MÉXICO
GOBIERNO DE LA REPÚBLICA

ESTADOS UNIDOS MEXICANOS

CONACYT
Consejo Nacional de Ciencia y Tecnología

GENERAL REPORT ON THE STATE OF SCIENCE, TECHNOLOGY AND INNOVATION

MEXICO 2017

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National Council for Science and Technology

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PREFACE

By publishing the 2017 General Report on the State of Science, Technology and Innovation (IGECTI), the National Council for Science and Technology (Conacyt) complies with article 10 of the Science and Technology Law, which provides for the creation of a yearly report on the state of science, technology and innovation in Mexico.

For the first time ever, the IGECTI is published exclusively on line, thereby reducing the materials, time and costs that comprise the printing and distribution of a hard copy textbook. The former and present versions of the IGECTI are available online at the Integrated Information System of Scientific Research, Technological Development and Innovation (SIICYT)[1].

The present edition of the 2017 IGECTI makes accessible to the scientific community, as well as to a wider public, the statistics and national indicators on the financial and human resources dedicated to scientific and technological activities; production in the fields of science, technology and innovation and the operation of the Conacyt as the office responsible for making the public policies in such matters and the compliance of the 2013-2018 Special Programme of Science, Technology and Innovation (PECiTI).

It must be pointed out that there are permanent efforts to reinforce the statistics and indicators on science, technology and innovation, which is why the Technical Committee Specialized in Statistics on Science, Technology and Innovation performs constant index examination. Additionally, the report's indicators were developed considering the recommendations of the Organization for Economic Co-operation and Development (OECD), the Network of Science and Technology Indicators, - Ibero-American and Interamerican (RICYT)- and the United Nations Organization for Education, Science and Culture, to ensure the international comparison.

Finally, the Government of the Republic is undertaking concerted efforts to make every office of the Federal Public Administration, and the three government levels, disclose public information so the citizens can watch and get feedback from government actions. In such spirit, the statistics and indicators herein reported may constitute a useful tool to anyone interested in the implementation of the public policies on science, technology and innovation.

[1] http://www.siicyt.gob.mx/index.php/estadisticas/informe-general.

ACKNOWLEDGEMENTS

The present edition of the 2017 General Report on the State of Science, Technology and Innovation, is the result of the work and personal dedication of the staff at the Assistant Direction of Planning and Evaluation of the National Council for Science and Technology (Conacyt)

The Conacyt hereby recognizes the people and organizations that contributed to edit this publication, such as the Mexican Institute of Industrial Property, the National Institute of Statistics and Geography (INEGI), the Ministry of Economy (SE) and other institutions that provided valuable information for this report.

Therefore, and in acknowledgement of their part in its creation, the officials responsible for the compiling, ordering and sifting of the information, as well as the writing of each of its chapter, are enlisted as follows:

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Correspondingly, the Conacyt's Technical Unit of Projects, Communication and Strategic Information also contributed to the editorial process of the document hereto.

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ACRONYMS

ACyT	Scientific and Technological Activities
AI	Innovation Activities
ANUIES	National Association of Universities and Institutions of Higher Education
APF	Federal Public Administration
ARHCyT	Human Resources in Science and Technology
BAT	High-technology goods
BMBF	Bundesministerium für Bildung und Forschung
BRICS	Brazil, Russia, India, China and South Africa
BUAP	Eminent Autonomous University of Puebla
CAR	Management Agreements by Results
CCA	Center of Architectural Collaboration
CCPRI	Qualifications Committee on Publications and Illustrated Journals
CDB	Convention on Biological Diversity
CDI	National Commission for the Development of the Indigenous Tribespeople and Communities
CEDAW	Convention on the Elimination of all forms of Discrimination Against Women
CENTRO GEO	Center of Research on Geospatial Information Sciences
CIAD	Center of Research on Food and Development, C.A. (Civil Association)
CIATEJ	Center of Research on the Assistance for Technology and Design in the State of Jalisco, C.A.
CIATEQ	Center of Advanced Technology in Querétaro
CIBIOGEM	Inter ministerial Commission for the Biosecurity of Genetically Modified Organisms
CICESE	Ensenada's Center of Scientific Research and Higher Education in Ensenada, Baja California
CICY	Yucatán's Center of Scientific Research
CIDE	Centre of Economic Research and Docentship
CIDESI	Center of Engineering and Industrial Development
CIDETEQ	Center of Research and Technological Development of Electrochemistry
CIESAS	Center of Research and Higher Studies on Social Anthropology
CIISB	Center for the Exchange of Information on the Security in Biotechnology
CIMAT	Center of Research on Advanced Materials
CIMMYT	International Maize and Wheat Improvement Center
CINVESTAV	Center for Research and Advanced Studies of the National Polytechnic Institute
CIO	Center of Research on Optics
CIP	International Patent Classification
CIQA	Center of Research on Applied Chemistry
CNDH	National Commission of Human Rights
COLEF	The Northern Border College
COLMEX	The College of Mexico
COLMICH	The College of Michoacán
COLPOS	The College of Postgraduates
COLSAN	The College of San Luis
COMIMSA	Mexican Corporation of Research on Materials
CONACYT	National Council for Science and Technology
CONAFOR	National Forests Commission
COP	Conference of the Parties
CPI	Public Research Centers
CRMCyT	Classification of Mexican Journals on Science and Technology
CTAP	Center of Deepwater Technology
DAAD	German Service of Academic Exchange
DST	Department of Science and Technology
ECOSUR	The Southern Border College
EFCyT	Scientific and Technical Education and Literacy
ENGASTO	National Survey on the Expense at Homes at Disposal of Families
ENOE	National Survey on Occupations and Employment
ERC	European Research Council
ESIDET	Survey on Research and Technological Development
ESRC	Economic and Social Research Council of the United Kingdom
FAO	The Food and Agriculture Organization of the United Nations
FEB	Federal Expense Budget
FINNOVA	Sectional Fund of Innovation
FIT	Technological Innovation Fund
FLACSO	Latin American Faculty of Social Sciences
FOMIX	Mixed Funds
FONCICYT	Conacyt's Fund of International Cooperation on Science and Technology
FORDECYT	Institutional Fund for Regional Development for Scientific Technological and Innovation Development

GBARD	Government Budget Allocations for Research and Experimental Development
GDP	Gross Domestic Product
GEFCyT	Expenditure on Scientific and Technological Teaching and Training
GERD	Gross domestic expenditure on R&D
GERDGS	GERD by Government Sector
GERDHEI	GERD by High Education Institutions
GERDPS	GERD by Private Sector
GFCyT	Federal Expenditure on Science, Technology and Innovation
GFEECyT	Federal Expenditure on Scientific and Technical Education and Teaching
GFIDE	Federal Expenditure on Scientific Research and Experimental Development
GFSCyT	Federal Expenditure on Scientific and Technological Services
GI	Expenditure on Innovation
GNCTI	National Expenditure on Science, Technology and Innovation
GPSPF	Federal Public Programing Expenditure
GSCyT	Expenditure on Scientific and Technological Services
GUF	General University Funds
HEI	Higher Education Institutions
HS	Harmonized System
ICE	Standard Quote Impact
IDE	Scientific Research and Experimental Development
IDRC	International Development Research Centre
IDT	Research and Technological Development
IF	Impact Factor
IIE	Institute of Electrical Investigations
IISUE	Institute of Research on University and Education
ILO	International Labor Organization
ILSI	International Life Sciences Institute
IMMEX	Manufacturing Industry, Bonded Factories and Export Services
IMP	Mexican Institute of Petroleum
IMPI	Mexican Institute of Industrial Property
IMSS	Mexican Institute of Social Security
IMT	Mexican Institute of Transport
IMTA	Mexican Institute of Water Technology
INADEM	National Institute of Entrepreneurs
INAOE	National Institute of Astrophysics, Optics and Electronics
INAPESCA	National Institute of Fishing and Aquaculture
INDAUTOR	National Institute of Copyright
INECC	National Institute of Ecology and Climate Change
INECOL	Institute of Ecology
INEEL	National Institute of Electricity and Clean Energy
INEGI	National Institute of Statistics and Geography
INFOTEC	Center of Research and Innovation on Information and Communication Technologies
INIDETAM	Institute of Research and Technological Develop-mento f the Mexican Navy
INIFAP	National Institute of Research on Forests, Agricultu-re and Livestock
ININ	National Institute of Nuclear Research
INMEGEN	National Institute of Genomic Medicine
INP	National Institute of Pediatrics
INSalud	National Health Institutes
INSERM	Pasteur Institute at the University of Toulouse
INSP	National Institute of Public Health
IPICYT	Scientific and Technological Research Institute in San Luis Potosí
IPN	National Polytechnical Institute
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ISI	Institute for Scientific Information
ISSSTE	Institute of Social Security and Services for Workers at the Service of the State
ITESM	Monterrey's Technological and Higher Studies Institute
JBEI	Joint Bio-Energy Institute
LBOGM	Genetically Modified Organisms Biosecurity Law
MOST	China's Ministry of Science and Technology
MSME	Micro, Small and Medium Enterprises
MSTI	Main Science and Technology Indicators
NOM	Official Mexican Norm
NRF	National Research Foundation
NSF	National Science Foundation
OECD	Organization for Economic Co-operation and Development
OEI	Organization of Ibero-American States for Education, Science and Culture
OGM	Genetically Modified Organism
OMPI	Intellectual Property World Organization
ONU	United Nations Organization
PCT	Patents Cooperation Treaty
PEA	Economically Active Population
PECiTI	2014-2018 Special Program of Science, Technolo-gy and Innovation
PEI	Technological Innovation Programme for High Added Value Companies, Precursory Technologies and Enterprises' Competitiveness
PEMEX	Mexican Petroleum
PILA	Long Term Research Programmes
PIRE	Partnerships for International Research and Education
PND	National Development Plan
PNPC	National Register of Quality Postgraduate Programmes
PPP	Purchasing Power Parity
RCEA	Certified Evaluators Register

REDNACECYT	National Network of State Science and Technology Councils and Offices
RENIECYT	National Register of Science and Technology Institutions and Companies
RHCyTC	Human Resources in Science and Technology that have concluded the technical or the higher levels and are employed in sci-tech activities
RHCyTE	Human Resources in Science and Technology that have concluded the technical or higher levels
RHCyTO	Human Resources in Science and Technology Employed in sci-tech activities
RICYT	Sci-Tech Indicators Network-Ibero American and Inter American
R&D	Research and Experimental Development
SAGARPA	Ministry of Agriculture, Livestock, Rural Development, Fishing and Food
SAV	IPN's Extension Support System
SCT	Ministry of Communications and Transport
SCyT	Scientific and Technological Services
SE	Ministry of Economics
SEMAR	Ministry of the Navy
SENER	Ministry of Energy
SEP	Ministry of Public Education
SGM	Mexican Geological Service
SHCP	Ministry of Public Finance and Credit
SIAFFASPE	Information System for the Management of the Fund for the Reinforcement of Public Health Actions in the states.
SINCO	Occupation Classification National System
SIICYT	System of Scientific Research, Technological Development and Innovation
SINECYT	National System of Scientific and Technological Evaluation
SITC	Standard International Trade Classification
SNCTI	Science, Technology and Innovation National System
SNI	Researchers National System
SOTM	Moving Satellite System
STET	Scientific and Technological Education and Training
STI	Science, Technology and Innovation
STPS	Ministry of Labor and Social Care
TBP	Technology Balance of Payments
S&T	Science and Technology
TIC	Information and communications technology
TIGIE	Tariff of the General Imports and Exports Taxes Law
TR	Thomson Reuters
UAAAN	Antonio Narro Autonomous Agrarian University
U de G	University of Guadalajara
UACh	Autonomous University of Chapingo
UACJ	Autonomous University of Ciudad Juarez
UAM	Metropolitan Autonomous University
UANL	Autonomous University of Nuevo León
UASLP	Autonomous University of San Luis Potosí
UAZ	Autonomous University of Zacatecas
UE	European Union
UNAM	National Autonomous University of Mexico
UNESCO	United Nations Organization for Education, Science and Culture
UPN	National Pedagogical University
USA	United States of America
UVTC	Linkage and Technology Transfer Unit
WCO	World Customs Organization
WoS	Web of Science

CHAPTER I

INVESTMENT IN SCIENTIFIC AND TECHNOLOGICAL ACTIVITES

INTRODUCTION

Science, technology and innovation activities (STI) are considered important factors for the economic and social development of any country as the generation and use of novel ideas and knowledge, as well as new innovations, are deemed as fundamental to increase the productivity, competitiveness and prosperity of any society as a whole.

That is the reason why investment in the activities of the sci-tech sector bears considerable relevance for the countries which, like Mexico, aim to take position in the so-called “knowledge economy”, for the generation of new ideas, technological development and innovation require the availability of economic resources.

In order to analyze the investment allocated in Mexico’s STI, it is necessary to keep such investment in a comparative perspective to the investment stimulated in other countries. Consequently, indicators have been created to make the data generated by each country comparable. It is information obtained by complying with the international standards established by institutions such as the United Nations Organization for Education, Science and Culture (UNESCO) and the Organization for Economic Cooperation and Development (OECD).

The most important international indicators which point to the investment in STI are the following three: the National Expenditure on Science, Technology and Innovation (GNCTI); the Federal Expenditure on Science, Technology and Innovation (GFCyT) and the Gross domestic expenditure on R&D (GERD). The first one provides evidence on the analysis of the total budget approved for STI. The second one measures the federal investment in STI, particularly in Research and Experimental Development (R&D): Postgraduate Studies, Scientific and Technological Services and Innovation. Thirdly, the Gross domestic expenditure on R&D is the indicator that shows the expenditures incurred for the generation of new knowledge, excluding the funds for related activities such as scientific and technological services, innovation activities, as well as the expenditure on scientific and technical education and teaching.

In the international context, the participation of public or private funding entities in the investment in Scientific and Technological activities is far from the national figures. In Mexico, the private sector contributes with less than 30 per cent of the expenditure, whereas in other countries, its contribution is placed above 50 per cent, creating a circumstance that leads to the design of strategies that foster (and increase) private investment in this sort of activities.

Accordingly, to turn scientific and technological development into an engine to move towards an economy and a society of knowledge, solid bonds among the private and public sector, as well as higher education institutions and research centers, are required.

This chapter is in three main parts. The first one describes the current situation of the Gross domestic expenditure on R&D, its growth and the position reached by Mexico internationally. The second one presents the Federal Expenditure on Science, Technology and Innovation and disaggregates it by budget sector, activity and socio-economic objective. Finally, the third section illustrates, for the National Expenditure on Science, Technology and Innovation, a summary of the budget managed by the four sectors that comprise a country’s economy, according to international standards, plus the one coming from abroad, for the execution of STI within the country.

Chapter I. Investment in scientific and technological activities

I.1 THE GROSS DOMESTIC EXPENDITURE ON R&D

FOCAL POINTS

- In 2017, the estimated amount for the Gross domestic expenditure on R&D (GERD) was $97,166.1 million pesos.
- In 2017, in real terms , the GERD decreased 6.4 per cent in comparison to that of 2016.
- Once again, the public funding sector was of paramount importance, with 62.94 per cent of the total GERD.
- The GERD's growth trend has so far been positive, with a 3.97 per cent in real terms between 2012 and 2017.
- The GDP/GERD ratio was 0.48 in 2017.

I.1.1 THE IMPORTANCE OF GERD AND ITS MEASURING

The GERD is a constituent of the National Expenditure on Science, Technology and Innovation that comprises only the resources used to enhance knowledge, excluding the expenditures for other related activities, such as scientific and technological services; innovation activities, and the budgets assigned to scientific and technical education and training, with the exception of postgraduate studies, whose final product consists of a Research and Experimental Development Project).[2]

According to the OECD's Frascati Manual, Research and Experimental Development (R&D) involves "creative work systematically carried out to increase the volume of knowledge, including that of mankind, culture and society, and the use of such knowledge to create new applications" (OECD, 2015: 44).

In order to be considered research and experimental development, any activity of such kind must fulfill five essential criteria:

1. **Novelty**.-To obtain new knowledge must be an expected result. Activities to copy, imitate or reverse engineering are excluded, as they do not share new knowledge.
2. **Creativity**.- The activity must be based on original hypotheses and concepts, not on obvious ones.
3. **Uncertainty**.- With no certainty on the costs or time needed to reach the expected results nor the goals to achieve, either totally or partially.
4. **Systematization**.- Conducted on planning premises, and kept registers of both the process and the results obtained. Moreover, a main purpose and sources of funding have to be identified.
5. **Transferability and reproducibility**.- New knowledge must be able to be transferred, allowing other researchers to reproduce the results. Due to the fact that the purpose of R&D is to increase knowledge, the results cannot remain hidden. (OECD, 2015:46 – 48).

[1] All the figures herein reported have been deflated to 2017 prices.

[2] "The costs of master and doctorate students dedicated to R&D activities or projects (not employed in the statistical unit) must be accounted for in the other current expenditures sector, which include scholarships and research funding that are tracked through the institution."

Therefore, R&D is considered a main feature in the generation of knowledge around the world, for the development of such activities enhances the outcoming of projects that expand the frontiers of knowledge. Likewise, R&D includes three types of research: basic, applied and experimental, which are not mutually exclusive, nor part of a sequential model, which means none of them constitutes a precondition on the execution of either.

1. Basic research: Experimental or theoretical work mainly produced to acquire new knowledge on phenomena and observable facts, without considering any particular use or application.
2. Applied research: Original research carried out to acquire new knowledge, mainly conducted towards a specific and practical objective.
3. Experimental research: Systematic work that uses the knowledge obtained from research or practical experience and whose outcome is additional knowledge aimed at the creation of new products or processes, or at the improvement of existing ones. (OECD, 2015:50 – 51).

Among all the scientific and technological activities, it has been recognized that, in order to increase dynamism in the generation of knowledge, and, more specifically, in the development of R&D projects, public and private funds that constitute systematic investment, from higher education institutions (HES) and non-lucrative private organizations, are needed. The GERD, as per cent of the GDP (GERD/GDP), is recognized as a fundamental indicator, as it clearly illustrates the efforts made by the countries to support R&D.

The GERD may be classified by: (i) OECD sector; (ii) science field; (iii) funding sector; (iv) performance sector, and (V) socio-economic objective.

I.1.2 THE EVOLUTION OR GERD

In terms of the latest version of the OECD's Frascati Manual (2015:115-116), the expenditures for those postgraduate studies that lead to projects or R&D activities, are accounted for as GERD. In consequence, the only expenditure considered was taken from domestic scholarships in master and doctorate degrees from the National Register of Quality Postgraduate Programmes (PNCP) of the Conacyt[3], and a similar proportion of the expenditure on postgraduate studies made by families and companies. As a result, the GERD figures herein presented take this reclassification into account.

The information sources used to calculate the GERD are three. The Public Account for the examination of public GERD; the National Survey on the Expense at Home at Disposal of Families (ENGASTO), and the Survey on Research and Technological Development (ESIDET) to know the private GERD. The figures from the public account are annually updated. Concerning ENGASTO and ESIDET, the figures referred to are estimated on the basis of the latest year reported: 2013 (see Appendix GERD Calculation Note). The moment new information is available, the corresponding figures will be updated.

The resources for the funding of R&D have been increasing on a yearly basis. Particularly, on the 2012 – 2014 period, they displayed more dynamism due to public funding. Nevertheless, since 2015 the GERD has decreased, thus affecting the indicator's general behavior.

In real terms, the estimated total GERD diminished 6.40 percent from 2016 to 2017. Correspondingly, in 2017 the public GERD decreased 12.54 percent in comparison to the previous year's, keeping an average growth rate of 0.67 percent in the 2010-2017 period. (see GRAPH I.1).

I.1.3 GERD AS A PERCENTAGE OF GDP

So as to obtain a comparative perspective throughout time and among countries, the GERD as a per cent of the GDP is commonly used. As it is appreciated in GRAPH I.2, in 2017 the GERD was estimated in 0.48 per cent as part of the GDP. In comparison to 2016, the 2017 GERD/GDP ratio decreased 0.03 percentage points.

I.1.4 GERD CLASSIFIED BY SOURCE OF FUNDS

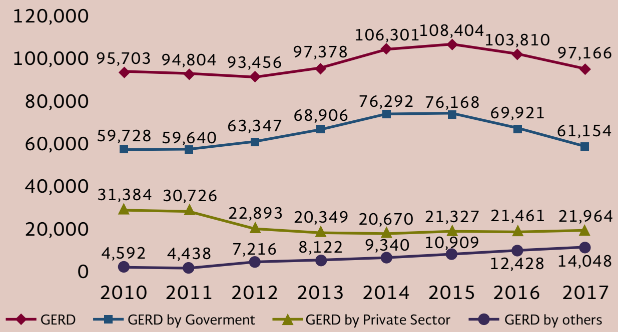
As it was previously mentioned, one feasible classification of GERD is based on the source of funds. In the case of Mexico, the two most important sources

[3] Foreign Scholarships were not accounted for as the information on the Research and Technological Development products foreign postgraduate programmes generate, is not available.

GRAPH I.1

EVOLUTION OF THE RESOURCES FOR THE GERD IN MÉXICO, 2010-2017

2017 million pesos

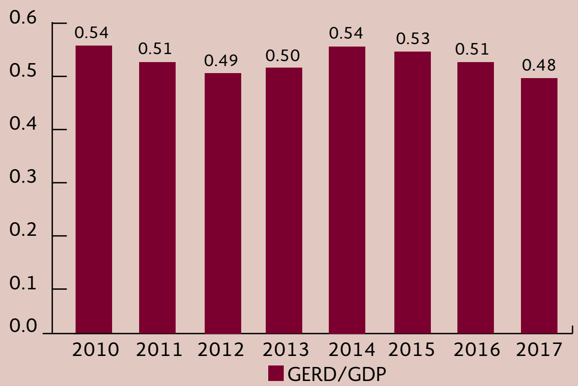


The data from 2014 to 2017 are estimates.
Source: Data calculated on information obtained from the Survey on Research and Technological Development (ESIDET) 2008, 2010, 2012, 2014, undertaken by the INEGI and the Conacyt.

GRAPH I.2

GERD/GDP RATIO BEHAVIOR IN MEXICO, 2010-2017

Percentage



The data from 2014 to 2017 are estimates.
Source: Data calculated on information obtained from the Survey on Research and Technological Development (ESIDET) 2008, 2010, 2012, 2014, undertaken by the INEGI and the Conacyt.

of funds are the public sector (the three levels of government) and the private one (companies). The contribution of other sources-non-lucrative private, homes and higher superior institutions-is not significant as source of funds for R&D.

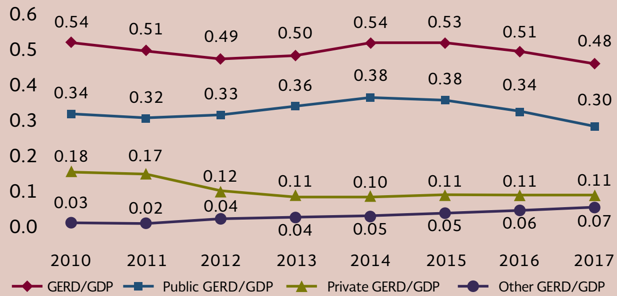
When checking the behavior by source of funds, it may be observed that the level of public GERD has been more significant than the private one between 2010 and 2017. The private GERD does not present important changes in its trends, while the public expenditure, particularly the federal government's, has made the indicator move. However, since 2016 the GERD was diminished due to an adverse economic scene as a result of high volatility in the global financial markets, a negative growth trend in the industrial production of the United States of America, a decrease in oil prices and the increase in protectionist policies around the world.

On the other hand, it is estimated that the GERD funded by the private sector augmented 2.34 percent in real terms and the expenditure of the other sectors increased 13.04 between 2016 and 2017 (see GRAPH I.3).

GRAPH I.3

BEHAVIOR OF THE GERD/GDP RATIO IN MEXICO AND BY SOURCES OF FUNDS, 2010-2017

Percentage



The data from 2014 to 2017 are estimates.
Source: Data calculated on information obtained from the Survey on Research and Technological Development (ESIDET) 2008, 2010, 2012, 2014, undertaken by the INEGI and the Conacyt.

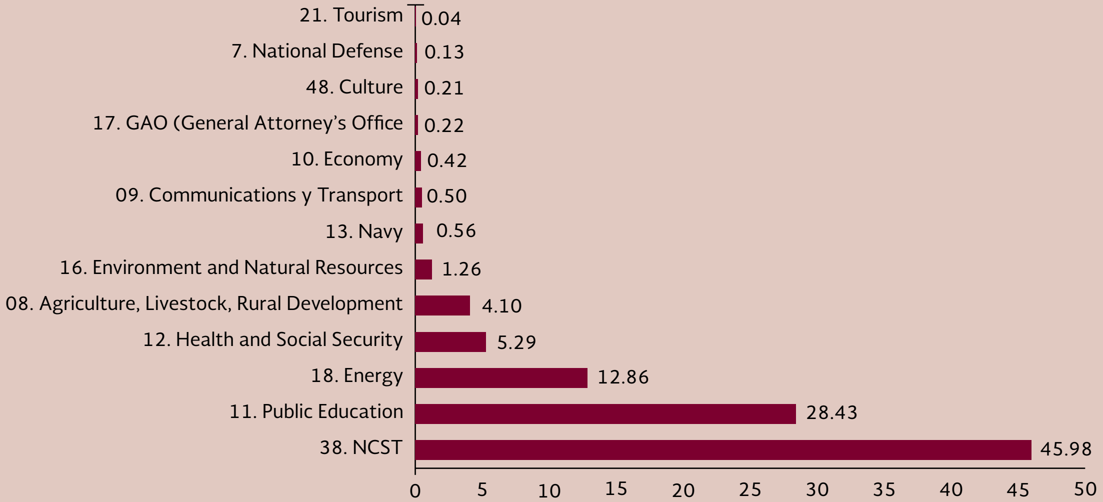
I.1.4.1 GERD FUNDED BY THE PUBLIC SECTOR. FEDERAL PUBLIC ADMINISTRATION BUDGET SECTORS

The importance of the public sector lies heavily on the GERD funding in Mexico. The public GERD involves the expenditure on R&D in the states and the federal expenditure of R&D (budget sector). As it can be seen in GRAPH I.4, twelve budget sectors finance R&D. In 2017, Sector 38 National Council for Science and Technology took significant participation, with 45.98 percent, followed by Sector 11 Public Education (28.43 percent) and Sector 18 Energy (12.86 per cent). In 2017, these three sectors concentrated more than 87 per cent of the expenditure.

GRAPH I.4

FEDERAL PUBLIC GERD BY BUDGET SECTOR, 2017

Percentage

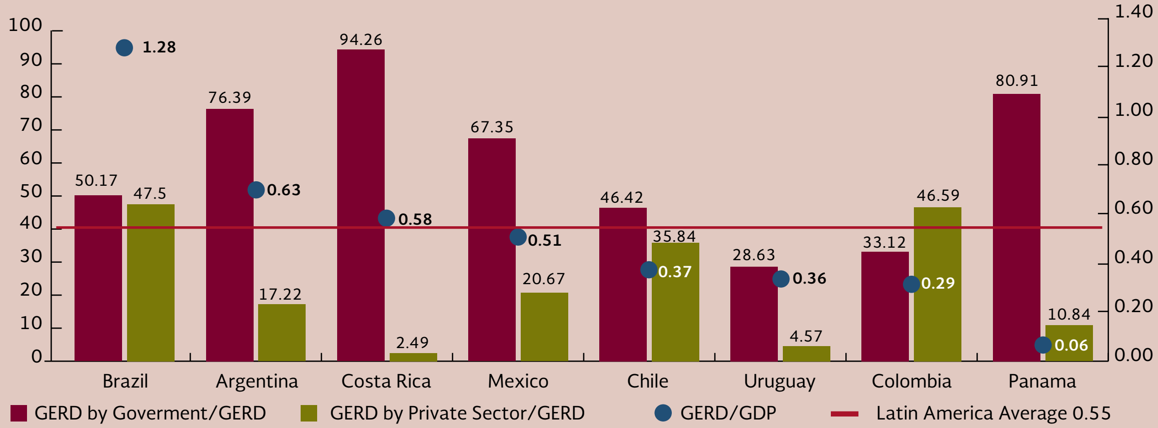


Source: Data calculated from the 2017 Ministry of Finance and Public Credit's Public Account, available online at: http://www.cuentapublica.hacienda.gob.mx/

GRAPH I.5

GERD IN LATIN AMERICA

Percentage



The Panama data belongs to 2013

The data for Argentina, Brazil, Costa Rica, Uruguay and Colombia correspond to 2014.

The Mexico was obtained in 2016 (estimate).

Source: Data calculated on information obtained from the 2014 Survey on Research and Technological Development (ESIDET), undertaken by the INEGI and the Conacyt.

RICYT, Ibero American Indicators of Science and Technology, in http://www.ricyt.org/indicadores, consulted on July 5th, 2018.

I.1.5 GERD ABROAD[4]

At the moment of making an international comparison between Mexico and countries from the region, it is likely to appreciate the position taken by our nation in R&D investment levels. Mexico, with an GERD/GDP ratio of 0.51, is hardly below the average in Latin America in 2015 (see GRAPH I.5). The GERD/GDP ratio in our country is below the one in countries such as Brazil, Argentina, and Costa Rica, and above Chile, Uruguay, Colombia and Panama.

GRAPH I.5 describes the situation of the GERD in different groups of countries, with the purpose of comparing the figures in Mexico with those in Latin America.

As it can be seen in Graph I.6, when Mexico is compared to other OECD members, the gap is greater than the one between our country and Brazil, Argentina and Costa Rica. It is evident that Mexico is below the organization's average; even when compared to countries such as South Korea, the difference increases, as such country invests eight times the amount invested in Mexico. Besides Korea, the leading countries in scientific and technological activities, such as Germany, the United States or Japan, allocate resources in amounts above the OECD average. Although Canada, France, Spain and the United Kingdom are below the average, they invest between three and four times more than Mexico.

The relevance of each of these GERD sources of funds varies, depending on the country to be analyzed. Nonetheless, it is quite common to find that in some developing countries the public/private ratio in the GERD integration is dominated by the public sector. If graphs I.6 and I.7 are compared, it is evident that the countries where the GERD/GDP indicator is greater, are those where the private investment prevails.

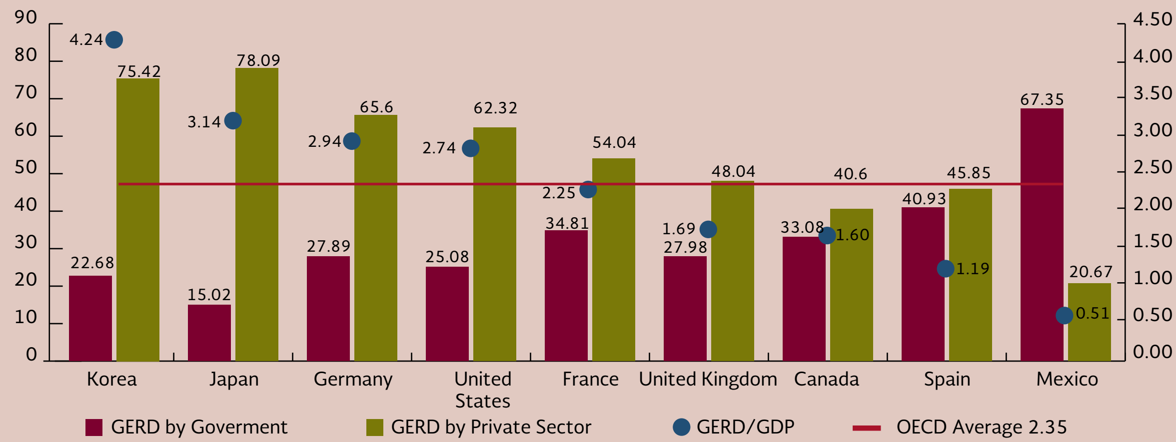
Another method to contrast Mexico's GERD internationally consists of analyzing the data on the nations considered to be strategic allies in the fields of Science and Technology (included in the 2014-2018 Special Program of Science and Technology and Innovation). Graph I.7 shows that Mexico is only above from Chile and Colombia, whereas Israel, South Korea and Japan present an GERD/GDP above three per cent.

Finally, Graph I.8 shows the GERD/GDP ratio in the countries collectively referred to as BRICS (Brazil, Russia, China and South Africa), which have gained increasing presence in the global economic landscape, with important GDP growth trends. Consequently, their GERD/GDP ratio is far above the Mexican indicator.

GRAPH I.6

GERD IN SELECTED COUNTRIES, OECD MEMBERS, 2016

Percentage



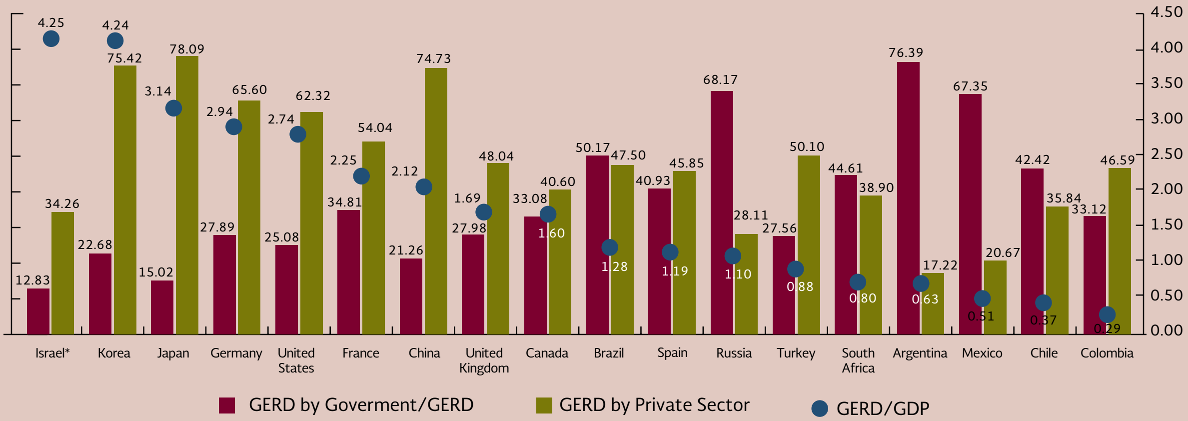
Sources: Data for Mexico calculated on information obtained from the 2014 Survey on Research and Technological Development (ESIDET), undertaken by the INEGI and the Conacyt.
Other countries: OECD, Main Science and Technology Indicator, available online at: http://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB#, consulted on July 8th, 2018.

[4] The comparison of the GERD in the world belongs to 2016 for the case of the OECD countries and to 2015 for the rest of Latin America, due to the data updating periods of both sources. This section used the 2016 datum for Mexico, with the intention of setting up the same period. In case the existing information for a specific country belongs to a year different from the aforementioned, the corresponding year will be explicitly mentioned..

GRAPH I.7

GERD IN STRATEGIC COUNTRIES FOR MEXICO, 2016

Percentage



The data for Brazil, Turkey, South Africa, Argentina and Colombia correspond to 2015.

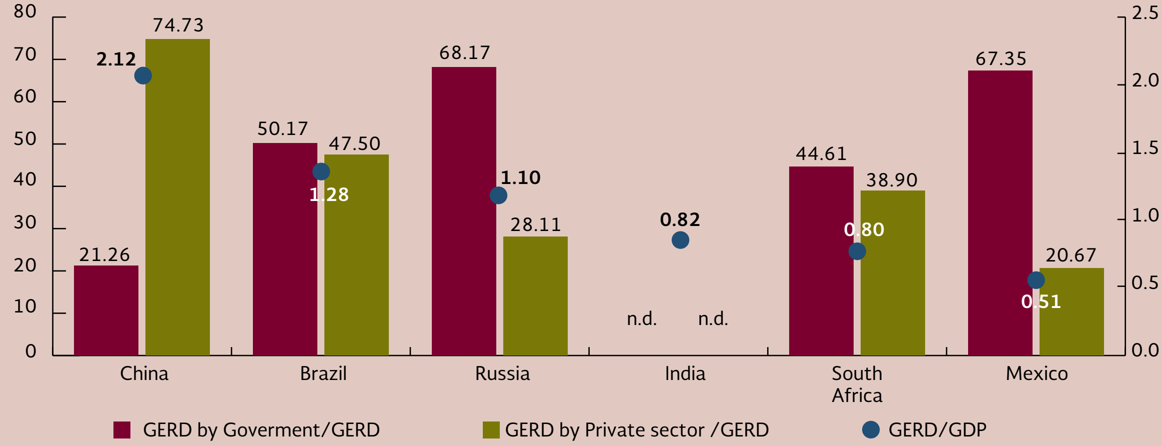
* 49.25 per cent of the R&D financed by Israel corresponds to the sector “rest of the world”, which includes all the institutions and individuals without a production site within their national territories and all the international organizations.

Sources: Data for Mexico calculated on information obtained from the 2014 Survey on Research and Technological Development (ESIDET), undertaken by the INEGI and the Conacyt.
Other countries: OECD, Main Science and Technology Indicator, available online at: http://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB#, consulted on July 8th, 2018.
RICYT, Ibero American Indicators of Science and Technology, in http://www.ricyt.org/indicadores, consulted on July 8th, 2018.

GRAPH I.8

GERD IN BRICS AND MEXICO, 2016

Percentage



n. a.: Not available.

The data for India corresponds to 2011.

The data for Brazil and South Africa belong to 2015.

Sources: Data for Mexico calculated on information obtained from the 2014 Survey on Research and Technological Development (ESIDET), undertaken by the INEGI and the Conacyt.
Other countries: OECD, Main Science and Technology Indicator, available online at: http://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB#, consulted on July 10th, 2018.
RICYT, Ibero American Indicators of Science and Technology, in http://www.ricyt.org/indicadores, consulted on July 10th, 2018.

I.2 FEDERAL EXPENDITURE ON SCIENCE, TECHNOLOGY AND INNOVATION

FOCAL POINTS

- In 2017, GNCTI amounted to 86,214 million pesos, superior by 18 per cent in real terms in comparison to the amount spent in 2012.
- The Federal Government's contribution to the funding of GERD during 2017, represented 0.30 per cent of the GDP[5]
- The 2017 expenditure presents a real increase of 32.9 per cent in comparison to 2016, from Budget Sector 11 Public Education.

The 2013-2018 National Development Plan (PND) emphasizes the importance of finance for Science, Technology and Innovation, to the Government of the Republic. That is the reason why this section analyzes the federal budget assigned to the funding of such activities.

According to what the PND establishes, one of the main objectives of the 2014 -2018 Special Program of Science, Technology and Innovation is "to contribute to the annual growth of the national investment in Scientific Research and Experimental Development up to one per cent of the GDP". Despite the budget adjustments of the last three years, the Government of the Republic reaffirms its commitment on not affecting this investment.

The Conacyt, as a consultation body of the Federal Government for science, technology and innovation, contributes to the achievement of such objective, in coordination with other ministries and offices of the Federal Public Administration, state governments, higher education institutions, public and private research centers, and companies.

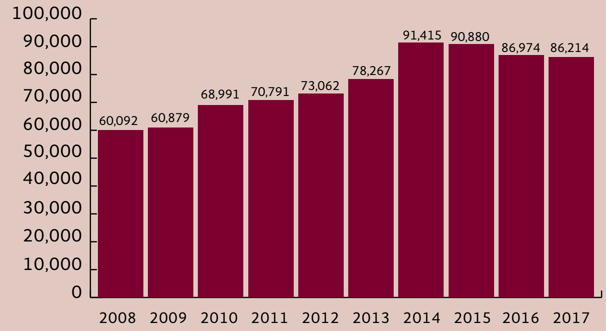
I.2.1 GFCYT AND ITS RATIO WIT GDP AND THE FEDERAL PUBLIC PROGRAMING EXPENDITURE

Graph I.9 presents the evolution of GFCyT from 2008 to 2017. Until 2014, the indicator presents real growth trends, with significant increase in 2008, 2010, 2013, and 2014; in 2015 it was constant with respect to2014 and in 2016 and 2017 it diminished by 4.3 and 0.9 per cent, respectively, in comparison to 2015 and 2016, due to the budget adjustments caused by the unfavorable global economic landscape.

GRAPH I.9

GFCYT, 2008-2017

Million pesos, 2017 prices



Sources: SHCP, Federal Public Financial Account, 2008-2017.
INEGI, Mexico's National Accounts System

In 2017, the value of the GFCyT/GDP indicator was 0.42 per cent, as it can be observed in Graph I.10, two hundredths more than what was reported in 2012.

Likewise, GFCyT in 2017, as a per cent of the Federal Public Programing Expenditure (GPSPF), reached 2.19 per cent, 18 hundredths above what was informed in 2012.

I.2.2 GFCYT CLASSIFIED BY BUDGET SECTOR

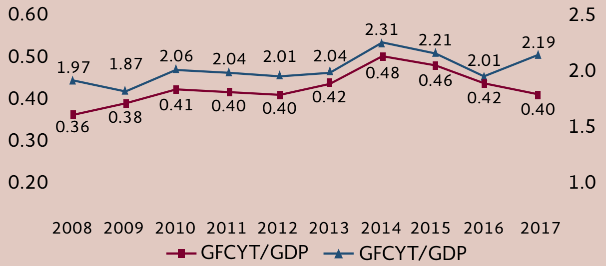
Table I.1 shows GFCyT 's comparison in 2016 and 2017, classified by budget sector. In 2017, GFCyT

[5] The classification of the Federal Expenditure on Science, Technology and Innovation (GFCyT) by activity comprises four elements:
1) Federal Expenditure on Scientific and Technical Education and Teaching (GFEECyT);
2) Federal Expenditure on Scientific Research and Experimental Development (GFIDE);
3) Federal Expenditure on Scientific and Technological Services (GFSCyT), and
4) Federal Expenditure on Innovation.
The second component GFIDE, is defined by the 2015 Frascati Manual as Government Budget Assignations for Research and Development (GBARD). The term considers, in accountancy terms, the Federal Government's budget for the execution of scientific activities and experimental research, unlike Gross domestic expenditure on R&D GERD, which registers the national economic resources allocated for the four sectors than comprise a country's economy (government, companies, higher education institutions and non-lucrative private organizations), in addition to those coming from abroad, on the basis of the international norm (Frascati Manual, 2015). The government sector involves the federal, state and municipal levels. The present report analyzes only federal resources.

GRAPH I.10

GFCYT PARTICIPATION IN THE GDP AND THE GPSPF, 2008-2017

Percentage



Sources: SHCP, Federal Public Financial Account, 2008-2017.
INEGI, Mexico's National Accounts System.

increased to 86,214 million pesos, 18 per cent superior in real terms to what was dissipated in 2012. Five budget sectors concentrated 95.9 per cent of this expenditure: 38.- Science and Technology, 34.8 per cent; 11.- Public Education, 36.1 per cent; 18.-Energy, 9.1 per cent; 8.-Agriculture, Livestock, Rural Development, Fishing and Food, 8.1 per cent and 12. – Health and Social Security, 7.8 per cent.

Graph I.11 presents GFCyT between 2008 and 2017 by budget sector, it can be observed that the budget allocated for Sector 11 Public Education has grown constantly, significantly increasing in 2017. Until 2015, Sector 38 Science and Technology also presented considerable sustained growth rates.

I.2.2.1 GFCYT BY SECTOR 38 NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

As appreciated in Graph I.12, in 2017 the Conacyt's participation in the expenditure on Budget Sector 38 Science and Technology, was 71.4 per cent, while the concurrence of the research centers coordinated by the Conacyt added up to 28.6 per cent.

In 2017, the expenditure on STI by Budget 38 Science and Technology had a sharp decrease in real terms of 17.6 per cent in relation to 2016. In the same way, the entities which comprise the sector presented considerable contractions in real terms. In the one hand, the Conacyt by 17.7 per cent and the coordinated research institutes, by 17.3 per cent.

TABLE I.1

GFCYT BY BUDGET SECTOR, 2016-2017

Million pesos, 2017 prices

Budget sector	2016	2017	2017 percentage	Real variation 2016-2017 (%)
38 National Council for Science and Technology	36,418	30,002	34.8	-17.6
11 Public Education	23,441	31,155	36.1	32.9
18 Energy	9,455	7,852	9.1	-17.0
08 Agriculture, Livestock, Rural Development, Fishing and Food	6,882	6,958	8.1	1.1
12 Health and Social Security[1/]	7,108	6,735	7.8	-5.2
10 Economy	1,958	1,600	1.9	-18.3
16 Environment and Natural Resources	754	765	0.9	1.5
09 Communications and Transport	338	318	0.4	-5.9
Others[2/]	620	829	0.9	33.7
Total	**86,974**	**86,214**	**100.0**	**-0.9**

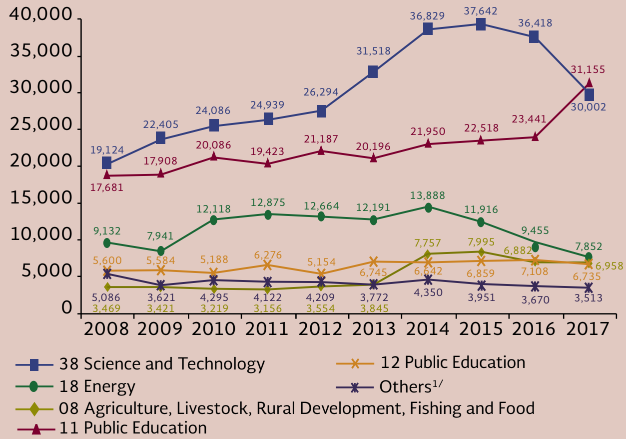
[1/] Includes IMSS and ISSSTE
[2/] Includes sectors 04 Government, 05 Foreign Relations, 07 National Defense, 13 Navy, 17 General Attorney's Office, and 21 Tourism.

Sources: SHCP, Federal Public Financial Account, 2016-2017.
INEGI, Mexico's National Accounts System

GRAPH I.11

GFCYT EVOLUTION BY BUDGET SECTOR, 2008-2017

Million pesos, 2017 prices



[1/] Includes sector 04 Government, 05 Foreign Relations, 09 Communication and Transport, 10 Economy, 13 Navy, 16 Environment, 21 Tourism and 17 General Attorney's Office. From 2012 to 2017, it includes Sector 07 National Defense.

Sources: SHCP, Federal Public Financial Account, 2008-2017.
INEGI, Mexico's National Accounts System.

I.2.2.2 GFCyT BY SECTOR 11 PUBLIC EDUCATION

Graph I.13 presents the expenditure on STI in 2016 and 2017 by Sector 11 Public Education. The main entities that took part in the GFCyT by this sector were: the National Autonomous University of Mexico (UNAM), 45.5 per cent; the National Polytechnical Institute (IPN), 13 per cent; the Metropolitan Autonomous University (UAM), 12 per cent; the Center for Research and Advanced Studies of the National Polytechnic Institute (CRAT), 10.6 per cent, and the College of Mexico, 2.5 per cent. These five entities concentrated 84 per cent of the GFCyT by this sector.

The 2017 expenditure on Sector 11 Public Education had a significant increase of 32.9 per cent in real terms in comparison to the previous year, which is justified by the increasing expense at the coordinated entities; the section Others, which comprehends the centralized units of the SEP, 151.3 per cent; the UAM, 54.4 per cent; the IPN, 32.1 per cent; the UNAM, 17.4 per cent, and the CRAT, 7.7 per cent. Other entities with a minor relative weight also presented real increase: the Antonio Narro Autonomous Agrarian University (UAAAN), 61.7 per cent and the College of Mexico, 13.2 per cent.

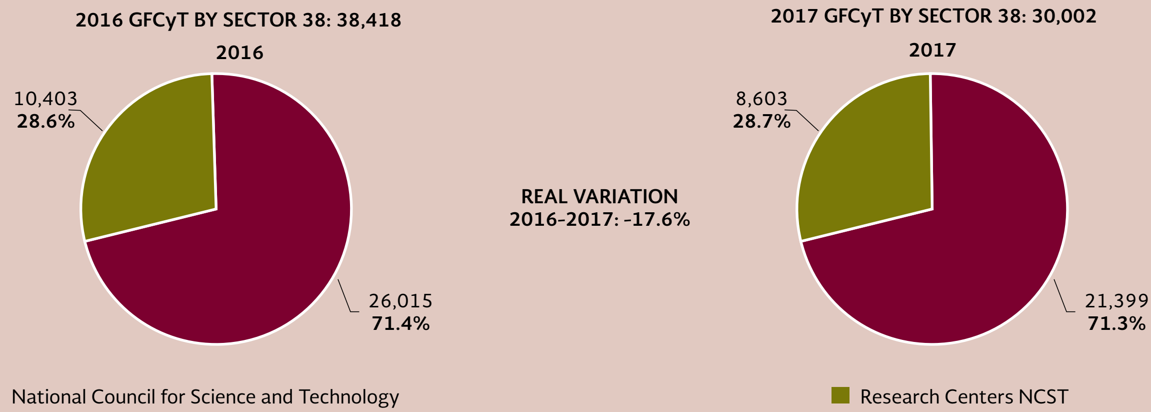
I.2.2.3 GFCYT BY SECTOR 18 ENERGY

Graph I.14 illustrates the entities that took part in the expenditure on science, technology and innovation by Sector 18 Energy in 2017: the Mexican

GRAPH I.12

GFCYT BY SECTOR 38 NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY, 2016-2017

Million pesos, 2017 prices, Percentage

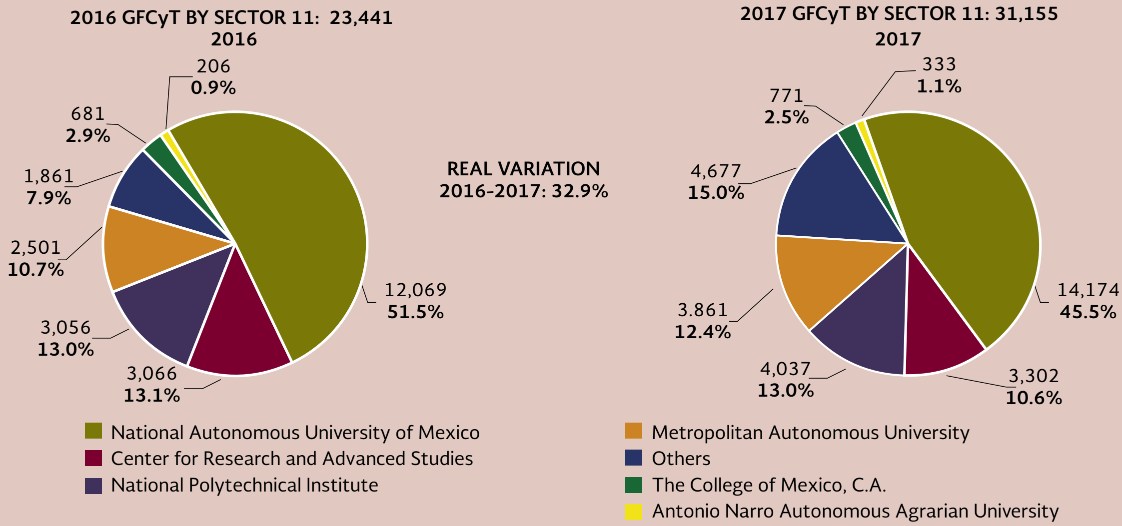


Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

GRAPH I.13

GFCYT BY SECTOR 11 PUBLIC EDUCATION, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

.

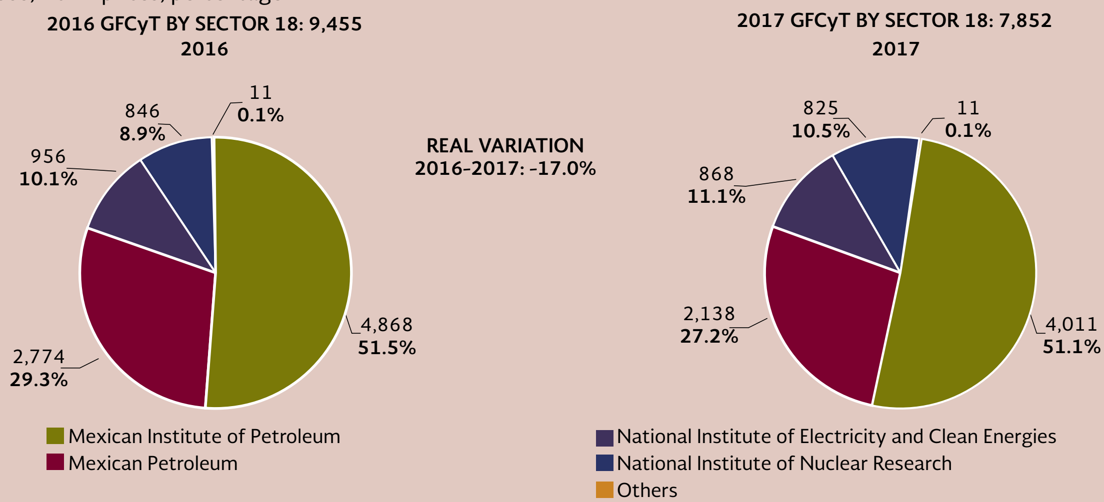
Institute of Petroleum (IMP), 51.1 per cent; Mexican Petroleum (Pemex), 27.2 per cent; the National Institute of Electricity and Clean Energy (INEEL)[6], 11.1 per cent, and the National Institute of Nuclear Research (ININ), 10.5 per cent.

This expenditure diminished by 17 per cent in real terms in comparison to 2016. The decreased is justified by the behavior of its coordinated entities. Within the sector, Pemex had a significant real

GRAPH I.14

GFCYT BY SECTOR 18 ENERGY, 2016-2017

Million pesos, 2017 prices, percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

[6] As of 2016 the Institute of Electricity Research (IER) is denominated National Institute of Electricity and Clean Energy.

reduction of 23 per cent; the IMP, 17.6 per cent; the INEEL, 9.3 per cent and the ININ, 2.5 per cent.

I.2.2.4 GFCYT BY SECTOR 08 AGRICULTURE, LIVESTOCK, RURAL DEVELOPMENT, FISHING AND FOOD

Graph I.15 presents the budget spent on STI in 2016 and 2017 by this sector. The General Direction of Productivity and Technological Development (GDPTD) took part in the expenditure with 39.9 per cent; the College of Postgraduates (COLPOS) with 20.5 per cent; the National Institute of Research on Forests, Agriculture and Livestock (INIFAP), with 20.3 per cent; the Autonomous University of Chapingo (UACh) with 8.5 per cent, and the National Institute of Fishing and Aquaculture (INAPESCA)[7] with 8.3 per cent.

In 2017, this sector presented the same expenditure pace as in 2016. GDPTD's behavior, with a real increase of 59.1 per cent, must be highlighted; correspondingly, the College of Postgraduates and the National Institute of Fishing and Aquaculture presented real growth trends of 4.7 per cent and 3.7 per cent, respectively, whereas INIFAP and UACh decreased in real terms by 9.1 per cent and 7.1 per cent, respectively.

I.2.2.5 GFCYT BY BUDGET SECTOR 12 HEALTH AND SOCIAL SECURITY

Graph I.16 provides information on the entities that took part in the expenditure on STI in 2016 and 2017 by Sector 12 Health and Social Security; 88.4 per cent was distributed among the following entities: National Health Institutes, 38.5 per cent; the General Direction of Quality and Education in Healthcare, 39 per cent; the Mexican Institute of Social Security (IMSS), 9.3 per cent, and the Institute of Social Security and Services for Workers at the Service of the State (ISSSTE), 1.6 per cent.

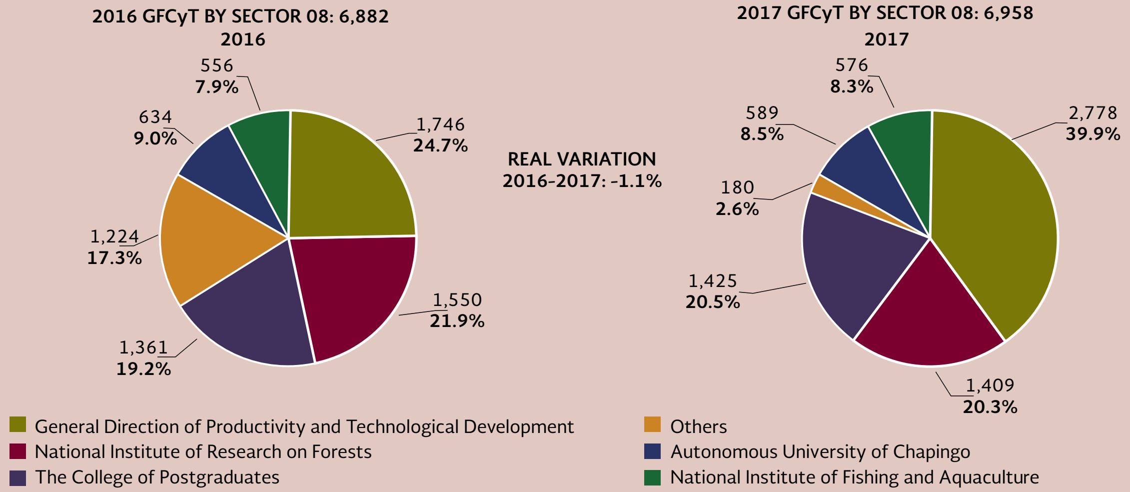
In 2017, the federal expenditure on STI in this sector had a real decrease on 5.2 per cent in real terms in comparison to 2016. Within this budget sector, the ISSSTE had a real growth in expense with respect to the previous year by 16.3 per cent; the General Direction of Quality and Education in Healthcare practically kept the same expense pace, while the National Institutes of Health had a real decrease of 6.3 per cent and the IMSS, of 14.3 per cent.

I.2.3 GFCYT BY ACTIVITY

Graph I.17 reveals GFCyT's percentage structure by activity in 2016 and 2017. In 2017, Research and

GRAPH I.15

GFCYT BY SECTOR 08 AGRICULTURE, LIVESTOCK, RURAL DEVELOPMENT, FISHING AND FOOD, 2016-2017
Million pesos, 2017 prices, Percentage



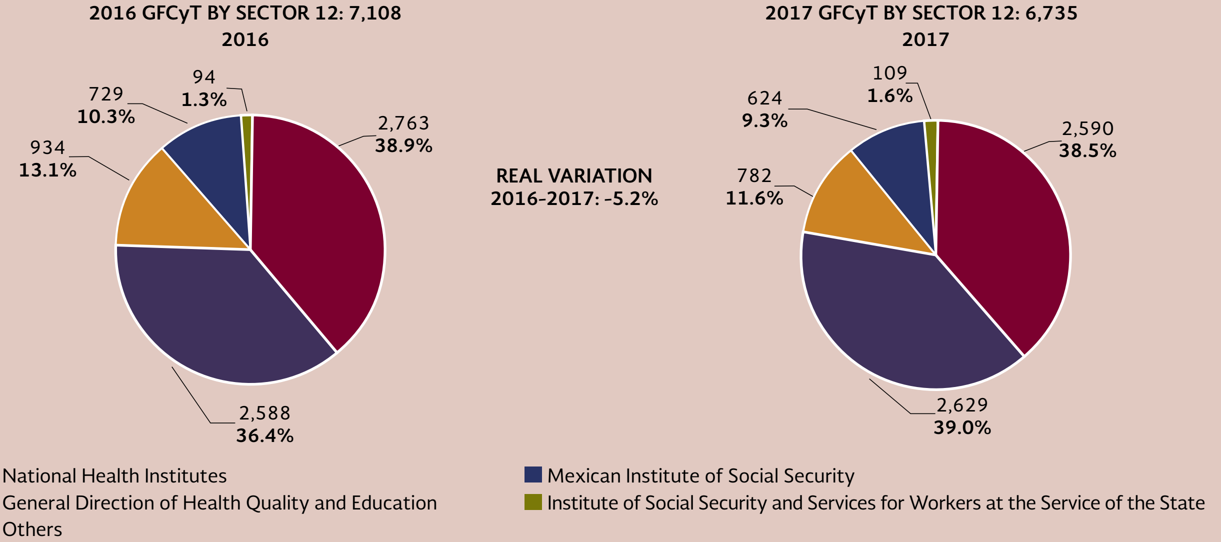
Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

[7] As of 2017, the name of the National Fisheries Institute changes to the Institute National Fisheries and Aquaculture.

GRAPH I.16

GFCYT BY SECTOR 12 HEALTH AND SOCIAL SECURITY, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

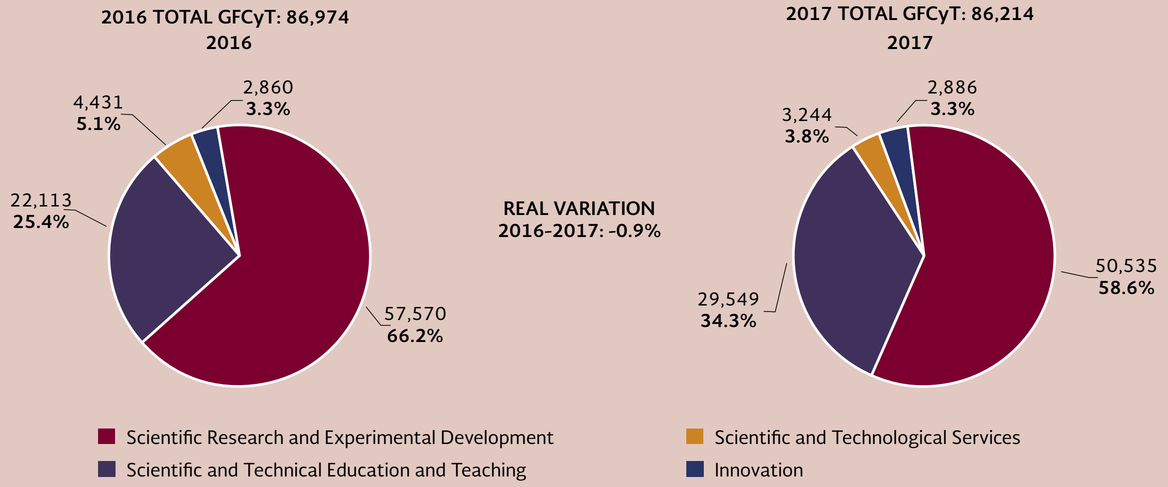
Experimental Development (R&D) took part with 58.6 per cent; Scientific and Technical Education and Training (STET), 34.3 per cent; Scientific and Technological Services (SCyT) played a part with 3.8 per cent, and Innovation, with 3.3 per cent.

By comparison, the Federal Expenditure on Scientific and Technical Education and Teaching (GFEECyT) presented a real increase to 33.6 per cent, whereas the Federal Expenditure on Scientific and Technological Services (GFSCyT) dropped in real terms by 26.8 per cent; Federal Gross Domestic Expenditure on R&D (GFIDE) fell by 12.2 per cent and the Expenditure on Innovation practically maintained its expense level.

GRAPH I.17

GFCYT BY ACTIVITY, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

I.2.3.1 GFIDE BY BUDGET SECTOR

Graph I.18 sets forth the participation of Sector 38 Science and Technology in the 2017 GFIDE at 35.2 per cent; Sector 11 Public Education, 34.1 per cent, Sector 18 Energy, 15.4 per cent; Sector 12 Health and Social Security, 6.3 per cent; and sector 08 Agriculture, Livestock, Rural Development, Fishing and Food, 4.9 per cent. These five sectors represent altogether 95.9 per cent of the total figure.

In 2017, the GFIDE experienced a decline in real terms by 12.2 per cent in comparison to 2016, provoked by the decrease in the corresponding sectors: Sector 38 Science and Technology, 23.9 per cent; Sector 18 Energy, 17 per cent; Sector 12 Health and Social Security, 9.6 per cent, and Sector 08 Agriculture, Livestock, Rural Development, Fishing and Food, 3.3 per cent. Sector 11 Public Education, had a real increase of 1.9 per cent.

1.2.3.1.1 GFIDE FROM AN INTERNATIONAL PERSPECTIVE

Table I.2 shows that Mexico is one of those OECD members which do not allocate as much resources from the Federal Government to the financing of R&D, in spite of the considerable upward trends of such assignations between 2013 and 2015.

In 2016 and 2017, the Federal Government's Funding to R&Ddecreased significantly in relation to 2014 and 2015.

The leading countries in this type of funding are the United States of America (USA), Japan and Germany. Mexico can be found at half-bottom positions, above Turkey, Israel and Chile.

I.2.3.2 GFEECYT BY BUDGET SECTOR

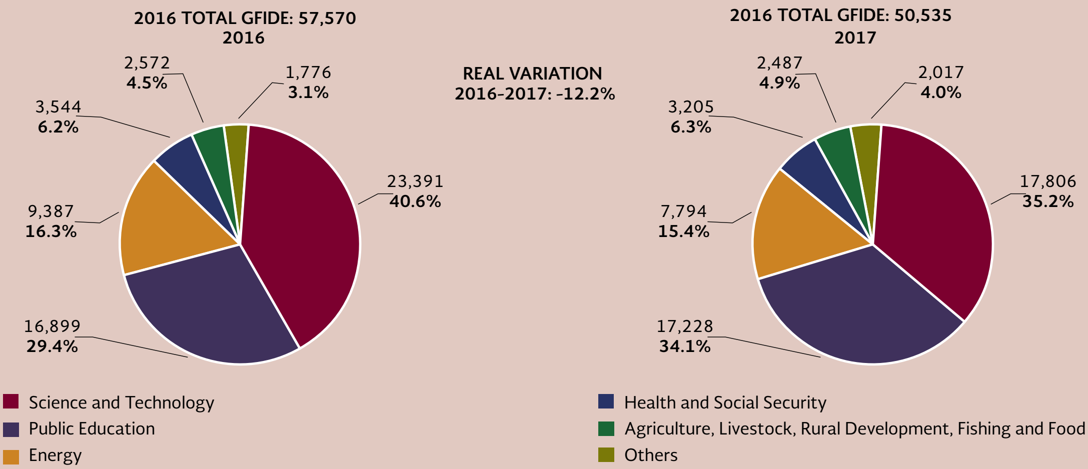
Graph I.19 displays that Sector 11 Public Education took 47.1 per cent from the GFEECyT in 2017, followed by the following sectors: 38 Science and Technology, 34 per cent; 12 Health and Social Security, 11.9 per cent, and 08 Agriculture, Livestock, Rural Development, Fishing and Food, 6.8 per cent. These four sectors practically concentrate the total amount of this expenditure (99.8 per cent).

During 2017, the GFEECyT displayed an increase in real terms by 33.6 per cento in relation to the precious year. Such increase is due to the outstanding 113 per cent growth of Sector 11 Public Education. Sectors 08 Agriculture, Livestock, Rural Development, Fishing and Food; 12 Health and Social Security and 38 Science and Technology did not present any considerable changes.

GRAPH I.18

GFIDE BY BUDGET SECTOR, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

TABLE I.2

INTERNATIONAL COMPARISON OF GOVERNMENT BUDGET ASSIGNATIONS TO R&D (GBARD), 2013-2017

Million US dollars1/

Country	2013	2014	2015	2016	2017
USA2/	132,477.0	136,159.0	138,544.0	150,392.0	151,380.0
Japan2/	35,633.5	35,431.8	33,841.6	34,455.5	35,493.2
Germany2/	32,745.9	33,186.3	34,046.0	35,214.7	37,277.5
Russia2/ 3/	21,898.8	20,808.0	19,084.1	17,017.5	13,939.3
France2/	18,457.1	18,349.2	17,415.7	17,430.8	
United Kingdom2/	14,362.8	14,663.0	14,506.1	14,604.0	
Spain2/	8,420.5	8,721.4	9,047.4	9,136.1	
China3/	7,303.0	7,368.9	7,567.0	7,982.5	8,260.8
Mexico2/ 4/	**6,324.5**	**7,180.5**	**6,915.9**	**6,282.2**	**5,486.5**
Turkey2/	5,445.5	5,080.2	5,132.9	5,777.7	5,934.5
Israel2/	1,686.1	1,749.9	1,863.5	2,057.5	
Chile2/ 4/	812.3	859.7	833.1		

1/ Conversion to US dollars was undertaken with the Purchasing Power Parity (PPP) calculated by the OECD.
2/ Strategic countries defined in the 2014-2018 PECiTI and members of the OECD.
3/ Strategic countries defined in the 2014-2018 PECiTI and members of BRICS.
4/ Strategic countries defined in the 2014-2018 PECiTI and members of OECD and Latin America.
Source: OECD, Main Science and Technology Indicators, 2017-2.

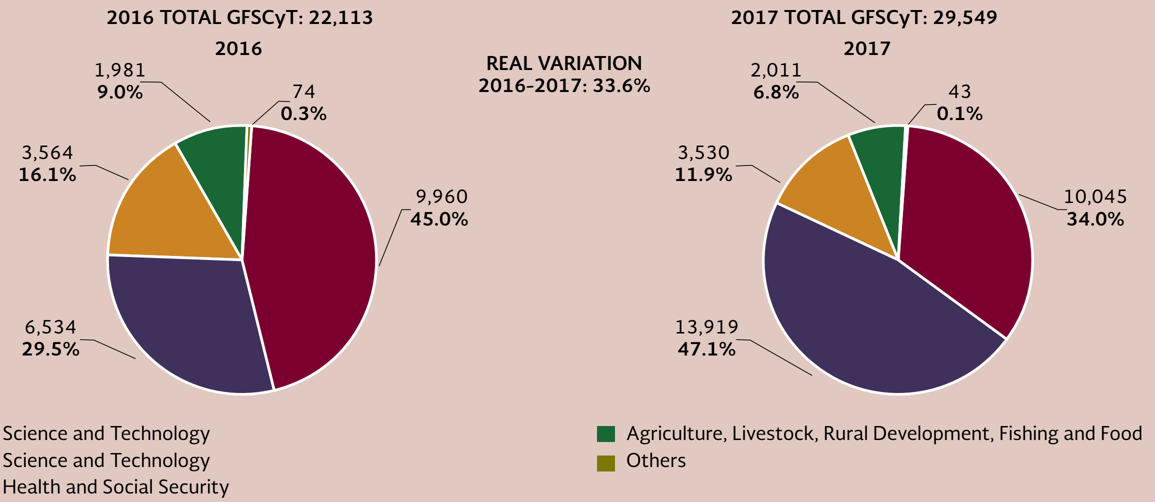
I.2.3.3 GFSCYT BY BUDGET SECTOR

Graph I.20 exposes to view the budget sectors that took part in the GFSCyT during 2017. Sector 38 Science and Technology, 52.9 per cent; Sector 10 Economy, 41.5 per cent, and Sector 18 Energy. 1.8 per cent. The three of them comprise 96.2 per cent of the total expenditure.

GRAPH I.19

GFEECYT BY BUDGET SECTOR, 2016-2017

Million pesos 2017 prices, percentage

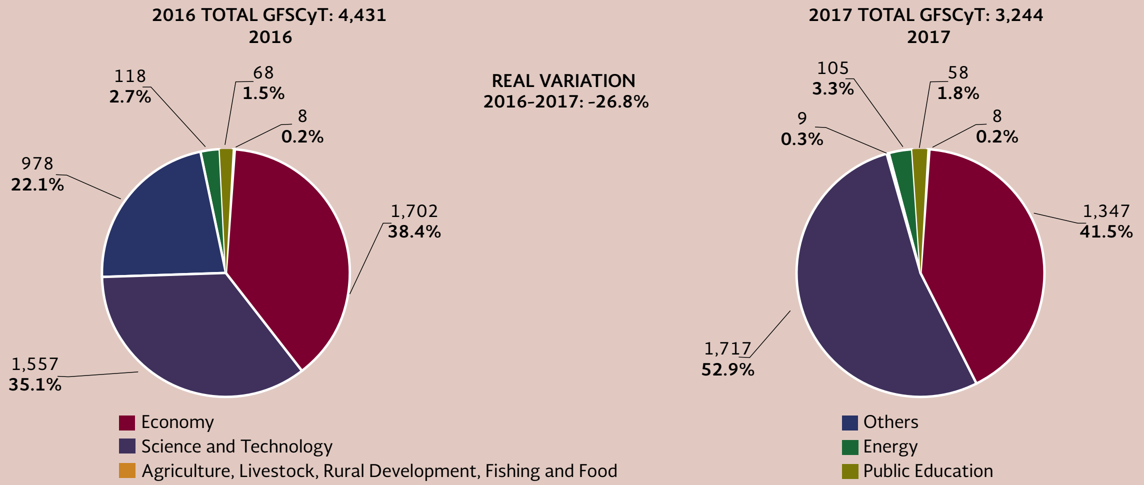


Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

GRAPH I.20

GFSCYT BY BUDGET SECTOR, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

In 2017, GFSCyT fell by 26.8 per cent in real terms in comparison to 2016. Within this activity, Sector 38 Science and Technology augmented 10.3 per cent in real terms in relation to the previous year, whereas sectors 10 Economy and 18 Energy, evidenced real contractions of 20.8 and 1.7 per cent, respectively. Sector 11 Public Education, with a lighter relative weight, maintained its expense level.

I.2.4 GFCYT BY SOCIO ECONOMIC OBJECTIVE

On the basis of Frascati's Manual 2015 edition, the classification of the GFCyT by socio economic objective establishes 13 objectives: 1) Exploration and exploitation of the land; 2) Environment; 3) Exploration and exploitation from space; 4) Transport, telecommunication and other infrastructure; 5) Energy; 6) Production and industrial technology; 7) Health; 8) Agriculture; 9) Education; 10) Culture, leisure, religion and mass media; 11) Systems, structures and political and social processes; 12) the general advancement of knowledge financed by 12.a) General University Funds (GUF) and 12.b) other sources different from GUF and 13) Defense.

During 2016, the Conacyt carried out painstaking examination of the statistical information by socio economic objective from the GFCyT reported until 2015, in accordance with the classification standard aforementioned, which led to a reclassification that includes 12 out of the 13 objectives, as the socio-economic objective 'Education' in contained in 'General advancement of Knowledge', financed by General University Funds.

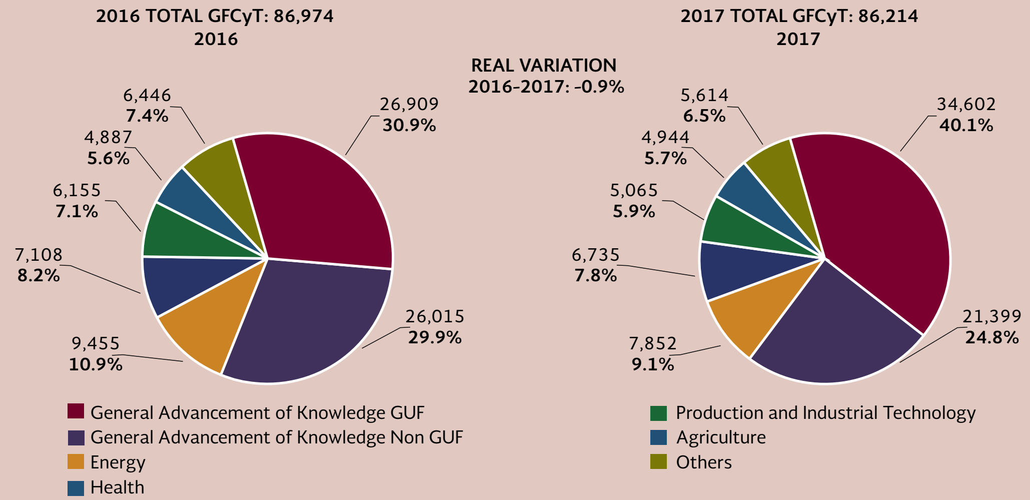
In 2017, the GFCyT distribution by socio-economic objective was the following: General Advancement of Knowledge by GUF, 40.1 per cent; General Advancement of Knowledge by other NON-GUF, 24.8; Energy, 9.1 per cent; Health, 7.8; Production and industrial technology, 5.9 per cent, and Agriculture, 5.7 per cent. These six objectives comprise 93.4 per cent of the total GFCyT, as it can be fully appreciated in Graph I.21.

In 2017, the socio-economic objective General Advancement of Knowledge by GUF must be emphasized, as it displayed an outstanding increase by 28.6 per cent in comparison to 2016. The objectives 'Environment' and 'Agriculture' kept their respective expense levels, whereas the other socio-economic objectives presented real negative variations.

GRAPH I.21

GFCYT BY SOCIO ECONOMIC OBJECTIVE, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

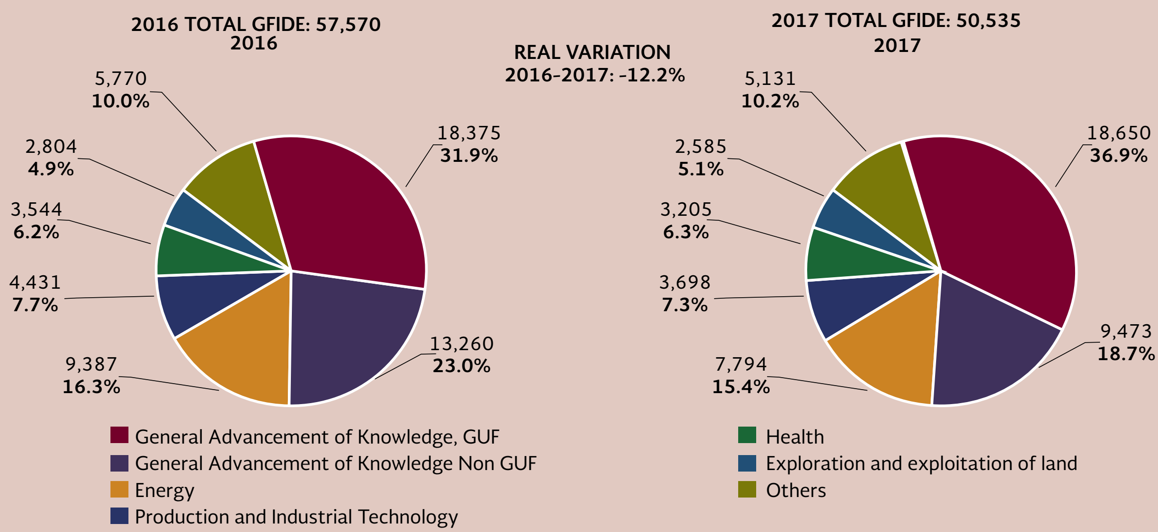
I.2.4.1 GFIDE BY SOCIO ECONOMIC OBJECTIVE

Graph I.22 presents the distribution of GFCyT by socio-economic objective in 2017, as follows: General advancement of knowledge by GUF, 36.9 per cent; General advancement of knowledge by NON-GUF, 18.7; Energy, 15.4; Production and industrial technology, 7.3; Health, 6.3 per cent, and exploration and exploitation of the land, 5.1 per cent. Altogether, these objectives concentrate 89.7 per cent of the GFCyT.

GRAPH I.22

GFIDE BY SOCIO-ECONOMIC OBJECTIVE, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

In 2017, the objectives that maintained their expense on R&D in comparison to the previous year were General advancement of knowledge by GUF and Environment. The other objectives presented real falls, being the most significant ones the following: Culture, leisure, religion and mass media, 46.5 per cent; General advancement of knowledge by other NON-GUF, 28.6 per cent; Systems, structures and political and social processes, 23.4 per cent; Energy, 17; Production and industrial technology, 16.5 per cent; Health, 9.6, and Exploration and Exploitation of the Land, 7.8 per cent.

I.2.4.2 GFEECYT BY SOCIO-ECONOMIC OBJECTIVE

Graph I.23 show the distribution of 2017's GFCyT by socio-economic objective: General advancement of knowledge by GUF, 53.9 per cent; General advancement of knowledge by other NON-GUF, 33.3, and Health, 11.9 per cent. Collectively, these objectives comprise 99.1 per cent of the total GFCyT.

In 2017, the socio-economic objective 'General advancement of knowledge by GUF' displayed a significant real increase in its expense level in relation to 2016, being 87.1 per cent. The objectives 'General advancement of knowledge by other NON-GUF' and Health, barely modified their expense levels, while the objective 'Systems, structures and political and social processes' went through a decrease of 12.3 per cent.

I.2.4.3 GFSCYT BY SOCIO-ECONOMIC OBJECTIVES

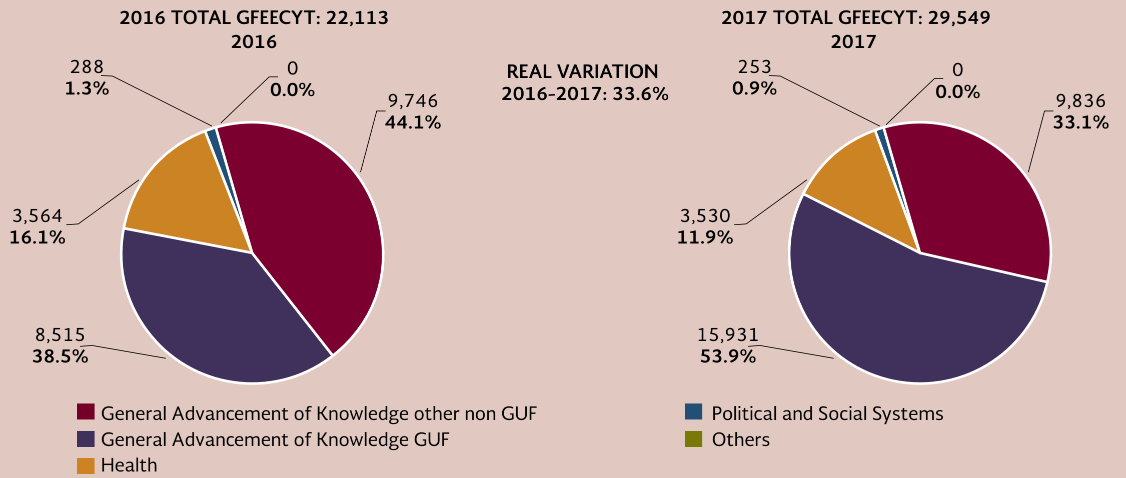
Graph I.24 presents GFSCyT by socio-economic objective in 2016 and 2017. In 2017, GFCyT's distribution by socio-economic objective was the subsequent: General advancement of knowledge by other NON-GUF, 5q per cent; Production and industrial technology, 2.3 per cent, and Systems, structures and political and social processes, three per cent. These three objectives include 96.3 per cent of the total expenditure on scientific and technological services.

The socio-economic objectives which presented a real expenditure increase in 2017 in relation to 2016, were: General advancement of knowledge by other NON-GUF, 10.5 per cent, and General advancement of knowledge by GUF, with a lighter relative weight, 11.7 per cent.

GRAPH I.23

GFEECYT BY SOCIO-ECONOMIC OBJECTIVE, 2016-2017

Million pesos, 2017 prices, Percentage

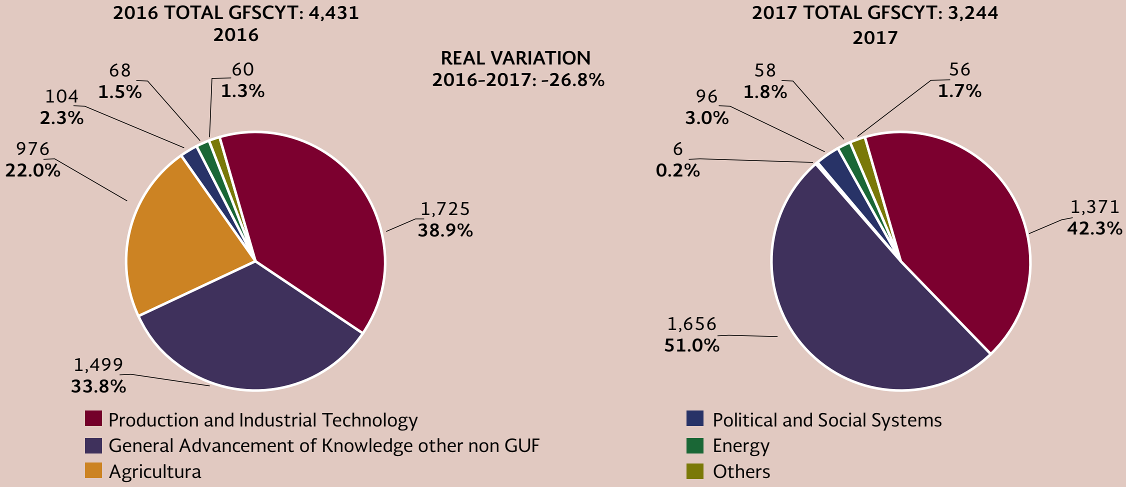


Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

GRAPH I.24

GFSCYT BY SOCIO.ECONOMIC OBJECTIVE, 2016-2017

Million pesos, 2017 prices, Percentage



Sources: SHCP, Federal Public Financial Account, 2016 and 2017.
INEGI, Mexico's National Accounts System

I.3 NATIONAL EXPENDITURE ON SCIENCE, TECHNOLOGY AND INNOVATION AND ITS CONTRIBUTION TO THE KNOWLEDGE SOCIETY

FOCAL POINTS

- The National Expenditure on Science, Technology and Innovation (GNCTI) in 2017 amounted to 212,212.0 million pesos, which represents 1.05 per cent of Mexico's Gross Domestic Product in the same year.
- As of 2014, the GNCTI includes the private expenditure on Innovation, according to information obtained from the Survey on Research and Experimental Development, which has improved GNCTI's accountancy.
- Since 2014, the Conacyt and the budget sectors' expense is disaggregated, in order to provide information on Innovation investment.
- One of the changes in accountancy consists of the consideration of a proportion of the expense of families on postgraduate studies as Gross domestic expenditure on R&D, as indicated in the 2015 Frascati Manual.
- The percentage distribution of GNCTI on Scientific and Technological Activities, on the one hand, and Innovation Activities, is:
  a. Gross domestic expenditure on R&D: 45.79 per cent
  b. Expenditure on Scientific and Technical Teaching and Training: 33.84 per cent.
  c. Expenditure on Scientific and Technological Services: 12.89 per cent.
  d. Expenditure on Innovation Activities: 7.8 per cent.
- GNCTI's percentage distribution by source of funds, is:
  a. Private, 46.71 per cent
  b. Public, 40.89 per cent.
  c. Higher Education Institutions: 12.09 per cent.
  d. External: 0.31 per cent.

I.3.1 BACKGROUND

This section puts forward the National Expenditure on Science, Technology and Innovation (GNCTI). It includes its definition, activities and relations to the GERD and the GFCyT, the way it is constructed and interpreted from these two indicators. Additionally, statistics by Activity and Source of Funds are shown[8].

The manual of Statistics on Scientific and Technological Activities (OECD, 1948 p. 16) integrates Scientific and Technological Activities (ACyT) in three major groups: a) Research and Experimental Development (R&D); 2) Scientific and Technical Education and Training (EFCyT) and 3) Scientific and Technological Services (SCyT). On the other hand, the OSLO manual (OECD/Eurostat, 2005, p.57) defines Innovation Activities (AI)[9] as the scientific, technological, organizational, financial and commercial operations that effectively lead to the introduction of innovations.

The GNCTI is the in-door expenditure on ACyT and Innovation Activities (AI), within Mexico's border in a specific period. It may be funded by some of the following four sources: public, private, external and higher education institutions (HES). In 2017, the GNCTI was 212,212.0[e/] million pesos, which represents 1.05 per cent of Mexico's Gross Domestic Product (GDP) in 2017.

Therefore, GERD is the expense made at one of the three ACyT, notwithstanding the source of funds. And the GFCyT is the amount spent on any of the ACyT and AI, financed by the Federal Government. In this way, GERD and GFCyT integrate GNCTI.

Due to (i) the recognition of potential GERD to make a significant contribution to the economic growth and prosperity of a country (OECD,2015, p.20); (ii) the fact that EFCyT and SCyT are considered compatible activities for the enhancement of R&D, and (iii) AI's objective is to introduce to the market a significantly improved or new product; in can be interpreted that the GNCTI measures the efforts of a country to improve social well-being by funding ACyT and AI. Thereby, it is important to know the performance of the activities involved and their different funding sectors. The subsequent sections present the percentage distribution of GNCTI by activity and by source of funds.

[8] It is to be mentioned that this section is complemented with Appendix A.4, which specifies the calculation method, estimation methods, deflators and sources of funds of each one of the GNCTI components.

[9] In case of reference to the expenditure on R&D, EFCyT, SCyT or Innovation Activities, letter "G" is put ahead of each one of the beginning letters.

[e/] Estimated figures

I.3.2 GNCTI'S PERCENTAGE DISTRIBUTION BY SOURCE OF FUNDS

EFCyT is defined as "every teaching and training activity at non-university specialized superior level, as well as those activities concerning superior teaching and training that lead to the obtaining of a university degree or those related to the organized permanent post-university training and continuing education of scientists and engineers" .

SCyT are understood as the "activities related to scientific research and experimental development that contribute to the generation, diffusion and application of scientific and technological knowledge" (UNESCO, 1978).

In general, EFCyT and SCyT are close activities with a scientific and technological basis needed to carry out GERD, whose definition was presented in section one hereto. In summary, the three scientific and technological activities are understood as "systematic activities closely related to the production, diffusion and application of technical and scientific knowledge in all the fields of science and technology". (UNESCO, 1978)

Graph I.25 illustrates the GNCTI's behavior and distribution from 2010 to 2017 by ACyT and AI. In real terms, such period the GNCTI amounted to $87,804.0 real million pesos. Each one of the years examined shows that GERD represents GNCTI's most significant proportion. Particularly, in 2017 GNCTI was distributed as follows: GERD 45.79, GEFCyT 33.84, SCyT 12.89 and IE 7.48 per cent, respectively.

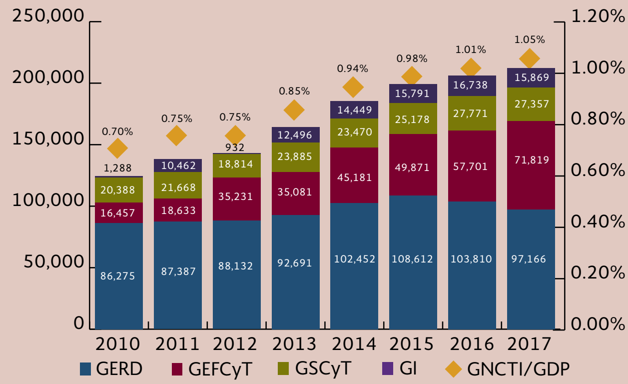
I.3.3 GNCTI'S PERCENTAGE DISTRIBUTION BY SOURCE OF FUNDS

GNCTI might as well be financed by one of the following sources of funds: public, private, external, and HEI. Within the source of public funds, there are two more classifications: federal investment and state investment. In the private funding sector, it is also feasible to make an additional classification: family investment and corporate investment. Finally, for HEI and external funding there is no additional classification.

GRAPH I.25

GNCTI DISTRIBUTION BY ACyT AND AI, 2010-2017

Million pesos, 2017 prices, Percentage



(100%=212,212.0 real million pesos in 2017)

Source: MFPC, Federal Public Financial Account, 2017.
Data for Mexico calculated on information obtained from the Survey on Research and Technological Development (ESIDET), 2012 and 2014, undertaken by the INEGI and the Conacyt
Data calculated by Conacyt based on information obtained from the National Survey on the Expense at Homes at Disposal of Families, 2013.

The importance of GNCTI sources of funds lies in the statistical information provided: source of funds in significant proportion, level and purpose of ACyT and AI, interactions and collaborations among the institutions of the sources, etc.

Graph I.26 show the distribution of GNCTI from 2010 to 2017 by source of funds. It is observed that public and private sources fund most of GNCTI, with a greater participation of the former from 2010 to 2015; however, the trend changed as of 2016, when the private sector started to fund GNCTI more significantly, and it has maintained ever since. In 2017, the sources of funds were distributed as follows: private, 46. 71 per cent, public 40.89 per cent, HEI, 12.09 per cent and External, 0.31 per cent.

The modification in the GNCTI funding trend may be attributed to the fall of the growth rate of the public sector in 2016 and 2017, with a set back of -6 and -3 per cent, respectively; the other three sectors that comprehend GNCTI presented a positive growth rate: private, 11 and 6 per cent; External, 14 and 13 per cent, and HEI with 18 per cent in both years.

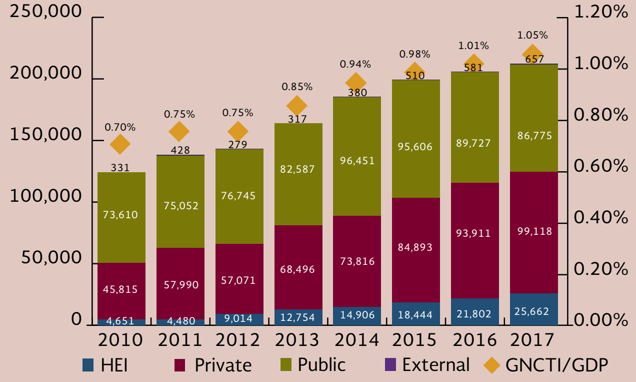
[10] Because the information provision instruments do not allow any other type of dissociation, provoking underestimation.

[e/] Estimated figures

GRAPH I.26

GNCTI SOURCES OF FUNDS, 2010-2017

Real million pesos 2017



(100%=212,212.0 real million pesos in 2017)

Source: MFPC, Federal Public Financial Account, 2017.
Data for Mexico calculated on information obtained from the Survey on Research and Technological Development (ESIDET), 2012 and 2014, undertaken by the INEGI and the Conacyt Data calculated by Conacyt based on information obtained from the National Survey on the Expense at Homes at Disposal of Families, 2013.

Finally, Table I.3 displays the integration of GNCTI by Sources of Funds, ACyT and AI. It can be observed that GNCTI's percentage as a proportion of the Gross Domestic Product reached 1.05 per cent in 2017.

TABLE I.3

NATIONAL EXPENDITURE ON SCIENCE AND TECHNOLOGY BY SOURCE OF FUNDS, 2017[E/]

Millones de pesos

Activity	Public Sector					HEI	Private Sector			External Sector	Total	% of NEST	% of GNCTI	% of GDP
	Federal investment			Estates[1/]	Subtotal		Family Inves-tment	Corporate Sector[2/]	Subtotal					
	Budget sectors	Conacyt	Subtotal											
HEI	41,062.9	19,529.0	60,591.9	561.9	61,153.8	5,924.9	6,392.6	23,037.9	29,430.5	656.9	**97,166.1**	**49.49**	**45.79**	**0.48**
Postgraduate	19,713.2	442.6	20,155.8		20,155.8	12,288.7	7194.6	32,179.6	39,374.2		**71,818.6**	**36.58**	**33.84**	**0.35**
S&T Services	1,588.1	1,655.9	3,244.0		3,244.0	7,448.5		16,666.6	16,666.6		**27,359.1**	**13.93**	**12.89**	**0.13**
Total S&T	**62,364.2**	**21,627.5**	**83,991.7**	**561.9**	**84,553.6**	**25,662.1**	**13,587.2**	**71,884.1**	**85,471.3**	**656.9**	**196,343.8**	**100.00**	**92.52**	**0.97**
GNCTI %	**31.76**	**11.02**	**42.78**	**0.29**	**43.06**	**13.07**	**6.92**	**36.61**	**43.53**	0.33	**100.00**			
GDP %			**0.41%**		**0.42%**	**0.13%**		**0.35**	**0.42**		**0.97**			
Innovation	1,787.9	434.4	2,222.3	0.0	2,222.3			13,647.1	13,647.1		15,869.4		7.48	0.08
Total STI	**64,152.1**	**22,061.9**	**86,214.0**	**561.9**	**86,775.9**	**25,662.1**	**13,587.2**	**85,531.2**	**99,118.4**	**656.9**	**212,213.3**		**100.00%**	**1.05**
GNCTI %	**30.23**	**10.40**	**40.63**	**0.26**	**40.89**	**12.09**	**6.40**	**40.30**	**46.71**	**0.31**	**100.00**			
GDP %			**0.42**		**0.43**	**0.13**			**0.49**		**1.05**			

e/ Estimated figures.
1/ Contributions of state governments to Mixed Funds and Postgraduate Studies.
2/ Includes non-lucrative private sector.
2017 GDP = 20,300,289.4 million pesos.
Source: MFPC, Federal Public Financial Account, 2017.
Data for Mexico calculated on information obtained from the Survey on Research and Technological Development (ESIDET), 2012 and 2014, undertaken by the INEGI and the Conacyt
Data calculated by Conacyt based on information obtained from the National Survey on the Expense at Homes at Disposal of Families, 2013.

CHAPTER II

HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

INTRODUCTION

The economic growth of a country, as well as the well-being of its population, are linked not only to its scientific and technological progress, but also to its innovation ability; a society based on knowledge, according to the UNESCO (2005) is the one which integrates access and diffusion knowledge instruments, such as information technologies and telecommunications; books, school manuals and human capital formation[1].

Therefore, the chapter hereto accounts for and monitors human capital integration processes; presents statistical information concerning scientists, technologists and specialized technicians associated to the development, application, diffusion and transfer of science, technology and innovation in our country.

According to the Canberra Manual (1995), specialized human capital constitutes a crucial component for the enlargement and diffusion of knowledge, economic growth, social progress and general well-being. This section constitutes, undoubtedly, a useful instrument for the making of the studies, comparisons and demands required by the advancement of society.

The chapter is divided in three sections: 1) Human Resources Stock; 2) Flux of Human Resources and 3) National Researchers System, which expedite data such as human resources mobility by education level, gender, state concentration, knowledge area and type of institution; origin, action cores and sociodemographic characteristics, with regards of human capital in our country.

[1] United Nations Education, Science and Culture Organization (UNESCO), "Towards knowledge societies", UNESCO Editions, 2005.

CHAPTER II. HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

II.1 STOCK OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

FOCAL POINTS

- In 2017, the number of people classified as part of the Stock of Human Resources in Science and Technology (ARHCyT) was 16.3 million. This number increased by 3.15 per cent, in comparison to the previous year.
- Correspondingly, there are 11.8 million members of the Stock of Educated Human Resources in Science and Technology (RHCyTE), which represents a rise of six per cent in relation to 2016.
- Finally, the Stock of Educated and Employed Human Resources in Science and Technology (RHCyTC) was 6.4 million people in 2017, 3.22 per cent above last year's.

II.1.1 BACKGROUND

Before the dynamic advancement of science and technology, it is of utmost importance to promote the formation of qualified human resources in Science and Technology (S&T), as well as greater public and private investment in research and technological development projects, with the purpose of having better opportunities to enhance technological innovation that substantially increase competitiveness both in companies and the countries.

Likewise, the resources in science and technology are tools for the spreading of knowledge, through education and scientific and technical teaching, as well as its diffusion and application. This section identifies scientists and technologists in aggregates, specialized technicians and support personnel related to the development, application, diffusion and transfer of science and technology. These people are denominated "Stock of Human Resources in Science and Technology" (ARHCyT).

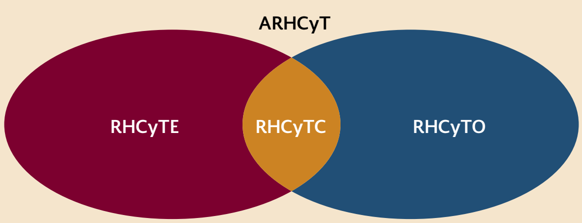
In order to carry out adequate measuring and comparison of ARHCyT, the Organization for Economic Co-operation and Development's (OECD) Canberra's Manual[1], recommends to use the areas and education levels from the International Standard Classification of Education, ISCED), developed by the UNESCO.

The ARHCyT[2] is classified in three categories:

i. **Educated Human Resources in Science and Technology (RHCyTE):** Comprised by people who concluded third level studies related to science and technology.
ii. **Employed Human Resources in Science and Technology (RHCyTO):** Formed by people employed in S&T activities, notwithstanding their education level.
iii. **Educated and Employed Human Resources in Science and Technology (RHCyTC):** Composed of people who concluded third level studies and working on S&T activities.

The RHCyTC are the core of the ARHCyT and are constituted by the people who fulfill the educational and occupational criteria.

FIGURE II.1
COMPOSITION OF THE STOCK OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY (ARHCYT)



Source: OECD, Canberra Manual, 1995.

[1] Manual for the measuring of human resources focused on scientific and technological activities. Consulted on May 2018 in: https://www.oecd-ilibrary.org/science-and-technology/measurement-of-scientific-and-technological-activities_9789264065581-en

[2] Data presented in 2014 y 2015 were estimates. As of 2016, the calculation methodology for ARHCyT was updated according to the Canberra Manual.

[3] Tertiary education, or third level education, considers ISCED levels 5, 6, 7 and 8, labelled as short-term tertiary education or technical superior level, bachelor's degree or equivalent level, master's degree or equivalent level, and doctorate's degree or equivalent, respectively. Consulted on May 2018, in: http://uis.unesco.org/en/topic/international-standard-classification-education-isced

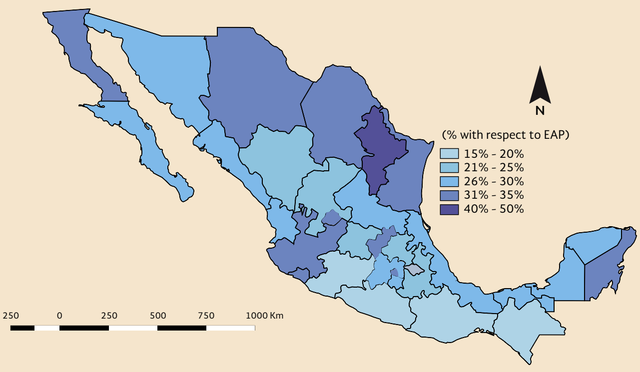
II.1.2 STOCK OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY (ARHCYT)

Graph II.1 shows that in 2017 the amount of ARHCyT was 16.3 million educated human resources and/or employed in science and technology. This number is 3.15 per cent superior to the one reported the previous year. Besides, as of 2010 the evolution of ARHCyT shows continuous increase in comparison to the national economically active population (PEA). In 2017, there was a 29.52 participation with respect to the 18-year-old-and-up PEA.

At a state perspective, Mexico City and Nuevo León present the highest ARHCyT proportions, with respect to their Economically Active Population (PEA), with 48.88 and 40.01 per cent, respectively. In contrast, Chiapas, Guerrero, Michoacán and Oaxaca show the lowest percentages, even at 20 per cent (see Figure II.2)

As for the gender of the people that are part of the ARHCyT, 8.3 million are women, who represent 50.9 of the total amount (16.3 million). It must be mentioned that, since 2015, the sum of people dedicated to S&T activities was nearly identical between men and women. AS shown in Graph II.2, from that year on, the presence of women gains greater relevance in S&T activities.

FIGURE II.2
STOCK OF HUMAN RESOURCES IN SCIENCE AND TECHOLOGY, 2017
Percentage of Economically Active Population, state level.

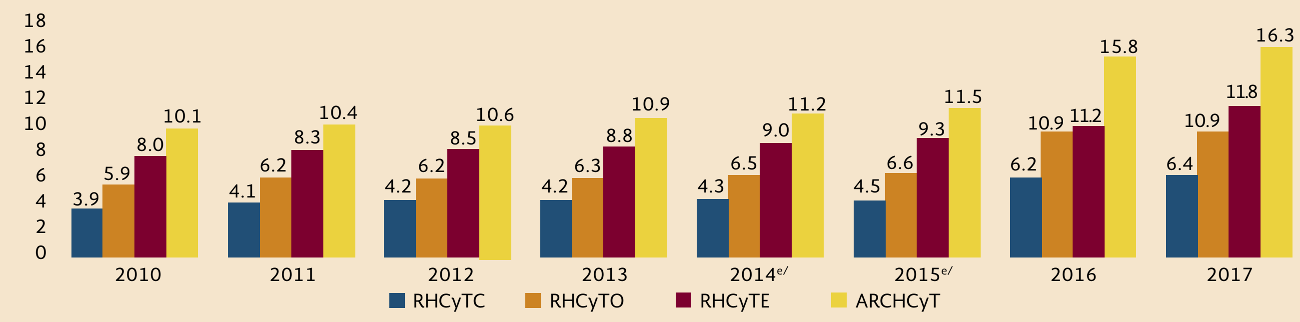


Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2010-2017.

II.1.2.1 EDUCATED HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY (RHCYTE)

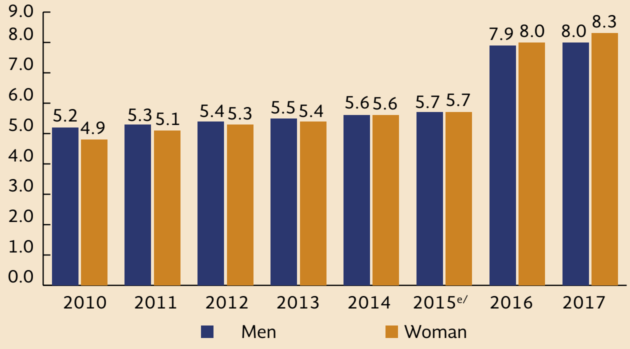
With the purpose of generating internationally comparable information, UNESCO's International Standard Classification of Education (ISCED) was used as a basis to determine people with tertiary

GRAPH II.1
STOCK OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY AND ITS FIELDS 2010- 2017
Million people



e/ Estimates
*As of 2016, the methodology to determine the ARHCyT was developed according to the Canberra Manual, in order to have internationally comparable data.
Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2010-2017.

GRAPH II.2
STOCK OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY AND ITS FIELDS 2010- 2017
Million people

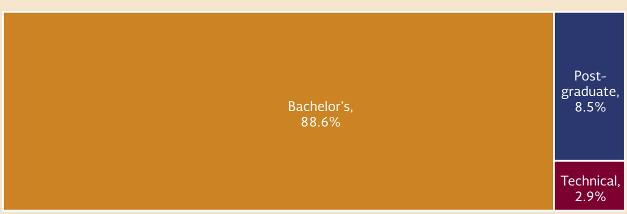


e/ Estimates
Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2010-2017.

education. Such classification considers people who have concluded technical studies, bachelor's degrees and postgraduate degrees as people with tertiary studies.

In 2017, the number of people who was part of the RHCyTE was 11.8 million, a figure which shows a 6 per cent growth trend with respect to the figure of the previous year. Graph II.3 presents the percentages by education levels that comprise RHCyTE. It can be observed that 88.6 per cent of these people have bachelor's studies. Onwards, people with postgraduate studies (8.5 per cent), and lastly, those with technical studies (2.9 per cent).

GRAPH II.3
RHCYTE, 2017
Percentage



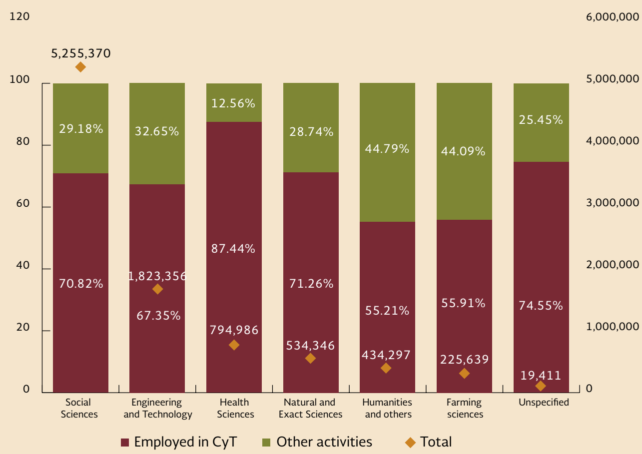
Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2010-2017

II.1.2.1.1 RHCYTE BY SCIENCE FIELD AND SORT OF OCCUPATION

This section carries out an analysis of the people who take part in the RHCyTE in accordance with the science field they come from and the technology or activities concerning trade, services, agriculture, operational or educational activities unrelated to science and technology.

Furthermore, 70.5 per cent of the occupied personnel out of the total RHCyTE performs one or any scientific or technological activity and 29.5 per cent is dedicated to other functions. This is the reason why more than two million people with tertiary studies linked to S&T may incorporate to labor related to or within scientific and technological knowledge (Graph II.4). The field of study where a major percentage of people is employed in S&T is health sciences, with 87.44. On the contrary, the field with the smallest percentage of people employed in S&T is Humanities and others, with 55.21 per cent (see Graph II.4).

GRAPH II.4
COMPOSITION OF RHCYTE; ECONOMICALLY ACTIVE AND EMPLOYED ACCORDING TO OCCUPATION SECTOR AND SCIENCE FIELD 2017
Percentage, Number of people



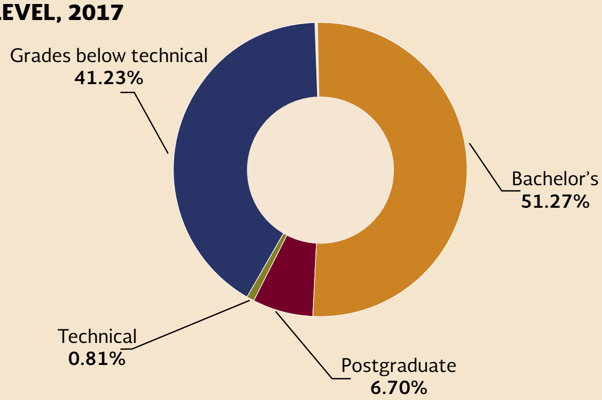
Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2010-2017.

II.1.2.2 EMPLOYED HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY (RHCYTO)

During 2017, the RHCyTO amounted to 10.9 million people, a figure one per cent superior to the one registered the previous year. In Graph II.5, it can

GRAPH II.5

PERCENTAGE OF HUMAN RESOURCES BY EDUCATION LEVEL, 2017



Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2017.

be appreciated that, in that year, a bit more than half of the people employed in S&T have bachelor's studies (51.27 per cent), 41.23 per cent have studies below the technical level and 6.7 per cent have postgraduate studies.

On the other hand, the RHCyTO, with respect to the national economically active population, represent 20 per cent. The aforementioned indicates that one in every five persons in labor age and economically active, carry out S&T activities.

II.1.2.3 EDUCATED AND EMPLOYED HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY (RHCYTC)

Mexico's transition to a knowledge economy demands an important number of RHCyTC to avoid a deficit of highly qualified personnel. Currently, the market requires people with the qualifications needed to generate innovating processes, to work autonomously, efficiently and effectively, so as to ensure the country's economic growth and development.

Regarding RHCyTC, it reached an amount of 6.4 million people. This number exceeds the one registered the previous year by 3.22 per cent. The aforementioned represents 39.26 per cent of ARHCyT, which means that four in every ten people in ARHCyT have third level formation and work on S&T activities. Considering gender, 51.79 per cent is formed by men and 48.21 per cent by women.

Table II.1 shows the distribution by education level and occupation position in S&T activities. It can be observed that 87.24 per cent of the people have bachelor's studies; subsequently, the people with postgraduate studies (11.39 per cent) and finally, people with technical education (1.37 per cent). By comparison, 67.09 per cent of the people with bachelor's studies occupy professional positions, and 24.48, technical positions. In contrast, a person with only technical studies mostly undertakes technical positions, representing 83.34 per cent.

Now as for the active and employed PEA, RHCyTC represent 11.6 per cent of this population. The percentage indicates that, in Mexico, one in every ten people of the active and employed PEA has third level studies and work in a science and technology sphere.

II.1.2.3.1 RHCYTC BY EDUCATION LEVEL AND SCIENCE AREA

With respect to RHCyTC, Table II.2 exposes to view that nearly six in every ten people undertook studies on social sciences; in second place, engineering and technology-related studies, representing nearly two in every ten people, the third position is taken by those with studies on health sciences and the rest of the areas contribute with less than 12 per cent of the RHCyTC.

TABLE II.1

COMPOSITION OF RHCYTC BY OCCUPATION POSITION AND EDUCATION LEVEL, 2017

Number of people

Education level	Director	Professional	Technician	Total
Postgraduate	98,431	562,514	68,949	729,894
Bachelor	471,178	3,749,473	1,368,086	5,588,737
Technical	4,294	10,330	73,137	87,761
Total	**573,903**	**4,322,317**	**1,510,172**	**6,406,392**

Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2017.

TABLE II.2

COMPOSITION OF RHCYTC BY EDUCATION LEVEL AND SCIENCE AREA, 2017

Number of people

Area	Technical	Bachelor	Postgraduate	Total
Total	**5,588,737**	**729,894**	**87,761**	**6,406,392**
Social sciences	3,230,477	473,334	18,181	3,721,992
Engineering and Technology	1,150,161	59,588	18,321	1,228,070
Health Sciences	572,222	91,168	31,764	695,154
Natural and exact sciences	308,930	61,909	9,913	380,752
Humanities and others	200,533	30,694	8,562	239,789
Farming sciences	119,212	5,933	1,020	126,165
Unspecified	7,202	7,268	0	14,470

Source: Own calculation based on information from INEGI and STPS. National Survey on Occupations and Employment, 2017.

II.2 HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

II.2.1 THE FLUX OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

FOCAL POINTS

- The Most relevant flux is the entrance to the Stock of Human Resources in Science and Technology, as of the conclusion of bachelor's studies, which show a positive trend in the eight cycles described in this section.
- In 2017, the number of bachelor graduates was 631,454 four per cent superior to what was observed in 2016.
- The number of alumni graduated from Master's Studies in 2017 was 87,772, five per cent higher in comparison to the previous year.
- In 2017, 9,268 students graduated from doctorate studies, which represents an increase of nine per cent in comparison to 2016.

II.2.2 BACKGROUND

The flux of human resources in science and technology allows us to know if the workforce needs required for the science-and-technology labor market are likely to be met. Such flux, comprised by those who gain entry and then conclude higher education studies, is obliged to comply with the demands and respond to the challenges imposed by society's advancement.

The section here to informs on the movements displayed in the Stock of Human Resources in Science and Technology (ARHCyT) in this country, over the last few years. The flux of ARHCyT refers to the movements that take place in or out of the Stock (input or output) in a specific period.

In accordance with the Canberra Manual (1995)[4], ARHCyT fluctuations may be defined as the number of people who do not satisfy any of the conditions imposed to be included in the ARHCyT at the beginning of the period, but at least comply with one during such lapse (affluence), as well as the number of people who meet any of the conditions a defined in ARHCyT at the beginning of the period and fail to observe it throughout such lapse (exit). Additionally, the Canberra Manual establishes that it is likely to calculate inward flux, defined as the movements within the ARHCyT.

In order to calculate ARHCyT's "inward flux", the data on bachelor graduates provided by the Survey on Higher Education Statistics, 911.A. Correspondingly, the measuring of what is known as the inward flux of ARHCyT is carried out on the basis of such survey in its 911.B modality, which includes information on specialty, master and doctorate graduates.

For both fluctuations, the evolution of aggregated data and the subdivision of each one of them by gender, is shown. To get acquainted with the entrance or affluence into ARHCyT allows to observe the input dynamics concerning human capital formed to get involved in science and technology activities. The inward flux augments ARHCyT, which is why the human resources installed capacity grows, and so does the potential to perform science, technology and innovation activities.

By comparison, the inward flux presented in this section allows to identify the way in which human capital academically evolves within ARHCyT throughout time after bachelor's studies (see Figure II.3).

II.2.3 INPUT-OUTPUT RATIO IN HIGHER EDUCATION

This section displays the variations of the last seven school terms for each higher education level. The length of the school terms has been homogenized within each level, in order to show compact behavior and not one according to each educative program (see Table II.2).

II.2.3.1 BACHELOR'S STUDIES

During the 2012-2017 period, there was an input of 1'093,983 students and an output of 631,454, as shown in Table II.3, In comparison to the preceding period, the volume of both input and output increased by 36,338 and 26,796 students, respectively. From the 2005-2010 term to the 2012-2017 period, the bachelor input/output ratio is 0.58 per cent for the last period, that is to say, 58 graduates in every 100 students who go through this level.

[4] Canberra Manual, OECD, 1995.

FIGURE II.3
FLUX OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

International Standard Classification of Education. ISCED, 2011.
Source: OECD. Canberra Manual, 1995.

TABLE II.1
LENGTH OF TERM BY LEVEL

Nivel	Length (years)
Bachelor	Five
Specialty	One
Master	Two
Doctorate	Four

Source: own creation based on Higher Education Statistics 911.A and 911.B, 2004-2017.

II.2.3.2 SPECIALTY STUDIES

The number of people who went through specialty studies in the 2016-2017 terms was 24,476, whereas only 19,440 concluded. This represents an increase by 10 percent in the input and 5 per cent in the output with respect to 2015-2016. The most significant decrease is observed in the 2011-2012, which presented an 8 per cent fall in the input; as for outputs, the 2011-2012 term presented a 16 per cent reduction (see Table II.4).

TABLE II.3
PINPUTS AND OUTPUTS IN BACHELOR'S STUDIES BY TERM, 2005-2017
Number of people

Term	Input	Input growth rate (%)	Output	Output growth rate (%)	Output/Input
2005-2010	787,797	-	421,930	-	0.54
2006-2011	862,268	9	436,996	4	0.51
2007-2012	919,075	7	478,429	9	0.52
2008-2013	955,381	4	504,999	6	0.53
2009-2014	936,495	-2	541,793	7	0.58
2010-2015	985,366	5	570,181	5	0.58
2011-2016	1,057,645	7	604,658	5	0.65
2012-2017	1,093,983	3	631,454	4	0.58

Source: own creation based on Higher Education Statistics 911.A and 911.B, 2004-2017

II.2.3.3 MASTER'S STUDIES

The number of inputs and outputs at Master's level for the 2015-2017 term was 91,813 and 87,772, respectively; in comparison to the 2014-2016 term, it represents an increase of three per cent for the former and five per cent for the latter (see Table II.5).

II.2.3.4 DOCTORAL STUDIES

The number of doctorate graduates in the 2013-2017 term was 9,268, whereas the inputs were 11,468; the figure points to a positive trend of nine per cent in the outputs and twelve per cent in the inputs with respect to the preceding period. During the term 2007- 2011 there was a negative trend of 20 per cent in the outputs, being the lowest registered in the 2006-2017 period. As for inputs, the term 2009-2013 presented the lowest rate, with a six per cent decrease (see Table II.6).

II.2.4 INWARD FLUX

The preceding section displayed an examination of each one of these educative levels from the perspective of school terms. The outputs for the 2010-2017 term will be next detailed.

TABLE II.4
INPUTS AND OUTPUTS IN SPECIALTY STUDIES BY TERM, 2009-2017
Number of people

Term	Input	Input growth rate (%)	Output	Output growth rate (%)	Output/Input
2009-2010	20,673	-	19,923	-	0.96
2010-2011	22,408	8	18,855	-5	0.84
2011-2012	20,610	-8	15,777	-16	0.77
2012-2013	19,459	-6	18,036	14	0.93
2013-2014	21,549	11	17,864	-1	0.83
2014-2015	22,510	4	19,181	7	0.85
2015-2016	22,295	-1	18,466	-4	0.84
2016-2017	24,476	10	19,440	5	0.79

Source: own creation based on Higher Education Statistics 911.A and 911.B, 2004-2017.

CUADRO II.5
PEOPLE WHO ENTER AND GRADUATE FROM LEVEL OF MASTERY BY CYCLE, 2008-2017
Number of people

Term	Input	Input growth rate (%)	Output	Output growth rate (%)	Output/Input
2008-2010	62,887	-	50,195	-	0.80
2009-2011	72,313	15	46,965	-6	0.65
2010-2012	74,694	3	56,874	21	0.76
2011-2013	71,696	-4	65,576	15	0.91
2012-2014	73,972	3	72,415	10	0.98
2013-2015	81,722	10	77,610	7	0.95
2014-2016	88,769	9	83,802	8	0.94
2015-2017	91,813	3	87,772	5	0.96

Source: own creation based on Higher Education Statistics 911.A and 911.B, 2004-2017.

TABLE II.6
INPUTS AND OUTPUTS IN DOCTORAL STUDIES BY TERM, 2006-2017
Number of people

Term	Input	Input growth rate (%)	Output	Output growth rate (%)	Output/Input
2006-2010	7,438	-	5,456	-	0.73
2007-2011	8,528	15	4,359	-20	0.51
2008-2012	9,135	7	4,681	7	0.51
2009-2013	8,631	-6	5,990	28	0.69
2010-2014	9,896	15	6,572	10	0.66
2011-2015	9,905	0	7,662	17	0.77
2012-2016	10,215	9	8,475	11	0.77
2013-2017	11,468	12	9,268	9	0.81

Source: own creation based on Higher Education Statistics 911.A and 911.B, 2004-2017.

II.2.4.1 BACHELOR'S STUDIES

This section exposes to view Mexico's ARHCyT inward flux, on the basis of the annual data of bachelor's graduates, in the 2010-2017 term. This type of entrance to the Stock is known as the "pipeline", which stands for a country's main source of human capital trained in science and technology.

In 2017, the number of bachelor's graduates was 631, 454, four per cent superior to what was observed in 2016. As shown in Graph II.6, from 2010 to 2017 there has been constant increase in such education level.

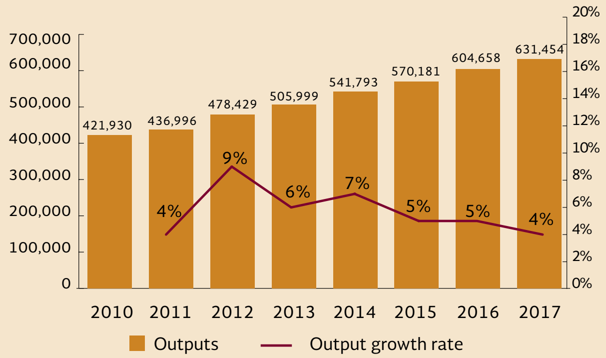
II.2.4.2 SPECIALTY STUDIES

The number of graduates at specialty levels during 2017 was 19,440, an increase by five per cent with respect to 2016; additionally, it was the year with the most graduates during the period.

II.2.4.3 MASTER'S STUDIES

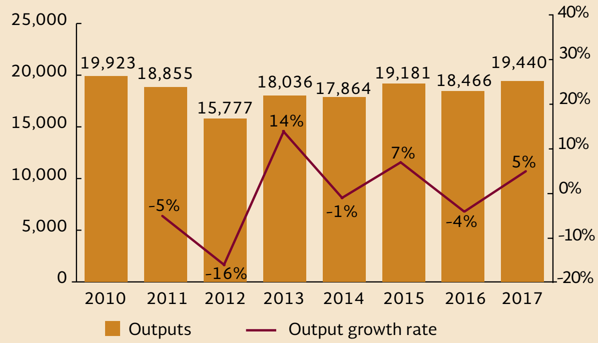
In 2017, 87,772 students graduated from Master's Degrees, representing an increase of five per cent with respect to 2016. The term 2010-2017 in Graph II.8 shows the growth rates, which are positive during most of the period, the highest registered in 2012, with 21 per cent.

GRAPH II.6
OUTPUTS IN BACHELOR´S STUDIES BY YEAR, 2010-2017
Number of people, growth rate



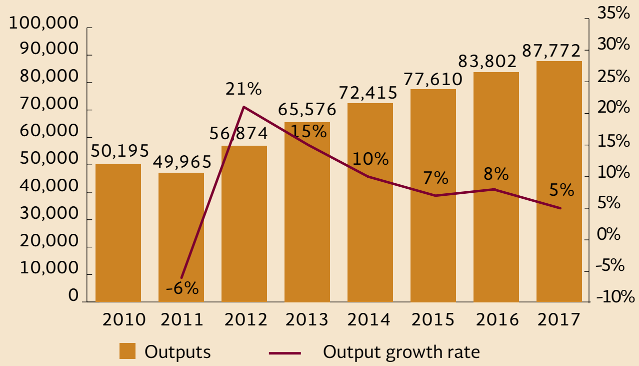
Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

GRAPH II.7
OUTPUTS IN SPECIALTY STUDIES BY YEAR, 2010-2017
Number of people, Growth rate



Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

GRAPH II.8
OUTPUTS IN MASTER'S STUDIES BY YEAR, 2010-2017
Number of people, Growth rate



Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

II.2.4.4 DOCTORAL STUDIES

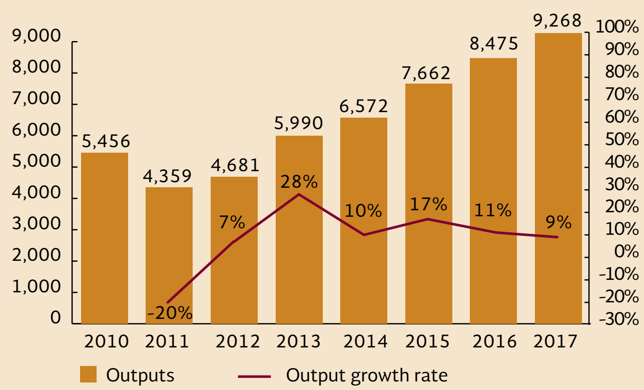
The number of doctoral graduates in 2017 was 9,268. The data series in Graph II.9 shows that the only negative trend took place in 2011, with a fall of 20 per cent. The highest increase rate was recorded in 2013, with 28 per cent; correspondingly, in 2017 the trend was positive, with nine per cent in comparison to the previous year.

II.2.5 INWARD FLUX BY GENDER

Due to the fact that the flux of human resources in science and technology is obtained by analyzing annually the percentages of people who come into and out of the Higher Education level, and taking into account that women, because of cultural, social, economical and political reasons had been taken apart from the higher education system, the fact that gender gaps have diminished over the last decade is worth-watching.

Nowadays, and thanks to international pacts such as the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW), and changes in the Science and Technology Law, as well as the 2013-2018 National Development Plan (PND), the gender perspective was incorporated in every area of the administration to highlight the importance of the presence of women in higher education levels, as it is not only a personal benefit, but also a factor in the development of this country by promoting the training of specialized human resources, thus reducing international competitiveness gaps. Consequently, the percentages of women and men in Bachelor's, Specialty, Master's, and Doctoral Studies are detailed below.

GRAPH II.9
OUTPUTS IN DOCTORAL STUDIES BY YEAR, 2010-2017
Number of people, Growth rate



Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

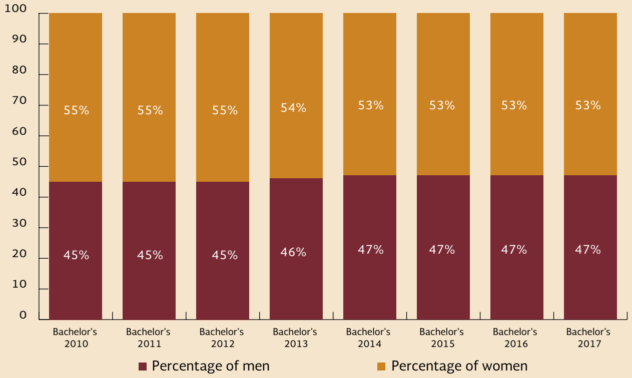
II.2.5.1 PERCENTAGE OF BACHELOR'S GRADUATES BY GENDER, 2010-2017

One example of the gender gap closing is the one observed at Bachelor's studies, as the percentage of women graduated overcomes men's; the difference is not greater than ten percent from 2010 to 2013, and as of 2014 the difference is six per cent. This means that Higher Education is reaching gender parity, emphasizing that the most significant number of women graduated from bachelor's studies was verified in those years. (see Graph II.10).

II.2.5.2 PERCENTAGE OF SPECIALTY GRADUATES BY GENDER, 2010-2017

As for specialty studies, there are variations every year from 2010 to 2017. In 2010 and 2011 the proportion of graduates by gender was 54 per cent women and 46 per cent men, whereas in 2012 it closed in 56 and 44 per cent, respectively. In 2017, the percentage of women graduated from specialty studies was 55 per cent, while men's was 45 per cent. In the same way, it is appreciated that from 2010 to 2017 the percentage of women graduated from specialty studies has increased (see Graph II.11).

GRAPH II.10
PERCENTAGE OF BACHELOR'S GRADUATES BY GENDER, 2010-2017

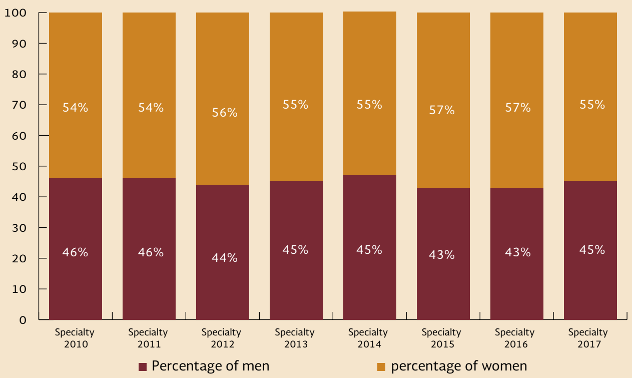


Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

II.2.5.3 PERCENTAGE OF MASTER'S GRADUATES BY GENDER, 2010-2017

The third example, the case of master's graduates, not only indicates a reduction of the women-men gap, but also the increase in women's participation in this education level. Graph II.12 presents the graduation percentages for men and women at master's studies, where it stands out that in 2010 there was a distribution of 53 per cent for women and 47 per cent for men, and throughout time it has been increasing until 57 and 3 per cent, respectively, in 2017. The aforesaid indicates that, in this education level, women graduate in increasing percentages, in comparison to men.

GRAPH II.11
PERCENTAGE OF SPECIALTY GRADUATES BY GENDER, 2010-2017

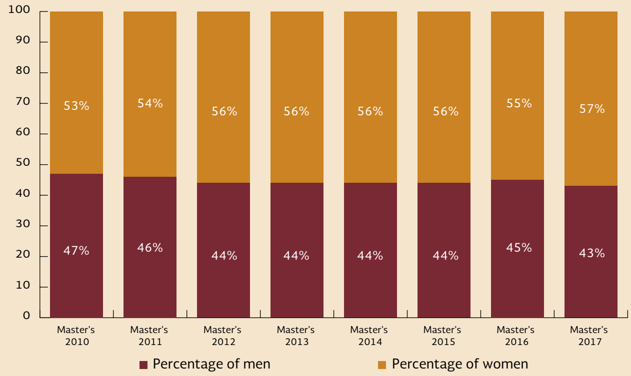


Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

II.2.5.4 PERCENTAGE OF MASTER'S GRADUATES BY GENDER, 2010-2017

In the case of doctoral studies, since 2010 it is appreciated that men dominated outputs in comparison to women, with 54 per cent for the former and 46 per cent for the latter. However, and in terms of the presented data, in 2017 gender parity was accomplished, in a proportion of 50 per cent of graduates corresponding to both men and women.

GRAPH II.12
PERCENTAGE OF MASTER'S GRADUATES BY GENDER, 2010-2017



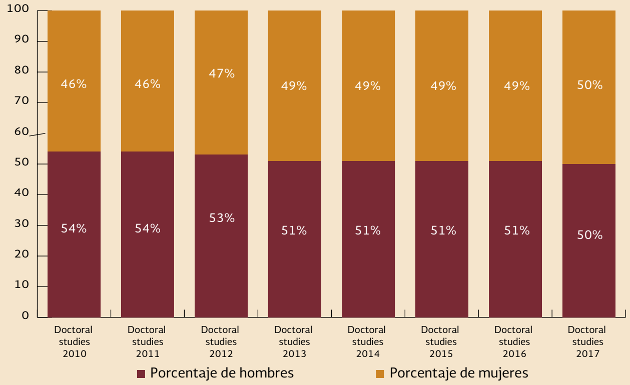
Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

II.2.6 FINAL NOTES OF THE FLUX OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

Considering the gender perspective as a transversal axis in the National Development Plan (2013-2018), all of the programs operated by the Federal Public Administration through its ministries, offices and agencies shall incorporate a gender approach. Public management, education centers and the general public have aimed at the reduction of the gap between men and women as specialized human resources; according to the results obtained from the Higher Education Statistics 911.A and 911.B, 2009-2017, the gender gap in the inward flux of human resources in science and technology has significantly reduced. For instance, from 2010 to 2017, women displayed a higher graduation percentage than men's in bachelor, specialty and master's studies.

GRAPH II.13

PERCENTAGE OF DOCTORATE GRADUATES BY GENDER, 2010-2017



Source: own creation based on Higher Education Statistics 911.A and 911.B, 2009-2017.

II.3 THE NATIONAL RESEARCHERS SYSTEM: CORNERSTONE OF THE COUNTRY'S SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT

INTRODUCTION

The National Researchers System (SNI) is one of the Conacyt's most emblematic programs. Since its creation in 1984, it has promoted that human capital specialized in science, technology and innovation is dedicated full-time to such activities. The researchers therein incorporated represent a group of paramount importance to knowledge development in Mexico.

On the basis of a three-decade existence, the SNI has grown considerably, both in quantitative and qualitative terms. Nowadays, it would be impossible to understand the state of the country's science, technology and innovation without regarding the SNI's contributions to these fields.

It must be mentioned that, according to the Science and Technology Law, decreed in 2002, the Conacyt has the faculty to organize and direct the SNI. Correspondingly, there is a bylaw that specifies the operation premises. Concerning its functioning, the SNI Works through an incentive-based scheme that allows its members to move to higher levels of recognition to their academic careers.

As for its structure, the SNI has three categories: I) Candidate to National Researcher, aimed at novel researchers; II) National Researcher, subclassified in levels 1, 2 and 3, and finally III) National Emeritus Researcher, which is an honorary designation for researchers with career and work widely recognized by both the national and international scientific communities.

Among the various elements considered by the System's evaluating instances in order to promote researchers, we stress the following: 1) the quantity and quality of their scientific production; 2) the generation of research groups and networks; 3) current teaching activities; 4) Research links with the public and private sectors and 5) the formation of new scientists and technologists.

The evaluation process y carried out by pairs and to obtain the distinction as a SNI researcher means that the contributions of the System's members are top-quality. Once incorporated into the SNI the researchers receive economic stimuli whose amount varies in accordance with the level reached. Under this context, the present section's objective is to examine the SNI's evolution from 2010 to 2017. Therefore, it is necessary to focus on the variables that illustrate the most significant changes and reflect their current situation, under an international scenario where science, technology and innovation manifest increasing prominence for the countries.

FOCAL POINTS

- In 2017, the SNI had a registration of 27,186 members. Comparing such data to the one generated in 2010, the number of System members grew by 64 per cent, as in that year the researchers summed 16,600 members.
- From 2010 to 2017, the budget assigned to the SNI kept an upward trend. In 2017, the amount was 4,600 current million pesos, which represented an increase of 3.42 per cent in real terms in comparison to 2016, when the budget amounted to 4,448 current million pesos.
- The knowledge areas with the greater percentage of SNI members were physics, mathematics, earth sciences, biology, chemistry and social sciences, with 16 per cent. By contrast, the areas with minor percentages were medicine and health sciences, biotechnology and farming sciences, with 12 and 11 per cent, respectively.
- The concentration of researches in certain areas was evident in 2017, More than 40 per cent of SNI members was located in Mexico City, as well as in the states of Mexico and Jalisco.
- The incorporation of women into the SNI was still notorious in 2017. Out of the 27,186 System members, 37 per cent were women. When comparing such figure to the data generated the previous year, the percentage of SNI women increased by one per cent, from 36 to 37 per cent. This confirms the upward trend in the participation of women in scientific research activities.

II.3.1 NUMBER OF SNI RESEARCHERS: PERMANENT GROWTH

The number of researchers accepted in the SNI has grown without interruption since the System's creation. In recent years, the registration of researchers has increased substantially, from 16,600 in 2010, to 27,186 in 2017. The growth rate in such period was 64 per cent, whereas it reached 8.43 per cent from 2016 to 2017. Finally, the annual average growth rate was 7.30 per cent from 2010 to 2017.

II.3.2 THE SNI'S BUDGET: THE IMPORTANCE OF INVESTMENT IN HIGH-LEVEL HUMAN CAPITAL

Over the last years, the budget allocated to the Program has undergone an increasing trend, amounting to 4,600 million pesos in 2017. Only between 2016 and 2017, the SNI's budget reflected a 3.42 per cent upgrade in real terms in 2017 pesos. If the 2010-2017 is considered, the increase reached 83 per cent, also in real terms. Lastly, the annual average growth rate in the same period was 9.01 per cent.

II.3.3THE SNI FROM A SOCIO-DEMOGRAPHIC PERSPECTIVE AND ITS KEY ASPECTS

The composition of the SNI's researcher population is rather heterogeneous, in terms of sociodemographic characteristics. It must be pointed out that women have incorporated into the System in increasingly greater proportions. In 2017, more than a third part of SNI members were women, representing 37 per cent of the registration. Analyzing the available data since 2010, the growth of women's participation is confirmed.

On the other hand, the SNI has incorporated national and international researchers as long as they generated new scientific and technological knowledge in our country, hence facilitating a cultural exchange of experiences and knowledge that in the end enrich the System.

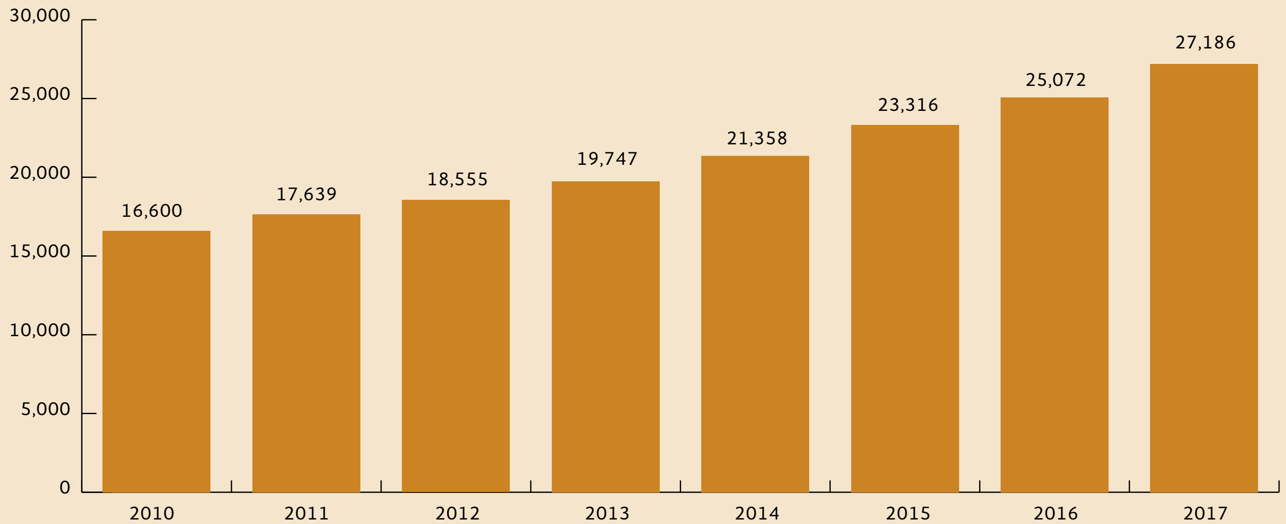
Graph II.18 shows the distribution of SNI researchers by origin, between Mexican and foreign researchers. Although the volume of national researchers was still predominant, in 2017 the community of foreign researchers was eight per cent of the total amount.

II.3.4 THE SNI IN THE STATES

SNI researchers are spread all over the national territory. Therefore, one of the Program's objectives is to favor the movement of the System members to foster scientific and technological advancement in the country's different regions, hence improving the states' development.

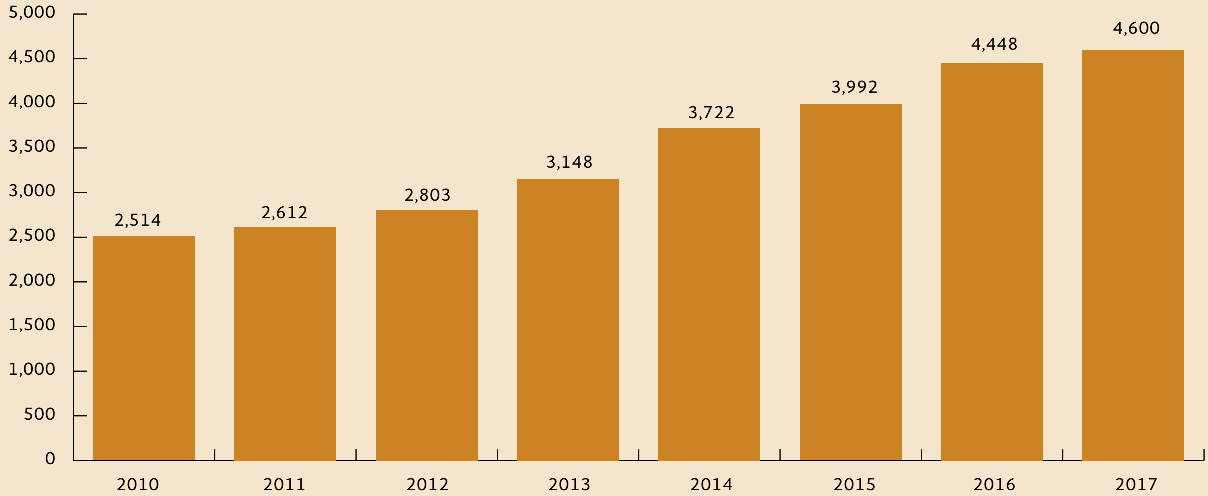
In the year reported, Mexico City, the State of Mexico and Jalisco concentrated more than 40 per cent of the total amount. By contrast, Campeche, Guerrero and Nayarit were the states with the fewest SNI members.

GRAPH II.14
NUMBER OF SNI RESEARCHERS, 2010-2017
Number



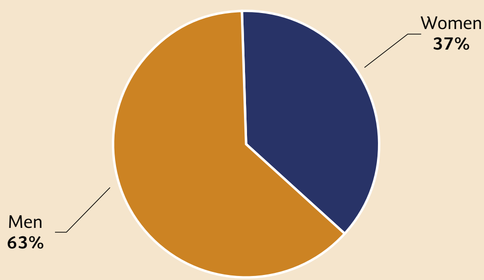
Source: own creation based on SNI data.

GRAPH II.15
SNI BUDGET, 2010-2017
Millions



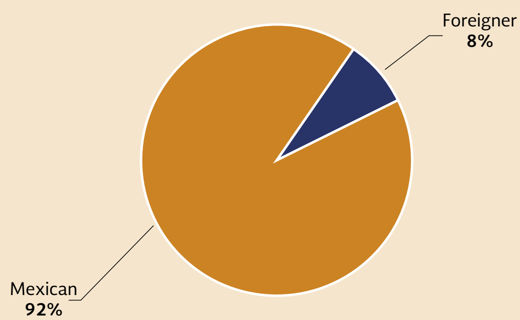
Source: own creation based on SNI data

GRAPH II.16
SNI RESEARCHERS BY SEX, 2017



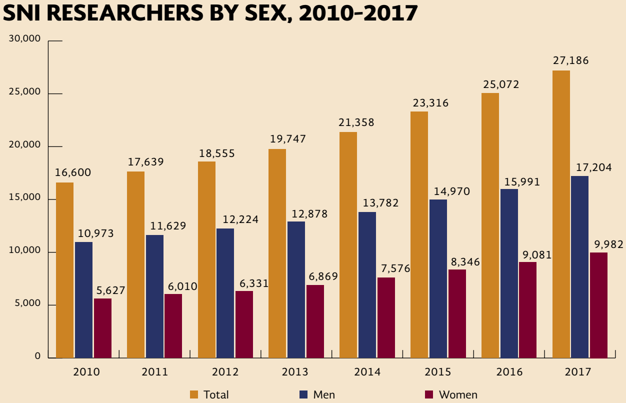
Source: own creation based on SNI data.

GRAPH II.18
SNI BY ORIGIN, 2017



Source: own creation based on SNI data.

GRAPH II.17
SNI RESEARCHERS BY SEX, 2010-2017



Source: own creation based on SNI data.

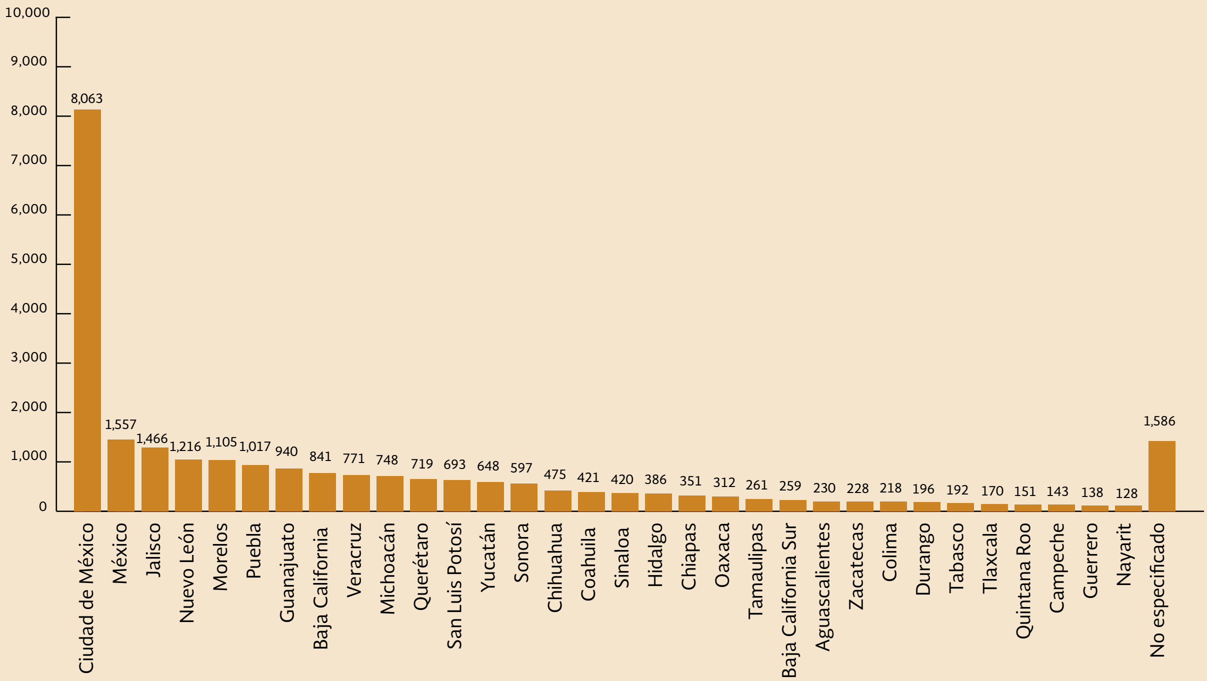
Moreover, by analyzing the number of SNI researchers in every thousand inhabitants in the states, there are changes that must be taken into account. Even when Mexico City clusters a significant number of researchers, so do states such as Morelos, Baja California Sur and Querétaro. On the contrary, Tamaulipas, Chiapas and Guerrero present a low quantity of researchers in every thousand inhabitants.

On the other hand, from 2010 to 2017 it has been observed that researchers have spread more intensively outside Mexico City. Graph II.21 provides information on how the population of researchers has gradually moved away from the country's capital, migrating to the rest of the states.

GRAPH II.19

SNI RESEARCHERS BY STATE IN ABSOLUTE TERMS,2017

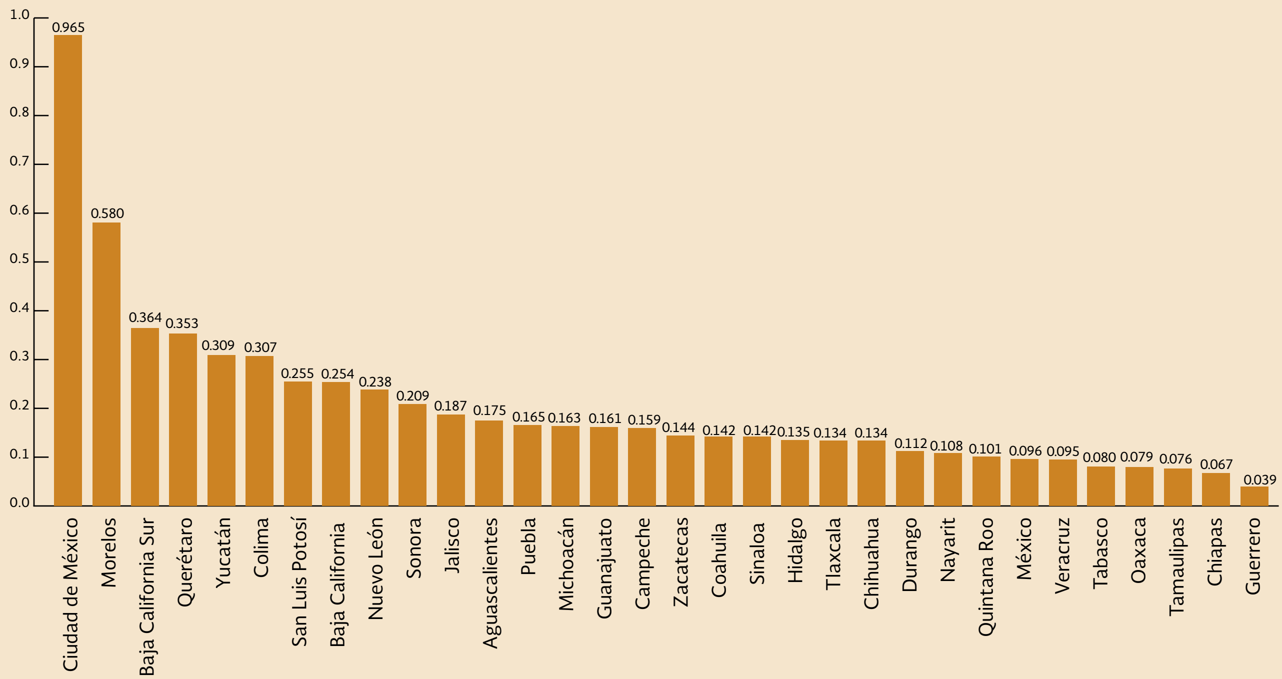
Number of researchers



Source: own creation based on SNI data.

GRAPH II.20

SNI BY STATE IN EVERY THOUSAND INHABITANTS, 2017



Source: own creation based on SNI data.

II.3.5 THE SNI'S RESEARCHERS AND THEIR PROFILES

With the purpose of sifting the profiles of SNI members, there are four dimensions that allow such examination: a) level within the System; b) studies level; c) type of institution and, finally a) knowledge area on which they work. Altogether, these dimensions permit the detailed observation of the SNI's researchers' most outstanding characteristics.

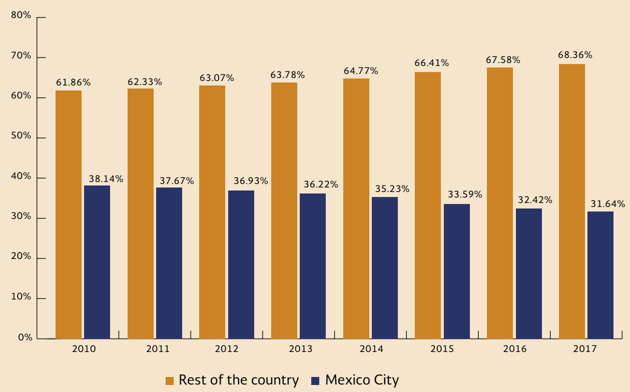
As for the level in the System, in 2017, 22 per cent of researchers were candidates, 54 per cent were Level 1; 16 per cent, Level 2, and 8 per cent, Level 3. Graph II.22 shows such distribution from 2010 to the year reported.

On the basis of specialization, researchers are classified in seven knowledge areas: I) Physical, Mathematical and Earth Sciences; II) Biology and chemistry; III) Medicine and health sciences; IV) Humanities and behavioral sciences; V) Social sciences; VI) Biotechnology and farming sciences and VII) Engineering.

From 2010 to 2017, distribution in absolute terms by knowledge area is presented as shown in Table II.2.

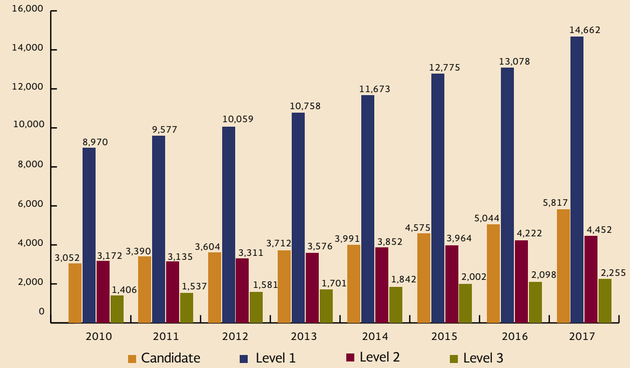
In 2017, the location of SNI researchers by knowledge area was the following: 16 per cent in Biology and chemistry and Social sciences, as well as Physical, mathematical and earth sciences; 15 per cent in Humanities and behavioral sciences; 14 per cent in Engineering; 12 per cent in Medicine and health sciences and, finally, 11 per cent in Biotechnology and farming sciences, as illustrated in Graph II.23.

GRAPH II.21
SNI DECENTRALIZATION, 2010-2017



Source: own creation based on SNI data.

GRAPH II.22
CATEGORY AND HISTORIC LEVEL, 2010-2017



Source: own creation based on SNI data.

Regarding emeritus researchers, such designation is the consequence of excellence in the field of research, works whose contributions have an impact on the country's scientific and technological development.

In 2017, 178 SNI members obtained the emeritus researchers' distinction. From this amount, the knowledge area which grouped most of investigators was Biology and chemistry, with 42. On the contrary, Engineering was the area with the fewest researchers, with five (see Graph II.24).

On the other hand, one of the requirements to be accepted or to remain in the SNI is an excellent academic formation. Consequently, 96 per cent demonstrated doctoral studies and the four per cent left reported bachelor's or master's levels (see Graph II.25).

II.3.6 RESEARCHERS AND THEIR ACTION CORES: INSTITUTIONS BY NUMBER OF SNI RESEARCHERS

Despite SNI members have undertaken different positions, most of them work for academic institutions, mainly those with a major capacity to absorb human capital in science and technology.

From such institutions, researchers carry out their activities on a daily basis. In 2017, the ten institutions with most SNI researchers were academic ones (see Graph II.26).

TABLE II.2

AVERAGE DISTRIBUTION OF SNI RESEARCHERS BY KNOWLEDGE AREA, 2010-2017

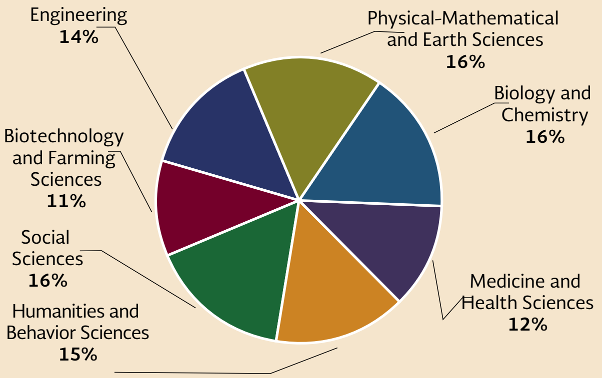
Number and percentage

Year	Physical, mathematical and earth sciences	Biology and chemistry	Medicine and health sciences	Humanities and behavioral sciences	Social Sciences	Biotechnology and Farming Sciences	Enginee-ring	Total
2010	2,707	2,904	1,596	2,466	2,615	1,864	2,448	16,600
2011	2,853	3,086	1,758	2,622	2,686	1,993	2,641	17,639
2012	3,004	3,162	1,914	2,773	2,747	2,177	2,778	18,555
2013	3,203	3,360	2,035	2,918	2,996	2,326	2,909	19,747
2014	3,458	3,696	2,233	3,121	3,336	2,442	3,072	21,358
2015	3,782	3,993	2,511	3,380	3,672	2,612	3,366	23,316
2016	3,994	4,084	2,847	3,735	3,983	2,842	3,587	25,072
2017	4,244	4,266	3,247	4,032	4,302	3,163	3,932	27,186

Source: own creation based on SNI data.

GRAPH II.23

SNI BY KNOWLEDGE AREA, 2017

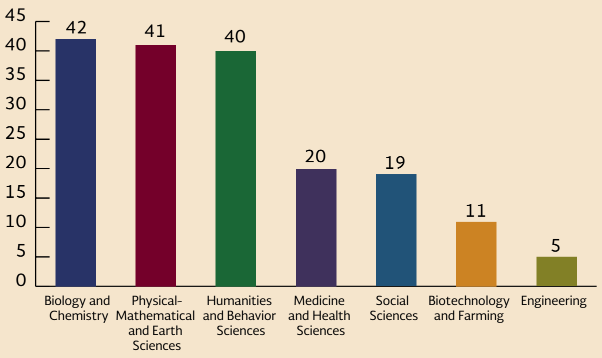


Source: own creation based on SNI data.

GRAPH II.24

SNI EMERITUS RESEARCHERS BY KNOWLEDGE AREA, 2017

Number of researchers



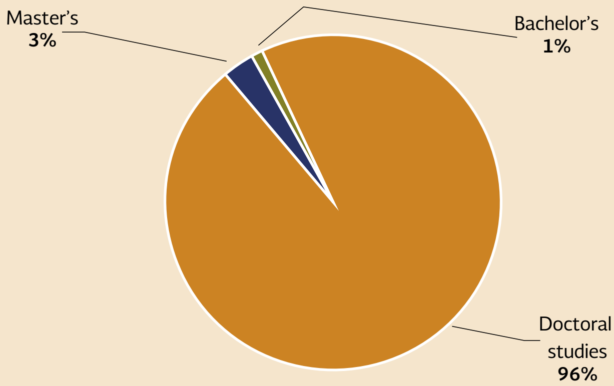
Source: own creation based on SNI data.

II.3.7 THE WORLD IN THE SNI, THE SNI IN THE WORLD

One of the SNI's particularities consists of its ability to integrate researchers from multiple nationalities. The aforementioned provides the System with a diversity streak that enhances wider research networks. Graph II.27 shows the ten countries the foreign SNI members came from in 2017.

Finally, it must be mentioned that the SNI allows its members to move to institutions abroad, so they can perform their activities at an international scale. Graph II.28 shows the researchers' ten residence countries during 2017.

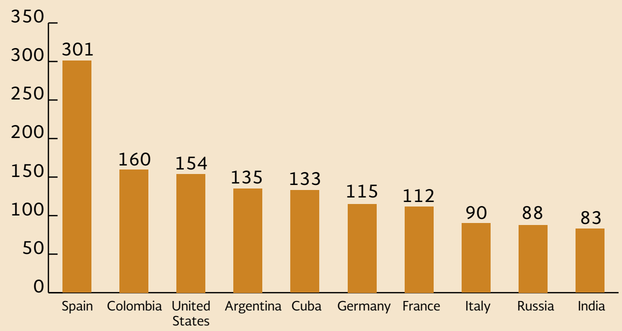
GRAPH II.25
SNI EDUCATION LEVELS, 2017



Source: own creation based on SNI data.

GRAPH II.27
SNI BY FOREIGN COUNTRY, 2017

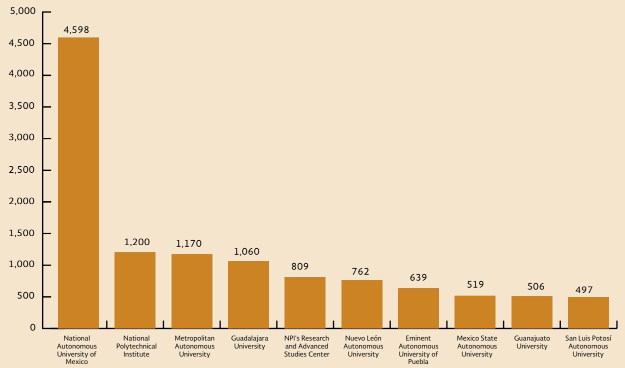
Number of researchers



Source: own creation based on SNI data.

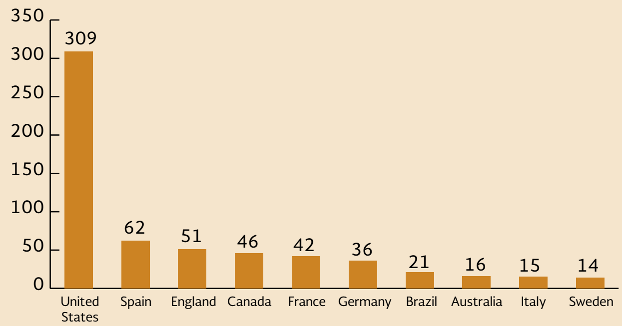
GRAPH II.26
TEN INSTITUTIONS WITH MOST SNI MEMBERS, 2017

Number of institutions



Source: own creation based on SNI data.

GRAPH II.28
SNI ABROAD, 2017



Source: own creation based on SNI data.

CHAPTER III

SCIENTIFIC AND TECHNOLOGICAL PRODUCTION AND ITS ECONOMIC IMPACT

INTRODUCTION

Knowledge, defined as the ability to rationalize and comprehend reality, is a source of well—being that has provided humanity with the understanding to grasp reality, thus improving life conditions. The key to knowledge-based economies is the connection constructed between scientific production and the development of innovative products and services, both having problem-resolution as a common objective.

With the development of knowledge-based economies as a premise, the way in which knowledge generates new innovation forms must be fully understood, as well as the manner in which such forms create knowledge. It is important to mention that not all the scientific production leads to innovation processes. The aforementioned takes place only when production is diversified in multiple fields, hence generating theory and knowledge.

Therefore, the generation of statistical information on research and development must be examined within a referential framework including both, on the basis of their paramount importance for knowledge-based economies. Moreover, such information allows to analyze either the affectivity or the public policies made in favor of Mexico's transition to this sort of economy.

The chapter hereto contains statistical information that reflects the country's economical impact of scientific production. Sections contain information concerning publications in scientific journals, patents, Technology Balance of Payments (TBP), foreign trade of high-technology goods (BAT) and innovation. It musts be born in mind that these figures are the result of Mexico's efforts to move towards a knowledge-based economy.

As for the outstanding aspects on patents, in 2017 there was a growth rate of 1.83 per cent in the requests made by nationals with respect to the previous year. On the other hand, both TBP and displayed a minimal, though substantial increase in comparison to 2016, as TBP presented a coverage rate of 0.56 per cent, where the previous year It was 0.53 per cent, and BAT showed a positive deficit of $ 4,422.83 million dollars.

Notwithstanding these positive results, it must be accepted that Mexico is not yet a totally independent country regarding scientific and technological transfer. It is necessary to strengthen the policies, as well as to create a connection mechanism between scientific production and the productive system.

CHAPTER III. Scientific and Technological Production and its Economic Impact

III.1 PUBLICATIONS, SCIENCE DISSEMINATION

FOCAL POINTS

- From 2008 to 2017, the production of scientific papers in Mexico underwent an annual average growth rate of 5.93 per cent; during the term 2016-2017, such growth rate was 4.3 per cent.
- Throughout the 2013-2017 lustrum, the production of Mexican scientific papers in comparison to those made in the rest of OECD members was in position 19 out of the 35 countries.
- In the 2013-2017 five-year period, Mexico was in OECD's position 34 regarding Normalized Quote Impact, presenting an index of 0.81.

III.1.1 PUBLICATIONS

The most relevant scientific advancements in the contemporary world have been traditionally disseminated through scientific journals. Journals constitute a communication channel among experts, which provides multiple advantages, for instance, the promote the exchange of scientific knowledge between peers world-wide; they generate and keep debates that expand knowledge frontiers in different disciplines, and last but not least, they constitute a mechanism to assess the appropriateness, veracity and quality of scientific discoveries and technological advancements.

The objective of this section is to present information on the scientific production of Mexican researchers, Higher Education Institutions (HEI), Research Centers (RC) and Mexican journals. Journals are analyzed for the very first time in the history of the making of General Reports on STI[1], as they represent one of the most significant final products by the academic community in our country. For this reason. A quantitative analysis was carried out, on the basis of the indicators generated by the Thomson Reuters (RT) database, obtained from Web of Science (WoS)[2]. It is to be mentioned that the analyses were based on annual and five-year periods.

The first six indicators (included in the Statistical Appendix) permit us to examine scientific production, the number of quotes, the annual quote impact factor and the relative impact of Mexican journals abroad. The eight subsequent indicators consider OECD members, the ones known as BRICS[3], strategic to Mexico in terms of STI international cooperation[4]. Once the list of indicators is presented, the performance of Mexican authors will be examined, as well as HEI and Mexican Journals of Science and Technology.

III.1.1.1 BASIC IDEAS TO UNDERSTAND SCIENTIFIC PUBLICATIONS

Bibliometrics is the discipline dedicated to calculating and valuating the production and consumption of scientific information[5]. Two fundamental criteria for the assessment of publications are derived therefrom: the number of papers published and the quotes referred to in such papers.

In this manner, scientific production is analyzed in two streaks: on the one hand, the number of papers published is an indicator of the work deve-

[1] General Reports on the State of Science, Technology and Innovation in Mexico (annual publications from 1996 to 2016). Available at: http://www.siicyt.gob.mx/index.php/transparencia/informes-conacyt/informe-general-del-estado-de-la-ciencia-tecnologia-e-innovacion

[2] Beforehand, TR held the Institute for Scientific Information (ISI) as a source, but it later became the source owner, denominating it WoS, available at http://webofknowledge.com. The data herein presented were obtained from the data bases: InCites, Essential Science Indicators, on May 15th and 21st, 2018.

[3] In general terms, BRICS is the acronym for the economic-commercial association among the world's five most important emergent national economies: Brazil, Russia, India, China and South Africa.

[4] The countries and regions that present most of STI international cooperation opportunities for Mexico have been identified and selected as follows: In North America, the United States and Canada; In South America, Argentina, Brazil, Chile and Colombia; in Europe, Germany, Spain, France and the United Kingdom and, in Asia, China, South Korea, India, Israel and Japan. The selection criteria respond not only to the quality of the research carried out in such countries (publications and patents) but also to strategic questions in geographic and economic terms (2014-2018 PECiTI, section 1.8, STI International Cooperation, p.39).

[5] Bibliometrics is defined, according to Alan Pritchard (1969) as "The application of statistical and mathematical methods able to define written communication processes as well as the nature and development of scientific disciplines through recounting and analysis techniques applied on such communication". In this way, it is possible to observe the evolution of scientific activities and measure their quality through their results.

loped within a discipline or knowledge area[6]. On the other hand, the number of quotes reflects both the interest and impact generated by either a paper or a publication in a determined period, within the academic community.

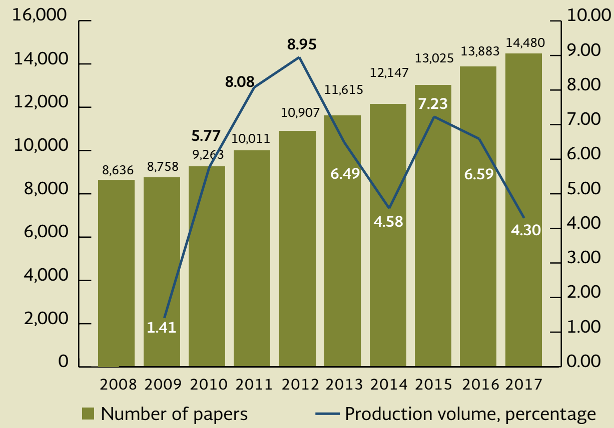
The impact of publications is measured through the Impact Factor (IF). This indicator is useful to compare scientific journals and assess their importance, in accordance with the quotes taken from the articles published. The IF in a determined year the quotient resulting from dividing the quotes' quantity from the previous two, three or even five years by the number of papers published in the same years. It is calculated by research areas so as to compare a journal with the rest of the area disseminations.

On the other hand, the Normalized Quotes Impact (NQI) is calculated by dividing the quote re-counting by the expected quotation rate (base line) for publications with the same type of document, publishing year and thematic area. This indicator reflects the importance of a country's scientific production, journal or institution to the international academic community.

GRAPH III.1

PPUBLICATIONS BY MEXICANS AND ANNUAL GROWTH, 2008-2017

Production volume, percentage variation of the production growth rate



Source: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 11th, 2018.

III.1.2 SCIENTIFIC PRODUCTION IN MEXICO

During the 2008-2017 term, the production of scientific papers in Mexico has increased in absolute terms. However, as of 2012, the speed of such phenomenon, analyzed through the production growth rate, presents a decreasing trend. As shown in Graph III.1, the total number of publications by Mexican authors indexed in TR, and its yearly growth rate, shows a lack of dynamism as of 2010. From 2009 to 2012, the publications' growth rate was rather positive and displayed constant increase; nevertheless, as of 2013, the growth trend began to slow down. From 2008 to 2017, the average growth rate was 5.93 per cent, registering a peak value of 8.95 per cent in 2012.

Graph III.2 shows the Mexican publications' growth trend, disaggregated in 22 research areas in the 2016-2017 term. The graph divides publications in two groups: the top positions are taken by those with a positive growth (Pharmacology and toxicology, 27.86 per cent; Biology and bio-chemistry, 17.86 per cent; Mathematics, 17.76 per cent). The bottom positions show the areas' behavior with decrease (Multidisciplinary areas, -50 per cent; Social sciences, -6.89 per cent; Earth sciences -3.53 per cent). It must be pointed out that, apart from observing a positive growth trend in 15 research areas, five of these (Ecology/environment; Agriculture, Psychology/psychiatry, Mathematics, Biology and bio-chemistry, Pharmacology and toxicology) present an increase rate above 11 per cent annually.

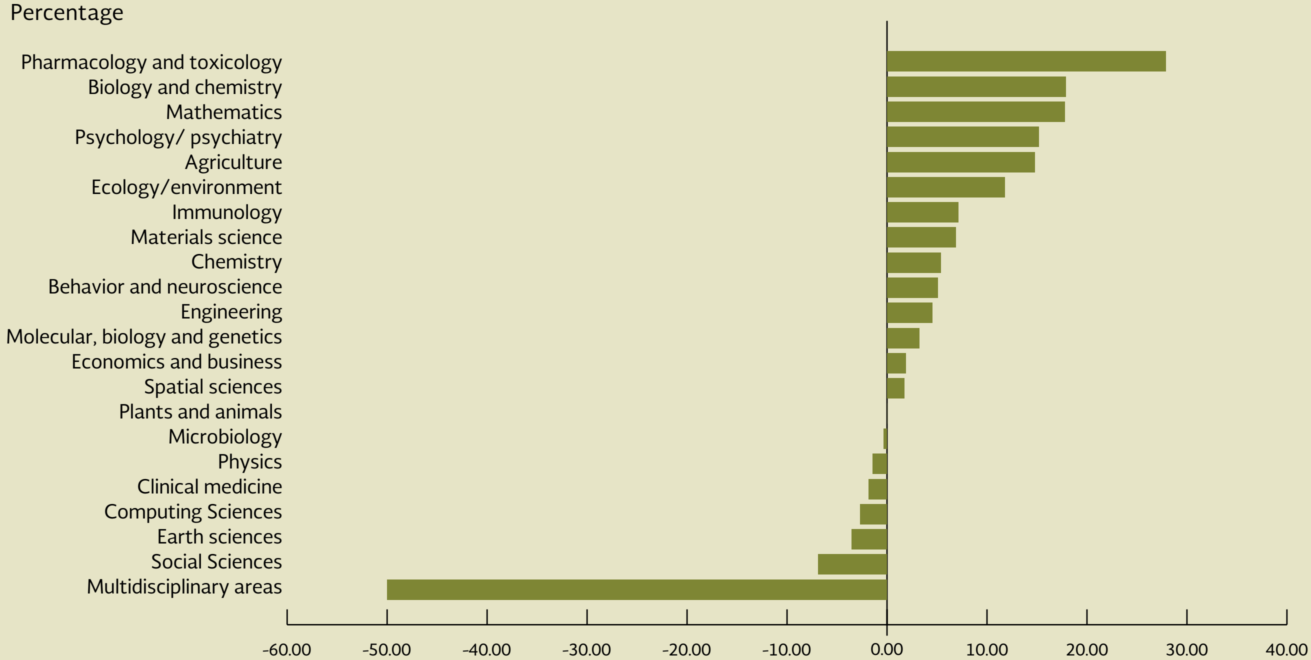
When analyzing the share of Mexican scientific production with respect to its peers abroad, a certain stagnation is observed during the 2008-2014 term. The aforementioned is reflected on the average participation of 0.60 per cent presented in those years. However, as of 2015, there was a slight increase that led to an average participation of 0.64 per cent in the 2015-2017 term, with a variation between 0.62 and 0.66 per cent annually. In the 2013-2017 lustrum, the participation of Mexican production with respect to the total worldwide, displayed a positive trend, from 0.61 per cent to 0.66 per cent by the end of such period. Data in

[6] The knowledge areas referred to in this chapter are those TR determines for its counting. The data base Essential Science Indicators defines 22 research areas: Farming sciences, biology and bio-chemistry; chemistry, clinical medicine; computing sciences, economics and business; engineering, environment and ecology; earth sciences; immunology, materials sciences; mathematics, micro-biology, molecular biology and genetics; multidisciplinary areas; neuro-sciences and behavior sciences; psychiatry and psychology; social sciences; space sciences; arts and humanities. Consulted on May 8th 2018, and available at: http://ipscience-help.thomsonreuters.com/inCites2Live/8300-TRS.html

GRAPH III.2

PERCENTAGE GROWTH OF MEXICAN PUBLICATIONS BY RESEARCH AREA, 2016-2017

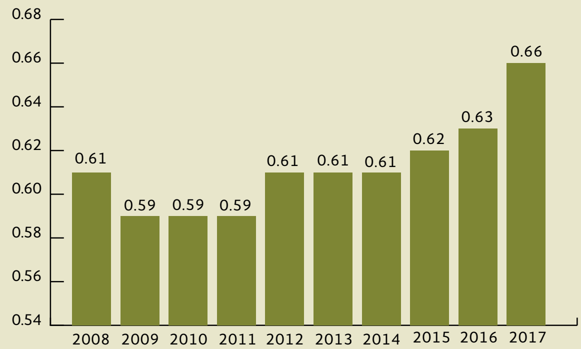
Percentage



Source: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 11th, 2018.

GRAPH III.3

PERCENTAGE PARTICIPATION OF MEXICAN PRODUCTION IN THE TOTAL ABROAD, 2008-2017



Source: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 13th,2018.

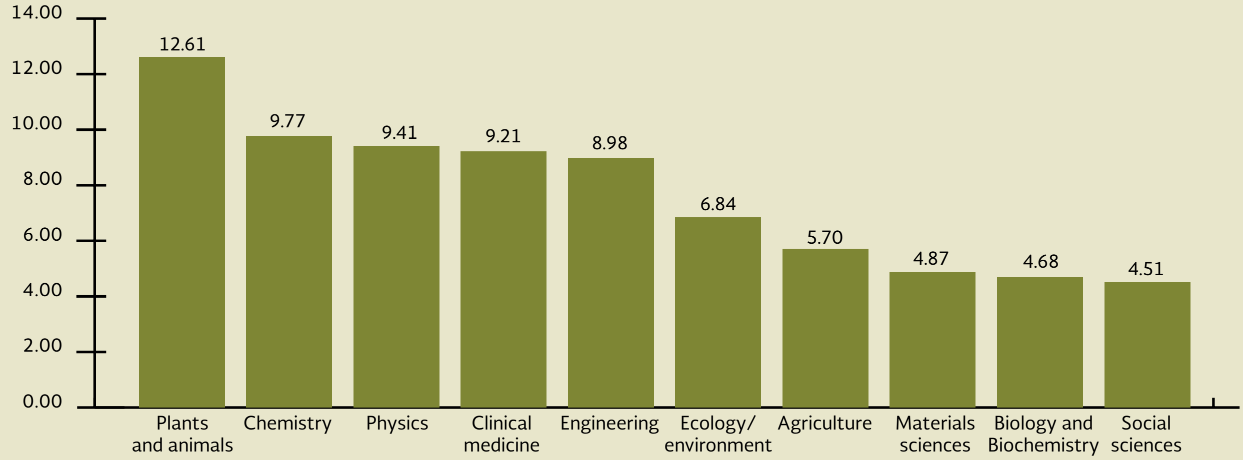
Graph III.3 show the changes in Mexico's scientific production with respect to the worldly production from 2008 to 2017[7].

[7] Some of the data herein presented may differ from those registered in previous Conacyt reports as the WoS data source changes the research areas in accordance with the trends displayed or the upcoming of new areas. That is the reason behind specifying the consultation dates, as a change in any such date may modify the data. On the other hand, it must be taken into account that the data considered in this report correspond only to scientific papers, discarding patents, research advancements and other documents.

If the total production of papers by research areas is disaggregated, it is likely to observe the scientific communities that contribute the most to national production. According to Graph III.4, it can be observed that, in 2013 and 2017, from the 22 thematic areas considered by TR, the ones that present the greatest volume of papers in Mexico are: Plants and animals (12.61 per cent), Chemistry (9.77 per cent), Physics (9.41 per cent), Clinical medicine (9.21 per cent), Engineering (8.98 per cent), Ecology and environment (6.84 per cent), Agriculture (5.70 per cent), Materials sciences (4.87 per cent), Biology and biochemistry (4.68 per cent) and social sciences (4.51 per cent).

When compared to OECD countries, Mexico's contribution to the papers published worldwide, is rather marginal. As illustrated in Table III.1, during the 2013-2017 lustrum, participation was way under United Kingdom's and Germany's (5.05 per cent and 4.85 per cent, respectively) and that of the United States (17.77 per cent). When compared to the BRICS' emergent economies, the Mexican production is far below China's, which represents 12.92 per cent from the total amount, whereas Mexico takes the penultimate position, with 0.63 per cent.

GRAPH III.4
PERCENTAGE PARTICIPATION OF THE MAIN RESEARCH AREAS IN MEXICO, LUSTRUM, 2013-2017



Source: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 12th ,2018.

Nonetheless, our country holds a relatively advantageous position in Latin America. During the 2013-2017 term, Mexico took up the first positions, right behind Brazil (1.99 per cent), but above similar nations such as Argentina, Chile and Colombia.

In terms of international cooperation, when Mexico is compared within the group of strategic countries, it is in the twelfth position out of a total of 16. In 2017, Mexico's percentage participation in the world's was barely superior to Argentina's, Chile's and Colombia's, as observed in Table III.2.

On the other hand, Graph III.5 presents Mexican production's percentage contribution to the world's total, by knowledge area, during the 2013-2017 lustrum. Such contribution reflects the areas with the greater production that have been developed in our country with respect to the rest of the world. The knowledge areas with the greater percentages are: Spatial Sciences (2.48 per cent), Agriculture (1.84 per cent) and Ecology/Environment (1.77 per cent). On the contrary, the low percentages of papers with respect to the world's production are found in Computing Sciences (0.56 per cent); Economics and Business (0.50 per cent); Clinical medicine (0.48 per cent), and Psychology and Psychiatry (0.46 per cent).

III.1.3 QUOTES AND IMPACT OF MEXICAN PAPERS BY RESEARCH AREA

The volume of scientific publications and its proportion in the international contexts are indicators of paramount importance to scientific activities, though insufficient to measure their visibility and impact. A widely accepted mechanism to evaluate scientific activities consists of studying the number of quotes received. On the basis of such indicator, the IF is constructed so as to measure a journal's visibility and dissemination within a research area, at the international, national and regional levels.

On the other hand, while other measuring instruments such as the Gross domestic expenditure on R&D or the number of researchers in every thousand inhabitants provide information on the country's investment in Science and Technology (S&T), the IF illustrates the results obtained by scientific activities in the variety of knowledge areas in the world. The measuring that reflect investment levels in S&T and the IF must be seen as complimentary to the analysis of development degrees in the sector, as well as its knowledge production and international extent.

Graph III.6 shows the number of quotes generated by Mexican papers, disaggregated by research areas according to TR data. Clinical medicine is the area that received the greatest number of quotes during the 2013-2017 lustrum, with 48,216 quotes, followed by Physics (39,020), Chemistry (27,178 quotes), Plants and animals (23,157) and Engineering (20,141 quotes). Clinical medicine is one of Mexico's most quoted areas in the rest of the world. However, its contribution to the world's production is rather limited (as appreciated in Graph III.5), which means they are rele-

TABLE III.1

PERCENTAGE PARTICIPATION IN THE WORLD'S TOTAL PRODUCTION OF PAPERS, OECD MEMBERS, LATIN AMERICA AND BRICS, LUSTRUM, 2013-2017

OECD

No.	Country	*per capita* GDP PPP 2016	Percentage participation in the production of papers 2017	2013-2017
1	United States	57,638.16	16.92	17.77
2	United Kingdom	42,608.72	4.98	5.05
3	Germany	48,860.53	4.72	4.85
4	Japan	42,203.32	3.42	3.64
5	France	41,343.29	3.15	3.31
6	Canada	44,644.17	2.87	2.98
7	Italy	38,370.46	2.81	2.92
8	Australia	46,012.33	2.68	2.68
9	South Korea	36,532.47	2.56	2.64
10	Spain	36,304.85	2.48	2.60
11	Netherlands	50,538.61	1.69	1.75
12	Switzerland	63,888.73	1.35	1.34
13	Turkey	25,247.20	1.23	1.32
14	Sweden	48,904.55	1.22	1.23
15	Poland	27,383.25	1.18	1.21
16	Belgium	46,428.67	0.94	0.97
17	Denmark	49,029.01	0.82	0.81
18	Austria	50,551.55	0.69	0.70

No.	Country	GDP *per cápita* PPP 2016	Percentage participation in the production of papers 2017	2013-2017
19	**Mexico**	**17,274.82**	**0.66**	**0.63**
20	Portugal	30,606.65	0.62	0.64
21	Israel	37,258.22	0.62	0.63
22	Norway	58,790.21	0.61	0.59
23	Finland	43,346.38	0.57	0.59
24	Czech Republic	34,749.21	0.57	0.57
25	Greece	26,778.50	0.43	0.47
26	New Zealand	38,565.08	0.41	0.42
27	Chile	23,193.97	0.37	0.36
28	Ireland	71,472.30	0.36	0.36
29	Hungary	26,700.76	0.31	0.32
30	Slovenia	32,723.07	0.16	0.18
31	Slovakia	30,460.38	0.16	0.16
32	Estonia	29,743.34	0.08	0.09
33	Iceland	50,104.15	0.05	0.05
34	Luxembourg	102,389.44	0.05	0.05
35	Latvia	25,587.39	0.03	0.03

LATIN AMERICA

No.	Country	*per capita* GDP PPP 2016*	Percentage participation in the production of papers 2017	2013-2017
1	Brazil	15,123.85	2.01	1.99
2	**Mexico**	**17,274.82**	**0.66**	**0.63**
3	Argentina	19,939.93	0.39	0.41
4	Chile	23,193.97	0.37	0.36
5	Colombia	14,153.93	0.21	0.19

BRICS

No.	Country	*per capita* GDP PPP 2016*	Percentage participation in the production of papers 2017	2013-2017
1	China	15,529.08	14.67	12.92
2	India	6,570.62	2.86	2.82
3	Brazil	15,123.85	2.01	1.99
4	Russia	24,788.68	1.56	1.55
5	**Mexico**	**17,274.82**	**0.66**	**0.63**
6	South Africa	13,196.81	0.58	0.57

*The per capita GDP is presented as a measure to contextualize each country's economic level.
Sources: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 13th,2018, and the Comparison Program Database, World Bank, http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD, consulted on April 15th,2018.

vant to the international community although only a few papers are published.

By contrast, Graph III.7 demonstrates that the Multidisciplinary area presented the highest IF (10.96) during the 2013-2017 term, exerting the considerable influence of this type of publications among the international academic community. It is followed by Molecular biology and genetics, as well as Spatial Sciences (9.92 and 9,09, respectively). Alternatively, Mathematics, Economics and Business, and Social Sciences are the research areas that report the lowest IF levels.

III.1.4 INTERNATIONAL IMPACT

As the quotes rates vary according to disciplines, or they augment with time and publications display different behaviors when quoted, it is suggested

TABLE III.2

PERCENTAGE PARTICIPATION IN THE WORLD'S TOTAL PRODUCTION OF PAPERS, STRATEGIC COUNTRIES FOR MEXICO, 2013-2017

Country estratégico	GDP *per cápita* PPP 2016	2017	2013-2017
United States	57,638.16	16.92	17.77
China	15,529.08	14.67	12.92
United Kingdom	42,608.72	4.98	5.05
Germany	48,860.53	4.72	4.85
Japan	42,203.32	3.42	3.64
France	41,343.29	3.15	3.31
Canada	44,644.17	2.87	2.98
India	6,570.62	2.86	2.82
South Korea	36,532.47	2.56	2.64
Spain	36,304.85	2.48	2.60
Brazil	15,123.85	2.01	1.99
Mexico	**17,274.82**	**0.66**	**0.63**
Israel	37,258.22	0.62	0.63
Argentina	19,939.93	0.39	0.41
Chile	23,193.97	0.37	0.36
Colombia	14,153.93	0.21	0.19

*The per capita GDP is presented as a measure to contextualize each country's economic level.
Sources: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 13th, 2018 and Comparison Program Database, World Bank, http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD consulted on April 15th, 2018.

they are normalized by discipline, year and sort of publication, thus obtaining the Normalized Quotes Impact (NQI), calculated by dividing the quotes recounting by the expected quote rate (base line) for publications with the same type of document, publication year and thematic area. Such indicator reveals the importance acknowledged by the international academic community to the scientific production of either a country, a journal or an institution.

Table III.3 presents Mexico's NQI within OECD, Latin America and BRICS countries for the 2013-2017 term. As for OECD countries, Mexican publications' NQI place our country in the next to last position out of the 35 members, with a value of 0.81, only above Turkey and below countries such as South Korea, Slovakia and Poland. Iceland takes up the first position with a value of 1.94.

Regarding Latin America, the highest NQI is displayed by Chile (1.05), a country which, despite being one of the countries with the lowest production in comparison to the rest of the world (as observed in Table III.1), shows an outstanding impact. Mexico is below Chile, Colombia and Argentina, although it has a greater volume of scientific production. Brazil undergoes a similar situation: despite having the greatest volume of publications in Latin America, is presented the lowest NQI throughout the 2013-2017 period.

When contrasted to that of BRICS countries, Mexico's NQI is similar to India's (0.79) and is even above Brazil's (0.78) and Russia's (0.64). Although South Africa presents a relatively minor publications in comparison to BRICS countries, it displays the greatest NQI volume (1.09) in the group.

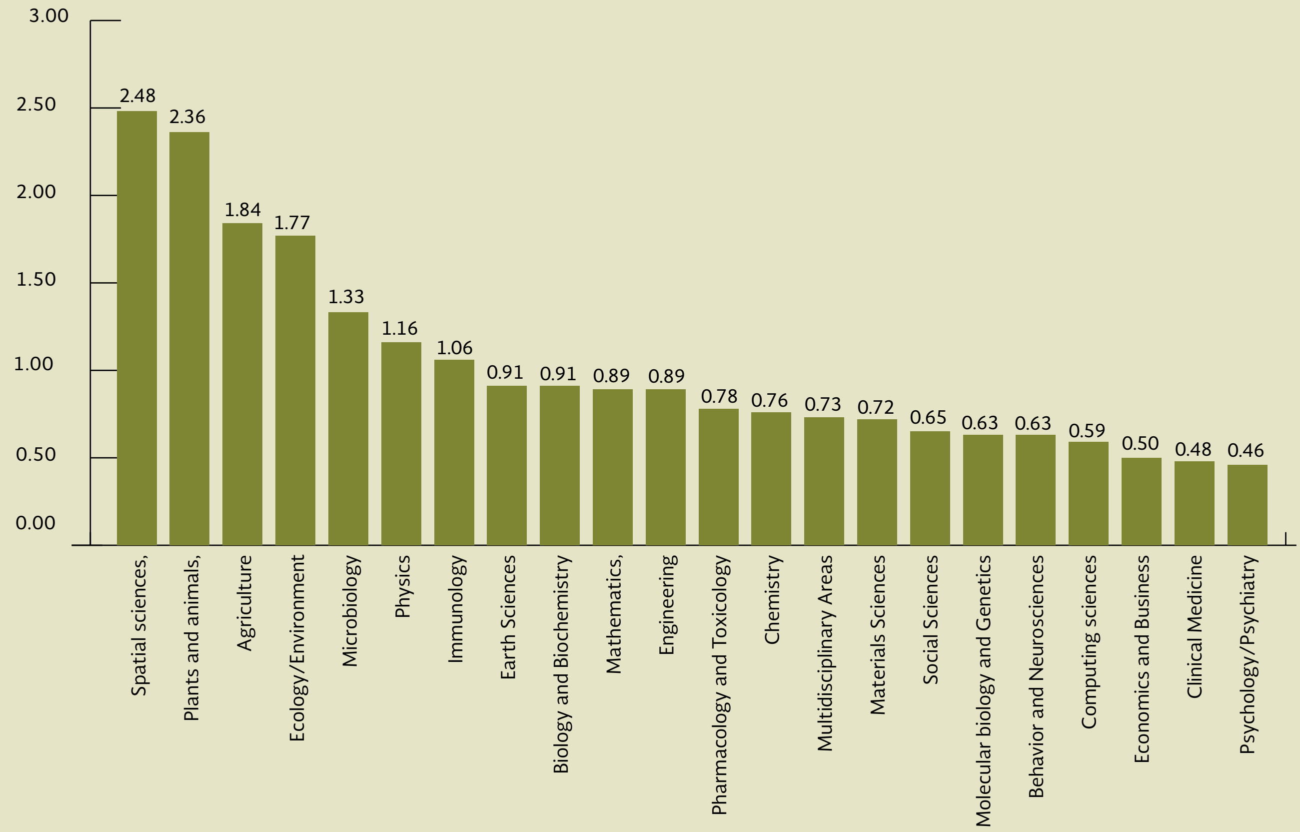
When comparing Mexico's NQI to that of strategic countries in terms of international cooperation, it is appreciated that it is placed above the performance of Brazil and India. The first positions in the group are taken by the United Kingdom, followed by the United States and Canada. (see Table III.4).

III.1.5 INDICATOR RATIOS

With the purpose of obtaining a first approach to the behavior of Mexican publications and that of existing ratios between published papers and the rest of the variables mentioned, this section presents a dispersion analysis of four bibliometric

GRAPH III.5

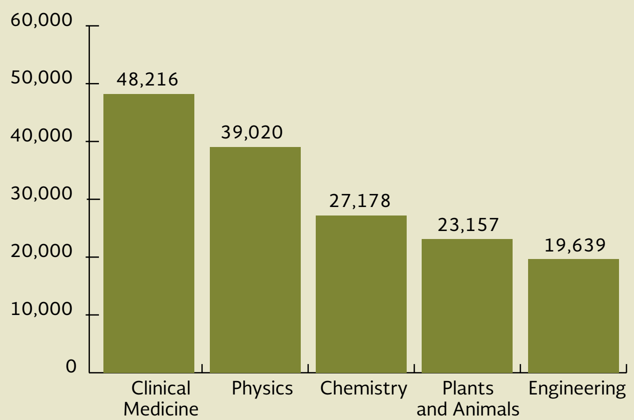
PERCENTAGE PARTICIPATION OF MEXICAN PRODUCTION IN THE WORLD'S TOTAL BY RESEARCH AREA, LUSTRUM, 2013-2017



Source: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 15th, 2018.

GRAPH III.6

NUMBER OF MEXICAN PAPERS' QUOTES BY DISCIPLINE, LUSTRUM, 2013-2017



Source: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 12th, 2018.

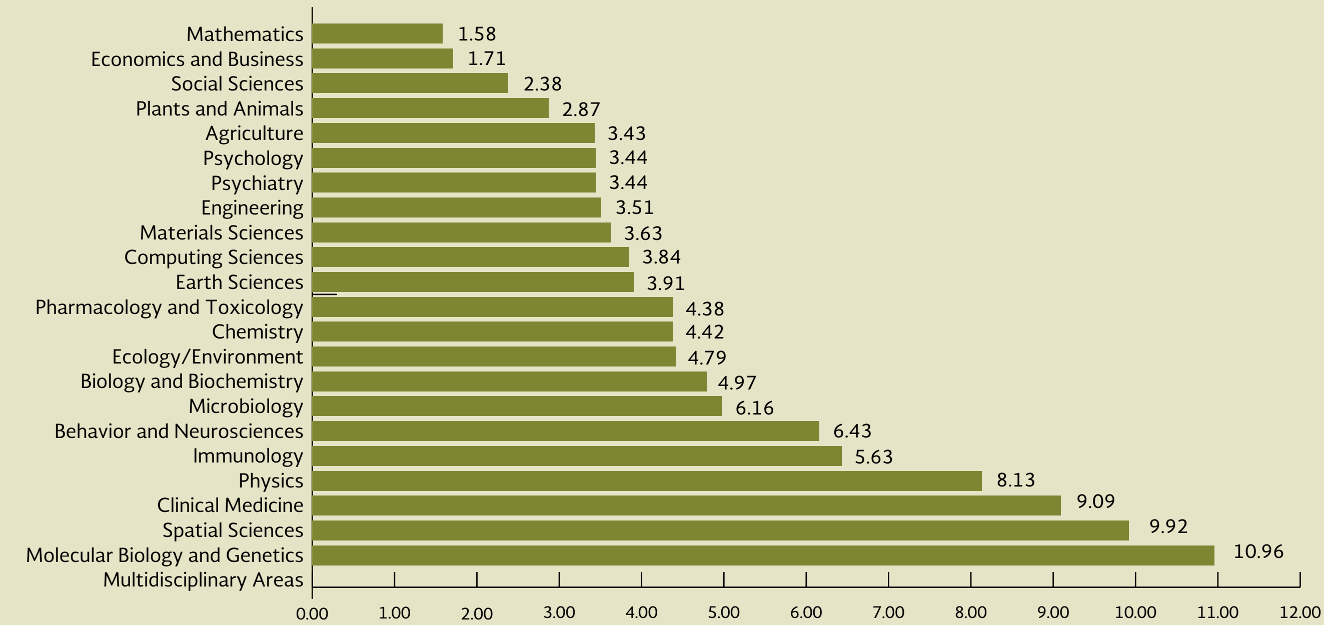
variables: number of published papers; number of quotes; quotes' impact factor and normalized quotes impact, all obtained from the Clarivate Analytics database, formerly known as Thomson Reuters.

Graph III.8 illustrates the ratio between the volume of "published papers" (x axis) and the "quotes impact factor" (y axis) for a varied group of countries, which may as well be set up in four quadrants[8].

The first quadrant groups most of the sample's countries which, on average, present a high IF, though with a quite moderate volume of articles published. Such countries are Estonia, Latvia, Iceland, Luxembourg, Belgium, Austria, among others. By contrast, the second quadrant groups

[8] China, the United States, Germany and the United Kingdom have been omitted as the volume of their publications jeopardized the reading of the graph.

GRAPH III.7
MEXICAN PRODUCTION'S QUOTES IMPACT FACTOR BY RESEARCH AREA, LUSTRUM, 2013-2017



Source: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 12th, 2018.

fewer countries, with both a high IF and publications volume: Australia, Italy, France, Spain and Canada. Mexico is classified in the third quadrant, with minor volumes of published papers and below the IF average, together with Argentina, Chile and Colombia. Finally, a group of countries with significant volumes of published papers and with an IF below the sample's average includes Japan, South Korea, India and Brazil.

When drawing a trend line, it is likely to be appreciated that, on average, the countries with fewer publications present a higher IF, which means that their contribution to knowledge generation across the world is relevant, although few papers are published.

Correspondingly, considering a minor scale, Conacyt's Public Research Centers present a ratio which contrasts to the rest of the world's. Such ratio is illustrated in Graphs III.9 and III.10 and displays a positive trend, which means that, the greater the number of papers published, the greater the impact they exert.

Finally, Graph III.10 allows to compare centers in accordance with the Normalized Quotes Impact, the CIATEJ being with the highest value, though with a low number of publications, placed in the first quadrant next to CIDE, Centro GEO, COMIMSA, CIMAT and CRIIC. By contrast, INAOE, INECOL and CICESE present a high volume of publications and, simultaneously, a NQI above the average. Lastly, COLSAN, CIESAS and the Mora Institute are placed in the third quadrant, as a result of their low production and a rather unsubstantial normalized quotes impact.

III.1.6 MEXICAN JOURNALS INDEXED IN THE MEXICAN SCIENCE AND TECHNOLOGY JOURNALS CLASSIFICATION SYSTEM

Scientific journals have a deep-rooted tradition in Mexico. Our country housed the first illustrated periodical publication in Latin America, entitled Mercurio Volante[9]. Such journal disseminated aspects regarding medicine and physics. The oldest Latin American scientific journal, currently in circulation, was also created: Mexico's Medical Gazette, whose first issue was published in 1864[10].

It is precisely in the Medicine and health sciences knowledge area where the oldest background concerning scientific journals in Mexico can be found. For instance, one of the oldest sources of Mesoamerican medicine is the document entitled "Libellus de medicinalibus indorum herbis", also

[9] López, E. J. A. (2000). America's first medical journal. ACIMED, 8(2), 39-133.
[10] Mendoza, Sara; Paravic, Tatiana (2006). Origin, classification and challenges of Mexican Journals. Research and Postgraduate, Vol. 21, Issue 1, pp. 44-75.

TABLE III.3
NORMALIZED QUOTES IMPACT FROM OECD MEMBERS, BRICS AND LATIN AMERICA, LUSTRUM, 2013-2017

OECD

No.	Country	per capita GDP PPP 2016*	Normalized Quotes Impact 2013-2017
1	Iceland	50,104.15	1.94
2	Estonia	29,743.34	1.74
3	Switzerland	63,888.73	1.69
4	Denmark	49,029.01	1.62
5	Netherlands	50,538.61	1.61
6	Belgium	46,428.67	1.53
7	Luxembourg	102,389.44	1.53
8	Ireland	71,472.30	1.46
9	Sweden	48,904.55	1.46
10	United Kingdom	42,608.72	1.46
11	Finland	43,346.38	1.45
12	Norway	58,790.21	1.44
13	Austria	50,551.55	1.41
14	Australia	46,012.33	1.38
15	United States	57,638.16	1.37
16	Canada	44,644.17	1.36
17	Germany	48,860.53	1.35
18	Greece	26,778.50	1.34
19	Italy	38,370.46	1.33
20	New Zealand	38,565.08	1.33
21	France	41,343.29	1.32
22	Israel	37,258.22	1.26
23	Spain	36,304.85	1.26
24	Portugal	30,606.65	1.19
25	Hungary	26,700.76	1.12
26	Slovenia	32,723.07	1.08
27	Czech Republic	34,749.21	1.06
28	Chile	23,193.97	1.05
29	Latvia	25,587.39	1.04
30	Japan	42,203.32	0.96
31	South Korea	36,532.47	0.94
32	Slovakia	30,460.38	0.93
33	Poland	27,383.25	0.88
34	**Mexico**	**17,274.82**	**0.81**
35	Turkey	25,247.20	0.67

LATINOAMÉRICA

No.	Country	per capita GDP PPP 2016*	Normalized Quotes Impact 2013-2017
1	Chile	23,193.97	1.05
2	Colombia	14,153.93	1.03
3	Argentina	19,939.93	0.94
4	**Mexico**	**17,274.82**	**0.81**
5	Brazil	15,123.85	0.78

BRICS

No.	Country	per capita GDP PPP 2015*	Normalized Quotes Impact 2013-2017
1	South Africa	13,196.81	1.09
2	China	15,529.08	0.98
3	**Mexico**	**17,247.82**	**0.81**
4	India	6,570.62	0.79
5	Brazil	15,123.85	0.78
6	Russia	24,788.68	0.64

*The per capita GDP is presented as a measure to contextualize each country's economic level.
Sources: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 13th, 2018 and Comparison Program Database, World Bank, http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD consulted on April 15th, 2018.

known as Cruz-Badiano Codex, written after the Spanish conquest in 1552[11].

In order to raise the quality, visibility and impact of electronically edited scientific journals in Mexico[12], the Conacyt has set up the Classification of Mexican Journals on Science and Technology System (CRMCyT)[13].

In 2017, the CRMCyT system comprised 94 magazines. The requirements to meet consist of being at least two years old, having constant publications and being submitted to a painstaking assessment to be included therein.

By considering these 94 scientific journals, a time line was constructed, presenting the publica-

[11] Turner, Guillermo (2007), The Cruz-Badiano Codex and its extense herbal family. Historical Studies Directorate's Journal, No. 68,109-115.

[12] Mexican journals with ISSN (International Standard Serial Number). Consulted on June 2018 in: http://www.revistascytconacyt.mx/manual-sistema-crmcyt.pdf

[13] The CRMCyT system is a public policy instrument whose background is constituted by the Open Access Policy, in terms of the 2014 decree that reformed the Science and Technology Law; the Education General Law and the Organic Law of the National Council for Science and Technology (Official Journal of the Federation, published on May 20th, 2014). For further information, consult in: http://www.revistascytconacyt.mx/

TABLE III.4

NORMALIZED QUOTES IMPACT FROM STRATEGIC COUNTRIES TO MEXICO, LUSTRUM, 2013-2017

Country	per capita GDP PPP 2016*	2013-2017
United Kingdom	42,608.72	1.46
United States	57,638.16	1.37
Canada	44,644.17	1.36
Germany	48,860.53	1.35
France	41,343.29	1.32
Israel	37,258.22	1.26
Spain	36,304.85	1.26
Chile	23,193.97	1.05
Colombia	14,153.93	1.03
China	15,529.08	0.98
Japan	42,203.32	0.96
South Korea	36,532.47	0.94
Argentina	19,939.93	0.94
Mexico	**17,274.82**	**0.81**
India	6,570.62	0.79
Brazil	15,123.85	0.78

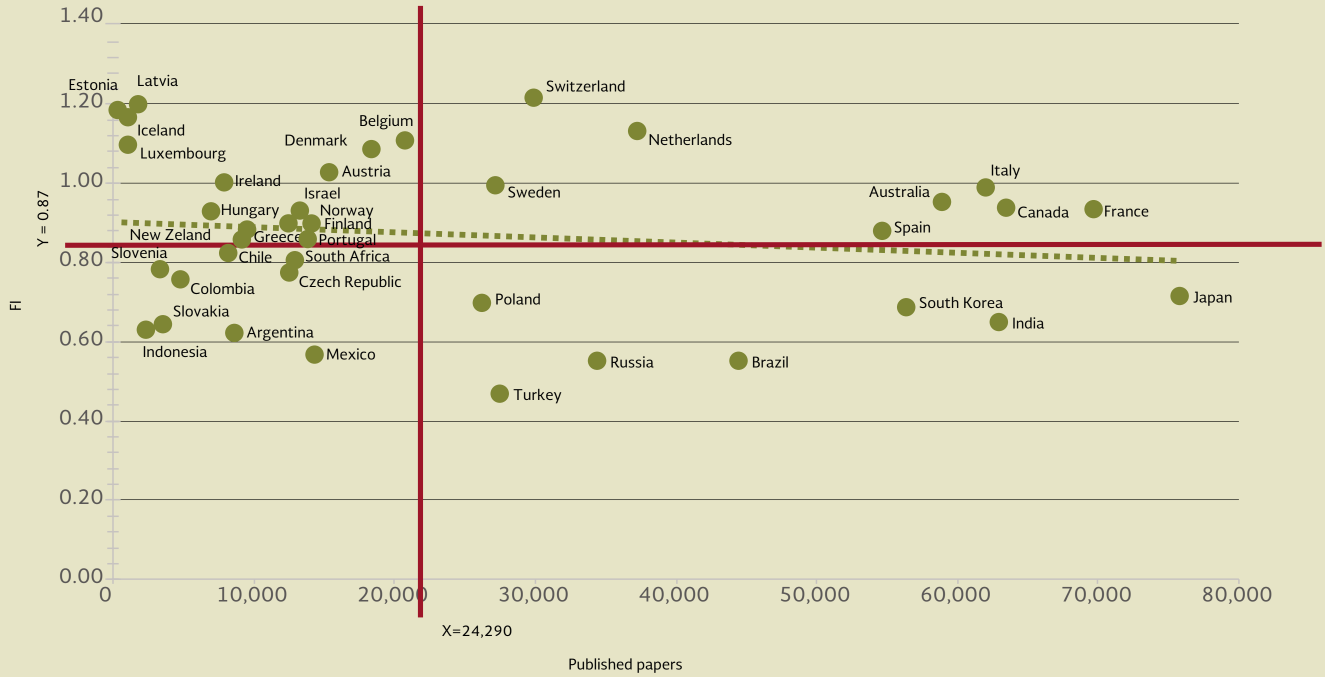
*The per capita GDP is presented as a measure to contextualize each country's economic level.
Sources: Database Incites, Essential Science Indicators, Research Areas, Thomson Reuters. Consulted on April 13th, 2018 and Comparison Program Database, World Bank, http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD consulted on April 15th, 2018.

tion year of their first volume. As mentioned previously, the oldest journal is Mexico's Medical Gazette, whose first volume was published in 1864 and the time line was set as of that year (see Figure III.1). Five periods are identified. The first one (1864-1925) includes only two journals: Mexico's Medical Gazette and the Mexican Geological Society Bulletin. The second term (1926-1950) increased the number of journals by 18 and most of them belonged to the Medicine and health sciences area. Throughout the third stage, which goes from 1951 to 1975, there were 27 journals and the Journal Marine Sciences took up the fourth position in Impact Factor (IF), with 1.04 in 2017. The fourth period (1976-2000) comprehends a significant deal of publications that start with their first volume (39), mostly belonging to Social Sciences; however, the journal Atmosphere is rather included in the Physical-Mathematical and Earth Sciences area, taking up the third position of IF with 1.187 in 2017. In the last period, from 2001 to 2018, the number of journals publishing their first volume was eight. The area with the most journals was Social Sciences, with 50 per cent of the journals. The publications Annals of Hepatology and Journal of Applied Research and Technology were placed in the first and second positions in the IF of the journals included in the CRMCyT, with 1.39 and 1.26, respectively in 2017.

Finally, Graph III.11 contains information on quotes, papers and IF by knowledge area of the 94 journals included in the Conacyt Classification of Mexican Journals on Science ant Technology System in 2017. Taking the IF into consideration, biology and chemistry publications are the ones with the most significant impact, with 0.78, followed by Engineering publications (0.64). By contrast, the journals on Humanities and behavior sciences have the lowest impact (0.12), as well as those on social sciences (0.25).

GRAPH III.8

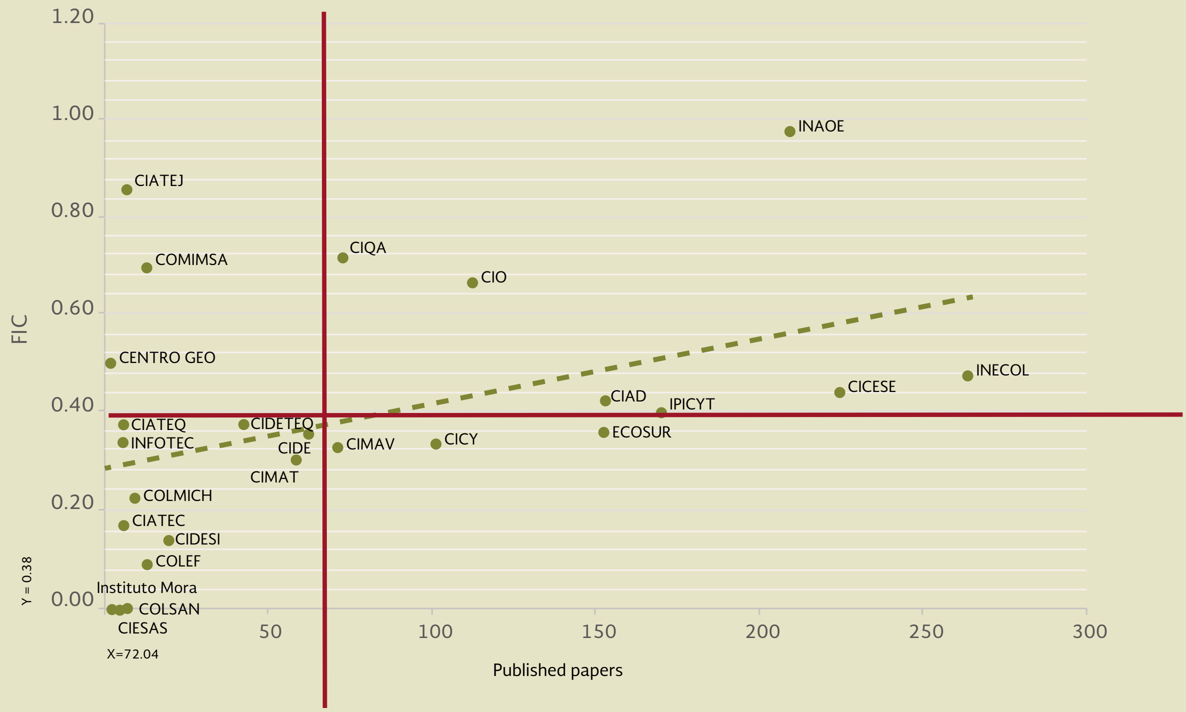
PAPERS PUBLISHED AND QUOTES IMPACT FACTOR, 2017



Source: Own modelling with information from Thomson Reuters. Consulted on April 13th, 2018.

GRAPH III.9

PAPERS PUBLISHED AND QUOTES IMPACT FACTOR, 2017



Source: Own modelling with information from Thomson Reuters. Consulted on April 16th, 2018.

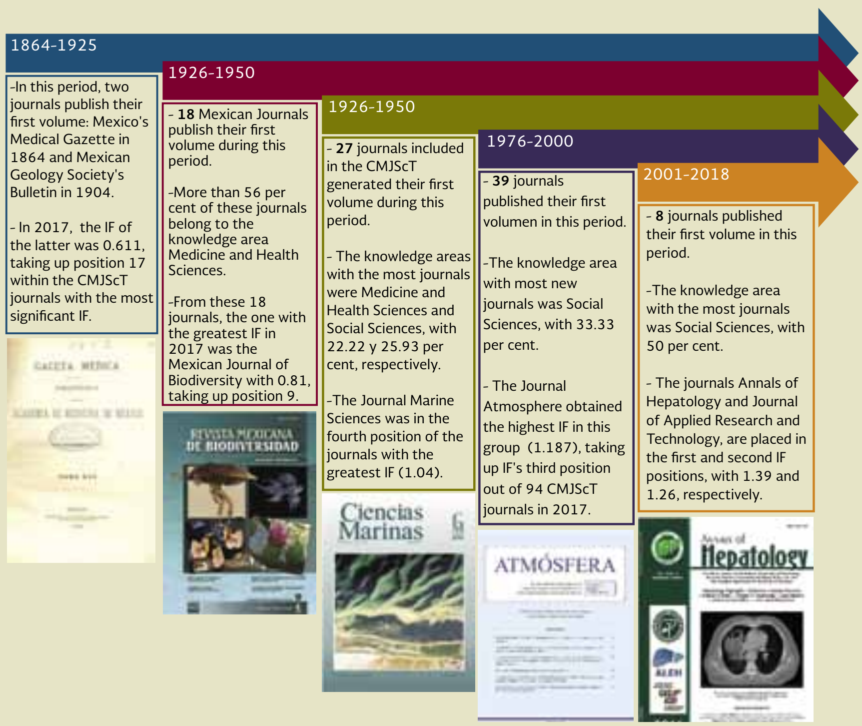
GRAPH III.10

PUBLISHED PAPERS AND NORMALIZED QUOTES IMPACT(NQI), 2017

Source: Own modelling with information from Thomson Reuters. Consulted on April 16th ,2018.

FIGURE III.1

TIME LINE, FIRST VOLUME'S PUBLISHING OF THE JOURNALS INCLUDED IN THE CRMCyT SYSTEM

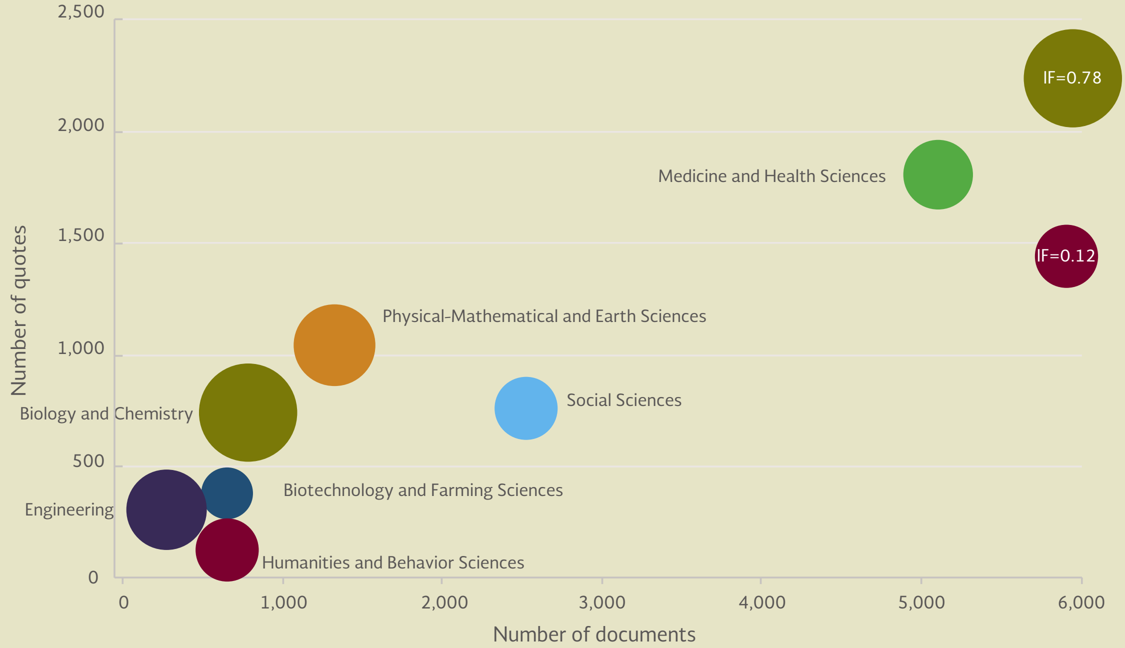


Source: Own making, based on the CRMCyT System.

GRAPH III.11

NUMBER OF QUOTES AND DOCUMENTS FROM THE CONACYT JOURNAL CLASSIFICATION SYSTEM, 2017

Bubble Size: Impact Factor



Source: Own making, based on information from the Conacyt's Journal Classification System

III.2 PATENTS

FOCAL POINTS

- In 2017 there was a growth trend of 1.83 per cent in the number of patents requested by national applicants, with respect to the previous year.
- By comparison, the number of patents requested by foreign applicants has been diminishing since 2015, in an average of 0.03 per year.
- In 2017, the states with the most patent requests were: Mexico City, Jalisco and Puebla.
- Only nine states (Mexico City, Jalisco, Puebla, State of Mexico, Nuevo León, Guanajuato, Querétaro, Coahuila and Sonora) were above the national average of patents requested, which in 2016 and 2017 consisted of 40 patent applications.
- These nine states sum up 75.49 per cent of the total patents requested by national applicants.
- The technological sector in which the most patents are granted to both national and foreign applicants is pharmaceutics, apart from constituting Mexico's main requests.
- The main three industrial property offices worldwide, where Mexicans request the most patents, are those of the United States, the European Union and Canada.

III.2.1 GENERAL CONTEXT

A patent is a temporary and territorially based exclusive right for the commercial exploitation of either an invention or a process, thus constituting a protection instrument for the inventions developed by corporations, institutions, people and organizations. The patent request, its grant and extension imply a great deal of continuous work by all those interested: previous studies on the invention's feasibility and commercial potentiality, display of technical, legal, commercial and financial resources for the request application, as well as other further processes In contrast, in order to obtain protection for an invention through a patent, it must meet the requirements concerning novelty, industrial applicability and inventive activity.

Therefore, patent requests and patents are the result of an important investment in resources for the formation of human capital, as well as scientific and technological research that aim to improve or contribute to innovative problem-solving methods. Likewise, being a source of available information, it is possible to analyze aspects such as the type of technology under protection; the technological area from which it rises and who is behind its development. That is to say, patent requests and patents are part od the indicators used to examine a country's state of scientific and technological development (OECD, 2009, p.15).

In Mexico, the institution that collects and published aggregated data on requests and their granting is the Mexican Institute of Industrial Property (IMPI).[18] This section shows the analysis of different variables taken from the patents requests and patents granted figures in Mexico, as well as the trends of patent requests by state. The second section identifies the main patent owners in Mexico during 2017, both nationals and foreigners. The third section refers to patent requests and patents according to technological sector. Finally, the last section expounds four indicators formulated by the Organization for the Economic Co-operation and Development (OECD) on a country's inventive capacity: dependence and self-sufficiency ratios, inventiveness coefficient and dissemination rate.

The origin of both the data and information used comes from two sources: the Mexican Institute of Intellectual Property's Annual Report (IMPI) and the

[14] Protection usually covers 20 years as of the request's submission, depending on the country's legislation. Information consulted on April 2018 in: http://www.wipo.int/patents/es/

[15] Exclusive rights are applicable only in the country or region in which a patent has been registered and granted. Information consulted on April 2018 in: http://www.wipo.int/patents/es/

[16] Form exam, in-depth exam, etc., as well as the corresponding payments for the submission of patents' requests; for the issuing of the patent title (in case it is granted), and the corresponding annual fees. Information consulted on April 2018 in: https://www.gob.mx/impi/acciones-y-programas/servicios-que-ofrece-el-impi-tarifas-invenciones-modelos-de-utilidad-disenos-industriales-y-esquemas-de-trazado-de-circuitos-integrados

[17] Industrial Property Law, last reform published on April 9th, 2012 in OJF. On inventions, Utility Models and Industrial Designs. Chapter I Preliminary Provisions. Article 12. Consulted on April 2018 in http://www.wipo.int/edocs/lexdocs/laws/es/mx/mx100es.pdf

[18] For further information, visit: https://www.gob.mx/impi

statistical database of the World Intellectual Property Organization (OMPI).

III.2.2. PATENTS REQUESTES AND GRANTED IN MEXICO

In 2017, the number of patents requested in Mexico was 17,184. From these, 1,334 were requested by domestic applicants, an amount which represents 7.76 per cent of the total requests. In comparison, foreign applicants requested 15,580 patents (92.24 per cent of the total patents requested).

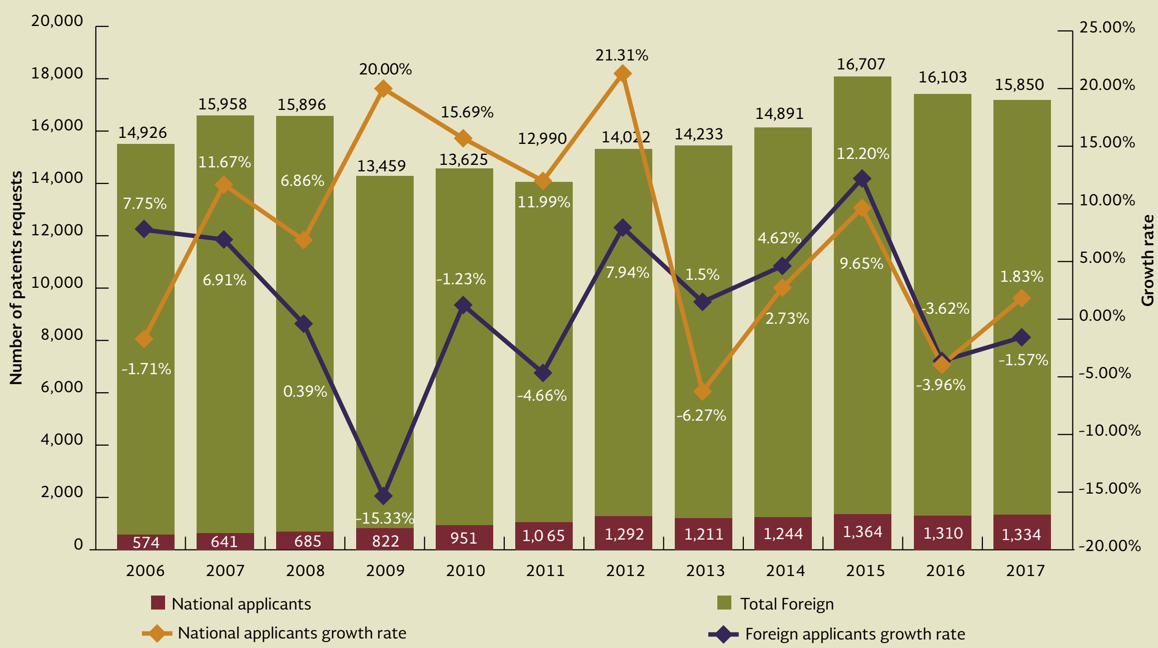
In the case of national applications, as it may be observed in Graph III.2, in 2017 there was a growth trend of 1.83 per cent in relation to the previous year. By contrast, the patents requests by foreign applicants decreased 1.57 per cent. However, such percentage is below the fall registered in the 2012-2013 term, with minus 6.27 per cent of the patent requests by foreign applicants.

The most significant growth trend by national applicants during the 2006-2017 term, took place in 2012, with 21.31 per cent.

In 2017, the number of patents granted in Mexico was 8,510. Graph III.13 shows that patents granted to both national and foreign holders presented a decrease with respect to the previous year, with a growth rate of 4.46 per cent in the former case and 1.56 per cent for the latter. The patents granted to national owners were 407, amounting to 4.78 of the total patents granted in that year, contrasting to those granted to foreigners, 8,103, 95.25 per cent of the total amount. During the term analyzed, 2006-2007, it was appreciated that the year when the most patents were granted to nationals was 2016, with 426, and in the case of patents granted to foreign holders, 2012, with 12,049.

Considering the information from Mexicans' patent requests by state corresponding to 2016 and 2017 (see Graph III.14) it is observed that in 2017 the three states with the greatest number of patent requests were: Mexico City with 333, an amount which represents 24.96 per cent of the total applications for that year; Jalisco, with 194 patents, that is, 14.54 per cent; Puebla took up the position as the third state with the most patents, with 90 applications, above the State of Mexico and Nuevo León, in relation to its 2016 position.

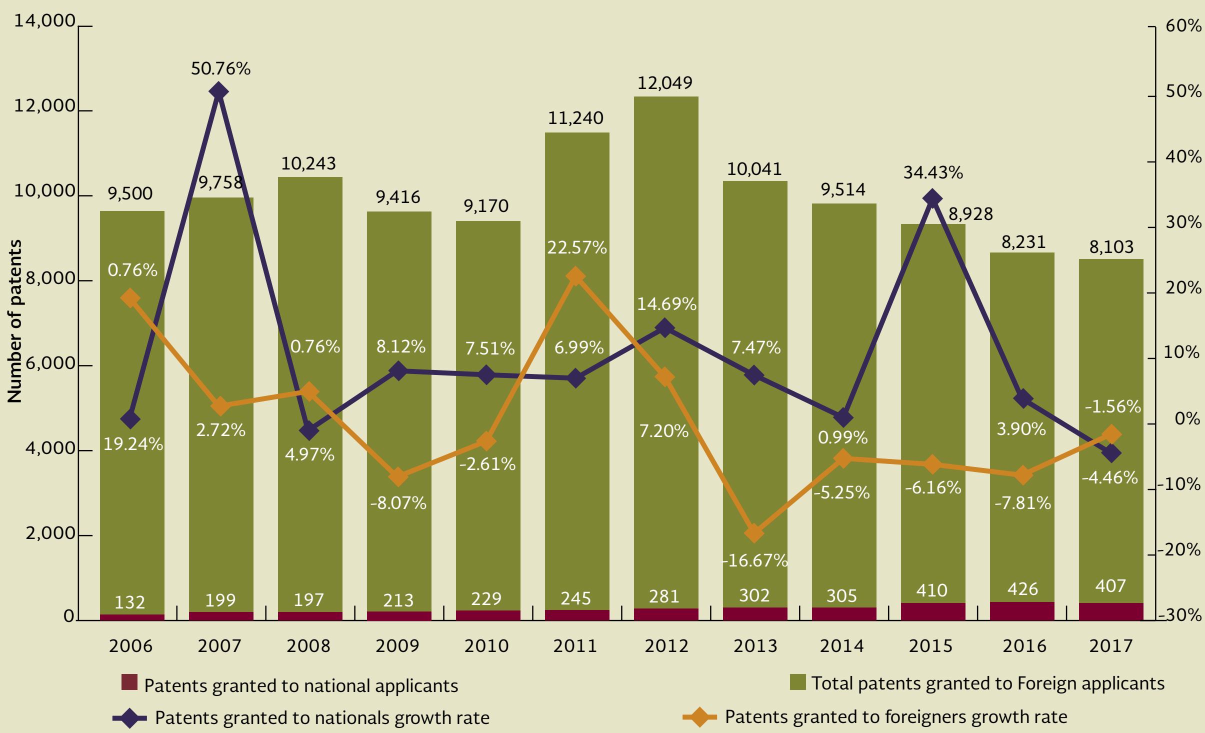
GRAPH III.12
PATENTS REQUESTS IN MEXICO, BY NATIONAL AND FOREIGN APPLICANTS, AND GROWTH RATES, 2006-2017



Source: Mexican Institute of Industrial Property (IMPI). "IMPI in figures 2017". Figures from January 1993 to December 2017.

GRAPH III.13

PATENTS GRANTED TO NATIONAL AND FOREIGN APPLICANTS IN MEXICO, GROWTH RATE, 2006-2017



Source: Mexican Institute of Industrial Property (IMPI). "IMPI in figures 2017". Figures from January 1993 to December 2017.

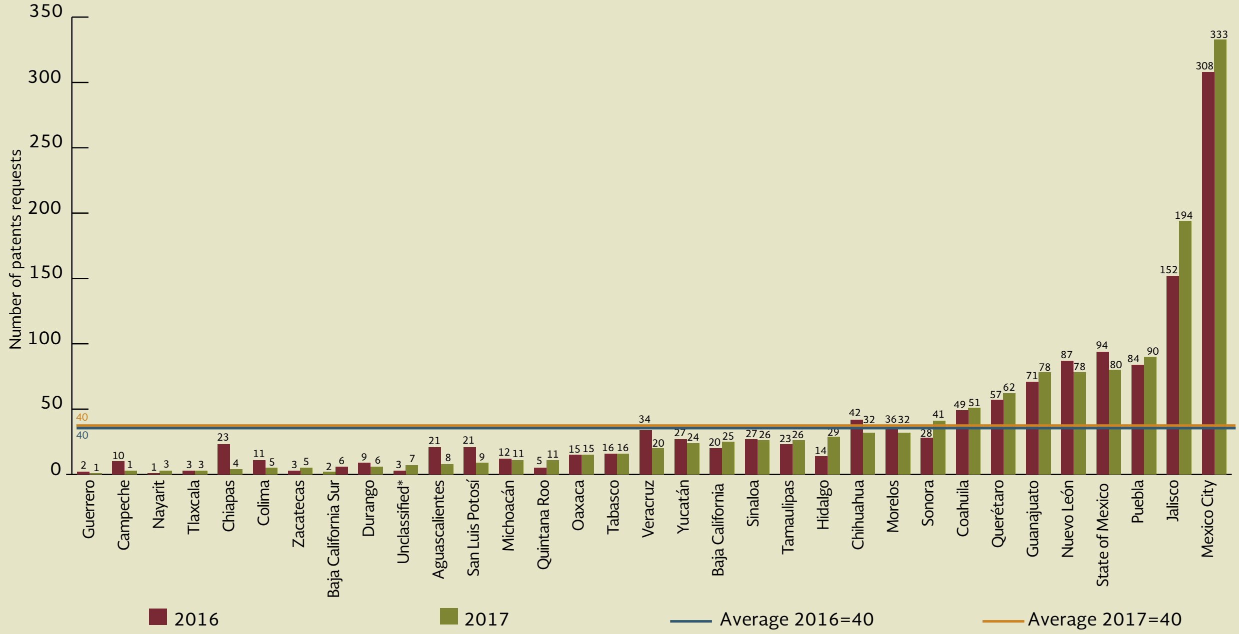
According to the growth rates, Jalisco displays the most significant one, with 27.63 per cent, followed by Mexico City with 8.12 per cent and Puebla with 7.14 per cent. On the other hand, Graph III.14 also shows that only nine states are above the average of patents requested; that in 2016 and 2017 such average was 40 applications. Such states were Mexico City, Jalisco, Puebla, The State of Mexico, Nuevo León, Guanajuato, Querétaro, Coahuila and Sonora, representing 75.49 per cent of the total patents requested in 2017.

III.2.3. PRINCIPAL PATENT OWNERS IN MEXICO

Table III.5 demonstrates the UNAM is the national holder of most of the patents granted in 2017, with 43, followed by ITESM, with 20 patents. Both institutions displayed a positive growth rate in relation to the previous year 2016, with 43 and 33 per cent, respectively. The third entity with the most patents is CINVESTAV, with 18 patents granted. These institutions, together with the Mexican Institute of Petroleum, CIATEJ, IIE, UAM and GU, are on top of the list as the principal owners to the patents granted since 2014, according to IMPI figures.[19] In that year, BUAP, UANL, and IMSS entered the list. As for Mabe Corporation (Anonymous Corporation of Variable Capital), it is part of the list since 2016, with 11 patents, and in 2017 it was the only representative of the private sector, with six. The patents granted to the main 13 national holders grouped 43 per cent of the total patents granted in 2017.

Table III.6 presents the foreign holders with the most patents, headed by Halliburton Energy Services, Inc., with 138 patents granted, surpassing The Procter & Gamble Company, a corporation that had led the list since 2015. Both companies are North American. The second position was taken up by Xiaomi Inc., Chinese company with 109 patents granted, showing an elevated growth trend with

GRAPH III.14
PATENTS REQUESTS BY STATE, 2016-2017



Source: Mexican Institute of Industrial Property (IMPI). "IMPI in figures 2017". Figures from January 1993 to December 2017.

respect to the previous year (172.5 per cent). Afterwards, with a difference of 31 patents, Nissan Motor Co., LTD, from Japan, has taken the next position. In the fourth position, with 75 patents, the Swedish company Nestlé, S.A.is followed by companies Unilever, N.V. from the Netherlands; BASF SE from Germany; Telefonaktiebolaget LM Ericsson (PBL) from Sweden; Samsung Electronics, Co., LTD from South Korea and Saint-Gobain Glass France from France. The total patents granted to these nine owners represent 7,83 per cent of the total granted to foreigners in 2017.

Table III.6 presents the foreign holders with the most patents, headed by Halliburton Energy Services, Inc., with 138 patents granted, surpassing The Procter & Gamble Company, a corporation that had led the list since 2015. Both companies are North American. The second position was taken up by Xiaomi Inc., Chinese company with 109 patents granted, showing an elevated growth trend with respect to the previous year (172.5 per cent). Afterwards, with a difference of 31 patents, Nissan Motor Co., LTD, from Japan, has taken the next position. In the fourth position, with 75 patents, the Swedish company Nestlé, S.A.is followed by companies Unilever, N.V. from the Netherlands; BASF SE from Germany; Telefonaktiebolaget LM Ericsson (PBL) from Sweden; Samsung Electronics, Co., LTD from South Korea and Saint-Gobain Glass France from France. The total patents granted to these nine owners represent 7,83 per cent of the total granted to foreigners in 2017.

III.2.4 REQUESTS AND PATENTS GRANTED BY TECHNOLOGICAL SECTOR

Considering the technological sector of the patents requests submitted by foreigners during the 2010-2016 , the areas that presented the most applications were: Pharmaceutics, Transport, Civil Engineering, Medical Technology, Basic Materials Technology, Fine Organic Chemistry, Biotechnology, Computing Technology, Manipulation Equipment and Measuring Equipment. Throughout all the years

[19] The IMPI in Figures 2014, 2015, 2016.

[20] La OMPI realiza una tabla de concordancia para el conjunto de la tecnología relacionando los códigos de la Clasificación Internacional de Patentes (CIP) con 35 campos de la tecnología. Información consultada en abril de 2018, en: http://www.wipo.int/ipstats/es/help/

[21] Durante el periodo en el que se realizó la consulta (abril-junio 2018) en la Base de datos estadísticos de la OMPI la información disponible era hasta el año 2016. https://www3.wipo.int/ipstats/index.htm?lang=es

TABLE III.5
MAIN NATIONAL PATENT OWNERS IN MEXICO, 2017

Owner	Patents granted
National Autonomous University of Mexico (UNAM)	43
Technological Institute and of Superior Studies of Monterrey (MTSHI)	20
IPN's Center of Research and Advanced Studies (CINVESTAV)	18
Eminent Autonomous University of Puebla (BUAP)	16
Autonomous University of Nuevo León (UANL)	16
National Polytechnical Institute (IPN)	13
Mexican Institute of Petroleum (IMP)	12
Center of Research on the Assistance for Technology and Design in the State of Jalisco (CIATEJ)	8
Institute of Electrical Investigations (IIE)	7
Mexican Institute of Social Security (IMSS)	6
Mabe (Variable Capital Anonymous Corporation)	6
Metropolitan Autonomous University (UAM)	5
Guanajuato University(GU)	5

Source: Mexican Institute of Industrial Property (IMPI). "IMPI in figures 2017". Figures from January 1993 to December 2017.

TABLE III.6
FOREIGN PATENT OWNERS IN MEXICO, BY COUNTRY, 2017

Owner	Country	Patents granted
Halliburton Energy Services, Inc.	USA	138
Xiaomi, Inc.	China	109
Nissan Motor Co., LTD.	Japan	78
Nestlé, (Anonymous corporation).	Switzerland	75
Unilever, N.V.	Netherlands	58
BASF SE	Germany	57
Telefonaktiebolaget LM Ericsson (PBL)	Sweden	47
Samsung Electronics Co., LTD.	South Korea	41
Saint-Gobain Glass France	France	**32**

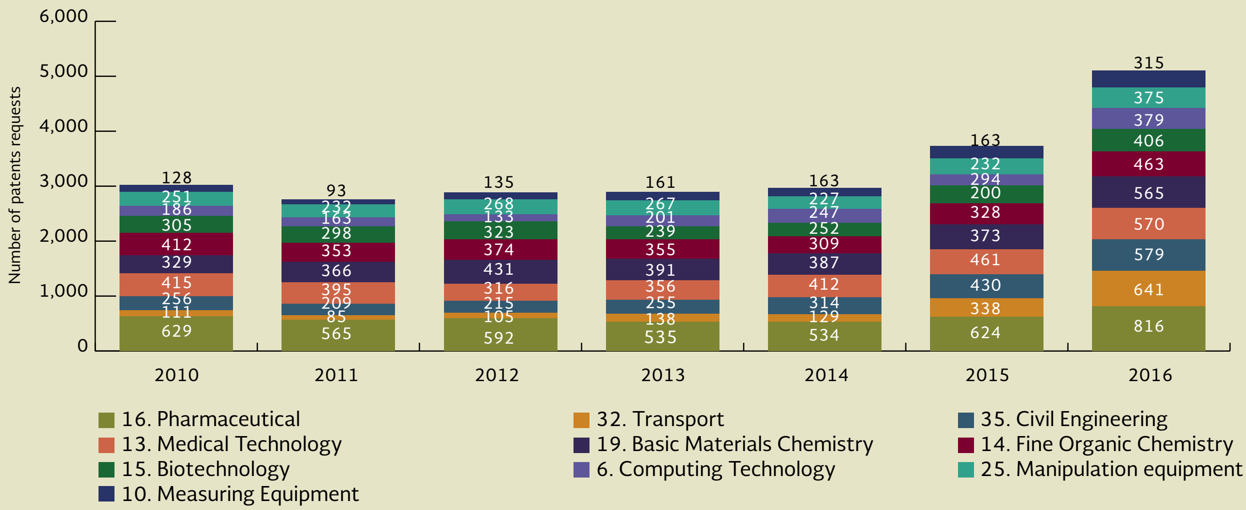
Source: Mexican Institute of Industrial Property (IMPI). "IMPI in figures 2017". Figures from January 1993 to December 2017

analyzed, the pharmaceutical sector led the list (see Graph III.15). In 2016, the sector had a growth rate of 30.77, with respect to the previous year. The United States was the origin country where the applicants apply for the most requests in all the areas mentioned.

In the case of patents requested by nationals, the same areas are highlighted, with the exception of transport, computing technology, Fine Organic Chemistry and Manipulation Equipment. Instead, Special Machines, Food Chemistry, Chemical Engineering, Materials and Metallurgy were incorporated. As in the foreign applications, pharmaceutics presented the most significant number of requests during the 2016-2016 term (see Graph III.16).

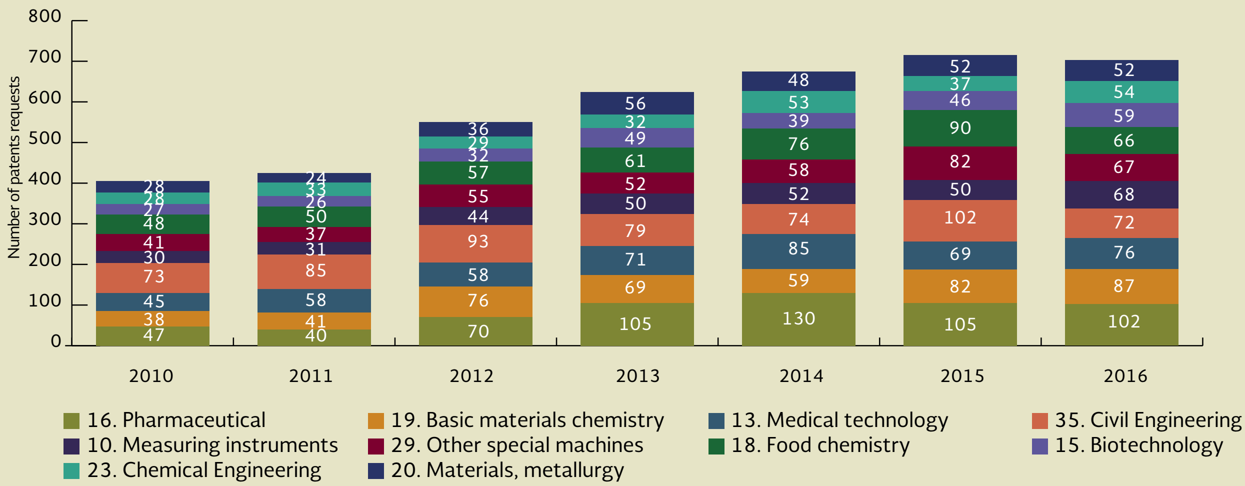
Regarding patents granted to foreigners in Mexico by technological area in 2016, pharmaceutics stands out with 4.57 per cent, with respect to

GRAPH III.15
FOREIGN PATENTS REQUESTS BY TECHNOLOGICAL AREA, 2010-2016



Source: OMPI's statistical data base. Last update: March 2018. Indicator: patents requests by technology sector, re-counting by submission office and first applicant's residence (2010-2016).

GRAPH III.16
RESIDENTS PATENTS REQUESTS BY TECHNOLOGICAL SECTOR, 2010-2016

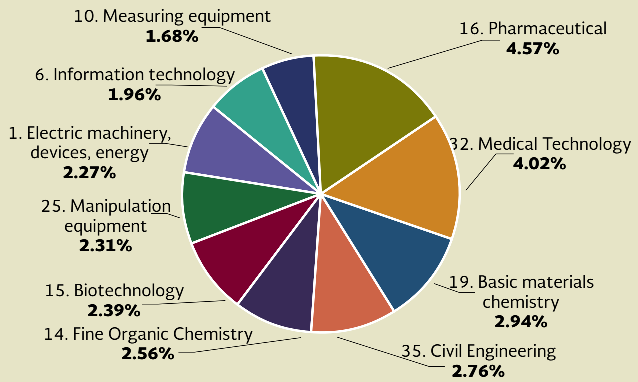


Source: OMPI's statistical data base. Last update: March 2018. Indicator: patents requests by technology sector, re-counting by submission office and first applicant's residence (2010-2016).

the total patents granted in that year (8,231). Medical technology took up the second position with 4.02 per cent; next, Basic Materials Chemistry; Civil Engineering; Fine Organic Chemistry; Biotechnology; Manipulation equipment: Electric Machinery; devices, energy, informatics technology and measuring equipment. All of them sum up 27.46 per cent of the patents granted to foreigners in 2016. (see Graph III.17).

GRAPH III.17

PERCENTAGE OF PATENTS GRANTED TO FOREIGN OWNERS IN MEXICO, BY TECHNOLOGICAL SECTOR, 2016



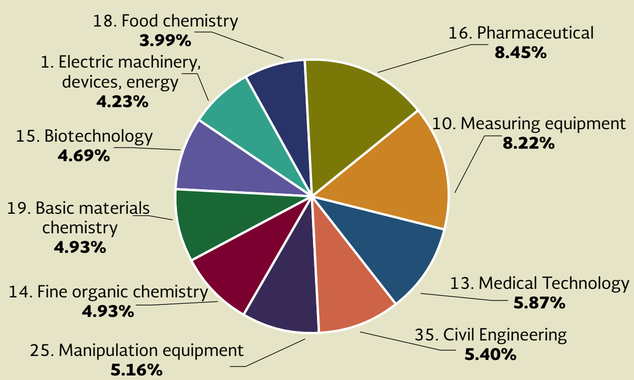
Percentage with respect to the total patents granted to foreign owners in 2016, N:8,231

Source: OMPI's statistical data base. Last update: March 2018.

Concerning the patents granted to national applicants in the same year, Graph III.18 shows it is possible to observe that Pharmaceutics is the area with the most patents granted, with 8.46 per cent, out of a total of 426. Subsequently, Measuring Equipment, Medical Technology, Civil Engineering, Manipulation Equipment, Fine Organic Chemistry, Basic Materials Chemistry, Biotechnology, Electric

GRAPH III.18

PATENTS GRANTED TO NATIONAL OWNERS, BY TECHNOLOGICAL SECTOR, 2016



Percentage with respect to the total patents granted to national owners in 2016, N:426

Source: OMPI's statistical data base. Last update: March 2018.

Machinery, Devices, Energy and Food Chemistry. Such sectors concentrate 55.87 per cent of the total patents granted in 2016 which is why it is possible to assure that there is a greater concentration of the patents granted to national applicants by technological sectors in comparison to those granted to foreigners.

III.2.5 PATENTS REQUESTED BY MEXICANS ABROAD

On the basis of information provided by data obtained from the World Intellectual Property Organization (OMPI), Graph III.19 shows the main seven industrial protection offices abroad, where the most patents by Mexican applicants were requested. During the terms analyzed (2006-2016), the United Stated is the country preferred by national applicants. In 2016, the number of patents requests in that country was 618, showing an increase of 4.22 per cent with respect to 2015, 23.46 per cent via PCT; most of the requests were submitted directly.

Some other offices where nationals are interested in protecting their inventions are in Canada, the European Union, Brazil, Japan, China and South Korea.

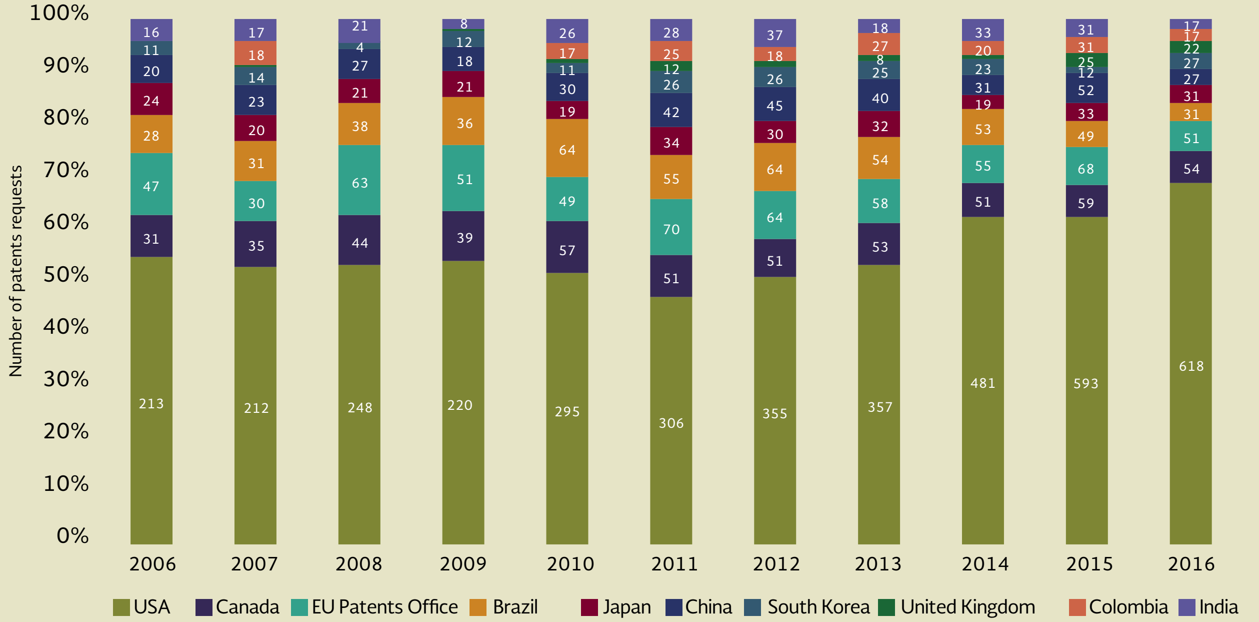
The country which displays the most significant growth rate of patent requests in 2016 was South Korea with 125 per cent, by comparison to the data reported in 2015. In contrast, China presented a decrease in the growth rate by 48.08 per cent, with respect to the number of requests in the preceding year.

III.2.6 DEPENDENCE RATIO, INVENTIVENESS COEFFICIENT AND DISSEMINATION RATE

The dependence ratio is a measure of a country's capacity to carry out its own technological development. This indicator is the coefficient of the number of patent requests applied for by foreigners divided by the number of requests submitted by nationals, in a year. The major the value obtained by the coefficient, the major the country's dependence degree. As it can be observed in Table III.7, during the 2006-2017 term, in 2012 there was a minor dependence ratio with 10.85, even if in subsequent years until 2017, there is an increase that does not go beyond 1.44, having falls of up to 13 points with respect to the 2006-2008 term.

GRAPH III.19

MAIN FOREIGN INDUSTRIAL PROPERTY AGENCIES WHERE MEXICANS REQUEST PATENTS (DIRECT SUBMISSION AND PCT)



Source: OMPI's statistical data base. Last update: March 2018.

The self-sufficiency indicator is a complimentary measure for the preceding one. It reflects the ratio between the number of patents requested by nationals and the total of patents requested in the country. In this case, the more the coefficient's result is one, it indicates the country is more self-sufficient in terms of technological development. In Table III.7 it is appreciated that during the 2011-2017 term, the self-sufficiency ratio has been constant with 0.08, twice as much as what was presented in the 2006-2008 period, and even though the number is still low, it shows a limited self-sufficiency.

Concerning the inventiveness coefficient, the indicator shows a country's population total inventiveness activity. For its calculation, the patents requests by nationals in every 10,000 inhabitants are considered. During the studied 2006-2017 term, it is observed that in 2015 there is a major inventiveness coefficient, as it is precisely in this year when there was a greater number of patent requests by domestic applicants (1,364) (see Graph III.12).

The last indicator refers to the dissemination of inventions developed by national applicants abroad. It is the result of the number of requests submitted by Mexicans abroad, divided by the number of requests by nationals submitted in the country. In Table III.7, it is appreciated that the greater dissemination rate in the examined period took place in 2015, with 0.87, as the number of patent requests by nationals in other countries (1,145) is similar to the number of requests in national territory (1,334).

TABLE III.7

DEPENDENCY AND SELF-SUFFICIENCY RATIOS, INVENTIVENESS COEFFICIENT AND DISSEMINATION RATE FOR MEXICO, 2006-2017

Year	Dependence Ratio	Self-sufficiency Ratio	Inventiveness Coefficient	Dissemination Rate
2006	26.00	0.04	0.06	0.71
2007	24.90	0.04	0.06	0.77
2008	23.21	0.04	0.07	0.67
2009	16.37	0.06	0.08	0.53
2010	14.33	0.07	0.10	0.65
2011	12.20	0.08	0.11	0.65
2012	10.85	0.08	0.13	0.74
2013	11.75	0.08	0.12	0.70
2014	11.97	0.08	0.12	0.67
2015	12.25	0.08	0.14	0.87
2016	12.29	0.08	0.13	0.81
2017	11.88	0.08	0.13	N/A

N/A.: Not available.
Dependence Ratio: Foreign Requests/National Requests
Self-sufficiency Ratio: National Requests/Total Requests.
Inventiveness Coefficient: National Requests/10,000 inhabitants
Dissemination Rate: Mexican Requests Abroad/ National Requests
Data on patents requests by Mexican residents abroad (by PCT and direct submission) Consulted on the OMPI's Statistical database. Last update: March 2018.
Sources: OMPI. IMPI. Consulted on march and April 2018.

III.3 TECHNOLOGY BALANCE OF PAYMENTS

FOCAL POINTS

- In 2017 the coverage rate was 0.56, whereas in 2016 it reached 0.53, hence indicating a major technological dependence by Mexico.
- The total amount of transactions in 2017 was 597.36 million dollars, while in 2016 the amount was 575.23 million dollars, indicating Mexico's greater commercial opening.
- Due to the increase in income, the deficit decreased with respect to 2016 and it stagnated in 170.87 million dollars.

II.3.1 BACKGROUND

Innovation has been the cornerstone of economic growth over the last few years, as it has been the basis to eradicate the negative effects of several social crises in fields such as health, food and global warming.

The OECD defines it as the implementation of a product (either good or service), or a new or significantly improved process. In that way, it can be a new commercialization or organization method for trade practices, o for the setup of a workplace or labor relations.

According to the OECD definition, there are four types of innovation: products, processes, marketing and organizational, all of them including the following external elements (Sener y Saridogan, 2011):

Products	Improvements concerning technical specifications, elements and materials, new software incorporation, greater kindness, as well as other functional features.
Processes	Related to changes in techniques, equipment and/or software.
Marketing	It comprehends improvements concerning the implementation of a new marketing process in either the design, placement, promotion or pricing of products or their packs.
Organizational	It is the implementation of new organizational methods by corporate practices, organization and external relations.

During the 1970s, with the uprising of economic growth endogenous models, it was determined that the technological change compelled by technology policies in an efficient way, such as increase in research and technological development, scientific research and development, innovation in science and technology, education, specialized human capital, information technologies, internet access, etc., can increase a country's competitiveness[22], which is why it is of utmost importance to countries the improvement in technological innovation.

When augmenting a country's innovation, its competitiveness level will benefit from costs reduction, increase in productivity and variety of products available in the global market; however, not all the countries are able to satisfy their need on the basis of their innovation level. Economic disparity is one of the main reasons why the population cannot cover their demands.

By contrast, globalization (Myro, 2003), understood as a process through which markets liberate and internationalize has led to the commercialization of technology and innovation goods among different nations, which would help less developed countries to meet their innovation demands, thus improving their populations' life quality.

In order to understand globalization, Myro encourages us to comprehend that behind this phenomenon there are two forces, a technological one and a political one. The former went through its peak as of the space career, which permitted the generation of high knowledge influx from fields such as medicine, communications and microelectronics. The global policy was the result of an agreement by different countries to open their borders as a result of their failed policies.

Therefore, knowledge generation flows are divided in two categories: one concerning the trade of technology incorporated in material goods and the other one formed by intangible goods. The flux of immaterial transactions related to technological knowledge advancements among different countries is accounted for by the Technology Balance of Payments (TBP).

[22] The World Economic Fund defines competitiveness as the group of institutions, policies and factors that determine a country's productivity.

III.3.2 THE TECHNOLOGY BALANCE OF PAYMENTS

The technology balance of payments is a subdivision of the Global Balance of Payments, whose function is to register the commercial transactions on intangible goods related to the countries' technological development. The coverage rate of these indicators varies depending on the country.

Transactions must comply with a series of conditions to be included within the TBP[23]. On the one hand, they need to be covered by agents from two different countries, apart from being commercial, as they have to reflect an income/outcome influx between the agents.

The TBP comprehends two categories of financial influx:

1. **Transactions related to intellectual property rights or trade of techniques (factors).** The income and expenditures obtained from the use and acquisition of patents, non-patented inventions, know-how revelations, trademarks, models and designs, as well as franchises.
2. **Transactions related to the rendering of services with technological content and intellectual services (Non-factorial).** Represented by the payments for technical assistance services, engineering design studies, apart from research and experimental development services in companies.

The following table explains in full detail the elements included in each one of the categories referred to:

Factors	Patent	It is an exclusive right granted on an invention, protecting the inventor so no third party uses such invention during a determined period (OMPI).
	Invention	Any human creation which allows to transform either the existing matter or energy for the satisfaction of concrete needs (Mexican Industrial Property Law).
	Know-how	It is the ability or capacity to carry out or execute "something" (Advisory, Scientific and Technological Forum).
	Intellectual property	Intellectual property rights permit people to ensure property rights in their creativity and innovation activities (Frascati Manual).
	Trademarks	Words, symbols or whatsoever references used by companies to distinguish products or services from the rest.
	Models and designs	They constitute the ornamental or aesthetic aspects of an item. They consist of three-dimensional features, such as the form or surface of an item, or two-dimensional characteristics, such as motifs, lines or colors (Frascati Manual).
Non-factorial services	Technological services	They include of factors' technology transmission, which are: technical assistance; technical studies, engineering, consulting, research and development (OMPI).

[23] In terms of the OECD Manual: Proposed standard method of compiling and interpreting Technology Balance of Payments data. TBP Manual 1990

On the basis of the information compiled by the TBP, two indicators are generated:

1. **Coverage Rate (income/outcome):** It measures the ratio of income with respect to the outcome of intangible goods in a country. It also allows to know the proportion with which a country covers its need in relation to its exports; correspondingly, it assesses the countries' technological dependence degree and it measures a country's position in terms of technology transfers.
   If the country is below the unity, it means it still depends on other nations to cover its needs in the matter. However, if it equals one, it means that it is self-sufficient and there is a trade equilibrium, as it is above the unity, indicating that it besides provides technology to other countries.

2. **Total transactions:** Defined as the sum of inputs and outputs or either imports and exports of intangible goods with technological content, measuring the level of commercial opening concerning these goods.

III.3.3 SOURCES OF INFORMATION: THE ESIDET

As of the Survey on Research and Technological Development (ESIDET)[24] made by the National Institute of Statistics and Geography (INEGI) with the support of the Conacyt, it is possible to obtain statistical data for the construction of TBP indicators.

Every two years, the survey compiles information on research activities, as well as experimental and technological development (IDT) in Mexico, related to the human and financial resources in the private, non-profit private, higher education and government sectors.

III.3.4 DESCRIPTION OF THE BTECHNOLOGY BALANCE OF PAYMENTS

III.3.4.1 GENERAL DESCRIPTION

III.3.4.1.1 TOTAL TRANSACTIONS

On the basis of the latest information, from 2012 to 2013 , it is possible to report the coverage rate, as well as the total transactions produced in Mexico during 2017.

As it can be appreciated in Graph III.20, in 2017 an income of 213.24 million dollars was reported, whereas in 2016 the profits amounted to 199.76 million dollars. On the other hand, the outputs generated a volume of 384.12 million dollars, while in the previous year the expenditures reached 375.48 million dollars. Likewise, the commercial influx generated transactions amounting 597.36 million dollars. On the basis of these figures, it can be concluded that Mexico is a country that is still promoting its commercial opening.

TABLE III.8

TECHNOLOGY BALANCE OF PAYMENTS' DEFICIT AND TOTAL TRANSACTIONS IN MEXICO, 2008-2017

Current Million USD

YEAR	Balance	Total transactions
2008	-828.90	1,022.70
2009	-1,728.20	1,916.80
2010	-568.60	744.20
2011	-676.20	869.00
2012	-476.70	636.20
2013	-324.80	722.90
2014[e/]	-265.20	653.20
2015[e/]	-134.20	518.70
2016[e/]	-175.72	575.23
2017[e/]	-170.87	597.36

III.3.4.1.2 COVERAGE RATE

The fact that Mexico is still dependent on technological and immaterial goods, is undeniable; nonetheless, what is worth-commenting on this indicator us that it its gradually strengthening (see Graph III.21), thus indicating that the country is on the right path to achieve its independence and even to become a supplier of both factorial and non-factorial goods.

III.3.5 INTERNATIONAL COMPARISON

Graph III.22 shows TBP indicators for 17 OECD countries classified in terms of their coverage rate.

In terms of the preceding data, Mexico is the country with the least valuable indicator compared to the rest of OECD countries, hence being the

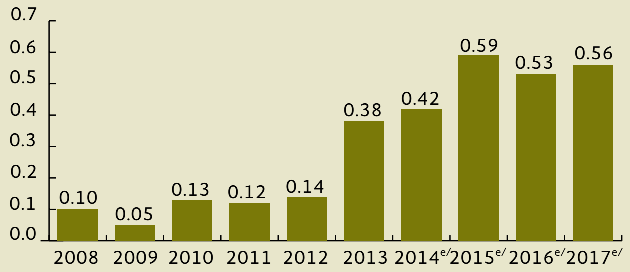
[24] Likely to be consulted in: http://www.beta.inegi.org.mx/proyectos/encestablecimientos/especiales/esidet/2014/

[25] ESIDET estimates, 2013.

GRAPH III.20
TOTAL TRANSACTIONS IN MEXICO'S TECHNOLOGY BALANCE OF PAYMENTS, 2008-2017
Current millions USD

e/: Estimates.
Sources: For Mexico, data calculated by Conacyt with information from the Survey on Research and Technological Development (ESIDET) 2010, 2012, 2014, jointly made by INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017)/ March 20, 2018.

GRAPH III.21
MEXICO'S TECHNOLOGY BALANCE OF PAYMENTS COVERAGE RATE, 2008-2017



Estimates. 1/ Coverage Rate = Income / Expenditure.
Sources: For Mexico, data calculated by Conacyt with information from the Survey on Research and Technological Development (ESIDET) 2010, 2012, 2014, jointly made by INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017)/ March 2018.

country with the greatest technological dependence, unlike Japan, with a rate of 6.55, which is self-sufficient and a significant exporter in the field. Next, there is Israel with a rate of 4.38 followed by Finland and Canada with a value of 2.15 and 2.14, respectively. As for Europe, the United Kingdom presents the highest rate, with 1.93.

As evidenced in Table III.9, Mexico is the country with the fewest transactions, with only 597.36 million dollars. By contrast, the United States, Ireland and Germany, take up the first three positions, having obtained transactions by 219.725, 171,428.45 and 125,570.76 million dollars, respectively.

Although a country's total transactions show their opening level, it is quite likely that Mexico does not obtain a greater amount of income due to the fact that its coverage rate does not make it to 1, thus reflecting its innovation deficit.

III.3.6 CONCLUSIONS

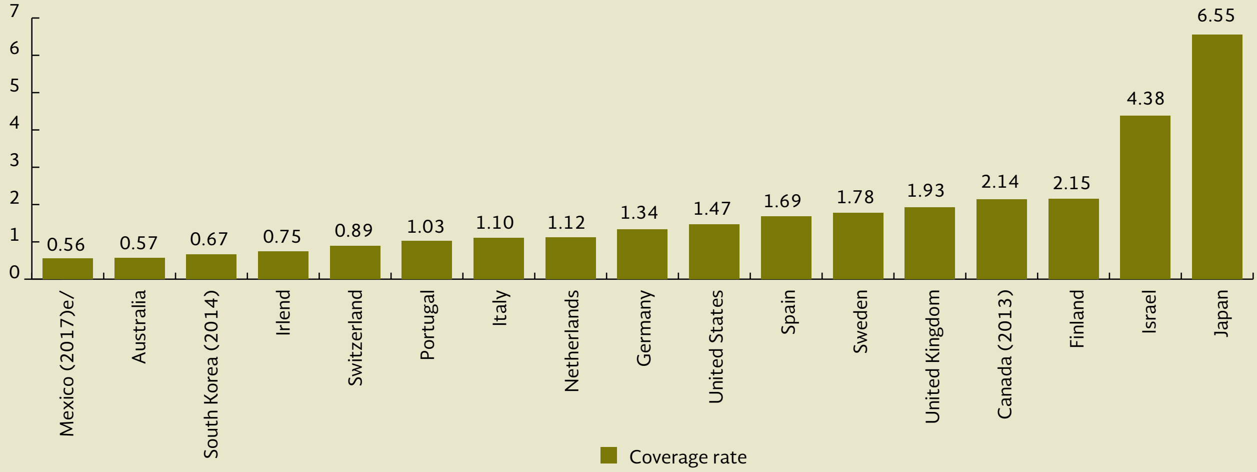
In this way, it can be verified that, over the last few years, Mexico has increased its coverage rate. Likewise, as of 2015, growth has been constant, which points to the fact that the country is generating major innovation in science and technology. Nevertheless, Mexico has not been able to cover the 1 rate, so it does not rely on other nations for this matter.

Internationally, in comparison to OECD members, Mexico has the lowest coverage rate; Japan, on the other hand, is the country with the widest coverage. Considering the income reported at 213.24 million dollars, it is likely to observe that Mexico has commercially opened to other countries, notwithstanding the expenditures in this field.

The latest data suggest that, although Mexico has increased its innovation level, it is necessary to keep strengthening the area so as to achieve a more significant economic growth based on science and technology.

GRAPH III.22

TECHNOLOGY BALANCE OF PAYMENTS IN SELECTED OECD COUNTRIES, COVERAGE RATE, 2015



1/ Coverage Rate = Income / Expenditures.

Fuentes: For Mexico, data calculated by Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010, 2012, 2014, jointly made by INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017)/20, marzo 2018.

TABLE III.9

TECHNOLOGY BALANCE OF PAYMENTS IN SELECTED OECD COUNTRIES, INTERNATIONAL COMPARISON, 2015
Current Million USDs

Country	Income	Expenditure	Balance	Total transactions	Coverage rate1/
Mexico (2017)e/	**213.24**	**384.12**	**-170.87**	**597.36**	**0.56**
Australia	4,427.95	7,799.62	-3,371.67	12,227.57	0.57
South Korea (2014)	10,407.90	15,540.00	-5,132.10	25,947.90	0.67
Ireland	73,337.04	98,091.41	-24,754.37	171,428.45	0.75
Switzerland	30,336.41	33,998.81	-3,662.40	64,335.21	0.89
Portugal	1,771.22	1,726.52	44.70	3,497.74	1.03
Italy	13,239.92	12,015.72	1,224.20	25,255.64	1.10
Netherlands	56,278.37	50,215.89	6,062.48	106,494.27	1.12
Germany	71,836.47	53,734.29	18,102.19	125,570.76	1.34
United States	130,834.00	88,891.00	41,943.00	219,725.00	1.47
Spain	17,099.76	10,097.29	7,002.46	27,197.05	1.69
Sweden	27,970.43	15,751.59	12,218.84	43,722.01	1.78
United Kingdom	41,060.55	21,280.42	19,780.14	62,340.97	1.93
Canada (2013)	2,620.91	1,227.43	1,393.48	3,848.33	2.14
Finland	10,781.44	5,022.45	5,758.99	15,803.88	2.15
Israel	15,371.54	3,512.25	11,859.29	18,883.80	4.38
Japan	32,631.38	4,978.73	27,652.65	37,610.11	6.55

e/ Estimates.

Sources: For Mexico, data calculated by Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010, 2012, 2014, jointly made by INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017)/20, marzo 2018.

III.4 FOREING TRADE OF HIGH TECHNOLOGY GOODS. MEXICO'S POSITION IN THE WORLD

FOCAL POINTS

- In 2017, Mexico became a net BAT (High Technology Goods) importing country. The value of its exports was superior to that of imports from the rest of the world, registering a deficit in the commercial balance of 4,422.83 million dollars.
- In relation to 2016, the total value of Mexico's BAT trade increased by 2.34 per cent in 2017. Likewise, the value of exports grew by 8.88 per cent whereas the imports value diminished by 3.14 per cent.
- Throughout the 2010-2017 term the total value of High Technology Goods (BAT) trade kept and annual growth rate of 3.79 per cent.
- In the same period, the exports value recorded an annual average growth of 4.82 per cent, while the imports value presented an annual average increase of 2.89 per cent.

III.4.1 PRINCIPAL INDICATORS

Innovation, but most of all, the countries' capacity to incorporate innovation into productive processes is recognized as a determining element in global competitiveness. The Organization for Economic Co-operation and Development (OECD) highlights that innovating activities are the cornerstone of the economic progress that will allow to face global challenges, accomplishing innovation through the investment in science and research.[26]

Scientific and technological activities, specially research and experimental development (R&D), are supplies to the production of goods with high technological content. Frequently, the systematic use of such activities is reflected on new products, services and/or productive processes, or the substantial improvement of the existing ones, Therefore, one way to measure the economic impact of scientific activities is through the influx of High Technology Goods foreign trade, which represents a greater aggregated value than that of the rest of goods produced by the different economies.

BAT refer to products generated by the manufacturing sector, with a high expenditure on R&D in relation to its sales. This sort of goods offers commercial profits above the average and affect the industrial structures in the countries where they are produced.

In accordance with the World Bank data, in 2016 Mexico positioned as one of the main exporters of high-technology products worldwide, taking up the 11th position in the ranking with an exports value of 46,809.60 million dollars .

One indicator of the intensity of this commercial exchange among nations is the value of **total trade**, defined as the sum of the imports and exports values .

By contrast, the r**emainder of the trade balance** is the difference between the value of exports and the value of imports. Whenever the value of exports is above the value of imports, it is said there is a surfeit or commercial surplus, whereas a trade deficit takes places whenever the value of exports is below the value of imports.

The **coverage rate** is defined as the quotient of the exports value with respect to the value of imports, and is presented as an approach to any country's dependence degree on certain goods or products. Such indicator may be interpreted as the proportion of the BAT imports value likely to be financed through the value of exports.

The coverage rate will always display negative values. Whenever the quotient value equals one, it implies that there is trade equilibrium. When the quotient surpasses one, it indicates that the country is a net BAT exporter, meaning the value of its exports covers the value of its imports. On the contrary, when the indicator is below one, there is commercial dependence (being wider as it reaches zero), where the value of exports is exceeded by the income from

[26] Machinea, José Luis y Cecilia Vera (2005). "Trade, Direct Investment and Production Policies", Paper prepared for the Seminar on a New Economic Development Agenda for Latin America (Salamanca, Spain, 7 and 8 October 2005), CEPAL-IADB; OECD (2007), "Innovation and Growth: Rationale for an Innovation Strategy", OECD Publishing. [Available at: http://www.oecd.org/sti/inno/39374789.pdf].

[27] OECD (2016), Main Science and Technology Indicators Volume 2015 Issue 2, OECD Publishing http://dx.doi.org/10.1787/msti-v2015-2-en

[28] High technology products exports (USD$ current prices), available at http://datos.bancomundial.org/indicador/TX.VAL.TECH.CD?view=map (Consultation date: May 7th 2018). The first ten positions are distributed as follows: China, Germany, the United States, Singapore, South Korea, France, Japan, the United Kingdom, Malaysia and Switzerland.

[29] In this chapter, the value of both exports and imports refers to total values, i.e. the sum of values of both temporary and definite exports and imports.

imports, which is the reason why the difference is to be financed with funds from other sources.

III.4.2 HIGH-TECHNOLOGY GOODS

III.4.2.1 BAT: CLASSIFICATION BY PRODUCT[30]

The Organization for Economic Cooperation and Development's Secretariat's (OECD) first attempts with respect to the concept "high technology", mainly in trade, were based on the classification used by the United States, whose application extended to country members. Although such classification was useful for international comparisons, it overlapped that country's industrial structure to all OECD members. In 1984, the Secretariat defines a new classification on the basis of research and development (expenditure on research and development of final products) by sector and countries, which eventually led to a classification in three categories of industry-high, medium and low technology-which was adopted by OECD country members.

Given the former classification's limitation when disaggregating the information by sectors, the Secretariat made two new lists, thus creating two complementary visions: i) Approach by sector, referred to manufacturing industries and ii) Approach by product, for manufactures.

The complementary nature of both approaches leads to the building of a more proper tool for the analysis of international trade, as it permits to calculate the real proportion of high technology in a determined sector, as it excludes the goods that are not high-technology, even if these are made by high-technology industries.

As a result of the aforementioned efforts, in 1994 the Secretariat issued a list of BAT that proposes nine categories: Aeronautics, Armament, Computers-Office Machines; Electronics-Telecommunications, Scientific instruments, Pharmaceutics, Electric Machinery, Non-electric machinery and Chemicals.

Such division is based on the Standard International Trade Classification (SITC) to five digits, though as of such year, the SITC classification was substituted by the six-digit classification of the Harmonized System (HS).

The HS system is an international nomenclature for products developed by the World Customs Organization (WCO), which allows country members to classify commercialized goods on a common basis. The system is used by more than 200 countries and economics as the starting point of their customs tariffs and for the compilation of foreign trade statistics, as almost the total merchandise (98 per cent) in international trade is classified in terms of the HS.

The information expounded in the present section is made with foreign trade data provided by the Ministry of Economy (SE), in the way official foreign trade figures are presented in the tariff of the General Imports and Exports Taxes Law (GIETL). The purpose of the GIETL (which is based on the HS) is to achieve the application of uniform criteria in the classification of international trade merchandise in accordance with its nature, manufacturing degree and, in certain cases, the sector they are addressed at.

III.4.3 FOREIGN TRADE OF HIGH TECHNOLOGY GOODS

In 2017, the total trade value of BAT amounted to 149,370.28 million dollars , out of which 72,473 million belonged to exports and 76,896.56 million to imports. The remainder of the trade balance was negative by 4,422.83 million dollars, thus displaying a coverage rate below one, 0.94.

The total trade value of BAT in Mexico during 2017 was 2.34 per cent superior with respect to the one recorded in 2016. There was a decrease in the value of imports by 3.14 per cent and an increase in the value of exports by 8.88 per cent. Despite the coverage rate increased from 2016 to 2017, it stagnated below one, implying that the value of BAT exports in Mexico was surpassed by the importing of such goods.

[30] Hatzichronoglou, T. (1997), "Revision of the High-Technology Sector and Product Classification", OECD Science, Technology and Industry Working Papers, 1997/02, OECD Publishing Paris.

[31] Founded in 1961, the Organization for Economic Cooperation and Development (OECD) gathers 34 country members and its vision is to promote policies that improve the social and economic well-being of people around the world. The representatives of country members reunite in specialized committees to debate ideas and examine the progress achieved in specific areas of public policy, such as economy, trade, science, employment, education or financial markets. The exchanges among OECD members are based on the information and the analysis provided by the Secretariat in Paris, which also works to support the committees' activities: it compiles data, observes trends, analyzes and forecasts economic progress.

BAT Foreign Trade, 2010-2017

With respect to the historical behavior of BAT commercial exchange, it was found out that during the 2010-2017 term the total trade value presented an average growth rate of 3.79 per cent. The annual median growth rate of exports was 4.82 per cent, whereas the value of imports augmented to an annual average rate of 2.89 per cent. It must be mentioned that the value of BAT exports had gradually increased, though in 2015 it shows a minor contraction, and in 2016 the trend reverses so as to appreciate a recovery up to 2017. By contrast, the value of imports reported growth rates from 2010 to 2015, with the exception of 2016 and 2017, when there was decrease (GRAPH III.23).

III.4.3.1 BAT COVERAGE RATE

As it has been mentioned, the BAT coverage rate is an approach to the remainder of the trade balance and it functions as an indicator of the trade dependence degree. During the 2010-2017 term, coverage rates below one were detected, reflecting Mexico's commercial deficit of BAT, since the resources it receives for the value of its exports are not enough to cover the amount of its imports. Even if there are not clear either increasing or decreasing trends on the coverage rate behavior, it almost reached one in 2017, being the highest registered during the period analyzed (GRAPH III.24).

III.4.3.2 PARTICIPATION OF HGT IN MANUFACTURING TRADE

The BAT participation with respect to the total trade of manufactures was 20.48 per cent. Although in 2010 it is observed that this contribution has been decreasing, as of 2015 there is a slight recovery; however, it went down again in 2017. In that year, the participation of BAT exports in relation to the total value of manufacturing exports was 19.88 per cent and the value of BAT imports was 21.08 per cent (TABLE III.10).

III.4.4 BAT TRADE. GROUPS OF GOODS. PRODUCT APPROACH

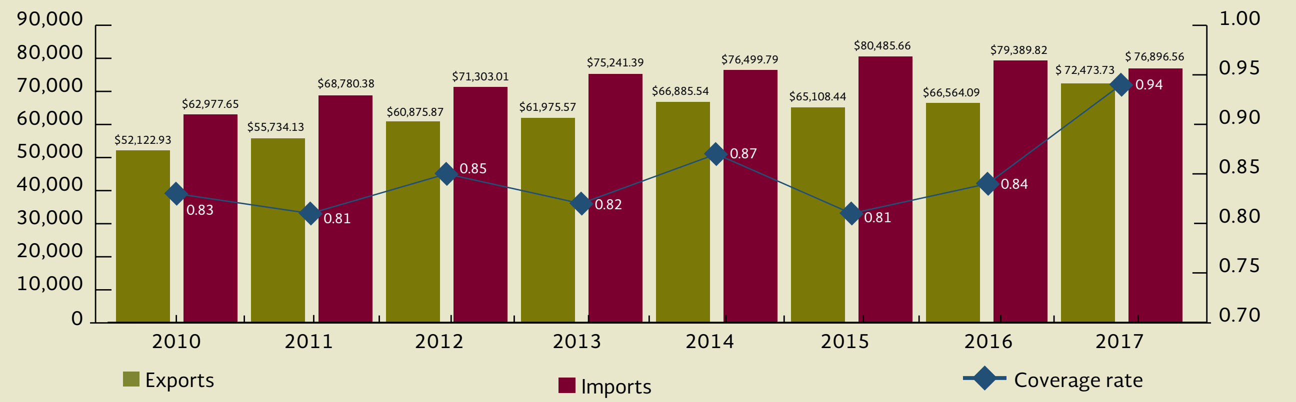
As it has been previously mentioned, the BAT classification under OECD's product approach groups nine goods under the following categories: Aeronautics, Armament, Computers-Office machines, Electronics-Telecommunications, Pharmaceutics, Scientific Instruments, Electric machinery, Non-electric machinery and Chemicals.

In 2017, 89 per cent of BAT was concentrated into four categories: Electronics-Telecommunications (45.80 per cent); Computers-Office Machines (27.71 per cent); Scientific Instruments (9.52 per cent) and Electric Machinery (5.97 per cent). The 11 per cent of BAT left was laid out among the other five categories, which are presented in this section under the title "Other BAT" (GRAPH III.25).

GRAPH III.23

FOREIGN TRADE OF BAT, 2010-2017

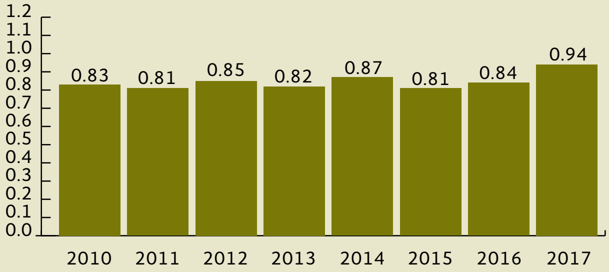
Million USD, Coverage Rate



Source: Own making with information from the Ministry of Economy, 2017.

[32] En este apartado las unidades monetarias están expresadas en dólares americanos corrientes.

GRAPH III.24
BAT COVERAGE RATE, 2010-2017



Source: Own making with information from the Ministry of Economy, 2017.

In contrast to 2016, it is observed that during 2017 the participation decreased for four BAT categories: Electronics-Communications, Scientific instruments, Pharmaceutics and Chemicals. Correspondingly, it also increased in four BAT categories: Computers-Office machines, Electric machinery, Aeronautics and Non-electric machinery. The contribution of Armament did not undergo changes in 2017. It must be highlighted that Electronics-Telecommunications represented almost half of BAT (GRAPH III.26).

Coverage Rate. Product Approach, 2017

In respect of the coverage rates by category in terms of the Product Approach, it is observed that during 2017 there were two categories in which Mexico presented a positive commercial balance, those in which the value of exports was above the value of imports and therefore presented coverage rates superior to one: Computers-Office Machines and Aeronautics. For the seven categories left, Mexico presented a deficit in the trade balance, implying that the value of its exports was not enough to cover the value of imports and thus showed coverage rate below one: Armament, Chemicals, Scientific Instruments, Electronics-Telecommunications, Electric Machinery, Pharmaceutics and Non-Electric Machinery. From 2016 to 2017, the only category which went from

TABLE III.10
FOREIGN TRADE OF BAT AND MANUFACTURES,2010-2017
Million dollars, Percentage

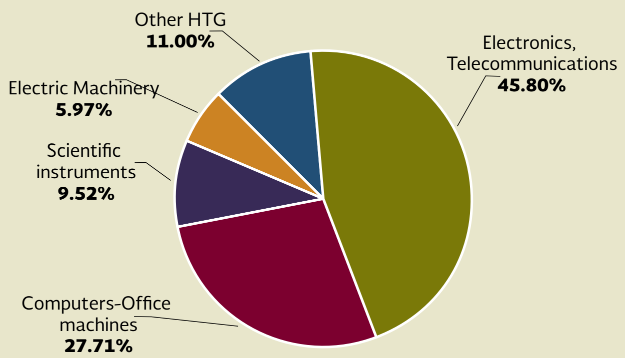
	2010	2011	2012	2013	2014	2015	2016	2017 r/
Trade								
Manufactures	505,967.20	571,963.74	616,762.22	641,192.62	682,128.11	689,621.35	679,004.88	729,248.47
BAT	115,100.58	124,514.52	132,178.88	137,216.97	143,385.33	145,589.60	145,953.91	149,370.29
BAT Share	**22.75**	**21.77**	**21.43**	**21.40**	**21.02**	**21.11**	**21.50**	**20.48**
Exports								
Manufactures	245,745.43	278,617.13	301,993.64	314,573.45	337,297.01	339,974.89	336,075.77	364,485.15
BAT	52,122.93	55,734.13	60,875.87	61,975.57	66,885.54	65,108.40	66,564.09	72,473.73
BAT Share	**21.21**	**20.00**	**20.16**	**19.70**	**19.83**	**19.15**	**19.81**	**19.88**
Imports								
Manufactures	260,221.77	293,346.62	314,768.58	326,619.17	344,831.10	349,646.45	342,929.11	364,763.32
BAT	62,977.65	68,780.38	71,303.01	75,241.39	76,499.79	80,485.00	79,389.82	76,896.56
BAT Share	**24.20**	**23.45**	**22.65**	**23.04**	**22.18**	**23.02**	**23.15**	**21.08**

r/ Figures verified for manufactures in 2017.
Toll-charge manufactures: On November 1st, 2006, The Decree for the Promotion of the Manufacturing and Maquiladora Industries and Export Services (MMIEX) was published. The order integrated in a single body all the programs operated by PITEX, hitherto dedicated to the Promotion and Operation of Temporary Exports and Imports Maquiladora Industries to Produce Export Items. As a result, the statistics on foreign trade no longer distinguishes maquiladora companies from the rest of the export firms of manufactured products. Therefore, manufacturing exports is disseminated in one single branch. The sum of partial figures may not match the total amount due to rounding.
Sources: Own making with information from the Ministry of Economy 2017 and INEGI, Economic Information Bank (External sector) >Manufacturing industry commercial balance > Exports >Total manufacturing (maquila) exports and imports. Consulted on May 2nd, 2018.

GRAPH III.25

PARTICIPATION OF BAT TOTAL TRADE, BY PRODUCT, 2017

Percentage



Source: Own modelling with information from the Ministry of Economy, 2017.

having a positive balance in 2016 to presenting a negative one in 2017 was Armament, with coverage rates of 1.59 and 0.98, respectively (GRAPH III.27).

Description by BAT Category. Product Approach, 2017

Information for each one of the four groups of goods with greater participation in BAT trade during 2017 is presented (Electronics-Telecommunications; Computers-Office Machines, Scientific Instruments and Electric Machinery), as well as "Other BAT".

III.4.4.1 ELECTRONICS-TELECOMMUNICATIONS

Electronics-Telecommunications was the category with the most participation in the value of BAT trade in 2017, representing an amount of 68,406.02 million dollars, out of which 31,346.92 million corresponded to exports and 37,059.10 million to imports. There was then a negative remainder of 5,712.17 million dollars and a coverage rate of 0.85.

In comparison to 2016 the value of exports in this group of goods augmented 8,76 per cent, whereas imports diminished to a 4.39 per cent rate. In this way the total trade amount presented a decrease of 1.22 per cent.

With regards of the trends appreciated during the 2010-2017 term, the value of exports reported an annual median growth rate of 2.71 per cent, while the value of imports was 2.66 per cent. The total trade value grew at a median rate of 2.69 per cent (GRAPH III.28).

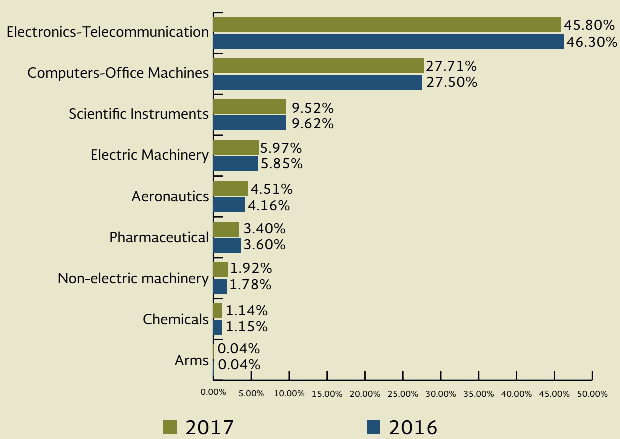
III.4.4.2 COMPUTERS-OFFICE MACHINES

In 2017, the second category with a significant participation in the total BAT trade value was Computers-Office Machines (27.71 per cent), whose total trade amount reached 41,384.39 million dollars. From this quantity, 24,978.93 million dollars corresponded to exports and 16,405.47 million dollars to imports. In this way, the remainder

GRAPH III.26

PARTICIPATION OF BAT TOTAL TRADE, BY PRODUCT, 2016-2017

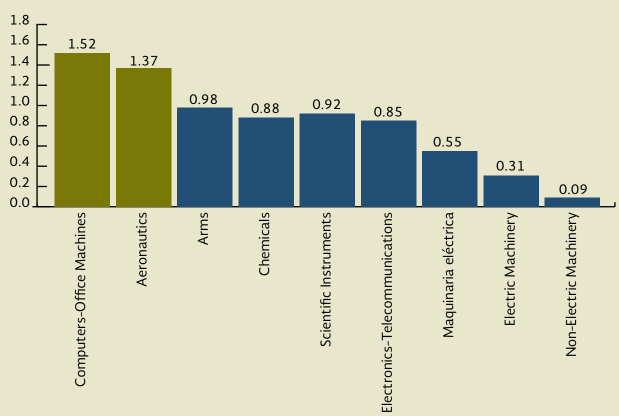
Percentage



Source: Own making with information from the Ministry of Economy, 2016 and 2017.

GRAPH III.27

COVERAGE RATE BY BAT CATEGORY. PRODUCT, 2017



Source: Own making with information from the Ministry of Economy, 2016 and 2017.

of the trade balance was positive by 8,573.46 million dollars, having reported a coverage rate of 1.52 per cent.

In comparison to 2016, in 2017 the total trade value increased by 3.11 per cent, as a result of an increase in the value of exports by 10.65 per cent and a decrease in the value of imports by 6.57 per cent.

The behavior of goods within this category during the 2010-2017 term presents some particularities. Throughout this term, the coverage rate is placed above one, reflecting positive remainders in the balance. Particularly, in 2010 the value of exports triples the total imports and in 2011 this gap quadruples. The total trade value presented an annual average growth of 1.11 per cent, noting that the total imports grew at an annual rate of 20.71 per cent, whereas the amount of exports did so at an annual rate of 7.10 per cent (GRAPH III.29).

III.4.4.3 SCIENTIFIC INSTRUMENTS

The goods in the Scientific Instrument group contributed to 9.52 per cent of the total BAT trade value, amounting to 14,219.86 million dollars. The total exports reached 6,809.97 million dollars, whereas imports amounted 7,409.90 million dollars. As a consequence, the remainder of the trade balance was negative by 599.93 million dollars, having reported a coverage rate of 0.92.

When comparing 2017 with respect to 2016, the total value trade in this group of goods increased by 1.27 per cent. The value of exports augmented 12.84 per cent with respect to the previous year, while imports decreased by 7.45 per cent.

During the 2010-2017 period, the annual median growth rate of these goods' total trade value was 5.99 per cent. The annual average growth rate of the exports costs was 6.60 per cent, superior to the increase in the value of imports by 3.17 per cent. Throughout the term, the value of exports constantly increased, whereas imports kept constant from 2010 to 2015, presenting a slight fall in 2016, which went on during 2017 (GRAPH III.30).

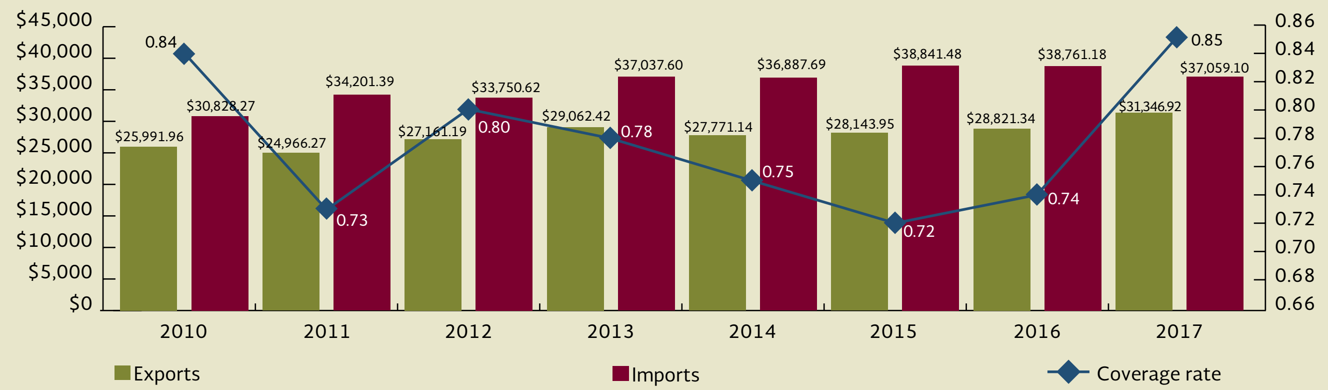
III.4.4.4 ELECTRIC MACHINERY

During 2017, the total trade of this type of goods reported a value of 8,914.16 million dollars, out of which 3,169.57 million corresponded to the value of exports and 5,744.59 million to imports, which is why there was a negative remainder of the trade balance by 2,575 million dollars, with a coverage rate of 0.55.

In comparison to 2016, in 2017 the value of exports recorded a decrease of 2.76 per cent, while the value of imports experienced an increase of 8.81 per cent, thus leading to an increase in the total trade value by 4.39 per cent.

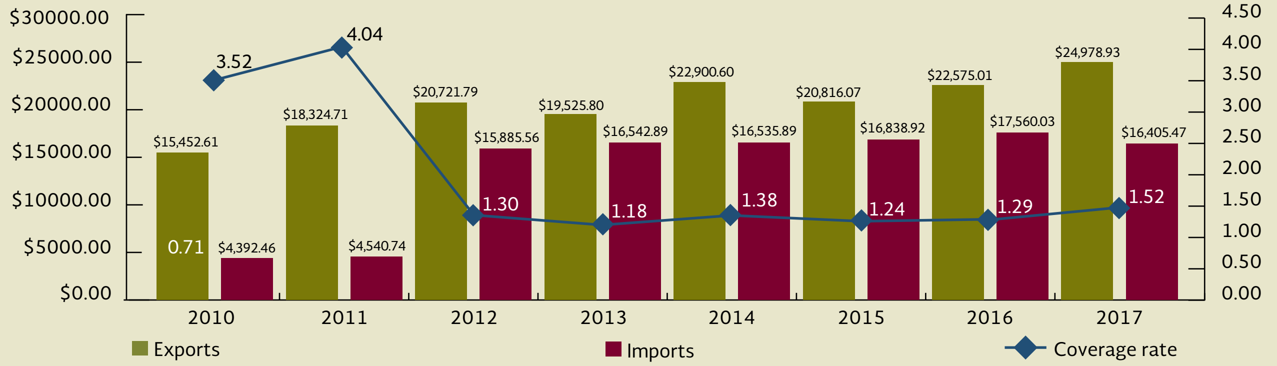
Throughout the 2010-2017 term, the value of exports rose to an annual median rate of 3.03 per cent, whereas the value of imports grew at a rate of 5.59 per cent annually, hence reporting an annual median growth rate of 4.62 per cent for the total trade value for this group of goods. It is

GRAPH III.28
ELECTRONICS-TELECOMMUNICATIONS TRADE, 2010-2017
Million dollars/Coverage rate



Source: Own making with information from the Ministry of Economy, 2017.

GRAPH III.29
TRADE OF COMPUTERS-OFFICE MACHINES, 2010-2017
Million dollars/Coverage Rate



Source: Own making with information from the Ministry of Economy, 2017.

also observed that the value of exports increased constantly from 2010 to 2015, only to fall in 2016, a trend also appreciated in 2017. With respect to the value of imports, it shows an upward trend from 2010 to 2015 and registers a slight decreased in 2016, recovering increase in 2017 (GRAPH III.31).

III.4.4.5 OTHER BAT

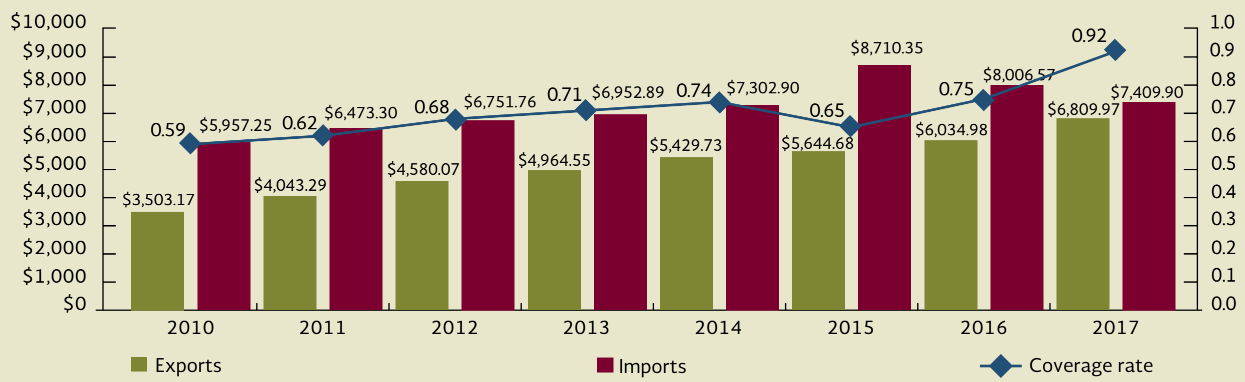
The five categories grouped under "Other BAT" represent 11 per cent of the total BAT foreign trade value, amounting to 16,445.84 million dollars. The total exports value was 6,168 million dollars, whereas imports reached 10,277.50 million dollars, thus registering a negative remainder in the trade balance of these goods by 4,109.15 million dollars and therefore a coverage rate below one, with 0.60.

Among the categories grouped, only Aeronautics presented a surplus in the trade balance. The four categories left-Armament, Pharmaceutics, Non-Electric Machinery and Chemicals- displayed a deficit in the trade balance.

In contrast to 2016, during 2017 the value of exports of this group of goods increased by 5.03 per cent and imports grew by 5.06 per cent. As a result, the total trade volume expanded by 5.05 per cent.

During the 2010-2017, term the annual median growth rate of exports was 4.27 per cent, and the

GRAPH III.30
TRADE OF SCIENTIFIC INSTRUMENTS, 2010-2017
Million dollars/coverage rate



Source: Own making with information from the Ministry of Economy, 2017.

value of imports decreased to an annual average rate of 7.60 per cent. The total trade value also presented a negative median growth rate during the period, with 4.36 per cent. The value of exports has been surpassed by imports throughout the whole term, reflecting such situation in a coverage rate below one; nonetheless, none of the two concepts shows neither a growth nor a decrease pattern constant or predictable. (GRAPH III.32).

III.4.5 BAT TRADE WITH SELECTED REGIONS

III.4.5.1 BAT TRADE WITH STRATEGIC COUNTRIES

As part of the Special Program of Science, Technology and Innovation 2014-2018 (PECiTI), 15 countries presenting cooperation opportunities for Mexico in STI have been identified and considered Strategic Countries: Germany, Argentina, Brazil, Canada, Chile, China, Colombia, South Korea, Spain, the United States, France, India, Israel, Japan and the United Kingdom. The selection criteria for these countries respond not only to research quality (publications and patents) but also to strategic questions in geographical and economic terms.

In 2017, the BAT foreign trade value with this group of countries amounted to 126,435 million dollars. Altogether, the remainder of the balance trade was rather positive, as the value of exports exceeds the value of imports by 8,704 million dollars, the total exports value was 67,569.67 million dollars, whereas imports reached 58,865 million dollars, showing a coverage rate of 1.15 (GRAPH III.33).

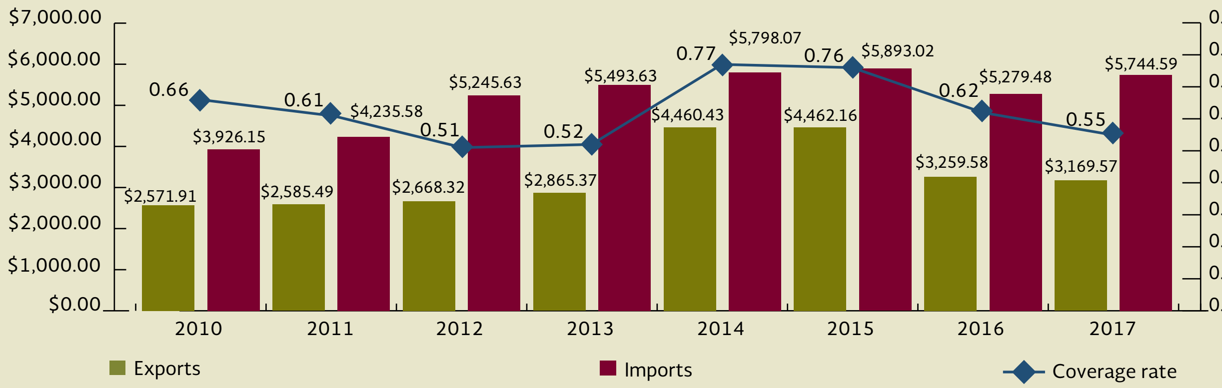
In 2017, 89.43 per cent of Mexico's exports value had the United States as a final destination. This country, together with Canada, Germany and China, represented 94.53 per cent of Mexico's total exports with the 15 strategic countries. On the other hand, 75.53 per cent of the imports value came from China (51.40 per cent) and the United States (24.13 per cent). Among the nations that comprise the group of strategic countries, the United States and China represented 84.94 per cent of the total BAT trade.

Likewise, Mexico presented a positive remainder in the trade balance with 8 of the 15 strategic countries and with the other 7, there was commercial deficit. With the United States, our country had the most significant positive balance, whereas the greatest trade deficit took place with China. However, the highest coverage rate came up with Chile, where Mexico's exports value exceeded the total imports from that country, by 15 times (TABLE III.11).

BAT Trade with Strategic Countries by Categories, 2017

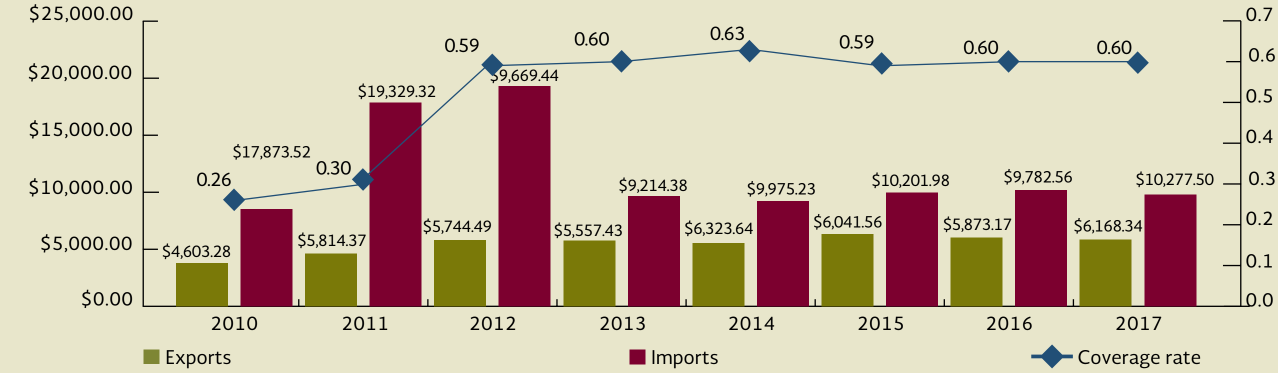
By BAT category, Electronics-Telecommunications and Computers-Office Machines jointly represented 78.05 per cent of the exports value (42.69

GRAPH III.31
TRADE OF ELECTRIC MACHINERY, 2010-2017
Million dollars/Coverage Rate



Source: Own making with information from the Ministry of Economy, 2017.

GRAPH III.32
TRADE OF OTHER HIGH-TECHNOLOGY GOODS, 2010-2017
Million dollars/Coverage Rate



Source: Own making with information from the Ministry of Economy, 2017.

per cent and 35.57 per cent, respectively). In relation to the amount of exports, these two sectors, together with Scientific Instruments, represented 77.12 per cent of the total value (Electronics-Telecommunications, 44.92 per cent; Computers-Office Machines, 21.72 per cent, and Scientific Instruments, 10.48 per cent).

Aeronautics: this sector presented a positive remainder in the trade balance with strategic countries by 1,127.50 million dollars; 81.62 per cent of Mexico's exports value had the United States as destination, and 80.35 per cent of the imports came from that country.

Armament: It demonstrated a positive remainder in the balance of payments with strategic countries by 2.79 million dollars; practically, Mexico's total exports amount was sent to the United States (99.70 per cent), and 59.75 per cent of the total imports came from there.

Computers-Office Machines: The sector recorded a positive remainder in the balance of payments with strategic countries by 11,112.77 million dollars; 93.09 per cent of Mexico's exports value had the United States as destination; however, 78.18 per cent of the imports value came from China.

Electronics-Telecommunications: The sector recorded a positive remainder in the balance of payments with strategic countries by 11,112.77 million dollars; 93.09 per cent of Mexico's exports value had the United States as destination; however, 78.18 per cent of the imports value came from China.

Pharmaceutics: The field manifested a negative remainder in the balance of payments with strategic countries by 2,028.69 million dollars; 49.37 per cent of Mexico's total exports was sent to the United States; nonetheless, 66.13 per cent of the imports value came from the United States, Germany and France.

Scientific Instruments: the sector presented a positive difference in the balance of payments with strategic countries by barely 376.92 million dollars; 93.11 per cent of Mexico's exports value had the United States as a destination, and 67.78 per cent of the imports came from China (34.15 per cent) and the United States (33.63 per cent).

Electric Machinery: The sector presented a negative difference in the balance of payments with stra-

GRAPH III.33
TRADE OF BAT WITH STRATEGIC COUNTRIES, 2017
Million dollars

Source: Own making with information from the Ministry of Economy, 2017.

TABLE III.11

TRADE OF BAT WITH STRATEGIC COUNTRIES, 2017

Million dollars/Coverage rate

Country	Exports	Imports	Total trade	Balance	Coverage rate
United States	60,428.29	14,206.15	74,634.44	46,222.14	4.25
Canada	1,134.04	820.63	1,954.67	313.41	1.38
Colombia	282.93	48.63	331.56	234.30	5.82
Brazil	470.17	281.64	751.81	188.53	1.67
Chile	119.32	7.61	126.93	111.72	15.69
Argentina	114.28	51.01	165.29	63.27	2.24
United Kingdom	400.74	365.90	766.64	34.84	1.10
India	362.94	335.00	697.94	27.95	1.08
France	980.03	1,014.71	1,994.74	-34.68	0.97
Israel	71.49	239.22	310.71	-167.72	0.30
Spain	83.49	556.13	639.63	-472.64	0.15
Germany	1,068.00	2,828.29	3,896.29	-1,760.30	0.38
Japa	657.02	3,429.84	4,086.85	-2,772.82	0.19
South Korea	156.45	4,425.74	4,582.19	-4,269.29	0.04
China	1,240.47	30,254.84	31,495.31	-29,014.37	0.04
Total Strategic Countries	**67,569.67**	**58,865.32**	**126,435.00**	**8,704.35**	**1.15**

Source: Own making with information from the Ministry of Economy, 2017.

tegic countries by just 1,999.21 million dollars; 94.68 per cent of Mexico's exports value ended up in the United States, though 58.93 per cent of the total imports came from the United States (37.23 per cent) and China (21.70 per cent).

Non-electric Machinery: The field displayed a negative difference in the balance of payments with strategic countries by barely 2,074.12 million dollars; 87.01 per cent of Mexico's exports was sent to the United States, whereas 73.55 per cent of the imports value came from the United States (35.97 per cent), Germany (19.08 per cent) and Japan (18.49 per cent).

Chemicals: The sector presented a negative difference in the balance of payments with strategic countries of 214.15 million dollars; 71.14 per cent of Mexico's exports was sent to the United States; nevertheless, 61.93 per cent of the total imports came from the United States (39.60 per cent) and China (22.33 per cent).

BAT Trade with Strategic countries, 2010-2017

Concerning the BAT evolution in the group of strategic countries during 2010-2017, the exports value showed an annual median growth rate of 5.01 per cent, while the value of imports recorded an annual median growth rate of 5.43 per cent. The median growth rate of the total trade value was 5.20 per cent.

It is to be emphasized that the whole term provides evidence of a positive remainder in the trade balance, hence having a coverage rate always above one. In general, both exports and imports show increasing trends throughout the period, with the exception of a slight fall in 2015 for the former and in 2016 for the latter, though they recovered next year (GRAPH III.34).

III.4.5.2 BAT TRADE WITH OECD COUNTRIES

In 2017, Mexico's total BAT trade value with the group of OECD members was 98,161.28 million dollars. The total value of exports doubles that of imports: 67,203.95 and 30,957.34 million dollars, respectively. Consequently, there was a positive difference in the trade balance by 36,246 million dollars and a coverage rate of 2.17, being superior to 1 (GRAPH III.35).

During 2017, Mexico registered positive differences in its trade balance with 10 out of the 34 OECD members. The total trade value with the United States represented 76.03 per cent of the total BAT trade value with these countries. In order of importance, the trade with such country is followed by the commercial relations with South Korea, whose participation was 4.67 per cent; Japan, with 4.16 and Germany with 3.97 per cent.

With respect to the cost of exports produced in Mexico, 89.92 per cent of such cost came from the trade with the United States. On the contrary, 71.26 per cent of the imports value came from the three following countries: 45.89 per cent, the United States; 14.30 per cent, South Korea and 11.08 per cent, Japan. It must be noted that 10 of the OECD members are also Strategic Countries to Mexico (TABLE III.12).

BAT Trade with Strategic Countries by Category, 2017

On the basis of BAT categories, Electronics-Telecommunications and Computers-Office Machines together represented 77.99 per cent of the exports value (41.98 per cent and 36.01 per cent, respectively). Regarding the value of imports, four countries constituted 72.14 per cent of the total: Electronics-Telecommunications, 33.79 per cent; Scientific Instruments, 14.13 per cent; Electric Machinery, 14.09 per cent and Pharmaceutics, 10.13 per cent.

Aeronautics: the sector presented a positive difference in the balance of payments with Strategic Countries by 3,765.02 million dollars; 79.51 per cent of Mexico's exports value had the United States as a destination; likewise, 74.16 per cent of the imports value came from that country.

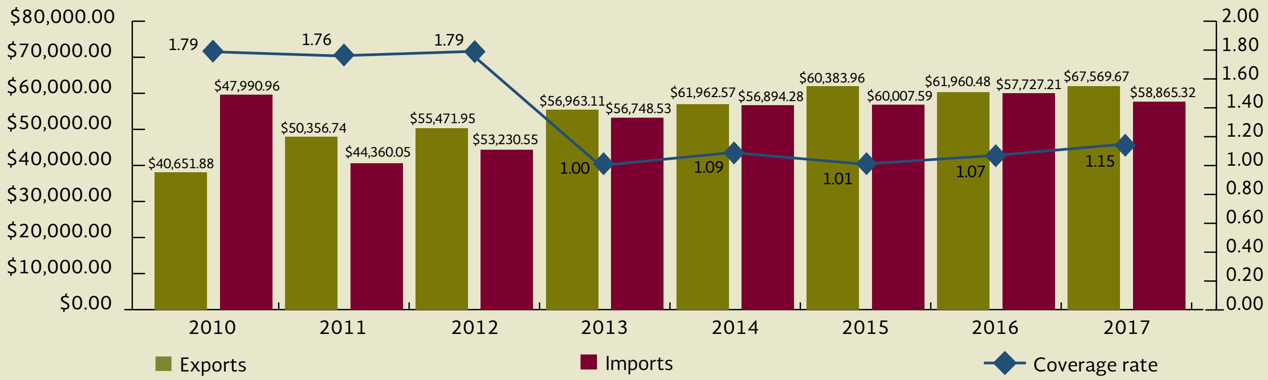
Armament: the sector registered a negative remainder in the balance of payments with Strategic countries by 2,868.65 million dollars; practically, the total value of Mexico's exports ended up in the United States (99.80 per cent), and 50.10 per cent of the total imports came from such nation.

Computers-Office Machines: the sector displayed a positive remainder in the balance of payments with Strategic countries by 13,740.01 million dollars; 91.93 per cent of Mexico's the exports value was from the United States, but 79.05 per cent of imports value came from the United States (49.93 per cent) and Korea (29.12 per cent).

Electronics-Telecommunications: the sector presented a positive difference in the balance of payments with Strategic Countries by 25,075.56 million dollars; 89.32 per cent of Mexico's exports was sent to the United States, whereas 68.88 per cent of the imports value came from the United States (46.31 per cent), Korea (21.26 per cent) and Japan (13.83 per cent).

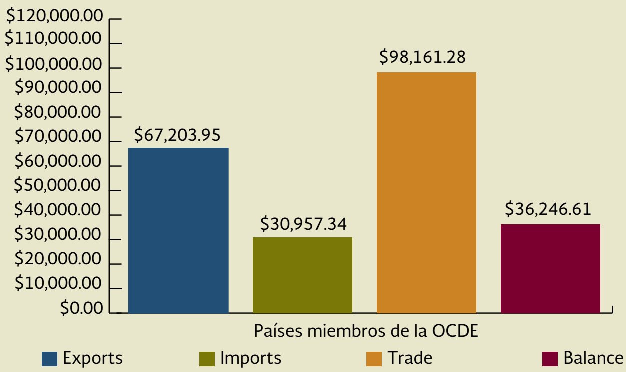
Pharmaceutics: The sector demonstrated a negative difference in the balance of payments with

GRAPHIII.34
TRADE OF BAT WITH STRATEGIC COUNTRIES, 2010-2017
Million dollars, Coverage Rate



Source: Own making with information from the Ministry of Economy, 2017.

GRAPH III.35
BAT TRADE WITH OECD MEMBERS, 2017
Million dollars



Sources: Own making with information from the Ministry of Economy and OECD, 2017.

Strategic countries by 3,797.21 million dollars; 59.43 per cent of Mexico´s exports value had the United States as a destination, and 57.46 per cent of the total imports came from the United States (23.68 per cent), Germany (21.83 per cent) and France (11.95 per cent).

Scientific Instruments: The sector recorded a positive remainder in the balance of payments with Strategic Countries by barely 2.209.43 million dollars; 92.79 per cent of Mexico's exports ended up in the United States, and 47.44 per cent of the imports value came from such country.

Electric Machinery: The sector showed a positive difference in the balance of payments with Strategic countries of 699.73 million dollars; 94.39 per cent of Mexico's exports was sent to the United States; however, 62.11 per cent of the imports value came from the United States (43.14 per cent) and Japan (18.96 per cent).

Non-electric machinery: The field had a negative difference in the balance of payments with Strategic Countries of scarcely 350.14 million dollars; 88.17 per cent of Mexico's exports value ended up in the United States, but 71.31 per cent od the imports came from the United States (34.88 per cent), Germany (18.50 per cent) and Japan (17.93 per cent).

Chemicals: the field displayed a negative remainder in the balance of payments with Strategic Countries of barely 66,652 million dollars; 77.13 per cent of Mexico's imports was shipped to the United States, and 56.79 per cent of imports came from such country.

BAT Trade with OECD members, 2010-2017

The total trade value in the 2010-2017 term recorded an annual average expansion of 3.95 per cent. The median growth rate of exports value was 4.93 per cent, whereas the total imports demonstrated an annual median growth of 2.05 per cent.

It can be observed that during the term analyzed, the exports value with OECD members increased, and although in 2015 there was a slight sink, it recovered. On the contrary, the total imports presented both increasing and decreasing fluctuations during the term, with no specific pattern, appreciating the same for the total trade value.

In relation to 2016, Mexico's total trade value with OECD members increased in 6.25 per cent, as a result of the rise in the value of exports by 8.24 per cent and of imports by 2.2 per cent (GRAPH III.36).

III.4.5.3 BAT TRADE BY REGION

With the aim of having a wider scope on Mexico's BAT trade with the rest of the world, the section hereto presents country groups on the basis of the classification made by the World Trade Organization (WTO)

Such classification lays out five regions: Africa (including Southern Sahara Africa, the Middle East and Northern Africa), Asia-Pacific (including South Asia, East Asia and the Pacific), North America, Latin America and the Caribbean, Europe and Central Asia.

Based on each region's participation in the total BAT trade value, the information is presented under the four main categories: North America (51.27 per cent), Asia (37.94 per cent), Europe (8.29 per cent) and the rest of the world (2.49 per cent).

The participation of North America in the total exports value was 84.94 per cent. With respect to the rest of the imports, Asia took a share of 68.48 per cent, followed by North America with 15.94 per cent. Additionally, a negative difference in the trade balance between Mexico, Asia and Europe was recorded, as well as a positive balance with North America and the rest of the world (TABLE III.13 and GRAPH III.37).

• **North America**

It comprises Canada and the United States. 97.45 per cent of the region's trade value was obtained from the United States, as well as 98.16 per cent of

CUADRO III.12

TRADE OF BAT WITH OECD COUNTRIES, 2017

Million dollars/Coverage rate

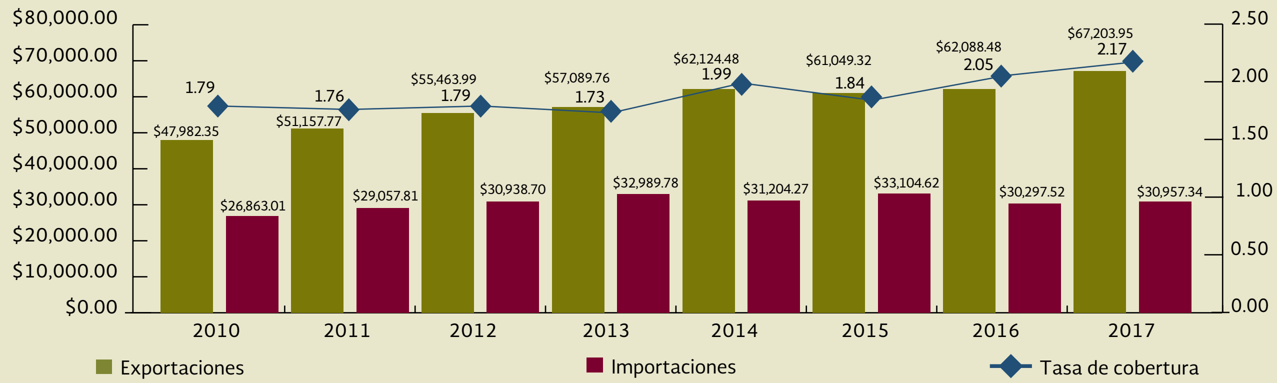
Country	Exports	Imports	Total trade	Balance	Coverage rate
United States	60,428.29	14,206.15	74,634.44	46,222.14	4.25
Netherlands	775.95	113.66	889.60	662.29	6.83
Canada	1,134.04	820.63	1,954.67	313.41	1.38
Australia	264.61	29.17	293.78	235.44	9.07
Chile	119.32	7.61	126.93	111.72	15.69
Turkey	69.24	19.95	89.19	49.29	3.47
United Kingdom	400.74	365.90	766.64	34.84	1.10
New Zealand	29.00	10.22	39.22	18.77	2.84
Luxembourg	13.07	3.78	16.85	9.30	3.46
Greece	9.08	4.97	14.04	4.11	1.83
Slovakia	18.10	23.67	41.76	-5.57	0.76
Slovenia	5.24	11.83	17.07	-6.59	0.44
Norway	7.03	17.60	24.63	-10.58	0.40
Iceland	0.00	11.35	11.35	-11.35	0.00
Ireland	139.83	168.87	308.70	-29.04	0.83
Portugal	11.51	42.40	53.91	-30.89	0.27
France	980.03	1,014.71	1,994.74	-34.68	0.97
Poland	71.27	108.30	179.57	-37.03	0.66
Czech Republic	98.57	151.94	250.50	-53.37	0.65
Finland	7.60	70.52	78.11	-62.92	0.11
Denmark	74.44	143.17	217.60	-68.73	0.52
Hungary	93.91	179.21	273.12	-85.31	0.52
Estonia	2.60	107.17	109.78	-104.57	0.02
Sweden	17.32	128.17	145.50	-110.85	0.14
Israel	71.49	239.22	310.71	-167.72	0.30
Belgium	79.81	250.14	329.95	-170.33	0.32
Austria	45.11	219.22	264.33	-174.11	0.21
Switzerland	100.52	513.04	613.56	-412.52	0.20
Spain	83.49	556.13	639.63	-472.64	0.15
Italy	171.29	734.79	906.08	-563.50	0.23
Germany	1,068.00	2,828.29	3,896.29	-1,760.30	0.38
Japa	657.02	3,429.84	4,086.85	-2,772.82	0.19
South Korea	156.45	4,425.74	4,582.19	-4,269.29	0.04
Total OECD countries	**67,203.95**	**30,957.34**	**98,161.28**	**36,246.61**	**2.17**

Sources: Own making with information from the Ministry of Economy and OECD, 2017.

the total exports value and 94.54 per cent of the imports.

The most commercialized categories between Mexico and this region were: Electronics-Telecommunications and Computers-Office Machines. The BAT category with a greater participation in exports was Electronics-Telecommunications (41.91 per cent), followed by

GRAPH III.36
TRADE OF BAT WITH OECD COUNTRIES, 2010-2017
Million dollars



Fuentes: Elaboración propia con información de la Secretaría de Economía 2017 y la OECD.

Computers-Office Machines (36.63 per cent), which jointly represented 78.54 per cent of the total value. In respect of the imports value, 34.42 per cent corresponded to Electronics-Telecommunications. Finally, both categories represented 71.48 per cent of the total trade (Electronics-Telecommunications with 40.44 per cent and Computers-Office Machines with 31.40 per cent).

• Asia

It has to be pointed out that commercial exchange between Mexico and China accounted for more than a half of the total BAT with Asia (55.57 per cent), as well as 30.86 per cent of total exports and 57.456 per cent of the imports value. In terms of participation, Malaysia followed with 12.03 per cent of the total trade value, 15.80 per cent of exports value and 11.75 per cent of imports.

The most frequently commercialized categories between Mexico and Asia were Electronics-Telecommunications and Computers-Office Machines, as with North America. The BAT category with a grater share in the value of exports was Electronics-Telecommunications (75.81 per cent). With respect to the value of imports, 56.84 per cent corresponded to the same sector and 27.69 per cent to Computers-Office Machines, which jointly represented 84.53 per cent of the total value. Finally, both categories accounted for 84.98 per cent of the total trade (Electronics-Telecommunications, 58.19 per cent and Computers-Office Machines, 26.80 per cent).

• Europe

There are two Mexico's BAT commercial partners in Europe who stand out among the rest: Germany and France. The commercial exchange between Mexico and Germany accounted for 31.47 per cent of the total BAT trade with Europe, as well as 24.24 per cent of the total exports and 24.24 per cent of the total imports (double in relation to 2016). The commercial exchange between Mexico and France constituted 16.11 per cent of the total BAT trade with Europe, as well as 22.24 of the exports and 12.73 per cent of the total imports cost.

The most commercialized categories between Mexico and Europe were Electronics-Telecommunications and Computers-Office Machines, as in the two previous regions, but also Pharmaceutics. The BAT category with a greater share in the exports value was Electronics-Telecommunications (38.03 per cent), followed by Computers-Office Machines (30.15 per cent), which altogether signified 68.18 of the total value. With respect to the imports, 27.27 per cent corresponded to Pharmaceutics and 19.70 to Electronics-Telecommunications, which jointly accounted for 46.97 per cent of the total value.

[33] La clasificación 'Resto del Mundo' comprende África, América Latina y el Caribe y Oriente Medio.

GRAPH III.37
BAT TRADE BY REGIONS, 2017
Million dollars

Sources: Own making with information from the Ministry of Economy, 2016 and the World Trade Organization (WTO).

Concerning the participation by region in the total BAT trade value, by category, it must be emphasized that:

- 66.25 per cent of the total trade value in Electronics-Telecommunications derives from Mexico´s trade with Africa.
- 40.44 per cent of the trade volume in Electronics-Telecommunications and 31.40 per cent of the trade in Computers-Office Machines come as a result of the trade between Mexico and North America.
- 39.09 per cent of the total trade in Pharmaceutics and 22.21 per cent of the total trade volume in Electronics-Telecommunications come from exchanges between Mexico and Latin America.
- 58.19 per cent of the total trade volume in Electronics-Telecommunications and 26.80 per cent of the total trade value in Computers-Offices Machines come from the trade between Mexico and Asia.
- 26.23 per cent of the total trade volume in Electronics-Telecommunications and 18.65 per cent of the total trade volume in Pharmaceutics come from trade between Mexico and Europe.
- 55.56 per cent of the total trade in Electronics-Telecommunications and 18.32 per cent of the total trade value in Computers-Office Machines come from operations between Mexico and the Middle East.

TABLE III.13

TRADE OF BAT BY REGIONS, 2017
Million dollars

Region	Exports	Imports	Trade	Balance
North America	61,562.33	15,026.78	76,589.11	46,535.55
Asia	4,019.44	52,656.47	56,675.91	-48,637.03
Europe	4,406.67	7,973.59	12,380.26	-3,566.92
Rest of the world	2,485.29	1,239.72	3,725.01	1,245.57
Total	**72,473.73**	**76,896.56**	**149,370.28**	-4,422.83

Sources: Own making with information from the Ministry of Economy and OECD, 2017.

III.5 INNOVATION IN MEXICO

INTRODUCTION

Innovation is still an important trigger for the competitiveness required by the country in order to be part of the Fourth Industrial Revolution. Therefore, the capacity to innovate turns out to be a fundamental factor. A nation's innovating performance mainly depends on the creation and use of knowledge, as well as the manner in which technologies are used and generates by each one of the economical agents, either companies (private and public), universities and research institutes (public and private). In the case of our country, the productive sector and the government dynamize innovation activities, as they are the main financiers of the expenditure on this field.

According to what the National Development Plan 2013-2018 establishes, the participation of the Federal Government has promoted the investment in Science, Technology and Innovation (STI) through public policies that enable scientific and technological development, as well as innovation, pillars of any social and economic sustainable progress (PND, 2013-2018). Under this vision, instruments that aim to foster the different actors' participation by investing in STI, have been created.

The data presented in the section hereto show the information related to the efforts made by both the government and the private sector during 2017. The Expenditure on Innovation in Mexico is taken from the Public Account, since data from the private sector are obtained from the Survey on Research and Technological Development (ESIDET). The information presented considers the last available year, and corresponds to 2017.

III.5.1 WHAT IS INNOVATION?

DIt must be born in mind that, according to the Oslo Manual (OECD, 2005:56-64) an innovation is "the introduction of a new, or significantly improved (good or service), a process, a new commercialization method or a new organizational method, in a company's internal practices, the organization of the workplace or external relations".

In the same manual, four types of information are defined: (a) of a product, which is the introduction of a new good or service, or significantly improved with respect to its characteristics or final use; (b) of a process, being the implementation of a new or meaningfully improved production or distribution process; (c) marketing, which is the implementation of a new commercialization method that implies significant changes in the design or packaging of a product, its positioning, promotion or taxation; and (d) organizational, which consists of the renovation of a new organizational method for practices, the organization of a workplace or the company's external relations.

It must be mentioned that the manual does not cover the dissemination of a new product or service to other departments or areas in the same company.

III.5.2 THE INNOVATION EXPENDITURE IN MEXICO

The expenditure on innovation, by source of funds, is divided in public expenditure and private expenditure. The former represents the economic resources granted by the Federal Public Administration in innovation. In 2017, as in the previous year, there were only resources from sector 38 National Council for Science and Technology and 8 Agriculture, Livestock, Rural Development, Fishing and Food, recording a total of 2,657 million.

By contrast, private expenditure is constituted by the economic resources allocated to innovation by the productive sector in Mexico.

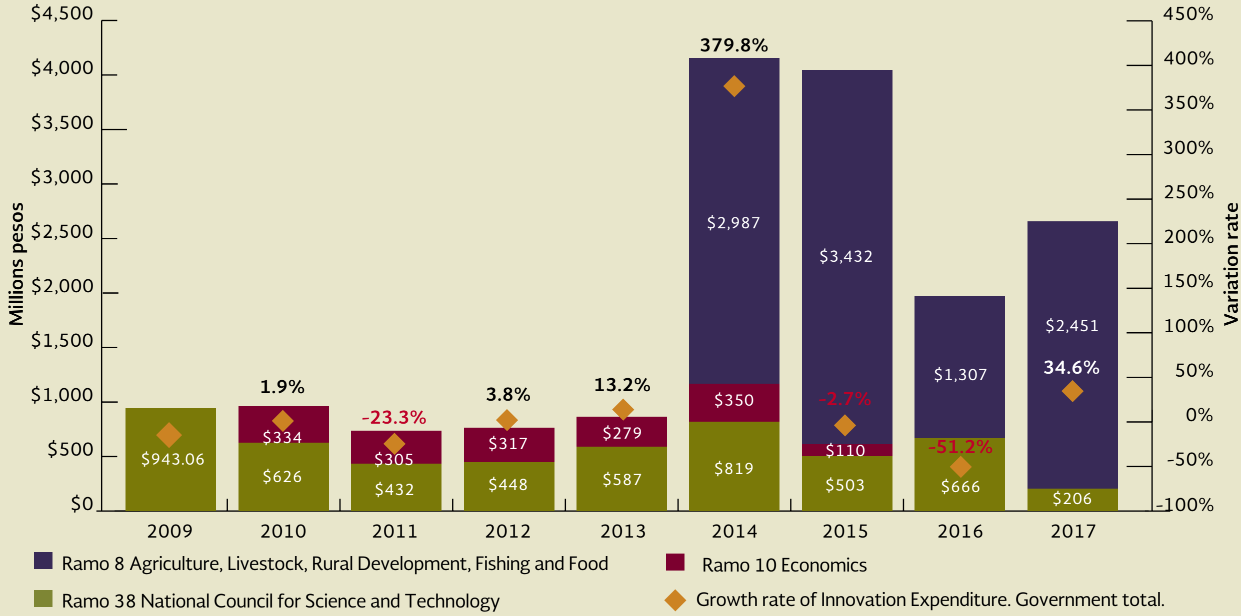
III.5.2.1 INNOVATION EXPENDITURE BY THE FEDERAL MEXICAN GOVERNMENT

In 2017, Sector 8 Agriculture, Livestock, Rural development, Fishing and Food, increased its innovation expenditure by 87.6 per cent with respect to 2016. On the other hand, the Conacyt diminished its expenditure by 69.2 per cent in 2017. However, the total expenditure showed an increase of 34.6 per cent in relation to 2016 (see GRAPH III.38).

GRAPH III.38

EVOLUTION OF EXPENDITURE ON INNOVATION BY THE FEDERAL MEXICAN GOVERNMENT, 2009-2017

Million pesos, 2017 prices, Growth rate



Source: MFPC, Federal Public Treasury Account, 2009-2017.

Despite the expenditure reduction in the Conacyt, the growth of the total expenditure on innovation in 2017 presents a positive variation, cutting down the downward trend presented during 2015 and 2016.

III.5.2.1.1 THE CONACYT INNOVATION EXPENDITURE

Over the last 20 years, the Conacyt has implemented different programs to promote the private sector's expenditure on STI activities, through direct or indirect stimuli.

During the 1995-2008 period, fiscal indirect stimuli were in force; later on, the Program of Stimuli to Research, Technological Development and Innovation (PEI) in 2009 and hitherto.

There are three modalities within the PEI:

INNOVAPYME (Technological Innovation for micro, small and medium companies): exclusively dedicated to proposals and projects made by Micro, Small and Medium companies.

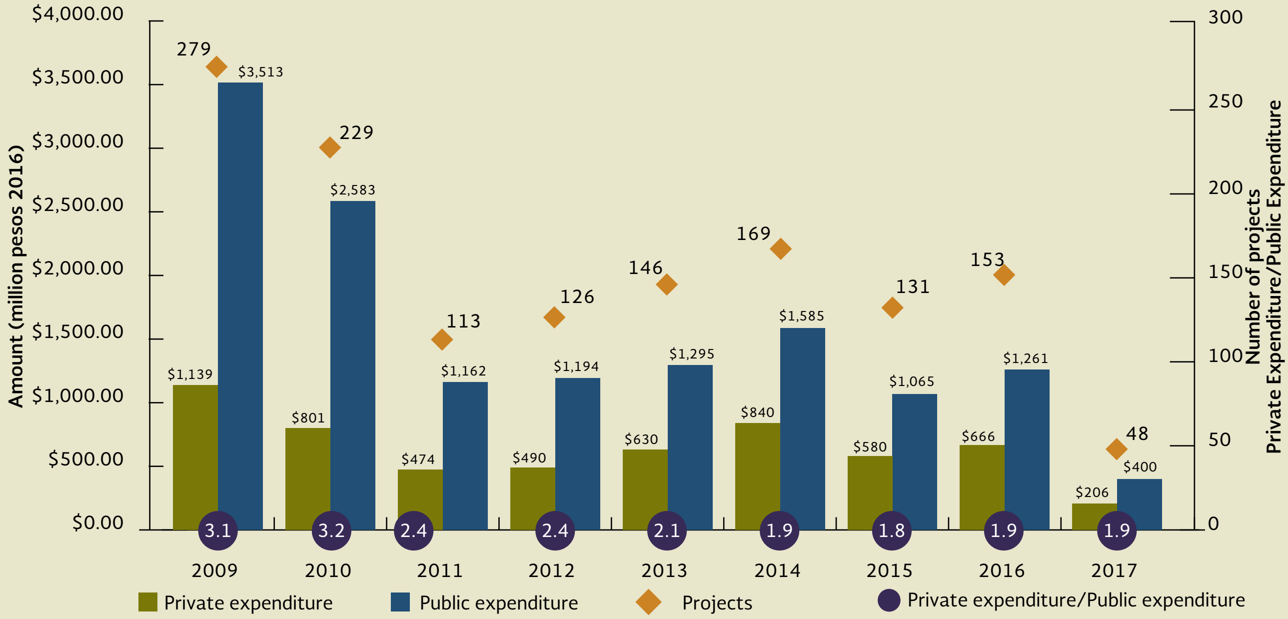
INNOVATEC (Technological Innovation for large companies): Aimed only at proposals and projects submitted by large companies.

PROINNOVA (Innovation-oriented network projects): Aimed only at proposals and projects presented in relation to at least two HEI, two RC or one of each.

INNOVAPYME and PROINNOVA are accounted for as GERD, and only the INNOVATEC modality is recorded as public expenditure on innovation.

In respect of the innovation expenditure in 2017, the PEI, under its INNOVATEC modality, decreased its amount by 69.1 per cent, in comparison to 2016, going from 666 million pesos in 2016 (see GRAPH III.39) to 206 million pesos. When the public investment, in relation to private expenditure, is examined, it is observed in a percentage of 1.9, just as in the previous year.

GRAPH III.39
PUBLIC AND PRIVATE INNOVATION EXPENDITURE IN THE PEI, 2009-2017
Million pesos, 2017 prices, number of projects, private expenditure/public expenditure



Source: Conacyt with PEI data. Data show only the registers for the INNOVATEC modality.

Graph III.40 presents the total expenditure on projects supported by PEI, under the INNOVATEC modality, developed individually or collectively (with CPI, HEI or both). During 2017, the number of linking projects corresponded to 66.67 per cent of the supported projects, where the total amount granted to this sort of projects diminished by 70.18 per cent in relation to the previous year.

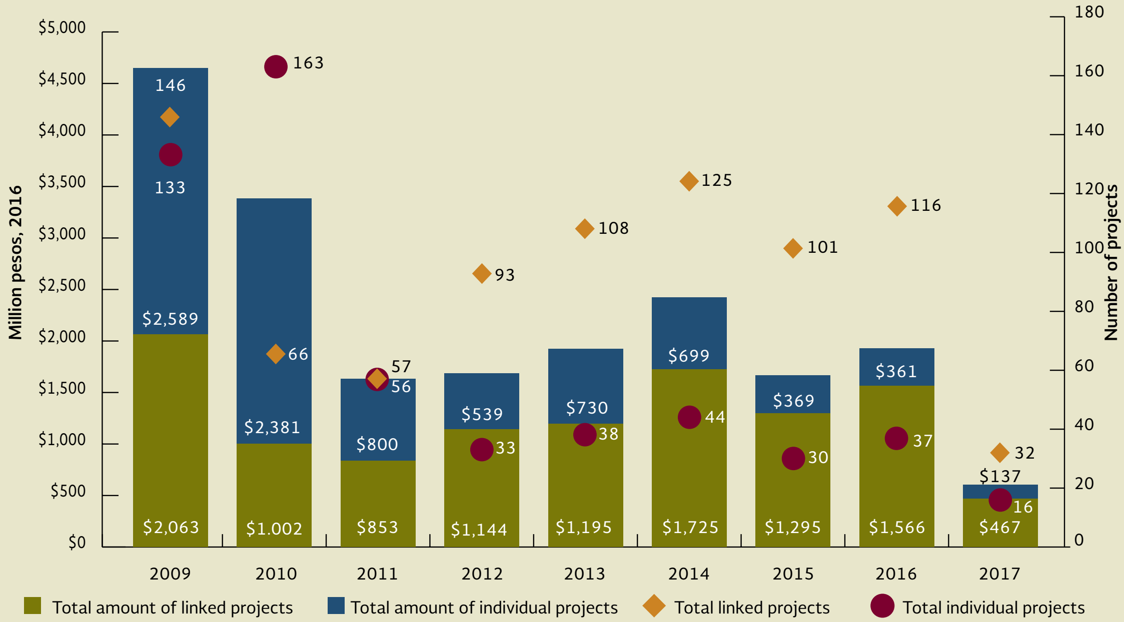
Correspondingly, even when the amount allocated to individual projects decreased with respect to 2016, by 62.05 per cent, the number of projects reduced by 56.76 per cent.

In Graph III.41, it is possible to appreciate the distribution of the projects supported by PEI, classified by industrial sector. 50 per cent of these projects belong to four sectors: Pharmaceutics, with seven projects; Chemistry, with six; Information Technologies, with five, Aeronautics and Agroindustry with three each.

During 2017, only 18 states received support, a minor number compared to the 21 states financed in 2016 by PEI. 54.17 per cent of the projects comes from four entities: Nuevo León, Mexico City, Querétaro and Jalisco (see Graph III.42), with four, eleven, five and six projects, respectively.

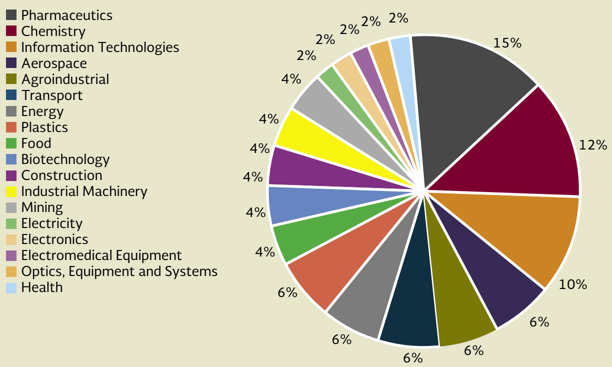
Considering the preceding information, it is possible to observe that the value of the amount allocated to innovation diminished for both the public and private sectors. This demonstrates the need to strengthen the policies aimed at fostering private investment, not only via direct grants but also jointly via the support for their activities through other type of indirect stimuli, such as tax credits, that aim to reward the individual effort every company carries out throughout their innovation activities.

GRAPH III.40
TOTAL PEI EXPENDITURE ON INDIVIDUAL OR LINKED PROJECTS, 2009-2017
Million pesos, 2017 prices, Number of projects



Source: Conacyt, PEI data. The data show only the registers for the INNOVATEC modality.

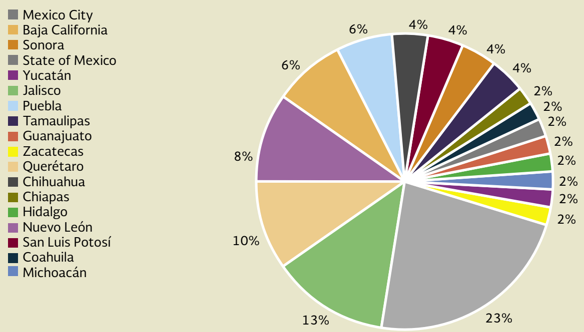
GRAPH III.41
INDUSTRIAL SECTORS SUPPORTED BY PEI, 2017
Percentage



N=48 projects

Source: Conacyt, with PEI data. Data demonstrate only the registers for the INNOVATEC modality.

GRAPH III.42
STATES SUPPORTED BY PEI, 2017
Percentage



N=48 proyectos

Source: Conacyt, with PEI data. Data demonstrate only the registers for the INNOVATEC modality.

CHAPTER IV

ACTIONS IN SCIENCE TECHNOLOGY AND INNOVATION IN THE FEDERAL PUBLIC ADMINISTRATION

CHAPTER IV. ACTIONS IN SCIENCE TECHNOLOGY AND INNOVATION IN THE FEDERAL PUBLIC ADMINISTRATION

FOCAL POINTS

- During 2017, the Conacyt (National Council for Science and Technology) spent a total budget of 21,399 million MXN, 18.9 percent less than in 2016. The resources of the research centers represented 29 percent of the total budget of Sector 38, equivalent to 8,603 million MXN.
- The PNPC registered 2,207 programs, higher by 6.7 percent compared to 2016.
- 31,532 new scholarships were granted and 64,994 were in force. The increase in the number of scholarships and fees in force compared to 2016 was 2.4 percent higher.
- This year, the National Researchers System was made up of 27,186 scientists and technologists, equivalent to a growth of 8.4 percent over the previous year. The SNI (National Research System) budget amounted to 4,600 million MXN, with an increase of 3.4 percent compared to 2016.

IV.1 SECTOR 38

IV.1.1 INVESTMENT

IV.1.1.1 BUDGET ALLOCATED IN SCIENCE TECHNOLOGY AND INNOVATION

The main objective of the National Council for Science and Technology (Conacyt) is to advise the Federal Executive Branch on science, technology and innovation, through the articulation of public policies and the promotion of the development of scientific and technological research, having as main objective the structuring of both a society and an economy based on knowledge.

To meet its objectives and goals, the Conacyt (National Council for Science and Technology) has the budget assigned to Sector 38, whose planning must ensure the execution of the specific instruments of the center, support scientific research, technological development, innovation, competitiveness and productivity, taking into account the priorities and criteria for the allocation of expenditure on science, technology and innovation, to foster the country's development and technological modernization.

IV.1.1.2 EXPENDITURE ON STI (SCIENCE, TECHNOLOGY AND INNOVATION) IN SECTOR 38

During 2017, Sector 38 (Conacyt and Research Centers) disbursed 30,002 million MXN, an amount lower by 18.8 percent in real terms, with respect to the previous year, as it can be seen in Figure IV.I. Of these resources, Conacyt exercised 21,399 million MXN, 18.9 percent less than the previous year. The resources of the research centers represented 29 percent of the total budget in Sector 38.

IV.1.1.3 PUBLIC RESEARCH CENTERS COORDINATED BY THE CONACYT

The Conacyt Research System is a set of 27 research institutions that cover the main fields of scientific, technological, social and humanistic knowledge. Table IV.I shows the main results of the centers, highlights the increase by four percent in graduate programs in research centers, as well as the three percent in personnel belonging to the National System of Researchers working in CPI (Public Research Centers) with respect to the previous year. In the case of research projects, there is also an increase of one per cent in comparison to 2016.

Among the activities carried out by the coordination of the centers during the period, are the following:

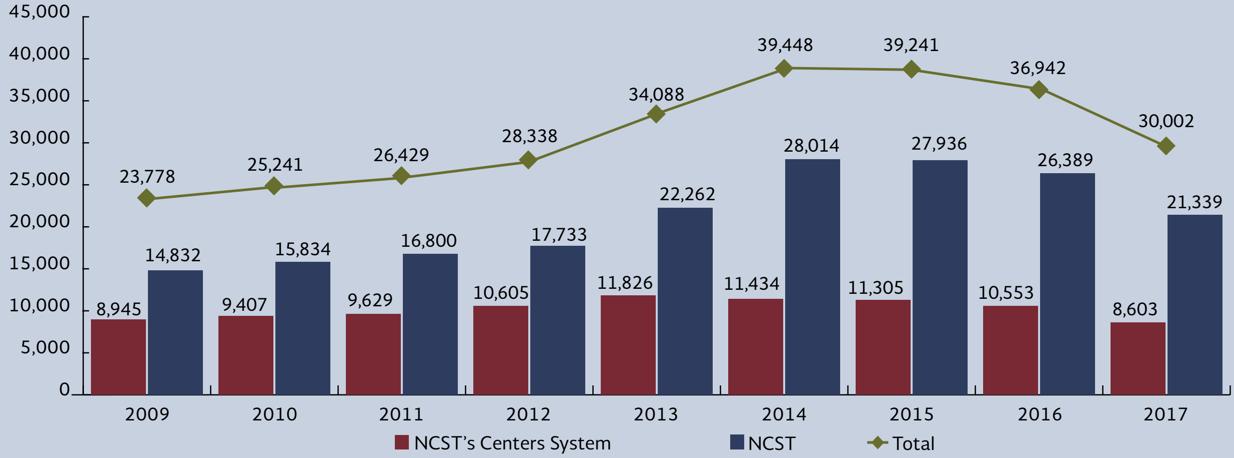
Four Long Term Research Programs (PILA) were published and printed: Society and Development, Nature of the Universe, Advanced Manufacturing, Climate Change and Sustainability.

The Document of Reorganization of the System of Public Research Centers of the National Council for Science and Technology was elaborated. The objective is to adopt new forms of work in the System of Public Research Centers sectorized into the Conacyt (National Council for Science and Technology), through the integration and strengthe-

GRAPH IV.1

BUDGET EXERCISED BY SECTOR 38 CONACYT AND RESEACH CENTERS, 2009-20017

Million pesos 2017



Note: The total may not coincide with the sum of the partials due to the rounding of the figures.
Source: Conacyt
SHCP (Ministry of Public Finance and Credit), Federal Public Treasury Account, 2009-2017.
SHCP, Budget Expenditures of the Federation, 2017.

ning of strategies to generate scientific research, technological development and innovation aimed at solving national problems and promoting the country's economic development.

Correspondingly, five organizational coordinations were created, where the 27 centers are divided into groups with an average of six centers each: coordination of materials, advanced manufacturing and industrial processes; coordination of physics and applied mathematics and data sciences; the one on the environment, health and foodstuffs; of politics and regional development, and history and social anthropology.

In 2017, Assessment Processes (internal and external) were carried out for the appointment of the holders of seven PRCs (Public Research Centers): COLSAN (The College of San Luis), COLEF (The Northern Border College), INECOL (The Institute of Ecology), CIMAT (Mathematics Research Center), ORC (Optics Research Center), CIAD (Center for Research and Food in Development) and CIQA (Center of Research on Applied Chemistry).

With the purpose of supporting, encouraging and enhancing actions and projects in research, technological development, innovation, training of human capital, public communication of science and linkage, aimed at increasing and improving the stock of scientific and technological capabilities and skills of the Conacyt CPI, until December, 2017, 337,776 million MXN was authorized and allocated to 28 projects of

TABLE IV.1

RESULTS OF THE RESEARCH CENTERS COORDINATED BY CONACYT, 2009-2017

Project	2009	2010	2011	2012	2013	2014	2015	2016	2017/p
Graduate Program	116	123	138	142	149	151	158	165	171
Students	4,950	5,729	6,517	6,361	6,422	7,448	7,368	7,908	7,526
SNI (National Research System) Members	1,392	1,436	1,493	1,499	1,538	1,621	1,731	1,798	1,852
Publications	2,011	2,199	2,473	2,243	2,075	2,969	3,212	3,365	3,077
Scientific Research, Technological Development and Innovation Projects	2,683	2,659	2,587	2,444	2,677	2,999	2,910	2,773	2,796

/p: Preliminary.
Source: Conacyt. Information reported by the heads of the Conacyt – CPI for the 5th Government Report via Address to the Union in 2017.

the Support Program for Scientific, Technological and Innovation Activities.

IV.1.2 HUMAN CAPITAL

IV.1.2.1 NATIONAL QUALITY POSTGRADUATE PROGRAM (PNPC)

The NQPP is implemented by the National Council for Science and Technology and the Ministry of Public Education (SEP) whose main objective is to ensure quality and continuous improvement in postgraduate courses at the national level, through membership in a standard on the part of the institutions that offer such programs (specialization, masters and doctorate) in the different areas of knowledge. To do this, they must meet characteristics such as: basic academic nuclei, significant graduation rates, solid infrastructure and high scientific and technological productivity.

In 2017, the PNPC registered 2,207 programs, higher by 6.7 percent compared to 2016 (Figure IV.II). From 2009 to 2017, the PNPC has had an average growth rate of 7.7 percent.

Table IV.II shows the percentages obtained according to the degree of consolidation in postgraduate courses in 2016 and 2017. Therefore, in 2017, 10.2 percent of the programs are positioned in the international competition levels and 29.2 percent consolidated, 39.2 percent are in development and 21.4 percent are newly created. Compared to 2016, there is a significant growth of more than 10 percent in the international competition level (11.9 percent). For the consolidated development programs there is a growth of 8.2 percent and for the recently created programs a decrease of 0.2 percent, thus having a 6.6 percent advance in the general total.

GRAPH IV.2
POSTGRADUATE PROGRAMS REGISTERED IN THE PNPC (NATIONAL QUALITY POSTGRADUATE PROGRAM), 2009-2017

Source: Conacyt, Attached Directorate of Graduate Studies and Scholarships

TABLE IV.2
NATIONAL QUALITY POSTGRADUATE PROGRAM BY LEVEL, 2016-2017

Level	2016		2017		Percentage Variation 2016-2017
	Program	Percentage	Program	Percentage	
International Competition	201	9.70	225	10.20	11.94
Consolidated	595	28.80	644	29.20	8.24
In process	799	38.60	865	39.20	8.26
Recent Creation	474	22.90	473	21.40	-0.21
Total	**2,069**	**100.00**	**2,207**	**100.00**	**6.67**

Source: Conacyt, Attached Directorate of Graduates and Scholarships.

IV.1.2.2 GRADUATE SCHOLARSHIPS AND CONSOLIDATION FEES

The program of Graduate Scholarships and Consolidation Support provides access to the population to carry out high standards studies in academic institutions of excellence, both in the country and abroad. Through the different modalities of the program, scholarships are awarded to carry out postgraduate studies at the master's and doctoral level, technical and academic specialties.

The Conacyt scholarships have different classifications and sub-classifications, starting with two major areas: new scholarships and current scholarships. The first correspond only to the scholarships that have been formalized in the year that is being studied; On the other hand, current scholarships are those that are presently active regardless of their creation year. In turn, the new and current scholarships are classified into national or abroad, depending on the place where the institution in which the educational program is located.

Other types of scholarships available to the Council are mixed scholarships, scholarships for technical, postdoctoral, sabbatical stays (both national and abroad), repatriations and retentions (national only).

Finally, there are specific scholarships, which are aimed at strengthening the professional training of groups within the population that are in vulnerable situations or specific sectors it seeks to promote. The specific scholarships that were counted in 2017 were the following:

- MoE (Ministry of Energy) Hydrocarbons and Energy Sustainability (national and abroad).
- Conacyt-SENER (Ministry of Energy). Hydrocarbons and Energy Sustainability national postdoctoral stays.
- Mexican mothers, heads of family to strengthen their professional development.
- Scholarships for indigenous people.
- Industry training for teachers and doctors.
- MISS (Mexican Institute of Social Security Scholarships.

In 2017, 31,532 new scholarships were granted and 64,994 were in force, comprising 22,996 scholarships at the doctorate level; 35,118 in mastery; 2,460 specialty; 3,610 specific scholarships, and 810 in other types of scholarships, such as: Mothers and heads of family. These results are shown in Table IV.3.

TABLE IV.3
GRADUATE GRANTS* CURRENT, BY STUDY AND DESTINATION LEVEL, 2017

Level	National	Foreign	Total
Doctoral Studies	19,502	3,494	22,996
Masters	32,203	2,915	35,118
Specialty	2,214	246	2,460
Specific	2,995	615	3,610
Other**	483	327	810
Total	**57,397**	**7,597**	**64,994**

* Includes mixed scholarships both in the national case and abroad.
** Includes scholarships for postdoctoral stays and scholarships for technical stays both nationally and abroad.
Source: Conacyt, Deputy Graduate Office and Scholarships.

On the other hand, the increase in the number of scholarships and fees in force compared to 2016 was 2.4 percent (Figure IV.3). The annual growth rate since 2009 has been 8.7 percent for new scholarships and 9.9 percent for current scholarships.

IV.1.2.2.1 NATIONAL GRADUATE SCHOLARSHIPS

During 2017, a total of 52,917 current national postgraduate scholarships were received, which meant a growth of 0.18 percent compared to 2016, a year in which 52,821 scholarships were awarded only for this modality.

The distribution by education level was found headed by scholarships of masters, with 59.6 percent (31,545), followed by scholarships of doctorate with 36.4 percent (19,263), specialty with four percent (2,109).

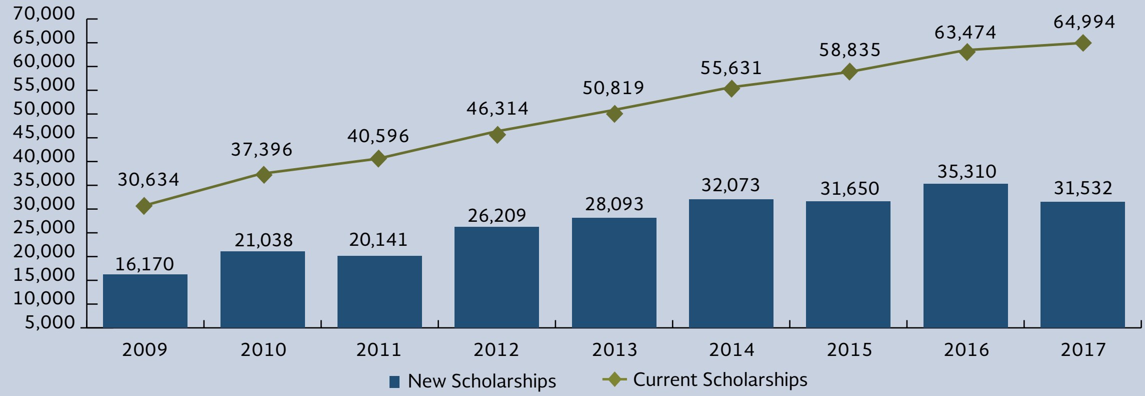
IV.1.2.2.2 POSTGRADUATE SCHOLARSHIPS ABROAD

The current postgraduate scholarships abroad reached a total of 3,718 scholarships in 2017, out of which 69.7 percent (2,590) corresponded to doctorate-level scholarships, 30.3 percent (1,127) to master's degrees and 0.03 percent (one) to specialties.

As for the countries of destination, ten territories concentrate the greatest number of fees with 93.3 percent of the total number of scholars in their different modalities: United Kingdom with 24 percent; United States 23.6 percent; Spain with 11.6 percent; Germany 8.6 percent, France 7.2 percent; The

[1] The Scholarships for indigenous people in 2017 include support for the modalities of: Incorporation of Indigenous Women in National Postgraduate Programs for Regional Strengthening and Conacyt

GRAPH IV.3
NEW AND CURRENT SCHOLARSHIPS, 2009-2017



Source: Conacyt, Deputy Postgraduate and Scholarship Office.

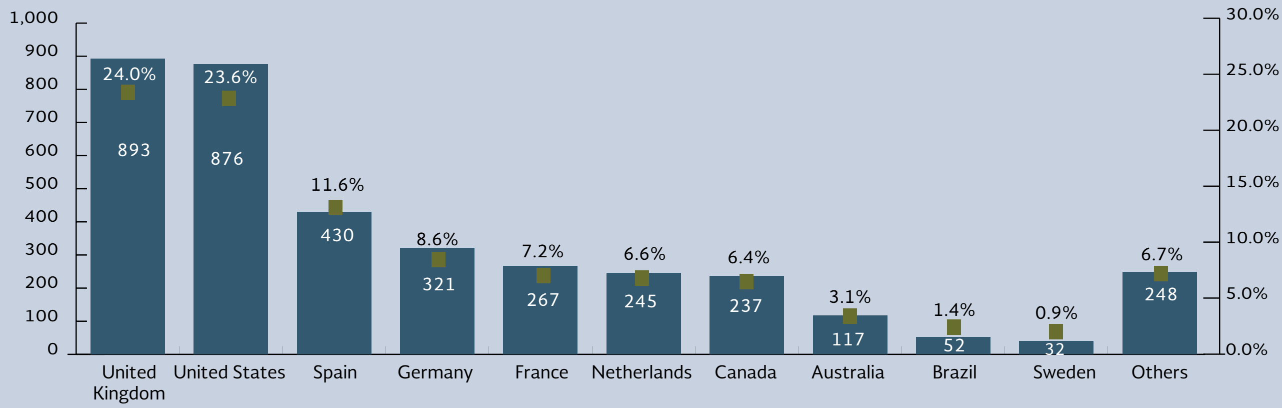
Netherlands with 6.6 percent; Canada 6.4 percent; Australia with 3.1 percent; Brazil 1.4 percent, and Sweden with 0.9 percent, 6.7 percent is concentrated in the remaining countries.

IV.1.2.2.3 SCHOLARSHIPS AND SPECIFIC FEES

As of December 2017, 3,610 specific grants and scholarships were in force. These are differentiated from general postgraduate scholarships because they are aimed at a specific sector of the population, aim to support a specific topic, come from a particular agreement or are provided in conditions and characteristics different from normal scholarships. These fees and scholarships were granted as follows:

- 1,741 fees for the technical and university training of single mothers.
- 615 Conacyt-SENER (Ministry of Energy). Hydrocarbons and Energy Sustainability scholarships abroad.
- 569 Conacyt-SENER (Ministry of Energy). Hydrocarbons and National Energy Sustainability Scholarships.
- 591 fees for indigenous people .
- 90 fees for the stays of teachers and doctors in the industry.
- 4 Mexican Institute of Social Security Scholarships.

GRAPH IV.4
SCHOLARSHIPS ABROAD BY COUNTRY, 2017



Source: Conacyt, Deputy Director of Graduate and Scholarships

[2] Includes 39 Conacyt-SENER scholarships for national postdoctoral stays.

[3] The scholarships for indigenous people include support in the modalities: Complementary Fees for Indigenous Women Fellows Conacyt, Incorporation of Indigenous Women in National Graduate Programs for Regional Strengthening and the Conacyt-CDI-CIESAS Agreement.

IV.1.2.2.4 YOUNG TALENTS PROGRAM

The main objective of the Young Talents program is to put science and technology in direct contact with young people, through practices and activities coordinated and developed preferably by scientists and academicians at the national level through institutional proposals. Among its main objectives are to benefit the largest number of talented young people interested in pursuing postgraduate studies and, at the same time, to involve more academic institutions in the development of programs to promote scientific and technological vocations focused on this sector of the population.

During 2017, 71 applications were authorized, supporting projects in 26 states, for an amount that added MXN 20 million.

The states with the largest number of programs were: Guanajuato (eight), Sinaloa (five) and Baja California Sur (four), while the states with the largest authorized budget were Guanajuato with 2.9 million, Sinaloa 1.5, Nuevo Leon with 1.4, and Mexico City MXN 1.3 million pesos.

IV.1.2.3 NATIONAL RESEARCHERS SYSTEM

The National Researchers System (SNI) contributes to the strengthening and consolidation of the scientific and technological capacities of the country. In 2017, the System was made up of 27,186 scientists and technologists. Its growth, compared to 2016, was 8.4 percent. The SNI budget for that year was 4,600 million MXN (Figure IV.5), with a decrease of 1.3 percent with respect to 2016.

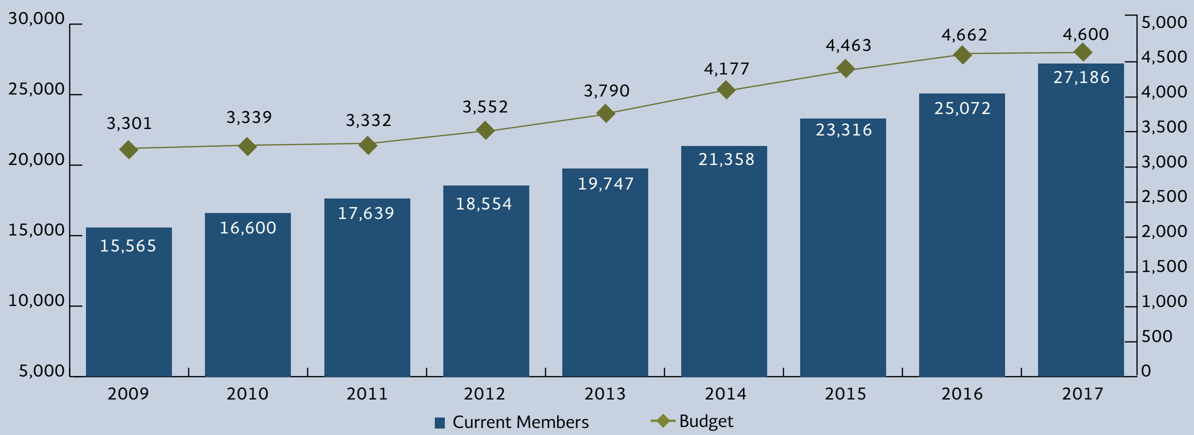
IV.1.2.4 CONACYT LECTURES

Conacyt Lectures emerged in 2014 as an effort to generate a critical mass of highly qualified human capital, which could increase and strengthen the capacity to generate, apply and transfer knowledge in the country's priority areas, by incorporating researchers to public institutions of higher education and research. This effort responds to the limited capacity of federal and state institutions of the public sector to incorporate highly qualified human capital, mainly young researchers, for the development of science, technology and innovation.

That is why Conacyt created the category called Conacyt Lectures for Young Researchers, aimed at new Mexican and foreign scientists (with legal residence in Mexico) with high potential and talent in research, technological development and innovation. Each Conacyt Lecture is likely to be occupied by researchers who registered their data in the Register of Young Researchers and have been proposed by a higher education institution or by a public research center.

Institutions and public entities that carry out scientific, social research or technological innovation activities in the country can evaluate institutional projects so that the institution benefits from the allocation of one and up to five lectures per project.

GRAPH IV.5
NATIONAL RESEARCHERS SYSTEM, 2009-2017



Source: Conacyt, Attached Directorate of Scientific Development.

IV.1.2.4.1 LECTURES' CHARACTERISTICS

Each institution may request between one and up to five Conacyt Lectures for the development of the postulated projects. In total, as of December 2017, there are 1,295 commissioners in 839 institutional projects. In 2014, 574 lectures were assigned to 323 projects; in 2015, 225 lectures to 161 projects; in 2016, 277 lectures to 191 projects and in 2017, 219 lectures to 164 projects.

The average age of researchers at Conacyt Lectures is 38 years. In addition, 41 percent correspond to women and 75.92 percent are members of the National Researchers System.

IV.1.2.4.2 NATIONAL DEVELOPMENT'S PRIORITY ISSUES

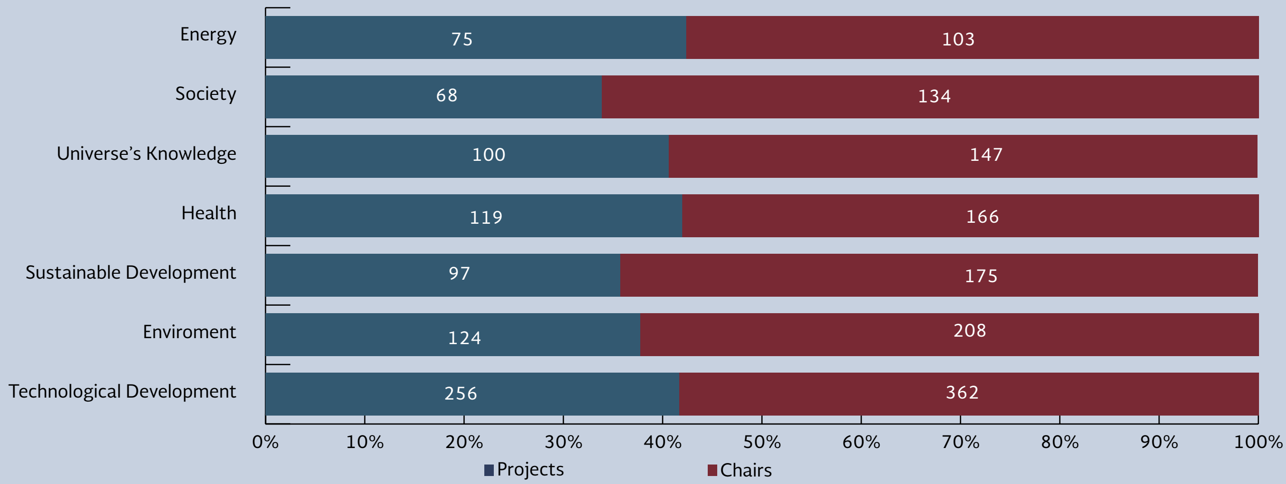
The projects presented by the institutions should aim to address issues and challenges of national priority in accordance with the 2014-2018 PECiTI (Special Program of Science, Technology and Innovation 2014-2018). As shown in Figure IV.6, out of the total projects from 2014 to 2017, most of them are placed in Technological Development, since it concentrates 30 percent (256 projects). This is followed by Environment, with 15 percent (124 projects); Health, 14 percent (119 projects); Knowledge of the Universe (100 projects) and Sustainable Development (97 projects), both with 12 percent; Energy with nine percent (75 projects), and finally Society, with eight percent (68 projects). Following a similar distribution, 28 percent of the lectures are focused on Technological Development (362 lectures); Environment groups 16 percent (208 lectures); Sustainable development, 14 percent (175 lectures); Health, 13 percent (166 lectures); Knowledge of the Universe, 11 percent (147 lectures); Society, 10 percent (134 lectures), and Energy reaches eight percent (103 lectures) out of the total amount assigned in this period.

IV.1.2.4.3 DISTRIBUTION OF LECTURES BY STATE

The lectures program seeks to favor institutions and dependencies located in entities lagging behind in terms of science, technology and innovation capacities, determined according to the presence of researchers belonging to the SNI and the existence of programs registered in PNPC (National Quality Postgrduate Program). According to these characteristics, in Conacyt Lecture Announcements, federal entities are grouped into three regions:

- Region 1: Baja California, Coahuila, Mexico City, Guanajuato, Jalisco, State of Mexico, Morelos, Nuevo Leon, Puebla, Queretaro and Sonora.
- Region 2: Aguascalientes, Chihuahua, Hidalgo, Michoacan, San Luis Potosi, Sinaloa, Tabasco, Tamaulipas, Veracruz, Yucatan.
- Region 3: Baja California Sur, Campeche, Colima, Chiapas, Durango, Guerrero, Nayarit, Oaxaca, Quintana Roo, Tlaxcala and Zacatecas.

GRAPH IV.6
PECITI PROJECTS AND LECTURES BY TOPIC, 2014-2017



Source: Conacyt, Directorate of Conacyt Lectures

As established in the announcement, in the event of equal quality circumstances of the project, preference will be given to projects presented by institutions that are in the Region 3 entities group, particularly Chiapas, Guerrero and Oaxaca. In this way, the federative entities that make up Region 1 concentrate 589 lectures, the entities of Region 2 have 415, while Region 3 accumulates 291. Regions 2 and 3 group 55 percent of the lectures assigned between 2014 and 2017.

As it can be appreciated in Graph IV.7, Mexico City, which is part of the entities of Region 1, has the largest number of lectures with 194, representing 15 percent of the total allocated between 2014 and 2017. This continued in San Luis Potosí and Aguascalientes, belonging to Region 2, with 70 lrctures, or 5 percent each. Michoacan and Yucatan, grouped in Region 2, have 67 and 57 lectures, respectively. In contrast, Nayarit and Colima, located in Region 3, are the entities with the lowest number of lectures, with 12 and 10 assigned, respectively, that is, one percent each.

IV.1.2.4.4 LECTURE-BENEFITED INSTITUTIONS

Researchers at Conacyt Chairs are commissioned to public higher education institutions, public research centers and, in general, to federal and state institutions of the public sector that carry out scientific research activities. Thus, out of the total number of lectures, 33 percent is concentrated in public research Conacyt centers, 28 percent in state public universities, 20 percent in federal higher education institutes and six percent in national health institutes and national technological centers, respectively (see Graph IV.8).

IV.1.3 STRENGTHENING OF REGIONAL DEVELOPMENT

IV.1.3.1 STRENGTHENING OF REGIONAL DEVELOPMENT

The State and Regional Innovation Agendas project has, as a general objective, to contribute to the state and regional economic development to take full advantage of Mexico's innovative potential, through a shared vision among government, academia, industry and society. By 2017, the 32 printed state agendas are already available, as well as the three regional agendas (South-Southeast, Center-North and North).

During 2017, events were held with the state governments to present and deliver to the governors, the executive summaries of the State Innovation Agendas. The states in which they have already been expounded are: Aguascalientes, Baja California, Campeche, Chiapas, Coahuila, Colima, Baja California Sur, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, Michoacan, Monterrey, Nayarit, Puebla, Queretaro, Quintana Roo, San Luis Potosi, Sinaloa, Sonora, Tabasco, Tamaulipas, Tlaxcala, Veracruz, Yucatan and Zacatecas.

IV.1.3.2 MIXED FUNDS

The Mixed Funds (FOMIX) were designed with the intention of promoting the integral development of states and municipalities through science, technology and innovation. These funds have generated an intense development dynamic by financing projects to address problems, needs and opportunities with scientific-technological actions.

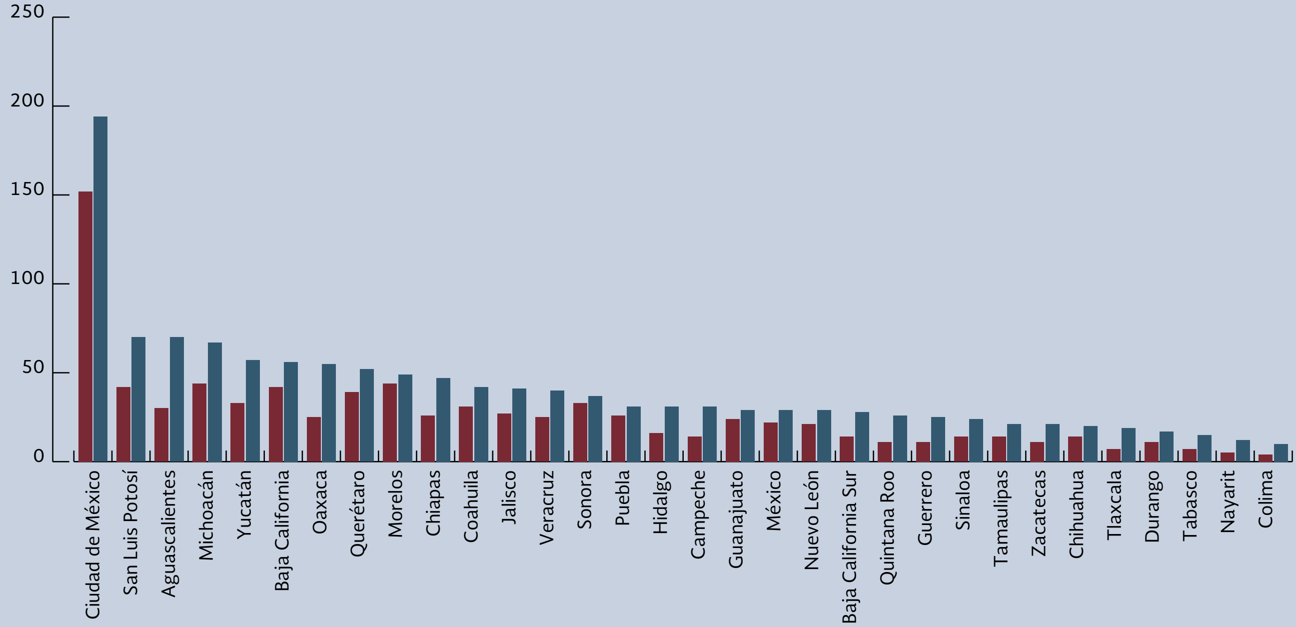
From 2009 to 2017, 570 announcements have been published, through which 7,792 applications have been received for a total amount of 23,749 million MXN (Table IV.4), out of which 2,559 projects have been approved of by the technical and administrative committees, for an amount of 9,027 million MXN.

In 2017, the Conacyt made contributions for 576.5 million pesos to the 27 trusts of the Mixed Funds. The governments of the states contributed 561.9 million pesos: 450.3 million pesos of the 2017 budget and 111.5 million pesos out of debt payment from previous years. There were published 55 calls with a committed amount of 1,289.2 million pesos. 122 applications were received, around 366 quality evaluations were carried out and 46 projects were approved for 933.3 million pesos.

IV.1.3.3 FORDECYT

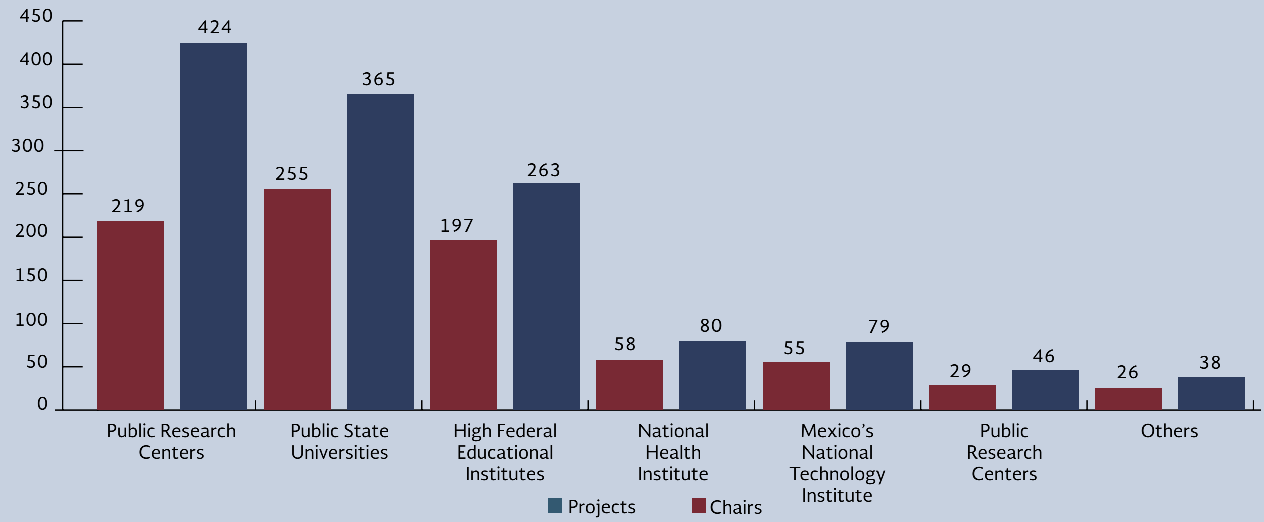
The Institutional Fund for Regional Development for Scientific Technological and Innovation Development (FORDECYT) is one of the Conacyt's intruments whose purpose is to strengthen local and regional systems of science, technology and innovation, as well as to promote the collaboration and integration of the regions.

GRAPH IV.7
DISTRIBUTION OF CHAIRS BY ENTITY, 2014-2017



Source: Conacyt, Directorate of Conacyt Chairs

GRAPH IV.8
LECTURES BY TYPE OF INSTITUTION, 2014-2017



Others: National Institute of Nuclear Research, National Center of Metrology, Autonomous University of Chapingo, Latin American Faculty of Social Sciences, The Mexican School, Mexican Institute of Social Security, The State College of Hidalgo, National Commission for Biodiversity's Trust Fund (NACBIO), Institute Technological Decentralized.
Source: Conacyt, Directorate of Conacyt Lectures.

TABLE IV.4
PROJECTS APPROVED IN MIXED FUNDS, 2009-2017
Numbers and amounts

Concepto	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Proposals received	2,302	1,668	1,240	1,397	675	102	184	102	122	7,792
Projects approved	741	483	409	478	189	70	100	43	46	2,559
Requested funds	1,488	4,102.9	3,050.1	5,818.0	1,566.0	1,824.8	1,558.7	2,009.0	2,331.8	23,749
Approved funds	1,351	1,059.5	1,216.0	1,140.5	696.6	905.4	778.1	947.1	933.3	9,027

Source: Conacyt, Deputy Directorate of Regional Development.

The resources authorized in the 2017 FEB (Federation's Expenditures Budget) allowed the Conacyt to contribute 123.5 million pesos to this Fund. As a result of the 11 announcements, 68 proposals were received, out of which 46 projects were approved for an amount of 782.5 million pesos.

One of the policies with greater support this year has been to encourage greater communication and cooperation among public research centers, identifying and taking advantage of existing capacities in a multidisciplinary manner and planning the future strengthening in the most effective and efficient ways possible.

IV.1.3.3.1 CONSORTIUMS OF PUBLIC RESEARCH CENTERS

The Consortiums of Public Research Centers constitute an agile, efficient and comprehensive policy of generating infrastructure and capacities to accompany regional development and to make the scientific and technological apparatus of the country more effective; likewise, they constitute an opportunity to promote the transition of Mexico towards a society and a knowledge-based economy.

In this sense, in the process of creation and consolidation of the Research Consortiums, the Conacyt has adopted a support strategy that includes the implementation of a specific program of the FORDECYT, which includes both support for operating expenses and infrastructure and associated services. Consortiums and Public Research Centers. This program is called "Support for the Consolidation of Consortiums and Networks of Public Research Centers in the Country", which approved seven fees for a total amount of MXN 153.6 million.

IV.1.3.4 SECTORAL FUNDS

The Sectoral Funds are trusts constituted by some dependencies, jointly with the Conacyt, with the purpose of allocating resources to promote the scientific investigation and the technological development of the different sectors, contributing to their own integral consolidation.

IV.1.3.4.1 SECTORAL TECHNOLOGICAL DEVELOPMENT FUNDS

During 2017, six Sectorial Technological Development Funds accepted a total of 50 projects, for a total amount of 877.3 million pesos (Table IV.5). The funds with the highest number of approved projects were Conacyt-SENER Hydrocarbons with 15 projects, followed by Conacyt-SENER Sustainability with 14 and SAGARPA-Conacyt with seven. In turn, these three funds were also those that had the highest authorized amount: 546.1 million pesos, MXN 151.8 million and MXN 107.7 million, respectively.

IV.1.3.4.2 SECTORIAL SCIENTIFIC RESEARCH FUNDS.

In 2017, four scientific research funds approved 498 projects all together for a total amount of 778.7 million pesos. The fund with the largest number of projects accepted was the Sectoral Fund

TABLE IV.5
SECTORAL FUNDS FOR TECHNOLOGICAL DEVELOPMENT, 2017

Fund	Projects	Amounts (Millions MXN)
Conacyt-SENER Hydrocarbons		564.1
Conacyt-SENER Sustainability	14	151.8
SAGARPA (Ministry of Agriculture, Livestock, Rural Development, Fishing and Food) - Conacyt	7	107.7
CONAFOR (National Forests Commission) - Conacyt	5	20.7
SEMARNAT (The Ministry of Environment and Natural Resources) Conacyt*	5	13.2
ECONOMY (FINNOVA/ Sector Innovation Fund) -Conacyt	4	19.8
Total	**50**	**877.3**

Note: The Sectoral Funds not included did not present new projects approved during the 2017 period, which does not necessarily mean inactivity.
Source: Conacyt, Deputy Directorate of Technological Development and Innovation
*Although the projects were approved in 2017, they belong to the 2016 announcement.

TABLE IV.6
SECTORIAL RESOURCES OF SCIENTIFIC RESEARCH, 2017

Sectoral Fund	Projects	Amount (Millions of pesos)
NAWC (The National Water Commission) - Conacyt	2	12.1
NIEE (The National Institute for the Evaluation of Education) - Conacyt	25	7.9
MPE-Conacyt	398	610.0
MPH/IMSS/ISSSWS (Institute of Social Security and Services for Workers at the Service of the State)-Conacyt	73	148.7
Total	**498**	**778.7**

Note: Sectoral Funds that are not in the table do not present new projects approved during the 2017 period, which does not mean inactivity..
Source: Conacyt, Deputy Directorate of Scientific Development, Deputy Directorate of Planning and Evaluation

SEP (Ministry of Public Education)-Conacyt with 398 projects and 610 million pesos. (Table IV.6).

IV.1.4 TRANSFER AND KNOWLEDGE APPLICATION

IV.1.4.1 TECHNOLOGICAL INNOVATION PROGRAM FOR HIGH VALUE-ADDED BUSINESSES, PRECURSORY TECHNOLOGIES AND BUSINESS COMPETITIVENESS (PEI)

TABLE IV.7
PROGRAM OF STIMULI TO INNOVATION, 2010-2017
NUMBER

Year	Projects	Amount (Millions of pesos)
2009	503	1,663
2010	677	2,797
2011	543	2,622
2012	522	2,127
2013	706	3,156
2014	866	3,971
2015	821	3,545
2016	936	4,122
2017	421	1,740
Total	**5,995**	**24,515**

Source: Conacyt, Deputy Directorate of Technological Development and Innovation

With the purpose of encouraging companies to invest in scientific research and technological development and boost the link between academia and business, through this program in 2017, 421 projects were approved for an amount of MXN 1,740.6 million (Table IV.7). 89 percent of the total projects are linked to higher education institutions or public research centers.

IV.1.4.2 ANNOUNCEMENT FOR SCIENTIFIC DEVELOPMENT PROJECTS TO ADDRESS NATIONAL PROBLEMS

With the aim of taking advantage of the knowledge generated by higher education institutions, public research centers and, in general, by public sector institutions that seek novel solutions to national problems, in November 2016 the announcement was published, including 18 demands:

1. National-scale emerging diseases
2. Food and its production
3. Use and protection of ecosystems and biodiversity
4. Development and use of clean renewable energies
5. Human behavior and prevention of addictions
6. Mitigation and adaptation to climate change
7. Integral water management, water security and water law
8. Computer connectivity and development of information, communication and telecommunications technologies

9. Fight against poverty and food security
10. Resilience against natural and technological disasters
11. High-tech manufacturing
12. Prevention of natural risks
13. Cities and urban development
14. Migrations and human settlements
15. Citizen security
16. The oceans and their use
17. Sustainable energy consumption
18. Knowledge economy

2,244 pre-proposals were received. As a result, in 2017, 82 projects were approved for an amount of MXN 156.3 million. Out of the total number of projects accepted by type of institution, the five groups of institutions with the largest number of projects were: public universities in the states obtained 25.6 percent (21 projects for 34 million pesos), followed by the Conacyt Centers with 17.1 percent (14 projects for MXN 27 million), UNAM (National Autonomous University of Mexico) with 12.2 percent (10 projects for MXN 15 million), national health institutes and private universities with 9.8 percent each (eight individual projects, 17 and MXN 14 million, respectively). These five groups of institutions concentrate 74.4 percent of the projects and 67.7 percent of the total amount granted to the program.

IV.1.4.3THEMATIC RESEARCH NETWORKS

The announcement for the Conacyt 2017 Thematic Networks was closed in January 2017, with 81 proposals approved out of the 242 received, for an amount of 98 million pesos. Of these, until December, 81 were financed.

From the proposals funded, it is appreciated that Mexico City is in the first position with 35.8 percent of projects, followed by Puebla, Morelos and Baja California with 7.4 percent each, and Michoacán with 6.2 percent. Nuevo León, 4.9 percent; Querétaro, Jalisco, Sonora, Guanajuato with 3.7 percent; Baja California Sur, Chihuahua, State of Mexico and San Luis Potosí with 2.5 percent for each state, and the rest, that add 6.2 percent.

Regarding the authorized amount, the five states with the greatest support were Mexico City with MXN 36 million, Puebla 7.6 million pesos, Morelos and Michoacan with 7.1 million pesos each, and Baja California with MXN 6.2 million.

IV.1.4.4 SCIENCE DISSEMINATION

Technical-financial completion certificates were processed and delivered to the subjects supported by the 2016 Announcement of Support for Public Communication Projects on Science, Technology and Innovation; as well as the call by the 2016 Fees Program of Public Communication of Science, Technology and Innovation Activities, adding all together a total of 20 projects for an amount of 47.5 million pesos.

Likewise, the announcement of the 2017 Program of Support for Public Communication of Science, Technology and Innovation Activities was published. As a result of the evaluation process, the agreements with the subjects supported were formalized.

The science dissemination activities included:

- From October 5 to 11, the XXIV National Science and Technology Week was held in San Luis Potosi, with a presence in seven venues. Six interactive museums, 43 groups of recreational science workshops, seven media, 24 lecturers from 16 thematic research networks and eight national Conacyt laboratories participated. 16 states and 70 organizations took part in such event. There were 80,109 people registrated.
- From December 5th to 8th, the 5th Ibero-American Seminar on Journalism of Science, Technology and Innovation Journalism, as well as the 2017 National Prize of Journalism on Science, Technology and Innovation, were held at the Eminent Autonomous University of Puebla's Cultural Complex. The events were attended by eight foreign speakers, journalists from 14 states of the Republic, 20 public research centers, eight higher education institutions, three news agencies, 21 media broadcasters, in addition to the intervention of BUAP students, researchers and teachers. There were 14 conferences and two dialogue tables on the evolution of science journalism in Mexico.
- The III National Congress of Public Communication of Science, Technology and Innovation was held, with the participation of 20 technical managers of the projects supported in 2017. Four lectures and

a round table on recreational science workshops were held.

IV.1.5 STRENGTHEN INFRASTRUCTURE IN SCIENCE, TECHNOLOGY AND INNOVATION

IV.1.5.1 SUPPORT FOR THE STRENGTHENING OF INFRASTRUCTURE

The support to the scientific and technological infrastructure of the centers and institutions dedicated to research, has been a fundamental part in the strengthening of the country. For this, the Conacyt has developed programs that go from facilitating infrastructure acquisition, to the construction and development of the project.

Among the support programs in this area, the following stand out:

- Support for the Strengthening and Development of Scientific and Technological Infrastructure: during 2017, 49 projects of 50[4] Sapproved projects were financed for an amount of 145.8 million MXN.
- Program of Scientific and Technological Development for the Strengthening and Consolidation of the Infrastructure of Public Research Centers Conacyt: During 2017, through the Directorate of Research Centers at the Conacyt, resources were approved to support different projects within the Support Program for Scientific, Technological and Innovation Activities, highlighting the support of 30 million MXN for the completion of the construction of the first stage of the Center for Industrial Engineering and Development (CIDESI). In addition, another 28 projects were accepted for 337.8 million MXN, benefiting 21 centers.
- Complementary support for the establishment and consolidation of Conacyt National Laboratories: In 2017, 59 projects of 60 approved[5] by the 2017 Announcement were formalized and ministered, with a total amount of 194.4 million MXN.

IV.1.6 STRENGTHENING OF SCIENCE AND TECHNOLOGY CAPABILITIES IN BIOTECHNOLOGY

The Office of the Executive Secretary, according to the purpose of the CIBIOGEM (Inter ministerial Commission for the Biosecurity of Genetically Modified Organisms), reports work progress carried out for 2017 within the framework of four general objectives:

1. **Coordinate the application of public policies on biosecurity of Genetically Modified Organisms (GMOs) for the effective implementation of the national regulatory framework.**

   These activities are in accordance with the Genetically Modified Organisms Biosecurity Law (BGMOL), with the aim of contributing to the formulation and implementation of national policies regarding the biosecurity of GMOs in Mexico and the cross-cutting link with policies for conservation and sustainable use of the components of biological diversity.

   Under this premise, it is working in states such as Campeche, Sinaloa, Sonora, Tamaulipas, Veracruz and Yucatan, where different consultation processes or agreements phase are carried out, due to requests for release to the OGM environment, for example: soybean and cotton.

2. **Strengthen participation, public awareness and education at different levels in the safe use of biotechnology in Mexican society in all sectors.**

   The importance of publicizing, communicating and educating society on the basis of reliable information is recognized, generating awareness of biosecurity issues, thus strengthening national capacities in this field.

   The Executive Secretariat is responsible for updating the profile of Mexico before the Biosafety Information Exchange Center (BIEC), the BioTrack Product Database of the Organization for Economic Cooperation and Development (OECD) and the Platform for GMOs of the UN for Food and Agriculture. All the databases were updated as of December 31, 2017, with the information sent by the competent secretariats.

   With respect to the National Registry of Genetically Modified Organisms, in 2017, 20 resolutions of permit applications for the release to the environment of GMOs were issued. Likewise, regarding the list of safety assessment of GMOs destined for

[4] Due to the fact that in one of the approved projects, the supporter requested the cancellation of the project and the return of 4.1 million MXN.

[5] As in one of the approved projects, the supporter requested the cancellation of the project and the return of 7.5 million MXM.

human, animal and processing consumption, 18 new OGM authorizations were sent, totalling 164.

3. **Promote and guide research in biotechnology and biosafety on strategic issues for sustainable use and conservation of biodiversity.**

   The development of the activities in this section deals with the content of the Program for the Development of Biosafety and Biotechnology and the BGMOL with regard to fostering, supporting and strengthening scientific and technological research in biosecurity and biotechnology.
   Technical and administrative follow-up of the Projects approved through the CIBIOGEM Fund in the Biosecurity modalities (2011, 2012 and 2014) and Biotechnology (2010, 2015 and 2016) was given. There are 19 projects that together represent an amount of 59.1 million MXN.

4. **Respond in a timely and coordinated manner to the participation and requirements established for Mexico before the international organisms in matters of biosecurity.**

   This encourages the participation and positioning of Mexico before international organizations and forums, following up on colloquia and commitments that lead to international or regional agreements related to biotechnology.
   Together with the SAGARPA, on October 27th, the Conacyt took part in the teleconference of the Trilateral Technical Mexico-United States and Canada. The update of applications of GMOs, the guide for the sequencing of Canada, the advancement in the proposal of webinar to be developed and the exchange of information about the NOM (Official Mexican Norm) of risk assessment and regulation of synthetic biology were addressed.

IV.1.6.1 CARTAGENA PROTOCOL ON SECURITY OF BIOTECHNOLOGY

The Conference of Parties (COP) is the highest governing body of the Convention on Biological Diversity (CDB). The COP gathers the representatives of the country's participants and key actors in charge of promoting the application of this agreement. 12 notifications were received to address the decisions taken within the Conferences of the Parties to the Convention and its Protocol (COP-MOP), as well as a press release. From the total notices, 10 were attended while two of them are in process, with a deadline to be met in the first quarter of 2018.

[6] http://www.cofepris.gob.mx/AZ/Paginas/OGMS/Lista.aspx

[7] Article 9 sections VI and XII, article 30 of the PDBB and articles 28 and 29 of the BGMOL.

IV.1.7 CROSSWISE STRATEGIES

IV.1.7.1 NATIONAL REGISTRY OF SCIENTIFIC AND TECHNOLOGICAL INSTITUTIONS AND COMPANIES (RENIECYT)

During 2017, RENIECYT had 11,652 registrations, 14 percent higher than in 2016. Registered institutions and companies are those that have the possibility of being benefited by some support of the programs operated by the Conacyt (Graph IV.9).

IV.1.7.2 NATIONAL SYSTEM OF SCIENTIFIC AND TECHNOLOGICAL EVALUATION (SINECYT)

The SINECYT is the instrument that fees the evaluation process of the Conacyt programs. The fundamental purpose is to ensure that the evaluation of the proposals presented in the various programs offered by the Conacyt is carried out in a transparent and objective manner.

In 2017, 25,406 evaluators were registered in the Conacyt Registry of Accredited Evaluators (RCEA), 2.8 percent higher than those registered in 2016 (Graph IV.10).

IV.1.8 INTERNATIONAL COOPERATION

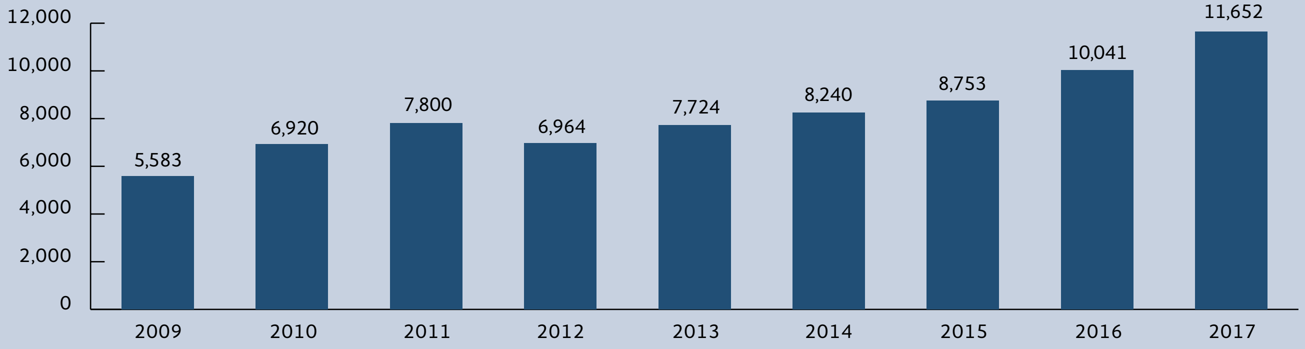
IV.1.8.1 INTERNATIONAL AGREEMENTS

Conacyt has 223 International Cooperation Conventions and Agreements with different countries such as: Germany, Saudi Arabia, Belgium, China, South Korea, Slovakia, United States, as well as with multilateral organizations, among others. The ten nations with the highest number of agreements in force are shown in Table IV.8

IV.1.8.2 BILATERAL COOPERATION

Within the framework of the activities developed by the Council to contribute to generating a knowledge economy, during 2017 the internationa-

GRAPH IV.9
INSTITUTIONS AND COMPANIES IN THE RENIECYT, 2009-2017
Numbers registrated



Source: Conacyt, Deputy Directorate of Legal Affairs.

lization of activities and public policies in science and technology continued to be strengthened, through three strategic points:

- Develop and consolidate international cooperation agendas with strategic countries and regions, with the aim of contributing to the country's scientific and technological development;
- Negotiate and implement joint mechanisms that support scientific research and technological development, through schemes and collaboration modalities with international actors;
- Administer the International Cooperation Fund for Science and Technology (ICFST), as a financing and coordination tool within the Council;
- Support the negotiation of agreements and instruments to promote international cooperation, such as the training of high-quality human resources, scientific development, technological innovation, among others.

Below, some relevant results are shown under these premises:

Germany

GRAPH IV.10
CONACYT REGISTRY OF ACCREDITED EVALUATORS, 2009-2017

Source: Conacyt, Directorate of International Cooperation.

TABLE IV.8
BILATERAL MOBILITY PROGRAM
Number

Country	Agreements
France	43
United States	42
United Kingdom	35
Canada	18
Spain	12
Germany	11
Multilateral Organizations	11
Australia	10
Argentina	5
European Union	4

Source: Conacyt, Directorate of International Cooperation.

The Joint Announcement for Mobility made by Conacyt-DAAD-PROALMEX, launched on October 21 and ending in November of the same year, received a total of 32 joint proposals, which have already been evaluated and eight were jointly chosen to be financed. They are currently in their second stage of development.

Within the framework of the Memorandum of Understanding between Conacyt and the Max-Planck Society of Germany, signed on April 11, 2017, from February 27 to March 1, 2018, the Symposium "Frontiers of Science ", of a multidisciplinary nature took place.

Canada

The Collaboration Agreement was signed between the Fonds de Recherche du Québec (FRQ) and the Conacyt, with the aim of establishing a legal framework to carry out specific calls and / or work plans in different areas of interest among the activities, related to the exchange of information and scientific and technical experience.

The Collaboration Agreement between the International Development Research Center (IDRC) and the Conacyt was subscribed through the program "Supporting indigenous women in science, technology, engineering and mathematics careers in Mexico and Central America", which includes support for research grants postdoctoral studies in science, technology and engineering for indigenous women. This instrument establishes the framework for both parties to carry out the project activities, as well as the individual and joint functions and responsibilities.

Cuba

Considering the opportunity presented in the development of nanotechnology in the field of bilateral relations between Cuba and Mexico, a contract for the provision of services was agreed upon between Innocavión y Competitividad, SA de CV and Conacyt, through which the proposal "Preparation of a diagnostic study and technological roadmap on the subject of nanotechnology in Cuba", with a budget of 1.05 million MXN.

United Kingdom

On November 22 and 23, 2017, the Smart Cities Workshop was held under the auspices of the Economic and Social Research Council of the United Kingdom (ESRC) and Conacyt, which brought together academics and researchers to discuss about the thematic areas circumscribed within the theme of smart cities. Four areas were identified as possible thematic lines to be developed as projects within a joint call:

- Urban infrastructure, mobility and quality of life
- Resilience and environmental sustainability
- Smart cities policies
- Urban economy and digital social innovation

South Africa

Within the framework of the Cooperation Program, the DST (Department of Science and Technology) through the NRF (National Research Foundation) and the Conacyt, launched on May 15, 2017 the Conacyt-NRF 2017 call, which is focused on the creation of working groups in Advanced Manufacturing, Astronomy and Oceanography.

Turkey

On October 25, 2017, in Ankara, Turkey, the Meeting of the Committee of Culture, Education, Science and Development Cooperation between Mexico and Turkey was held, in which the projects approved within the framework of the joint call

Conacyt-TÜBITAK, it was also agreed to strengthen the joint program and generate a strategy to involve the private sector, and it was established that the next joint call will be issued in 2019, based on the budget availability of Conacyt and TÜBITAK.

Announcement 2016-1 "Research Projects in Science, Technology and Innovation, linked with Mexican Scientists and Technologists abroad"

As of December 2017, we have the following results from the first and second group of the evaluation process of the proposal in extensive:

- First group: 35 projects were sent for evaluation by RCEA (Conacyt Registry of Accredited Evaluators), out of which 30 projects are already have the three required evaluations.
- Second Group: Ten projects were sent for assessment by RAE (Conacyt Registry of Accredited Evaluators), out of which 5 projects are already have the three required evaluations.

It is expected to end the evaluation process of this call no later than February 2018.

OAS

On September 14, 2017, the 10th Americas Competitiveness Forum was held and established as a space for dialogue to foster the exchange of ideas and experiences regarding the challenges and obstacles to achieve greater levels of competitiveness through innovation, and consequently improve the well-being of the inhabitants of the region. For its tenth edition, the central themes were structural reforms and entrepreneurship, in order to share good practices and find joint solutions to current challenges. There were more than a thousand leaders from both the public and private sectors, as well as academics whose participation impacts on regional competitiveness in terms of trade, industry and economic development. During the three days, keynotes, plenary discussions, workshops, interactive sessions, bilateral meetings spaces and entertainment events were offered.

Mexico-European Union cooperation

The Conacyt-T-AP DiD Announcement, the first of its kind to support digital humanities in Mexico, has the objective of promoting the participation of Mexican researchers in transatlantic consortiums, in the topic T-AP Digging into Data. After receiving 105 eligible proposals, the results and press releases were announced in March 2017. Two proposals with Mexican participation were winners and supported by the Conacyt during the second semester, through the signing of a Resources Assigment Agreement (RAA).

CHAPTER V

FOLLOW-UP OF THE SCIENCE, TECHNOLOGY AND INNOVATION STRATEGIES OF THE NATIONAL DEVELOPMENT PLAN, 2013-2018

CHAPTER 5. FOLLOW-UP OF THE SCIENCE, TECHNOLOGY AND INNOVATION STRATEGIES OF THE NATIONAL DEVELOPMENT PLAN, 2013-2018

FOCAL POINTS

- The indicator of number of researchers per every 1,000 people in the employed economically active population went from 64.4 in 2016, to 67.6 in 2017.
- The indicator for published scientific articles per every million inhabitants has continually grown during the past few years. The indicator for 2017 is 117.2.
- The Scientific Capabilities gap among states closed in comparison to 2016. It showed a .70 value for this year, and a value of .75 for the previous one.

BACKGROUND

The aim of this chapter is to present the most important actions undertaken by all instances of the Federal Public Administration (APF) to meet the goals of the science, technology and innovation strategies in the National Development Plan 2013-2018 (PND). Progress in indicators of the Special Program for Science, Technology and Innovation 2014-2018 (PECiTI) is also reported.

Organization and structure of the PECiTI 2014-2018

The general aim of the National Development Plan (PND) is to "lead Mexico towards development of its maximum potential". Five national goals and three cross-cutting strategies stem from this general purpose (see Figure 5.1).

The national goal "3. Mexico with quality education" of the PND, gives way to objective 3.5:

- "To make scientific and technological development, as well as innovation, foundations for a sustainable social and economic progress".

Para alcanzar tal objetivo se siguen cinco estrategias:

- Strategy 3.5.1. Contribute to the annual growth of national investment in scientific research and technological development towards achieving a total level of one percent of the GDP.
- Strategy 3.5.2. Contribute to the training and strengthening of high level human capital.
- Strategy 3.5.3. Foster the development of local scientific, technological and innovational vocation and abilities, to strengthen a sustainable and inclusive regional development.
- Strategy 3.5.4. Contribute to the transfer and use of knowledge, linking higher education institutions

FIGURE V.1

GENERAL OBJECTIVE, NATIONAL GOALS, AND CROSS-CUTTING STRATEGIES OF THE NATIONAL DEVELOPMENT PLAN, 2013-2018

Source: National Development Plan, 2013-2018.

with public, social and private sectors' research centers.
- Strategy 3.5.5. Contribute to the strengthening of the country's scientific and technological infrastructure.

The PECiTI 2014-2018 is the guiding outline for public policy in Science, Technology and Innovation (STI). Its mission and vision are:

Vision toward 2038:
Mexico is a global renowned actor in knowledge economics that has reached sustainable levels of competitiveness and productivity.

Vision toward 2018:
Mexico stands out for having achieved an important increase in its productivity and competitive levels and stands in a clear path towards a knowledge-based economy.

Complying with the PND thanks to the joint efforts of all actors in the Science, Technology and Innovation National System (SNCTI) laid the foundations for the creation of capabilities that led the country into a knowledge based economy.

Mission 2014-2018:
Make knowledge and innovation an essential lever for sustainable economic growth in Mexico. This should foster human development, enable greater social justice, consolidate democracy and peace, and strengthen national sovereignty.

To fulfill its mission and vision, the PECiTI relies on the five strategies stemming from objective 3.5, as well as from the three cross-cutting strategies of the PND 2013-2018, so as to lead Mexico into a knowledge-based economy.

The alignment of the PECiTI 2014-2018 with the PND 2013-2018 is shown in Figure 5.2.

OBJECTIVE 1. CONTRIBUTE TO THE ANNUAL GROWTH OF NATIONAL INVESTMENT IN SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT TOWARDS ACHIEVING A TOTAL LEVEL OF ONE PERCENT OF THE GDP.

During 2017 the National Polytechnic Institute (IPN) undertook several efforts to increase resources allocated to research development. It directed the $123,382,812.80 MXN conferred for internal funding to 1,837 research projects. 54.93% was

TABLE V.2
ALIGNMENT OF THE PECITI 2014-2018 WITH THE PND 2013-2018

<table>
<tr><th>National Goal</th><th>Aim of the national goal</th><th>Strategies</th><th>Aim of the program</th></tr>
<tr><td rowspan="5">III. Mexico with quality education</td><td rowspan="5">3.5 To make scientific and technological development, as well as innovation, foundations for a sustainable social and economic progress</td><td>1 Contribute to the annual growth of national investment in scientific research and technological development towards achieving a total level of one percent of the GDP</td><td rowspan="5">To make scientific and technological development, as well as innovation, foundations for a sustainable social and economic progress.</td></tr>
<tr><td>2 Contribute to the training and strengthening of high-level human capital.</td></tr>
<tr><td>3 Foster the development of local scientific, technological and innovational vocation and abilities, to strengthen a sustainable and inclusive regional development.</td></tr>
<tr><td>4 Contribute to the transfer and use of knowledge, linking higher education institutions with public, social and private sectors' research centers.</td></tr>
<tr><td>5 Contribute to the strengthening of the country's scientific and technological infrastructure.</td></tr>
</table>

Source: National Development Plan, 2013-2018.

devoted to higher education and graduate programs; 41.51% to research centers, and 3.55% to high schools and central area units. Compared to 2016, the internal budget oriented towards the development of research programs diminished by 66.10%; it went from $363,855,852.66 MXN, to $123,382,812.80 in 2017.

On the other hand, the National Autonomous University of Mexico (UNAM) received funds for 113 projects from one of Conacyt's sectoral funds. These projects amounted to a total worth of $481,793,751.04 MXN. Among the main programs there are the Sectoral Fund for Educational Research, Basic Research Projects; the Sectoral Fund SENER (Ministry of Energy)-Conacyt Hydrocarbon; the Sectoral Fund SENER (Ministry of Energy)-Conacyt, Energy Sustainability. Additionally, the project "Demonstrative buildings with bioclimatic design for sub-humid warm climate" of the Institute for Renewable Energies, was approved after participating in the call Conacyt-SENER-Energy Sustainability 2017-01. In order to develop this project, the government of the state of Morelos granted land measuring 8,800 m.2

Likewise, the UNAM received funding for seven projects by one of the Mixed Funds. All in all, $19,387,914.37 MXN were approved. Taken separately, the Mixed Funds (FOMIX) that contributed to the total amount were the Mixed Fund for the Promotion of Scientific and Technological Research Conacyt-Oaxaca State Government, and the Fund for the Regional Promotion of Scientific, Technological and Innovational Development.

On the other hand, the Fund for International Cooperation on Science and Technology (FONCICYT) approved 15 requests presented by UNAM for a total of $23,481,609.10 MXN. This amount funded several calls, including: Conacyt-NSF NoBi modality, Joint Call Conacyt-British Council, Conacyt-NSF PIRE, Conacyt-CNR.

Furthermore, it is worth mentioning that one of the meaningful achievements of 2017, for UNAM, was beginning the Conacyt Network "Environmental Pollution and Climate Change Mitigation", directed by a scholar of the Center for Atmospheric Sciences.

The National Pedagogical University (UPN), on the other hand, compiled 11 new projects for 2017, which led it to develop 90 current projects. This fosters educational research and the development of projects whose main characteristic is to produce educational intervention proposals for diverse educational levels.

Within the Health Sector, the ISSSTE was able to get funding for 32 basic and clinic research projects in topics such as breast cancers, brain and genetic tumors such as polymorphism including the resolve to study the genome wholly. The National Institute of Genomic Medicine (INMEGEN) signed a technological development agreement with the company Winter Web Internet and Network Technology for Enterprise Resources (Anonymous Variable Capital Corporation), for the project "Bio-informatics services in the cloud for the identification of genetic variants". This is an app for molecular diagnosis and genomic research, funded by the Technological Incentives Program (PEI) (Innovation Stimuli Program (ISP) FINNOVA-Conacyt, with a bridging fund of $1,998,384.71 MXN. The same funding provided for the formalization of the project "Creation and evaluation of a bio-panel for medicinal genomics and the early diagnosis of chronic degenerative illnesses, utilizing new genetic information of the Mexican population", with the bridge sum of $3,300,000.00 MXN.

Correspondingly, within the health sector, the IMSS reports, for 2017, a 15% increase vis-à-vis its 2016 expenses. It has 555 current health research projects with the financial support from IMSS itself, the Conacyt, pharmaceutical industry and other entities.

Within the energy sector, the Ministry of Energy (SENER), through the Sectoral Fund Conacyt-SENER, approved 18 projects for a sum of $172.36 million pesos. These projects were mainly oriented towards strengthening the management and development abilities of renewable energies, energetic efficiency, diversification of primary sources of energy and use of clean technologies. The Mexican Institute of Petroleum (IMP), at the end of 2017, had 80 ongoing research and technological development projects. The multi-annual investment for these projects amounted to $5,938 million MXN.

In 2017, the SEMARNAT supported six research projects via the Sectoral Fund Conacyt-CONAFOR for a total amount of $20 million MXN supplied to the following institutions: COLPOS, Autonomous University of Chapingo, INIFAP, Autonomous University of Coahuila and CICY.

In Table V.1 progress of the goals established for indicators for objective 1 of the PECiTI 2014-2018 are shown. The indicator Federal Expenditure on

TABLE V.1

FIGURES FOR INDICATORS OF OBJECTIVE 1. CONTRIBUTION TO NATIONAL INVESTMENT IN SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT TOWARDS AN ANNUAL GROWTH REACHING ONE PERCENT OF THE GDP

Name	Goal achieved by 2015	Goal achieved by 2016	Goal achieved by 2017
Expenditure on Scientific Research and Experimental Development (GERD) as percentage of the GDP	0.53%	0.51%	0.48%p/
Participation of the entrepreneurial sector in the Expenditure on Scientific Research and Experimental Development (GERD)	19.7%	20.7%	22.6%p/

[1] It is worth noting these are estimates. Real figures will be provided by the Survey on Research and Technological Development (ESIDET) 2016 which contains information from the years 2014 and 2015.
[2] It is worth noting these are estimates. Real figures will be provided by the Survey on Research and Technological Development (ESIDET) 2016 which contains information from the years 2014 and 2015.
p/ Preliminary figures.
Source: Indicators of the Special Program of Science, Technology and Innovation, 2014-2018 and their linkage to national planning, Conacyt.

Scientific Research and Experimental Development (GERD) as percentage of the GDP allows the monitoring of the monetary resources spent by the entrepreneurial, private not for profit, public and Higher Education Institutions (HEI), oriented to Scientific Research and Experimental Development (IDE) for a given time-period. This indicator is acknowledged as one of the main STI indexes for the design, follow-up and evaluation of public policies and their international comparison. Indicator has declined since 2016, the figure for which was 0.51 percent, and in 2017 the figure was 0.48, which represents a decrease of six percent.

Likewise, an advance of the indicator "Participation of the entrepreneurial sector in funding for Expenditure on Scientific Research and Experimental Development" (GERD), which is a measure of the investment undertaken by the private sector in technological research and development in support of national development in a given period of time, is shown. In 2016 the indicator grew: it went from 20.7 percent to 22.6 percent by 2017. An increase of 9.1 percent.

Both results suggest the importance of continuing to design more efficient politics and programs so that companies increase their investment in technological research and development and that the public sector and HEI keep and even increase their programs.

OBJECTIVE 2. CONTRIBUTE TO THE TRAINING AND STRENGTHENING OF HIGH LEVEL HUMAN CAPITAL

An important feature to highlight is that 68.1 percent of academics belong to levels II and III of the Researchers National System (SNI). Twenty two are emeritus, classified among those in level III of the SNI. Besides academic personnel, the CINVESTAV's staff includes 61 research assistants, 59 post-doctoral associates, 16 professors hired temporarily and 19 researchers under Conacyt Lecture status, all part of the SNI. During 2017, furthermore, procedures to sign 21 international collaboration agreements were followed.

The IPN, on the other hand, has 1,197 researchers in the SNI, which means a 3.64 percent increase compared to 2016. Not only the figure but the quality has grown, as the percentage of level III researchers has risen in 5.36 percent, in 8.38 percent for level II, and in 1.65 percent for level I.

For 2017, the Latin American Faculty of Social Sciences, (FLACSO) reported 34 professors were part of the SNI, representing 71 percent of the professors-researchers of the institution during that year. Additionally, according to their graduates' databases, 52 of their doctoral graduates from their program of Research in Social Sciences belong to the SNI, representing 44 percent of the total graduates of the program who live in Mexico. Of these, 20 are women, and 32, men.

Among the IMSS health personnel, 489 obtained an institutional researcher curricular status; 67.1 percent (328) became part of the Researchers National System which, for a second year in a row made 2017 the year with the most number of SNI researchers in the IMSS in the entire institute's history.

The Foreign Affairs Ministry delivered the annual research price "José Antonio Alzate" to the German researcher, Dr. Stefan Rinke, for the project "Among spaces". This acknowledgement includes a Mexican peso equivalent to 60 thousand euros, which will be used in a scientific research project related to Mexico. The prize recipient will develop the project in the institution that nominated him.

The Mexican Institute of Petroleum had, by 2017, 128 employees part of the SNI. It included in its workforce 10 graduates with MAs from abroad, which strengthened the specialized areas of oilfields, drilling, completion and maintenance of wells, basins modelling and their petroleum systems, hydrocarbon recovery systems, numeric simulation of oilfields and artificial production systems.

Within the National Forests Commission of the SEMARNAT, there are 10 SNI researchers; seven are level I, two are level II, and one is level III, supported by the Sectoral Fund CONAFOR-Conacyt 2017. Further, they reported participation in the Thematic networks Conacyt call for 2017, from which they obtained funding to support continuity of two research networks on forest health and for the laboratory for the analysis, use, management and conservation of soils. Together, these will provide information, materials and outcomes according to the needs of CONAFOR's technical areas.

The Mexican Institute of Transport (IMT) led thematic networks for the research of traffic-related accidents and logistics and transportation systems. In 2017, the IMT was named leader of the National Laboratory of Waterway-Vessels Engineering.

Table V.2 shows the progress of the goals included in the indicators established for Objective 2 of the PECiTI 2014-2018. The indicator "Researchers per every 1000 people in the employed economically active population (PEA)", measures the number of persons devoted to research and technological development, working in the productive sector, government, higher education and not for profits as a proportion of the PEA employed during a given time-period. This index has historically shown a growing trend: the figures 64.4 in 2016 and 67.6 in 2017 represent a 4.9 percent increase.

Similarly, there is progress in the indicator "Published scientific articles per every million inhabitants", which counts the number of articles written by scientists, members of Mexican institutions and economic entities, published in globally indexed journals per every million inhabitants in the Mexican Republic in a given time period. This measurement is a useful tool for decision making regarding support for and follow-up of creation and dissemination of new country produced scientific and technological knowledge in all fields of science and knowledge towards improvement of the population's well-being, sustainable economic development and competitiveness. This factor has historically kept a growing trend since 2014. In 2016 and 2017 the figures 113.5 and 117.2 show a 3.25 percent increase.

Finally, the indicator "Percentage of doctoral graduates in sciences and engineering from the total amount of doctoral graduates", seeks to demonstrate the participation of the former who have finished their degrees in the country's higher education institutions, both public and private. This index decreased in 2017, falling from 40.1 in 2016, to 39.7. A small decrease close to one percent.

OBJECTIVE 3. FOSTER THE DEVELOPMENT OF LOCAL SCIENTIFIC, TECHNOLOGICAL AND INNOVATIONAL VOCATION AND ABILITIES, TO STRENGTHEN A SUSTAINABLE AND INCLUSIVE REGIONAL DEVELOPMENT.

In 2017, the IPN continued projects for the creation of two research centers in Chihuahua and Morelos. Furthermore, the Professors College and the Graduate Studies and Research Section were started in Silao, Guanajuato.

The UNAM reports two relevant achievements in this area: implementation of the Juridical Research Institute and the National Diversities Laboratory. The latter is the first national facility dedicated to the social sciences and humanities supported by the Conacyt Likewise, stemming from the acquisition of the GOES-16 antennae, for the reception of images from the new generation satellites, which began operations in 2017, the National Laboratory for Earth Observation (NLEO) was established. This consolidates the Institute of Geography's

TABLE V.2

RESULTS FOR INDICATORS TO MEASURE OBJECTIVE 2. CONTRIBUTE TO THE TRAINING AND STRENGTHENING OF HIGH LEVEL HUMAN CAPITAL

Name	Goal achieved by 2015	Goal achieved by 2016	Goal achieved by 2017
Researchers per every 1,000 employed persons in the PEA	62.4	64.4	67.6
Published scientific articles per every one million inhabitants	99.6	104.7	117.2
Percentage of PhD graduates in sciences and engineering from the total PhD graduates	38.4	40.1	39.7

Source: Indicators of the Special Program in Science, Technology and Innovation, 2014-2018 and their link to national planning, Conacyt.

position as a national reference for the management of advanced inputs in remote perception.

In 2017, the CINVESTAV signed 21 international collaboration agreements: 14 general ones, three specific ones with Germany, Chile and Spain, and four for co-graduation with universities in Spain and France.

In the health sector, the IMSS had achievements regarding instruction and training of its research personnel, thanks to interaction with two French institutions: the Institut Pasteur and the University of Toulouse (INSERM), besides other institutions such as the University of Virginia, the University of Bonn, Germany and the University of Toronto.

Towards the year's end, the UAM reported 338 scholars in Sabbatical leave, which enables and sponsors academic enhancement through exchanges with national and foreign educational institutions, beyond fostering development of research projects. Regarding graduate students, there are 58 scholarship recipients in international mobility from UAM to other institutions, and three from abroad who participate in UAM in the same capacity.

The MIP added an MA graduate who studied abroad to its workforce. This hire strengthens the area of quantic geophysics. Moreover, three of its researchers spent three months in the JBEI, and nine visited Harvard University for a week, to develop joint projects. As an outcome of research projects in line with training graduates, during the period covered, two scientific articles were published in specialized refereed international journals, and a patent was registered. All of it directly linked to given technological requirements of the energy sector.

Table V.3 shows advancement of goals for indicators established for Objective 3 of the PECiTI 2014-2018. It demonstrates how the gap in scientific and innovation capabilities of the states becomes narrower –see indicator of same name. This index registers the behavior of the gap in terms of STI among the 32 Mexican states, by year. The smaller the variation coefficient, the smaller the gap among states. This implies that the mean of the capabilities factor increases, and data dispersion (standard deviation) is smaller. This indicator has traditionally descended. The resulting figure of 0.73 for 2017 represents a decrease of a little over 11 percent compared to the level achieved in 2016, of 0.82.

Likewise, there is progress in the "Index of scientific and innovation capabilities," which measures the 32 states' capacities in terms of human capital, scientific development and innovation in a given time period. The indicator has always increased. It is important to note that the outcome reached in 2016 has been greater than the one obtained in 2015; the geometric average of variation rates signals an increase of 31.7 percent.

OBJECTIVE 4. CONTRIBUTE TO THE CREATION, TRANSFER AND USE OF KNOWLEDGE, LINKING HIGHER EDUCATION INSTITUTIONS WITH PUBLIC, SOCIAL AND PRIVATE SECTORS' RESEARCH CENTERS.

CINVESTAV submitted 17 national registration requests, of which 14 are patents and three, industrial designs. Additionally, three more requests for patents were submitted before the Patent Cooperation Treaty, as well as a request for a patent submitted abroad.

The IPN obtained an award which enables it to link with companies that participate in the ISP-Conacyt funds; it also won the price for the best institutional software for the SAV. Furthermore, the IMPI awarded the IPN 19 patents and registrations: 12 trade-mark registrations; 194 work certificates; two registration titles for utility models; one registration title for industrial design; 243 copyright procedures; 215 industrial property commissions; 233 expert opinions and certificates issued by INDAUTOR, IMPI, and CCPRI.

For the year 2017, the UAM registered 353 research and current service provision projects with the public, social and private sectors. It submitted 10 patent requests; five were awarded nationally, and five internationally.

The SEMAR reports that, in 2017, 26 scientific research projects have jointly advanced in 73.06 percent. This has allowed an improvement in systems and equipment for the SEMAR regarding the use of cutting-edge technology, decreasing foreign technology dependence.

Table V.4 shows progress of goals included in the indicators established for Objective 4 of the PECiTI 2014-2018. There is advancement in the indicator "Percentage of companies that undertake innovation projects with HEIs and Public Research Centers (CPI)", which measures the transfer of STI knowledge from HEIs and PRCs to companies, to take on innovation projects. This indicator allows observation of the incorporation of technological innovation in the production apparatus, which adds value to products and services, fosters productivity and enhances national competitiveness. The indicator decreased up to 2016, year in which its value was 8.4. 2017 shows the same figure, in other words, it remains the same as the previous year.

The indicator "Companies that undertook technological innovation as percentage of the total number of companies" is the same for 2017. This index measures creation and use of STI knowledge in innovation projects, by companies. It can be ascertained that, as the proportion of innovative companies grows, the better is the creation and use of knowledge, as well as its transference to economics and society.

On the other hand, the Table shows progress of the indicator "Rate of dependence on patents requested by non-residents compared to the patents requested by residents", which represents the extent to which a country depends of inventions developed beyond its borders. Increase of investment in technological innovation activities will result in an increase in requests of national patents, which suggests it is possible to have less dependency. Results obtained for 2017, of 11.9 percent, shows a decrease in dependency of 3.25 percent compared to the year before, which reported a percentage of 12.3 for the same measurement.

OBJECTIVE 5. STRENGTHENING THE COUNTRY'S SCIENTIFIC AND TECHNOLOGICAL INFRASTRUCTURE

The Mexican Petroleum Institute finished the construction stage of the Center for Deepwater Technology (CTAP), as well as the acquisition for and supervision of the construction of experimental equipment for five laboratories. During 2017 the theoretical-numerical stage of the first three technological research and development projects in flow assurance, marine geotechnics and floating production systems was developed, authorized by the Sectoral Fund Conacyt-SENER Hydrocarbons.

On the other hand, the National Institute for Nuclear Research is the holder party towards the consolidation of the National Laboratory for Radiopharmaceuticals' Research and Development, with a sum of $5,000,000.00 MXN, and of the National Laboratory of Research on Nuclear Forensics, which includes the National Library in Nuclear Forensics. Likewise, the proposal for the consolidation of the National Laboratory of Sciences for the Research and Conservation of National Patrimony was approved.

On the same tenor, in 2017 the INECOL finished the certification of the laboratories of the National Institute of Ecology and Climate Change (INECC), in accordance with the ISO-17025 norm. The aim of this certification was to provide the INECC's laboratories the accreditation to perform testing and calibration.

Through the Sectoral Fund for Research and Development of Naval Sciences, the SEMARNAT implemented the following projects, which contribute to foster and strengthen the infrastructure of several research institutes: 1. The Navy's Institute of Research and Technological Development, with the projects "Maritime Surveillance System by

TABLE V.3

RESULTS OF THE INDICATORS FOR OBJECTIVE 3. FOSTER THE DEVELOPMENT OF LOCAL SCIENTIFIC, TECHNOLOGICAL AND INNOVATIONAL VOCATION AND ABILITIES, TO STRENGTHEN A SUSTAINABLE AND INCLUSIVE REGIONAL DEVELOPMENT.

Name	Goal achieved by 2015	Goal achieved by 2016	Goal achieved by 2017
Gap in the index of the states' scientific and innovation capabilities	0.84	0.82	0.73
Index of scientific and innovation capabilities, Mexico City	89	104	91
Index of scientific and innovation capabilities, Mexico	40	63	63
Index of scientific and innovation capabilities, Nuevo León	38	41	40
Index of scientific and innovation capabilities, Jalisco	37	50	46
Index of scientific and innovation capabilities, Guanajuato	27	36	35
Index of scientific and innovation capabilities, Puebla	24	37	36
Index of scientific and innovation capabilities, Querétaro	25	27	25
Index of scientific and innovation capabilities, Tamaulipas	19	23	23
Index of scientific and innovation capabilities, Veracruz	22	35	33
Index of scientific and innovation capabilities, Coahuila	22	30	31
Index of scientific and innovation capabilities, Hidalgo	17	23	21
Index of scientific and innovation capabilities, Baja California	21	23	22
Index of scientific and innovation capabilities, Sonora	19	29	25
Index of scientific and innovation capabilities, Morelos	18	21	19
Index of scientific and innovation capabilities, Chihuahua	19	25	26
Index of scientific and innovation capabilities, San Luis Potosí	14	18	17
Index of scientific and innovation capabilities, Michoacán	17	22	22
Index of scientific and innovation capabilities, Tabasco	12	16	17
Index of scientific and innovation capabilities, Yucatán	16	22	20

Continue

TABLE V.3

RESULTS OF THE INDICATORS FOR OBJECTIVE 3. FOSTER THE DEVELOPMENT OF LOCAL SCIENTIFIC, TECHNOLOGICAL AND INNOVATIONAL VOCATION AND ABILITIES, TO STRENGTHEN A SUSTAINABLE AND INCLUSIVE REGIONAL DEVELOPMENT.

Nombre	Meta alcanzada 2015	Meta alcanzada 2016	Meta alcanzada 2017
Index of scientific and innovation capabilities, Sinaloa	13	18	17
Index of scientific and innovation capabilities, Oaxaca	13	16	16
Index of scientific and innovation capabilities, Chiapas	10	18	18
Index of scientific and innovation capabilities, Durango	8	15	14
Index of scientific and innovation capabilities, Aguascalientes	12	16	14
Index of scientific and innovation capabilities, Zacatecas	8	12	12
Index of scientific and innovation capabilities, Baja California Sur	8	11	10
Index of scientific and innovation capabilities, Quintana Roo	6	10	10
Index of scientific and innovation capabilities, Tlaxcala	6	10	8
Index of scientific and innovation capabilities, Colima	8	8	6
Index of scientific and innovation capabilities, Nayarit	7	7	8
Index of scientific and innovation capabilities, Guerrero	5	11	11
Index of scientific and innovation capabilities, Campeche	6	12	11

Source: Indicators of the Special Program of Science, Technology and Innovation, 2014-2018 and its links to national planning, Conacyt.

Sonar, Airborne Radar" and "Simulators Development for the Learning and Training in Operation and Maintenance of Data Link Systems and SR Systems of the Mexican Navy"; 2. The INAOE, with the projects "Flight Simulator for CASA-295 (C-295M) Airplanes" and "Knowledge Management System and Analysis of Stochastic Dynamic Scenarios", and 3. The UNAM with the project "Self-sustainable System for the Control of Environmentally Harmful Gases for the Maritime Patrols of the Mexican Navy".

Thanks to the Institutional Informatics Network of the SEMAR, the Center for Higher Navy Studies was incorporated into the "Connected Mexico" program. This effort deploys telecommunications networks that provide connectivity in public spaces; further, with the goal of implementing immediate coordination actions with SEMAR-Defense Ministry directors, a video-conference service was implemented between both institutions through the microwave linkage of the radio-communications SEMAR-Defense Ministry. This implied a re-engineering of the internet network of the Center for Higher Naval Studies, which concluded transition of the administration of the "transference of port captaincies from the Ministry of Communications and Transport (SCT) to the SEMAR."

The Mexican Geological Service (SGM) manages the GeoInfoMex system, which presently holds 90 information levels. This allows national and international users to access a larger amount of data in geo-sciences for the development of their projects. Also, an inventory of open data and a launch plan was completed in relation to substantial topics for the institution, and it is programmed that six more topics will be included to the web page and data at datos.gob.mx: 1. Mining directory, 2. Statistical Yearbook, 3. Geology, 4. Geochemistry, 5. Geophysics and 6. Mining Inventories. The SGM finished inclusion of the information it committed to integrate in the open data launch plan, which continues to be updated annually. This information may be downloaded and freely managed by users.

Due to Conacyt's annual calls issued in 2015, 2016 and 2017, several institutional repositories were installed throughout the period. The aim of these platforms is to disseminate academic publications and primary research data in an open access fashion. These platforms are added by the National Repository which, by 2017, had supplemented information from a relevant amount of institutional repositories belonging to the following institutions: UPN, IMTA, COLSAN, INMEGEN, INP, INSP, UAM Cuajimalpa Campus, UAM Azcapotzalco Campus, UNAM's Atmosphere Sciences Center (ASC) and Institute of Research on University and Education (IISUE), CIDE, CIMAT, CICESE, COLMEX, INAOE, CICY, CIAD, CIDETEQ, ITESM, CIESAS, CIMAT, COLEF, COLMICH, UASLP, Mora Institute, UAZ, ECOSUR, INFOTEC, COMIMSA, UACJ and FLACSO. This addition significantly increased the research institutions' technological infrastructure and made available, through open access, tens of thousands of refereed scientific publications and primary research data.

Table V.5 shows the Federal Government's investment in scientific and technological infrastructure. In 2016, this expenditure represented, in Conacyt, 52.7 percent of the total Federal Government investment, followed by branch 11 Public Education, and 12 Health and Social Security, with 16.6 and 13.8 percent respectively. In 2017, Conacyt's investment in scientific and technological infrastructure represented 36.3 percent of the total investment of the Federal Government, followed by branch 18 Energy, with 35.8 percent.

TABLE V.4

RESULTS OF INDICATORS FOR OBJECTIVE 4. CONTRIBUTE TO THE CREATION TRANSFER AND USE OF KNOWLEDGE, LINKING HIGHER EDUCATION INSTITUTIONS WITH PUBLIC, SOCIAL AND PRIVATE SECTORS' RESEARCH CENTERS.

Name	Goal achieved by2015	Goal achieved by 2016	Goal achieved by 2017
Percentage of companies that undertook innovation projects in collaboration with HEIs and CPI	9.8	8.4	8.4
Companies that implemented technological innovation as percentage of the total number of companies	4.93	7.1	7.1
Rate of dependence: patents requested by non-residents compared to patents requested by residents	12.2	12.3	11.9

Source: Indicators of the Special Program for Science, Technology and Innovation, 2014-2018 and their links with national planning, Conacyt.

TABLE V.5

INVESTMENT IN SCIENTIFIC AND TECHNOLOGICAL INFRASTRUCTURE BY SECTOR, 2010-2017

Millions of current pesos

Sector	2010	2011	2012	2013	2014	2015	2016	2017
National Council for Science and Technology [1/]	387.1	527.2	729.8	1092.6	1214.1	898.4	655.4	215
Public Education	450.9	284.1	417.8	389.0	213.5	282.8	140.4	215.3
Energy	62.7	274.4	162.0	62.5	44.7	45.0	645.5	466.4
Agriculture, Livestock, Rural Development, Fishing and Food Production	167.8	120.1	79.2	7.7	11.3	6.7	76.2	11
Health and Social Security	421.3	266.7	208.9	290.7	179.0	234.9	131.3	144.8
Navy	236.2	187.3	108.9	279.7	264.0	157.3	51.4	187.4
Environment	59.9	61.9	55.0	13.5	20.7	35.1	18.9	16.5
Communications and transport	30.3	61.3	49.1	51.6	22.7	44.8	80.5	77.1
Culture	0	0	0	0	0	0	4.5	2.6
Total	**1,816.2**	**1,782.9**	**1,810.6**	**2,187.3**	**1,970.0**	**1,705.1**	**1,804.1**	**1,336.1**

[1/] Investment carried out by the research centers coordinated by Conacyt

Source: Conacyt, based on information presented by Federal Government's units and entities to be part of the Statistical Annex of the 5th. Government Report (via address to the Union), 2017.

APPENDIX

APPENDIX

A.1 APPENDIX OF THE OPEN SCIENCE POLICY

The General Guidelines for the National Repository and the Institutional Repositories issued in 2014 comprised the framework that governed the design and financing of the national strategy to democratize academic, scientific, technological and innovation information, under the international paradigm of Open Access. During the years following the implementation of this strategy, it was identified that this concept had already evolved internationally.

The new trend goes beyond the access to research results. This movement, called Open Science, focuses on making the process of generating scientific knowledge more transparent and collaborative. In this way, it is sought that any interested party may openly and freely access the materials and information resources that result from the research process, in any of its stages.

It privileges the use, reuse, modification and maximum dissemination of these information resources, from their early stages, through the use of Information and communications technology. Among the most recognized Open Science projects in the world are: Open Science. Innovation Policy Platform of the OECD (Organization for Economic Cooperation and Development) and European Open Science Cloud of the European Commission, which promote the efficiency of science, the increase of transparency and quality in the process of validation of research, knowledge transfer and the importance of the value of knowledge.

This appendix details how the Conacyt (National Council for Science and Technology), with the intention of staying at the forefront, expands the Open Access Strategy which evolves to become the Open Science Policy. Later on, the new composition of this policy is introduced and the main results of each of the six programs that comprise it are consolidated.

1. ON OPEN ACCESS TO SCIENTIFIC, TECHNOLOGICAL AND INNOVATION INFORMATION

In most of the world, the main funder of scientific, technological and innovation research is the State, which supports the development of countries through public resources. In the case of Mexico, the Federal Government, through Conacyt, distributes public resources for scientific, technological and innovation production. However, the research products are usually published in houses with high academic prestige that have a high subscription cost. Therefore, the research that gives rise to the scientific products are financed with public funds; but in order to have access to the information it is necessary to pay high subscription costs. This situation affects the cycle of scientific production, not only in Mexico, but in the world.

At the beginning of the 21st century, international efforts to define Open Access emerged and were formalized: The Open Access Initiative in Budapest on February 2002; the Bethesda Declaration on Open Access Publication, on June 2003, and the Berlin Declaration on Open Access to Knowledge in Science and Humanities, on October 2003 (the BBB pillars). From these initiatives, the international movement of Open Access originated, struggling for the elimination of payment barriers, the flexibility of the exploitation permits of works and the release of access to knowledge mainly financed with public funds.

2. FROM OPEN ACCESS TO OPEN SCIENCE

BUnder the umbrella of this paradigm, on May 20th, 2014, the Decree is published in the Official Journal of the Federation, modifying the Law on Science and Technology, which includes Chapter X entitled Open Access, Access to the Scientific, Technological and Innovation information and the National Repository. From the entry into force of the Decree, the Conacyt acquires the obligation to submit the corresponding guidelines and provisions for the operation of the National Repository and then issues the corresponding guidelines and provisions to train, convene, organize and coordinate the institutions and instances concerning open access matters, dissemination of information and operation of the National Repository. With the intention of complying with the terms established on November 20th, 2014, the General Guidelines for the National Repository and Institutional Repositories were published, and on November 26th, 2015, the Technical Guidelines for the National Repository and Institutional Repositories underwent the same process.

However, in the last two years, a new tendency has been identified at the international level aimed at making the process of generating scientific knowledge financed mainly with public resources more transparent and collaborative; this new paradigm is known as Open Science, which seeks that any interested party may openly and freely access the materials and information resources that result from the research process, in any of its stages, with the possibility of using, reusing, modifying, sharing and disseminating them through the use of Information and communications technology (TIC).

In synchrony with the Open Science paradigm, the Conacyt reviewed the current guidelines and the feasibility of transition. Within its field of action, it would include, apart from the National Repository and the Institutional Repositories, the following programs: Public Communication of Science, Publications, Consortiums for the Acquisition and Dissemination of Information, Connectivity and the Integrated System of Scientific and Technological Information; allowing to water down the barriers to share any type of product, resources, methods or tools, at any stage of the scientific, technological and innovation research process.

As a result, on June 9th, 2017, the General Guidelines for Open Science were issued, replacing the General Guidelines for the National Repository and Institutional Repositories. Subsequently, each of the six programs that make up the Open Science policy will make the necessary adjustments in their instruments with the intention of aligning with the provisions of the new guidelines.

3. THE OPEN SCIENCE POLICY IN MEXICO

The policy of Open Science is directed to the National System of Science, Technology and Innovation, and to anyone who carries out academic, scientific, technological and innovation research, financed totally or partially with public resources or that has used public infrastructure; as well as to anyone who undertakes scientific research without public funding, and who seeks to collaborate or coordinate with the National System of Science and Technology in the field of Open Science.

The Open Science policy aims to grant, to any interested party, open and free access to the materials and information resources that result from the research process, in any of its stages, with the possibility of using them, reusing them, modifying them, sharing them and disseminating them through the use of Information and communications technology.

This policy articulates the actions of six programs:

- Journals Program;
- National Scientific and Technological Information Resources Consortium (NSTIRC);
- Repository Program;
- Public Communication of Science Program;
- Integrated Information System of Scientific Research, Technological Development and Innovation (IISSRTDI);
- Connectivity Program.

3.1 JOURNALS PROGRAM

It is the program that, through both the Classification of Mexican Journals on Science and Technology System (CRMCyT System) and the selective registration and periodic evaluation of scientific journals published in Mexico, whether in electronic or printed format, seeks to raise their quality, visibility and impact. With this, the Conacyt seeks to boost the quality of national scientific publications and disseminate the results of the research activity developed in the country. The background of the CRMCyT System can be found in the Index of

Mexican Magazines of Science and Technology of Conacyt (IRMC), whose efforts were aimed at identifying high quality scientific journals, professionalizing their editors and encouraging the use of scientific publishing platforms.

In 2017, the CRMCyT System was already underway, having indexed 195 Mexican magazines. Due to their characteristics and stages of development, 46 were directly supported by the FOINS-UNAM Phase IV Agreement. This Agreement allows to offer advice in early stages with the intention of enhancing editorial capacities.

On the other hand, 148 journals demonstrated having already installed capacities, which is why they were able to participate in the Announcement for the "Open Fund for National and International Positioning of Science and Technology journals published in Mexico", by means of a proposal formulation. The ones feasible to be financed should submit projects to significantly increase the quality, visibility and impact of national scientific journals, open access, edited in electronic format and registered in one or more of the following indexes: Web of Science Core, Emerging Sources and / or SCOPUS, or it being a part of the CRMCyT System.

92 applications were received and evaluated, out of which 78 magazines benefited. Despite being in the CRMCyT, the case of a Mexican magazine was registered, which, because it was a subscription, did not meet the requirements to be a subject of support by the open fund. This was one of the substantive actions of the program to be homologated with those established in the principles of the Open Science Policy.

3.2 NATIONAL CONSORTIUM OF SCIENTIFIC AND TECHNOLOGICAL INFORMATION RESOURCES

The purpose of this program is to provide specialized information resources to public federal and state higher education institutions, as well as individuals in higher education, public research centers, national health institutes, and highly specialized hospitals, among others, in order to meet the information needs submitted by the academic communities in their various areas of knowledge. The Consortium has a collegiate government that balances the interests of the founders and ensures that institutional purposes are achieved. Additionally, the National Consortium of Scientific and Technological Information Resources (NCSTIR) has a series of operational policy instruments for its proper functioning. Some of these instruments are:

- Acquisition policies.
- Statistics policies.
- Communication and dissemination policies.
- Institutional Fund (FOINS) Operation Rules.

In 2017, NCSTIR registered 177 resources of scientific and technological information that represent 25 thousand 546 titles of scientific journals; 17 collections of digital books that include 138,338 titles; 144 reference databases, thesis, patents, clinical cases and drugs, as well as two clinical tools and two aggregators. For these acquisitions, we counted with the collaboration of 68 publishers and benefited 508 higher education institutions.

In addition, the Consortium coordinates Training Sessions which aim to develop the skills of users in the recovery and use of scientific information, through the different information resources hired by the Consortium. It is also intended to integrate the bibliographic information subscribed as basic and complementary bibliography into the Subject Plans, as well as thesis and seminar topics, which are taught in the institutions that are part of the Consortium. By 2017, there were 4 thousand 558 participants, in 23 locations, distributed throughout 18 states of the Mexican Republic.

Finally, the Annual Peer Seminar was held. Its main objective is to promote the production of scientific articles among the postgraduate and research academic community of the country, promoting a meeting space with leading international scientific publishers. This seminar has had five editions. The fifth took place in Ciudad Juarez, Chihuahua. It was attended by 3,858 attendees and 12,669 attendees for the online sessions.

3.3 REPOSITORY PROGRAM

It is the program that gives rise to the Open Science Policy. Its objective is to collect, preserve and ensure open access to Scientific, Technological and Innovation Information Resources created mainly with public resources. To achieve this, the program is broken down into two components: 1) National

Repository and 2) Institutional Repositories. Each of these has a specific objective.

- National Repository: disseminate information resources (scientific publications, products of technological development and innovation, and primary data of research), to encourage their use, reuse and accelerate scientific collaboration.
- Institutional Repositories: to support, through a public announcement, those public or private institutions that carry out scientific and technological research that add value to the National Repository.

In May 2016, the National Repository platform was put into operation, housing the first 27 Institutional Repositories corresponding to the Public Research Centers of the Conacyt. On December 21 of that same year, the First Announcement for the Development of Institutional Repositories for Open Access to Scientific, Technological and Innovation Information was published, from which 36 institutions were approved to be supported.

The 2016 Announcement for Developing Institutional Repositories of Open Access to Scientific, Technological and Innovation Information was published on December 19, 2016. It approved the creation of 31 new repositories. As of this announcement, both public and private institutions are included. Finally, on December 18, 2017, the 2017 Announcement to Develop Institutional Repositories of Open Science was published. The projects that benefit will be added to the repositories developed within the framework of this strategy; which are already interoperating or in the process of doing so with the National Repository.

3.4 PROGRAM OF SCIENCE PUBLIC COMMUNICATION

The National Council for Science and Technology (Conacyt) has an Annual Scientific and Technological Communication Program, which is approved on a yearly basis by its Governing Board. This program pursues the following objectives:

- Contribute to the segmented and sectoral public understanding of the cultural, economic and social meanings of scientific research, technological development and innovation.
- To contribute to the positioning of science, technology and innovation in the national political agenda and in the media as strategic activities for the development of the country.
- Position the Conacyt and the importance of its functions in the media and among opinion leaders.

The Annual Program of Scientific and Technological Communication of the Conacyt is integrated by six components; In turn, each one is integrated with actions, as shown in the following table of actions and results:

TABLE 3.
OCCUPATIONS TABLE

No.	Component	Actions	Results
1	Public dissemination and communication of science.	Edition of the Science and Development magazine	The following topics were published in the main section of the magazine: Science without Borders, 8th Gender Summit (January-February); The cinema and the audiovisual narrative in Mexico (March-April); Nuclear energy (May-June); The human brain (July-August); Tequila, in the center of the table and the investigation (September-October); From photography to scientific photography (November-December).
		Edition of the Hélix children's supplement	The following topics were published in the supplement: Mexico-USA. ¿Nos vamos? / Are we leaving? (January February); ¡Más que una colección de animales! / More than just a collection of animals! (March April); La manzana de Newton / Newton's apple (May-June); Edición genética /Genetic edition (July-August); Mi cuerpo artificial / My artificial body (September-October); Aquí hay gato estudiado / What a studied cat we got (November-December).
2	High impact events	National Week of Science, Technology and Innovation	It was carried out in San Luis Potosi. There were 80,109 attendees, as well as the participation of 70 institutions.
		International Festival of Planetariums	It was carried out in Mexico City, in the Luis Enrique Erro planetarium, with the participation of 28 national planetariums and five foreigners. The production workshop for digital dome continued.
		International Book Fair (FIL) is also science!	From November 25th to December 3rd, 2017 the Guadalajara International Book Fair 2017 was held. The Conacyt had a stand where 70 activities were held, with almost 150 exhibitors, 36 people for exclusive visitor attention and more than 20 thousand attendees.
3	Social communication	Conacyt Information Agency	During this term, four press conferences were held. 99 press releases derived from the informative and graphic coverage of the relevant activities of the Board were prepared, edited and disseminated. Twenty-two interviews were arranged with top-level council officials before printed and electronic media representatives.
4	Prize	Conacyt Prize for Science, Technology and Innovation Journalism	39 works were received for evaluation and there were three winners and two honorary mentions.
5	Training of human capital in matters of scientific dissemination	Ibero-American Journalism Seminar on Science, Technology and Innovation	It was carried out in the Cultural Complex of the Eminent Autonomous University of Puebla and was attended by 85 journalists from 60 institutions and media.
		National Congress of Public Communication for the Dissemination of Science, Technology and Innovation	It was carried out in the city of Torreon, Coahuila, and 65 technical managers from 17 entities of the country attended.

5	Training of human capital in matters of scientific dissemination	National Symposium of the Index of Mexican Journals of Scientific and Technological Dissemination	It took place at the Torreon Planetarium in Coahuila and brought together 23 editors of 21 journals from nine entities in the country.
6	Public calls to support scientific outreach efforts	Call for support to projects of Public Communication of Science, Technology and Innovation	206 applications were received, of which 32 were approved without resources and 20 approved with funds from 19 institutions in six entities of the country. $ 25,000,000.00 was assigned.
		Call for Integration to the Index of Mexican Journals of Scientific and Technological Dissemination	The Call for Integration of the Index of Mexican Journals of Scientific and Technological Disclosure integrated 25 journals from 21 institutions of 10 federal entities, with a total monthly circulation of 117,700 copies.
7	Open Science Policy	Public Communication Work Plan for Science, Technology and Innovation	The annual version of the Work Plan was published, which articulates the aforementioned actions and guides them to comply with the goals established in the Open Science Policy.

3.5 3.5 INTEGRATED INFORMATION SYSTEM ON SCIENTIFIC RESEARCH, TECHNOLOGICAL DEVELOPMENT AND INNOVATION

The Integrated Information System on Scientific Research, Technological Development and Innovation (IISSRTDI) aims to reinforce the integration and strength of the National System of Science and Technology and has a close relationship with the Special Program of Science, Technology and Innovation (PECiTI) 2014-2018.

In particular, the work of the IISSRTDI crosses transversally through the objectives and strategies included in the PECiTI, since it integrates the efforts of different educational institutions, research centers, public bodies, companies and individuals and legal persons of the public and private sectors, in order to promote the development and linking of basic science and technological innovation, as well as to turn science and technology into a fundamental element of society's general culture.

In 2017, there were nine nodal systems that are also micro sites within the IISSRTDI platform, through which the federative entities include information on their relevant actions in science and technology. At the moment, IISSRTDI has information on the following states:

- Coahuila
- Colima
- Hidalgo
- Michoacán
- Nuevo León
- Puebla
- Quintana Roo
- Sonora
- Zacatecas

Most of them were managed with user passwords to send and update information in their nodal system.

3.6 CONNECTIVITY PROGRAM

It is a public policy strategy, with a national scope, that seeks to strengthen the connectivity of Higher Education Institutions (HEI) and Research Centers (RC) with bandwidths and characteristics comparable to those of education and research networks of the most advanced countries; as well as connecting the institutions that currently do not have access to broadband. It has three particular objectives:

1. International connectivity. To establish the necessary conditions that allow the Nicté Network broadband interconnection between HEI and RC with specialized education and research networks abroad to guarantee the generation of border research as a result of international collaboration.
2. National connectivity through the 'backbone' network. Provide broadband connectivity to the main HEI and RC throughout the country for the development of joint research, education and training projects, facilitating the development and use of border technological and academic applications.
3. Local connectivity through urban belts. Provide broadband connectivity to the main HEI and RC at the city level, interconnecting them in turn with the national backbone for the development of joint projects of research, education and training, facilitating the development and use of technological and academic frontier applications.

A.2 CALCULATION METHODOLOGY OF THE GROSS DOMESTIC EXPENDITURE ON R&D (GERD)

The definition of the GERD adopted by the National Council for Science and Technology (Conacyt), is based on the Frascati Manual where the methodology proposed by the Organization for Economic Co-operation and Development (OECD) is exposed. This manual is the main methodological basis that guarantees the comparability of indicators on research and experimental development at an international level.

The information used to estimate the GERD indicator in Mexico is obtained from three sources:

1. **Survey on Research and Technological Development (ESIDET).** This is the survey carried out by the National Institute of Statistics and Geography (INEGI) at the request of Conacyt (National Council for Science and Technology) to know the expenditure on IDE (Scientific Research and Experimental Development) and Innovation carried out by companies (productive sector), the government, higher education institutions (HEI) and non-profit private organizations (NPPO). In addition, the ESIDET offers information on the postgraduate expenditure that each sector carries out and the personnel it employs for Scientific Research and Experimental Development (IDE) activities. The information is obtained through a representative sample of each institution sector and is raised every two years.

   Due to the fact that the government expenditure information is obtained from the public account, the information developed by the Survey on Research and Technological Development (ESIDET) for this sector is used only to know the distribution proportions of the expenditure made by the government in the rest of the financing sectors (government, companies, HEI, NPPO).

2. **Public Account.** "It is the technical document based on the items authorized in the Federal Expense Budget prepared by the Federal Executive Branch and delivered to the Congress, whose content is the information of the fiscal year of the three Branches of the Union and the constitutionally autonomous bodies. It introduces the accounting, finances and the spending exercise of public programs "(Superior Audit of the Federation, 2016).

   From this document and through a review of each budget program of the entire Federal Government, information is obtained from the administrative sectors and ministries that carry out Scientific Research and Experimental Development (IDE). In the public Gross domestic expenditure on R&D (GERD), the expense of the states in Scientific Research and Experimental Development (IDE) is also included, which is the contribution of the states to the Mixed Funds administered by Conacyt.

3. **National Household Expenditure Survey (NHES).** It is the survey carried out by the National Institute of Statistic and Geography (INEGI) which, as the name implies, captures the annual consumption expenditure of Mexican households, as well as the average expenditure per household and per person. From the NHES we obtain the amount of the expenditure of the homes in postgraduate studies.

In 2015, the new version of the Frascati Manual was published, where the main change was to contemplate the expenditure made in postgraduate programs which have projects that derive in R&D, as part of the GERD. To align the data from Mexico to the new methodology, the following changes were made:

1. Accounting for expenditure on master's and doctorate scholarships for programs registered in the Conacyt's National Register of Quality Graduates as part of the GERD total public.
2. Accounting for the expenditure on scholarships granted by Conacyt abroad in the modalities: specialty, master's and doctorate programs at universities with international recognition, as part of the total public GERD.
3. Taking as reference the annual proportion of postgraduate students who apply to join the National Register of Quality Postgraduate Programs

[1] The new version of the Frascati Manual is available at http://www.oecd-ilibrary.org/science-and-technology/frascati-manual-2015_9789264239012-en

[2] The sum of all the totals of each sector makes up the total GERD.

(PNPC) but are not approved (42 percent in 2013). The proportion of the expenditure made by the families in graduate school as part of the GERD of the total private non-profit sector was accounted for.[2]

4. Based on the annual proportion of postgraduate students who apply to join the PNPC but are not approved (42 percent in 2013), this proportion of the expenditure made by the postgraduate companies as part of the GERD of the total productive sector was accounted for.
5. Taking as reference the annual proportion of postgraduate courses that require joining the PNPC but are not approved of (42 percent in 2013), this proportion of the expenditure made by the Higher Education Institutions (HEI) in postgraduate studies as part of the GERD of the total HEI sector was accounted for.

Once the distribution of the postgraduate expenditure in the total of the GERD is made, the proportions of spending distribution of the execution and financing sectors according to the Survey on Research and Technological Development (ESIDET) are taken as a reference to redistribute the new total expenditure in each one of them.

The Gross domestic expenditure on R&D data from all sectors are estimates made by the Conacyt based on information from different sources. The Conacyt Deputy Directorate of Planning and Evaluation is responsible for addressing any doubt or clarification related to the calculation of this indicator and its components.

A.3 CALCULATION METHODOLOGY OF THE FEDERAL EXPENDITURE ON SCIENCE AND TECHNOLOGY (GFCyT)

The methodology adopted by the National Council for Science and Technology (Conacyt) to account for the Federal Expenditure on Science and Technology (GFCyT) is the one proposed by the Manual of Statistics on Scientific and Technological Activities (ACyT) of the United Nations' Educational, Scientific and Cultural Organization (UNESCO), as well as the Frascati Manual, which is used for the measurement of monetary and human resources destined for the implementation of Scientific Research and Experimental Development (R&D), and is published and disseminated by the Organization for Economic Co-operation and Development (OECD)[3].

The sources from which the data is obtained to calculate the GFCyT are the following:

Federal Expense Budget. "It is the legal, accounting and economic policy document, approved by the Congress of the Union at the initiative of the Republic's President, in which public spending is allocated, according to its nature and amount, which must be carried out by the central sector and the parastatal sector of direct control throughout the performance of its functions in a fiscal year[4]." (Glossary of most common terms in the Federal Public Administration, Sub-ministry of Expenditures, Government Accounting Unit and Report on Public Management, May 1998).

Federal Public Treasury Account."It is the technical document based on the items authorized in the Federal Expense Budget prepared by the Federal Executive Branch and delivered to the Congress, whose content is the information of the three Branches of the Union and the constitutionally autonomous bodies in fiscal year. It submits the accounting, finances and spending of public programs "(SAF, 2016).

Through a painstaking review of the programmatic categories included in the structure of the Federal Expense Budget, the monetary resources allocated for the implementation of scientific, technological and innovation activities by administrative branches and entities of the Federal Public Administration are identified and then, in the same fiscal year, based on the Federal Public Treasury Account, the expenditure is obtained.

Based on the definitions of ACyT and R&D included in the aforementioned international manuals, the GFCyT accounts consider the budgetary resources related to these activities as provided by the dependencies and entities of the Federal Public Administration, which include, in addition to the expenditure applied to the implementation of scientific research and experimental development, the expenditure aimed to carry out educational scientific and technical education activities related to postgraduate education, the provision for the implementation of scientific and technological services, of those assigned to the application of innovation projects.

The scientific and technological services include the exploration of mineral deposits which are mainly carried out by the Mexican Geological Service, regarding the granting of patents by the Mexican Institute of Industrial Property, as well as those provided by the National Metrology Center and the National Center for the Prevention of Disasters, among others.

Due to the cross-cutting nature of federal expenditure on science and technology, that is, which affects several administrative sectors, the functional classification of the expenditure on science, technology and innovation defined by the National Council for Accounting Harmonization (NCAH) has omissions that are identified with the exhaustive review of the programmatic categories of the entire Federal Expense Budget. On the other hand, to measure this expenditure more accurately, it is important to consider in the budgeting instruments, the four major items in which Federal Expenditure (FE) is classified in science, technology and innovation: Scientific Research and Experimental Development (IDE), Scientific and Technological Services (SCyT), Scientific and Technical Education and Teaching (STET), and Innovation.

[3] The new version of the Frascati Manual is available at http://www.oecd-ilibrary.org/science-and-technology/frascati-manual-2015_9789264239012-en

[4] The most common Glossary of Terms in the Federal Public Administration can be found at http://www.apartados.hacienda.gob.mx/contabilidad/documentos/informe_cuenta/1998/cuenta_publica/Glosario/glosario.htm.

CRITERIA TO IDENTIFY THE FEDERAL EXPENDITURE ON SCIENCE AND TECHNOLOGY (GFCYT)

- The full budget of the public research centers and the parastatal entities and potential decentralized bodies are to be established as public research centers, notwithstanding the budgetary keycodes used for their allocation.
- Programmatic categories which, in their budget keycode, include Purpose three (Economic development) and Function eight (Science, technology and innovation), regardless of the institutional activity and the budget program they use.
- Programmatic categories which, in their budget keycode, include Purpose two (Social development), Function five (Education) and Sub-function 04 (Postgraduate), despite the institutional activity and the budget program they use.
- Programmatic categories which, in their budget keycode, include institutional activity or budgetary program referring to scientific research and technological development; postgraduate education; scientific and technological services or innovation, in terms of the definitions described in the reference manuals.
- For all these items, both fiscal resources and those generated by the decentralized entities must be included.

The methodological changes reflected in the 2015 version of the Frascati Manual led to the reclassification of the GFCyT figures, particularly the Federal Expenditure on R&D (GFIDE), since 2007. Therefore, the GFIDE estimates in 2017 already contemplate this reclassification.

A.4 NOTE TO CALCULATE THE NATIONAL EXPENDITURE ON SCIENCE, TECHNOLOGY AND INNOVATION (GNCTI)

The manner in which the GNCTI is calculated in Mexico is herein presented. Because the GNCTI encompasses the Federal Expenditure on Science, Technology and Innovation (GFCyT) and the Gross domestic expenditure on R&D (GERD), this appendix is complemented by the those on the Federal Expenditure in Science, Technology and Innovation and the calculation of the Expenditure in Research and Experimental Development.

The GNCTI corresponds to domestic expenditure on Scientific and Technological Activities (ACyT) and Innovation Activities (AI), within the borders of a country in a specific period.

ACyT are three: 1) Research and Experimental Development (R&D); 2) Scientific and Technological Training and Teaching (STTT), and 3) Scientific and Technological Services (SCyT). The Innovation Activities for the GNCTI are not disaggregated, so they are only referred to as “Innovation Activities” (AI).

On the other hand, the GNCTI can be financed by one of the following four Sources of Funds: (i) Public; (ii) Private; (iii) External, and (iv) Higher Education Institutions (HEI). Within the Public Financing Sector there is one more classification: Federal Investment and State Investment. Within the Private Financing Sector, an additional classification can also be made: Investment of Families and Investment of the Business Sector. For HEI and External Funding Sectors, there is no additional classification.

The information used to estimate the GNCTI is obtained from the following sources:

1. Federal Expenditures Budget
2. Federal Public Treasury Account
3. Survey on Research and Technological Development (ESIDET)
4. National Survey on Household Expenditure (NSHE)

Same as discussed in the GFCyT and GERD appendixes.

The GNCTI is the sum of the GERD; the Expenditure on Scientific and Technological Training and Teaching (GEFCyT); the Expenditure on Scientific and Technological Services (GSCyT), and the Expenditure on Innovation (GI), as follows

GNCTI=GERD+GFECyT+ GSCyT+GI.

Where funding sources are:

1. Sectors
2. the National Council for Science and Technology (Conacyt)
3. States
4. Higher Education Institutions
5. Private
6. Families
7. External

A.5 CALCULATION METHODOLOGY OF THE EXPENDITURE ON INNOVATION

The definition of Innovation adopted by the National Council for Science and Technology (Conacyt) is based on the Oslo Manual (2005) and the Frascati Manual (2015). These manuals are the main methodological basis that guarantee the comparability of indicators at an international level.

According to the Oslo Manual, innovation is “the introduction of a new, or significantly improved, product (good or service), process, new marketing method or new organizational method, in the internal practices of the company, the organization of the work place or foreign relations” (OECD, 2005: 56-64).

Innovation can thus be classified by execution sector in the productive sector (corporations) and the government sector, Public Administration of the Federation (APF).

The information used to calculate the expenditure on Innovation is obtained from two sources:

Survey on Research and Technological Development (ESIDET). This is the survey carried out by the National Institute of Statistics and Geography (INEGI) at the request of National Council for Science and Technology (Conacyt) to know the Scientific Research and Experimental Development (IDE) and Innovation expenses carried out by enterprises. The information is obtained through a representative sample and is carried out every two years.

The expenditure estimates regarding Innovation of the production sector’s companies includes the expenses on Innovation in products or processes excluding the expense in domestic R&D and the expenses on R&D abroad.

Fiscal Account. ”This technical document is based on the items authorized in the Federal Expenditures Budget that is prepared by the Federal Executive Branch and delivered to the Congress, whose content is the fiscal year’s information of the three branches of the Union and of the constitutionally autonomous bodies. It presents the accounting, finances and the exercise of public programs spending” (SAF, 2016).

From this document and through a review of each budget program of the entire Federal Government, information is obtained from the administrative sectors and ministries that carry out Innovation activities.

As a contribution to the innovation expenditure of the Conacyt’s Program of stimuli to innovation program (PSI), only the portion corresponding to Technological Innovation for large enterprises (TECINN) is considered.

A.6 METHODOLOGY FOR THE CALCULATION OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY (ARHCyT).

To measure the ARHCyT, the methodology recommended in the Canberra Manual prepared by the Organization for Economic Cooperation and Development (OECD) was utilized.

The ARHCyT is composed of three populations: (i) Employed Human Resources in Science and Technology (RHCyTO); (ii) Educated Human Resources in Science and Technology (RHCyTE), and Educated and Employed Human Resources in Science and Technology (RHCyTC). The RHCyTO includes people who carry out a Science and Technology (S&T) activity, regardless of their educational level. In turn, the RHCyTE covers people who have third level education. Finally, the RHCyTC meets the criteria that people have third level college education and are also working in S&T activities.

The information sources used to determine the ARHCyT were the following:

National Survey on Occupation and Employment (ENOE). It is prepared by the National Institute of Statistics and Geography (INEGI) quarterly, with the objective of collecting occupational, demographic and economic information at the national level, to analyze the labor market in detail.

From this survey, the variables of education, type of occupation and area of knowledge are considered.

International Standard Classification of Education (ISCED). This classification is developed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) with the purpose of homologating the levels of studies and thus achieve an international comparability of educational indicators.

From the proposed classification, only levels 5, 6 and 7 are used, which are classified as third level education. (see Table 1).

International Standard Classification of Occupations (ISCO-88). This classification is prepared by the International Labor Organization (ILO), and presents ten items that allow to identify the type of occupation performed by workers.

TABLE 1.
EDUCATIONAL LEVEL ACCORDING TO STANDARDS

Level	Category
0	Pre-school education (Previous to primary level education)
1	Primary education (First level of basic education)
2	Lower middle school education (Second level in the first education stage)
3	Upper secondary education (Second level of basic education in the second stage)
4	Post-secondary education not third level
5	Third level education (First stage not leading to a college degree)
6	Third level education (First stage leading to College degree or equivalent)
7	Third level education (Second stage leading to a graduate or equivalent degree)

Source: UNESCO, International Standard Classification of Education ISCED, 1997.

In this case, only 11 subgroups are used that are considered by the Canberra Manual as occupations related to S&T (see Table 2).

The Occupation Classification National System 2011 (SINCO). It is prepared by the INEGI to identify the occupations in which the country's population carries out its activities.

From this classification, activities related to S&T are used, according to ISCO-88 and are as well homologated with the type of position, either Director, Professional or Technician.

TABLA 2.
OCCUPATION SUBGROUP

ISCO	Occupation Group
122	Administrators of the production and operation departments
123	Administrators of other departments
131	General administrators
21	Professionals of the physical-mathematical sciences and engineering
22	Professionals in the health and life sciences
23	Education professionals
24	Other professionals
31	Physical-mathematical sciences and engineering technicians
32	Health and life science technicians
33	Education technicians
34	Other specialists

Source: OECD, Canberra Manual, p. 25.

Mexican Classification of Study Programs by fields of academic training (MCSP 2011). This is the instrument developed by INEGI with the aim of standardizing the scientific areas classification of the country's different study programs.

The ARHCyT database structure

Once the considerations mentioned above are taken into account, it is possible to generate the database that contains the variables necessary to determine the ARHCyT.

This classification is used by the ENOE; however, it does not agree with those recommended in the Canberra Manual; for this reason, they were standardized to their equivalents, leaving the new categorization as shown in Table 4.

TABLE 4.
SCIENTIFIC FIELDS

Broad field code (MCSP[1], 2011)	Scientific Field MCSP	OECD's Scientific field
1	Education	Social Sciences
2	Arts and Humanities	Humanities
3	Social Sciences, administration and law	Social Sciences
4	Natural Sciences, exact and computer sciences	Natural and exact sciences
5	Engineering, manufacturing and construction	Engineering and technology
6	Agronomy and veterinary	Farming Sciences
7	Health	Health Sciences
8	Services	Others
9	Not specified	Not specified

Source: Our own elaboration based on information from the MCSP and the Canberra Manual.

ANNEX

STATISTICAL TABLES

INDEX OF ANNEX STATISTICAL TABLES

I.1 GERD BY EXECUTION SECTOR AND FINANCING SOURCES, 2010-2017

Thousand pesos

Execution sector / Financing sources	2010	2011	2012	2013	2014e/	2015e/	2016e/	2017e/
Productive								
Productive	22,909,765	23,490,746	18,350,221	16,472,590	17,460,946	18,508,603	19,619,119	21,316,131
Government	2,112,758	2,405,522	4,345,019	8,651,030	9,995,614	10,252,112	9,913,566	9,204,752
Higher Education	23,865	63,411	2,710	27,847	33,417	40,100	48,120	57,744
Non profit Private	6,233	14,921	12,018	47,113	56,535	67,843	81,411	97,693
External funds	149,586	426,874	94,403	124,918	149,902	179,882	215,859	259,031
Total Productive sector	**25,202,206**	**26,401,473**	**22,804,371**	**25,323,499**	**27,696,413**	**29,048,539**	**29,878,075**	**30,935,351**
Government								
Productive	299,924	323,876	257,140	230,533	244,365	259,027	274,569	298,318
Government	22,850,674	22,982,554	28,294,832	30,161,059	34,848,833	35,743,090	34,562,782	32,091,561
Higher Education	568,289	589,682	265,347	267,648	321,178	385,413	462,496	554,995
Non profit Private	11,400	10,657	235,988	112,431	134,917	161,901	194,281	233,137
External funds	428,673	266,679	101,232	90,445	108,534	130,241	156,289	187,547
Total Government sector	**24,158,960**	**24,173,447**	**29,154,540**	**30,862,116**	**35,657,827**	**36,679,672**	**35,650,416**	**33,365,558**
Higher Education								
Productive	77,250	313,295	106,582	165,966	175,924	186,479	197,668	214,766
Government	n.d.	n.d.	16,461,168	15,961,803	18,442,661	18,915,920	18,291,278	16,983,461
Government Funds to Public Universities	n.d.	n.d.	1,967,162	1,982,661	2,290,815	2,349,600	2,272,011	2,109,564
Government Subtotal	19,069,578	21,022,994	18,428,329	17,944,464	20,733,476	21,265,519	20,563,289	19,093,025
Higher Education	1,365,770	1,248,306	2,190,616	2,553,852	3,064,623	3,677,547	4,413,057	5,295,668
Non profit Private	50,997	136,720	390,428	561,238	673,485	808,183	969,819	1,163,783
External funds	267,460	218,084	9,041	12,866	15,439	18,527	22,232	26,679
Total Higher Education Sector	**20,831,055**	**22,939,399**	**21,124,996**	**21,238,386**	**24,662,948**	**25,956,256**	**26,166,065**	**25,793,921**
Non profit Private								
Productive	116,872	117,479	93,830	104,321	110,581	117,215	124,248	134,996
Government	508,047	649,377	975,530	718,518	830,194	851,497	823,379	764,508
Higher Education	7,948	10,489	6,373	7,939	9,527	11,433	13,719	16,463
Non profit Private	262,683	265,848	2,545,658	2,879,859	3,455,831	4,146,997	4,976,397	5,971,676
External funds	281,374	250,568	74,256	88,541	106,249	127,499	152,999	183,599
Total Non profit Private Sector	**1,176,924**	**1,293,760**	**3,695,646**	**3,799,179**	**4,512,382**	**5,254,642**	**6,090,742**	**7,071,241**
Total								
Productive	23,403,811	24,245,396	18,807,773	16,973,411	17,991,815	19,071,324	20,215,604	21,964,211
Government	44,541,056	47,060,447	52,043,710	57,475,071	66,408,116	68,112,219	65,863,016	61,153,846
Higher Education	1,965,873	1,911,887	2,465,046	2,857,287	3,428,744	4,114,493	4,937,392	5,924,870
Non profit Private	331,313	428,145	3,184,092	3,600,641	4,320,769	5,184,923	6,221,908	7,466,289
External funds	1,127,093	1,162,204	278,932	316,770	380,124	456,149	547,379	656,855
Total GERD	**71,369,146**	**74,808,080**	**76,779,553**	**81,223,180**	**92,529,570**	**96,939,109**	**97,785,298**	**97,166,071**

e/ Estimated numbers.
n.d.: No disponible.
Totals may not equal the sum of the columns due to rounding of the amounts..
The GERD figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual.
Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.

I.2 GERD BY EXECUTION SECTOR AND FINANCING SOURCES, 2010-2017
Thousand pesos 2017

Execution sector Thousand pesos 2017	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productivo								
Productive	30,721,071	29,769,882	22,335,844	19,748,879	20,059,661	20,697,630	20,827,897	21,316,131
Government	2,833,123	3,048,524	5,288,746	10,371,662	11,483,262	11,464,637	10,524,364	9,204,752
Higher Education	32,002	80,361	3,298	33,386	38,390	44,843	51,085	57,744
Non profit Private	8,358	18,909	14,628	56,483	64,950	75,866	86,427	97,693
External funds	200,588	540,978	114,907	149,764	172,212	201,157	229,158	259,031
Total Productive sector	**33,795,143**	**33,458,654**	**27,757,424**	**30,360,174**	**31,818,475**	**32,484,133**	**31,718,931**	**30,935,351**
Gobierno								
Productive	402,186	410,448	312,991	276,385	280,734	289,662	291,485	298,318
Government	30,641,833	29,125,849	34,440,400	36,159,893	40,035,390	39,970,455	36,692,274	32,091,561
Higher Education	762,053	747,305	322,980	320,881	368,979	430,996	490,991	554,995
Non profit Private	15,287	13,505	287,244	134,793	154,997	181,049	206,251	233,137
External funds	574,833	337,963	123,219	108,434	124,687	145,644	165,918	187,547
Total Government sector	**32,396,192**	**30,635,071**	**35,486,834**	**37,000,386**	**40,964,786**	**41,017,807**	**37,846,919**	**33,365,558**
Higher Education								
Productive	103,589	397,039	129,731	198,976	202,107	208,535	209,847	214,766
Government	n.d.	n.d.	20,036,493	19,136,499	21,187,486	21,153,121	19,418,245	16,983,461
Government Funds to Public Universities	n.d.	n.d.	2,394,424	2,376,999	2,631,757	2,627,489	2,411,995	2,109,564
Government Subtotal	25,571,536	26,642,494	22,430,917	21,513,498	23,819,243	23,780,610	21,830,240	19,093,025
Higher Education	1,831,442	1,581,982	2,666,412	3,061,796	3,520,731	4,112,494	4,684,955	5,295,668
Non profit Private	68,385	173,265	475,228	672,864	773,720	903,767	1,029,572	1,163,783
External funds	358,654	276,378	11,005	15,425	17,737	20,718	23,602	26,679
Total Higher Education Sector	**27,933,606**	**29,071,158**	**25,713,294**	**25,462,559**	**28,333,538**	**29,026,123**	**27,778,216**	**25,793,921**
Non profit Private								
Productive	156,721	148,881	114,209	125,070	127,038	131,079	131,904	134,996
Government	681,270	822,957	1,187,412	861,427	953,752	952,205	874,110	764,508
Higher Education	10,658	13,293	7,758	9,518	10,945	12,785	14,564	16,463
Non profit Private	352,247	336,910	3,098,568	3,452,644	3,970,163	4,637,466	5,283,004	5,971,676
External funds	377,311	317,546	90,384	106,151	122,062	142,578	162,425	183,599
Total Non profit Private Sector	**1,578,208**	**1,639,586**	**4,498,332**	**4,554,811**	**5,183,960**	**5,876,113**	**6,466,007**	**7,071,241**
Total								
Productive	31,383,567	30,726,251	22,892,775	20,349,309	20,669,540	21,326,905	21,461,133	21,964,211
Government	59,727,762	59,639,824	63,347,476	68,906,480	76,291,647	76,167,906	69,920,987	61,153,846
Higher Education	2,636,156	2,422,940	3,000,448	3,425,582	3,939,045	4,601,117	5,241,595	5,924,870
Non profit Private	444,277	542,589	3,875,669	4,316,785	4,963,830	5,798,148	6,605,254	7,466,289
External funds	1,511,387	1,472,864	339,515	379,774	436,698	510,098	581,104	656,855
Total GERD	**95,703,149**	**94,804,469**	**93,455,883**	**97,377,930**	**106,300,760**	**108,404,176**	**103,810,074**	**97,166,071**
GDP deflator 2017	74.57	78.91	82.16	83.41	87.05	89.42	94.20	100.00

[e/] Estimated numbers.
n.d.: Not available.
Totals may not equal the sum of the columns due to rounding of the amounts.
The GERD figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual.
Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.

I.3 GERD BY EXECUTION SECTOR AND FINANCING SOURCES, 2010-2017

Thousand pesos 2008

Execution sector Financing sources	2010	2011	2012	2013	2014e/	2015e/	2016e/	2017e/
Productive								
Productive	21,177,306	20,623,794	15,603,164	13,764,525	13,934,209	14,406,999	14,783,776	15,547,284
Government	1,952,989	2,111,938	3,694,563	7,228,816	7,976,714	7,980,189	7,470,261	6,713,643
Higher Education	22,061	55,672	2,304	23,269	26,667	31,214	36,260	42,117
Non profit Private	5,762	13,100	10,219	39,368	45,117	52,808	61,346	71,254
External funds	138,274	374,775	80,271	104,382	119,625	140,020	162,658	188,928
Total Productive sector	**23,296,391**	**23,179,279**	**19,390,520**	**21,160,360**	**22,102,332**	**22,611,229**	**22,514,303**	**22,563,226**
Government								
Productive	277,244	284,348	218,646	192,634	195,009	201,625	206,898	217,583
Government	21,122,684	20,177,625	24,059,051	25,202,634	27,810,116	27,822,233	26,044,413	23,406,528
Higher Education	525,314	517,713	225,624	223,647	256,307	300,004	348,509	404,795
Non profit Private	10,538	9,356	200,660	93,948	107,667	126,023	146,398	170,043
External funds	396,256	234,132	86,077	75,576	86,612	101,379	117,770	136,790
Total sector gobierno	**22,332,036**	**21,223,174**	**24,790,059**	**25,788,439**	**28,455,711**	**28,551,263**	**26,863,988**	**24,335,739**
Higher Education								
Productive	71,408	275,058	90,627	138,682	140,391	145,155	148,951	156,643
Government	n.d.	n.d.	13,996,905	13,337,711	14,717,639	14,724,052	13,783,196	12,387,177
Government Funds to Public Universities	n.d.	n.d.	1,672,674	1,656,715	1,828,120	1,828,916	1,712,050	1,538,646
Government Subtotal	17,627,518	18,457,222	15,669,579	14,994,425	16,545,759	16,552,968	15,495,246	13,925,824
Higher Education	1,262,489	1,095,955	1,862,677	2,134,003	2,445,635	2,862,583	3,325,411	3,862,486
Non profit Private	47,140	120,034	331,980	468,971	537,456	629,085	730,797	848,825
External funds	247,235	191,467	7,688	10,751	12,321	14,421	16,753	19,459
Total Higher Education Sector	**19,255,791**	**20,139,737**	**17,962,551**	**17,746,832**	**19,681,561**	**20,204,212**	**19,717,158**	**18,813,236**
Non profit Private								
Productive	108,034	103,141	79,783	87,171	88,246	91,240	93,626	98,461
Government	469,628	570,123	829,491	600,395	662,512	662,801	620,449	557,607
Higher Education	7,347	9,209	5,419	6,634	7,603	8,899	10,338	12,008
Non profit Private	242,819	233,402	2,164,569	2,406,415	2,757,827	3,228,001	3,749,910	4,355,544
External funds	260,096	219,987	63,140	73,985	84,789	99,245	115,291	133,911
Total Non profit Private Sector	**1,087,924**	**1,135,862**	**3,142,402**	**3,174,601**	**3,600,977**	**4,090,185**	**4,589,614**	**5,157,531**
Total								
Productive	21,633,992	21,286,342	15,992,220	14,183,012	14,357,855	14,845,018	15,233,251	16,019,972
Government	41,172,819	41,316,907	44,252,684	48,026,270	52,995,102	53,018,191	49,630,369	44,603,601
Higher Education	1,817,211	1,678,549	2,096,025	2,387,554	2,736,211	3,202,700	3,720,518	4,321,405
Non profit Private	306,259	375,892	2,707,428	3,008,702	3,448,067	4,035,917	4,688,452	5,445,666
External funds	1,041,861	1,020,362	237,175	264,694	303,347	355,064	412,472	479,088
Total GERD	**65,972,142**	**65,678,052**	**65,285,532**	**67,870,232**	**73,840,582**	**75,456,890**	**73,685,062**	**70,869,732**
GDP deflator 2008	108.18	113.90	117.61	119.67	125.31	128.47	132.71	137.11

e/ Estimated numbers.
n.d.: Not available.
Totals may not equal the sum of the columns due to rounding of the amounts..
The GERD figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual.
Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.

I.4 GERD BY EXECUTION SECTOR AND EXPENDITURE CATEGORIES, 2010-2017

Thousand pesos

Execution sector Expenditure Categories	2010	2011	2012	2013	2014e/	2015e/	2016e/	2017e/
Productive								
Labour costs	7,961,048	8,339,881	5,741,837	6,865,745	7,509,093	7,875,683	8,100,588	8,387,239
Other current costs	8,015,287	8,396,701	6,909,979	9,339,189	10,214,309	10,712,966	11,018,895	11,408,814
Current expenditure Subtotal	**15,976,336**	**16,736,582**	**12,651,817**	**16,204,934**	**17,723,402**	**18,588,650**	**19,119,484**	**19,796,052**
Land and buildings	639,804	670,249	204,036	1,531,244	1,674,727	1,756,487	1,806,647	1,870,577
Instruments and equipment	8,586,067	8,994,641	9,948,518	7,587,321	8,298,284	8,703,403	8,951,945	9,268,721
Capital expenditure Subtotal	**9,225,870**	**9,664,891**	**10,152,554**	**9,118,565**	**9,973,012**	**10,459,889**	**10,758,591**	**11,139,298**
Total Productive Sector	**25,202,206**	**26,401,473**	**22,804,371**	**25,323,499**	**27,696,413**	**29,048,539**	**29,878,075**	**30,935,351**
Government								
Labour costs	14,186,103	14,194,610	15,951,704	15,986,708	18,470,906	19,000,227	18,467,067	17,283,501
Other current costs	8,456,953	8,462,024	10,367,371	11,540,727	13,334,058	13,716,171	13,331,286	12,476,876
Current expenditure Subtotal	**22,643,056**	**22,656,634**	**26,319,075**	**27,527,435**	**31,804,964**	**32,716,398**	**31,798,354**	**29,760,377**
Land and buildings	565,729	566,068	885,113	783,675	905,452	931,399	905,263	847,244
Instruments and equipment	950,175	950,744	1,950,352	2,551,007	2,947,411	3,031,875	2,946,799	2,757,937
Capital expenditure Subtotal	**1,515,904**	**1,516,813**	**2,835,465**	**3,334,682**	**3,852,863**	**3,963,274**	**3,852,062**	**3,605,181**
Total Productive Sector	**24,158,960**	**24,173,447**	**29,154,540**	**30,862,116**	**35,657,827**	**36,679,672**	**35,650,416**	**33,365,558**
Higher Education								
Labour costs	12,911,584	14,218,385	13,009,685	12,659,122	14,700,329	15,471,204	15,596,261	15,374,444
Other current costs	4,887,312	5,381,965	5,099,269	5,689,803	6,607,250	6,953,729	7,009,938	6,910,239
Current expenditure Subtotal	**17,798,896**	**19,600,350**	**18,108,954**	**18,348,925**	**21,307,579**	**22,424,933**	**22,606,198**	**22,284,684**
Land and buildings	201,877	222,310	364,818	406,971	472,592	497,375	501,395	494,264
Instruments and equipment	2,830,282	3,116,740	2,651,224	2,482,490	2,882,777	3,033,948	3,058,472	3,014,973
Capital expenditure Subtotal	**3,032,160**	**3,339,049**	**3,016,042**	**2,889,461**	**3,355,369**	**3,531,322**	**3,559,867**	**3,509,237**
Capital expenditure Subtotal	**20,831,055**	**22,939,399**	**21,124,996**	**21,238,386**	**24,662,948**	**25,956,256**	**26,166,065**	**25,793,921**
Non profit Private								
Labour costs	448,018	492,494	1,557,605	1,613,075	1,915,890	2,231,043	2,586,039	3,002,344
Other current costs	440,756	484,511	1,749,498	1,684,816	2,001,099	2,330,268	2,701,052	3,135,873
Current expenditure Subtotal	**888,774**	**977,004**	**3,307,103**	**3,297,891**	**3,916,990**	**4,561,311**	**5,287,091**	**6,138,217**
Land and buildings	204,906	225,247	48,861	189,362	224,910	261,906	303,580	352,451
Instruments and equipment	83,245	91,509	339,682	311,926	370,482	431,424	500,071	580,573
Capital expenditure Subtotal	**288,151**	**316,756**	**388,543**	**501,288**	**595,392**	**693,331**	**803,651**	**933,024**
Total Non profit Private Sector	**1,176,924**	**1,293,760**	**3,695,646**	**3,799,179**	**4,512,382**	**5,254,642**	**6,090,742**	**7,071,241**
Total								
Labour costs	35,506,753	37,245,370	32,413,743	34,569,624	39,381,768	41,258,524	41,618,674	41,355,123
Other current costs	21,800,308	22,725,201	23,771,804	28,445,832	32,405,535	33,949,835	34,246,186	34,029,322
Current expenditure Subtotal	**57,307,061**	**59,970,571**	**56,185,547**	**63,015,456**	**71,787,303**	**75,208,360**	**75,864,860**	**75,384,444**
Land and buildings	1,612,316	1,683,875	1,325,243	3,234,457	3,684,698	3,860,294	3,893,991	3,869,332
Instruments and equipment	12,449,768	13,153,634	19,268,763	14,973,267	17,057,569	17,870,455	18,026,447	17,912,295
Capital expenditure Subtotal	**14,062,084**	**14,837,509**	**20,594,006**	**18,207,724**	**20,742,267**	**21,730,749**	**21,920,438**	**21,781,627**
Total GERD	**71,369,146**	**74,808,080**	**76,779,553**	**81,223,180**	**92,529,570**	**96,939,109**	**97,785,298**	**97,166,071**

e/ Estimated numbers.
Totals may not equal the sum of the columns due to rounding of the amounts.
The GERD figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual.
Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.

I.5 GERD BY EXECUTION SECTOR AND EXPENDITURE CATEGORIES, 2010-2017

Thousand pesos 2017

Execution sector Expenditure Categories	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productive								
Labour costs	10,675,445	10,569,153	6,988,950	8,231,296	8,626,673	8,807,147	8,599,684	8,387,239
Other current costs	10,748,177	10,641,161	8,410,810	11,196,691	11,734,506	11,979,997	11,697,794	11,408,814
Current expenditure Subtotal	**21,423,623**	**21,210,313**	**15,399,760**	**19,427,987**	**20,361,178**	**20,787,144**	**20,297,479**	**19,796,052**
Land and buildings	857,951	849,409	248,352	1,835,798	1,923,977	1,964,228	1,917,958	1,870,577
Instruments and equipment	11,513,569	11,398,932	12,109,312	9,096,389	9,533,319	9,732,761	9,503,494	9,268,721
Capital expenditure Subtotal	**12,371,520**	**12,248,340**	**12,357,663**	**10,932,187**	**11,457,297**	**11,696,989**	**11,421,453**	**11,139,298**
Total Productive Sector	**33,795,143**	**33,458,654**	**27,757,424**	**30,360,174**	**31,818,475**	**32,484,133**	**31,718,931**	**30,935,351**
Government								
Labour costs	19,022,993	17,988,865	19,416,375	19,166,358	21,219,934	21,247,399	19,604,866	17,283,501
Other current costs	11,340,433	10,723,945	12,619,138	13,836,101	15,318,568	15,338,394	14,152,657	12,476,876
Current expenditure Subtotal	**30,363,426**	**28,712,810**	**32,035,513**	**33,002,458**	**36,538,502**	**36,585,793**	**33,757,523**	**29,760,377**
Land and buildings	758,620	717,380	1,077,357	939,543	1,040,210	1,041,556	961,039	847,244
Instruments and equipment	1,274,146	1,204,881	2,373,964	3,058,385	3,386,075	3,390,458	3,128,358	2,757,937
Capital expenditure Subtotal	**2,032,766**	**1,922,261**	**3,451,321**	**3,997,928**	**4,426,285**	**4,432,014**	**4,089,396**	**3,605,181**
Total Government sector	**32,396,192**	**30,635,071**	**35,486,834**	**37,000,386**	**40,964,786**	**41,017,807**	**37,846,919**	**33,365,558**
Higher Education								
Labour costs	17,313,913	18,018,995	15,835,357	15,176,937	16,888,181	17,300,996	16,557,182	15,374,444
Other current costs	6,553,689	6,820,577	6,206,818	6,821,467	7,590,608	7,776,152	7,441,836	6,910,239
Current expenditure Subtotal	**23,867,602**	**24,839,573**	**22,042,175**	**21,998,404**	**24,478,789**	**25,077,148**	**23,999,018**	**22,284,684**
Land and buildings	270,709	281,734	444,055	487,914	542,928	556,199	532,287	494,264
Instruments and equipment	3,795,295	3,949,852	3,227,064	2,976,241	3,311,821	3,392,775	3,246,911	3,014,973
Capital expenditure Subtotal	**4,066,004**	**4,231,585**	**3,671,119**	**3,464,156**	**3,854,749**	**3,948,975**	**3,779,198**	**3,509,237**
Total Higher Education Sector	**27,933,606**	**29,071,158**	**25,713,294**	**25,462,559**	**28,333,538**	**29,026,123**	**27,778,216**	**25,793,921**
Non profit Private								
Labour costs	600,774	624,138	1,895,913	1,933,905	2,201,033	2,494,910	2,745,370	3,002,344
Other current costs	591,036	614,022	2,129,485	2,019,915	2,298,923	2,605,871	2,867,470	3,135,873
Current expenditure Subtotal	**1,191,809**	**1,238,160**	**4,025,398**	**3,953,820**	**4,499,956**	**5,100,781**	**5,612,841**	**6,138,217**
Land and buildings	274,771	285,457	59,473	227,025	258,384	292,882	322,284	352,451
Instruments and equipment	111,628	115,969	413,460	373,966	425,621	482,449	530,882	580,573
Capital expenditure Subtotal	**386,398**	**401,426**	**472,934**	**600,991**	**684,005**	**775,332**	**853,166**	**933,024**
Total Non profit Private Sector	**1,578,208**	**1,639,586**	**4,498,332**	**4,554,811**	**5,183,960**	**5,876,113**	**6,466,007**	**7,071,241**
Total								
Labour costs	47,613,125	47,201,152	39,453,928	41,445,292	45,242,963	46,138,204	44,182,895	41,355,123
Other current costs	29,233,335	28,799,705	28,934,982	34,103,518	37,228,455	37,965,110	36,356,172	34,029,322
Current expenditure Subtotal	**76,846,461**	**76,000,856**	**68,388,909**	**75,548,811**	**82,471,418**	**84,103,313**	**80,539,067**	**75,384,444**
Land and buildings	2,162,051	2,133,979	1,613,083	3,877,769	4,233,092	4,316,854	4,133,909	3,869,332
Instruments and equipment	16,694,638	16,669,634	23,453,891	17,951,350	19,596,249	19,984,008	19,137,098	17,912,295
Capital expenditure Subtotal	**18,856,688**	**18,803,612**	**25,066,974**	**21,829,119**	**23,829,341**	**24,300,862**	**23,271,007**	**21,781,627**
Total GERD	**95,703,149**	**94,804,469**	**93,455,883**	**97,377,930**	**106,300,760**	**108,404,176**	**103,810,074**	**97,166,071**
Deflactor del GDP 2017	74.57	78.91	82.16	83.41	87.05	89.42	94.20	100.00

[e/] Estimated numbers.
Totals may not equal the sum of the columns due to rounding of the amounts.
The GERD figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual.
Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.

I.6 GERD BY EXECUTION SECTOR AND EXPENDITURE CATEGORIES, 2010-2017
Thousand pesos 2008

Execution sector Expenditure Categories	2010	2011	2012	2013	2014e/	2015e/	2016e/	2017e/
Productive								
Labour costs	7,359,026	7,322,032	4,882,275	5,737,029	5,992,417	6,130,390	6,104,111	6,117,376
Other current costs	7,409,164	7,371,917	5,875,545	7,803,842	8,151,237	8,338,916	8,303,170	8,321,213
Current expenditure Subtotal	**14,768,190**	**14,693,949**	**10,757,820**	**13,540,871**	**14,143,655**	**14,469,307**	**14,407,282**	**14,438,589**
Land and buildings	591,421	588,448	173,491	1,279,510	1,336,468	1,367,240	1,361,379	1,364,337
Instruments and equipment	7,936,780	7,896,881	8,459,209	6,339,979	6,622,209	6,774,683	6,745,642	6,760,300
Capital expenditure Subtotal	**8,528,201**	**8,485,329**	**8,632,700**	**7,619,489**	**7,958,677**	**8,141,923**	**8,107,021**	**8,124,637**
Total Productive Sector	**23,296,391**	**23,179,279**	**19,390,520**	**21,160,360**	**22,102,332**	**22,611,229**	**22,514,303**	**22,563,226**
Government								
Labour costs	13,113,337	12,462,215	13,563,709	13,358,521	14,740,179	14,789,676	13,915,660	12,606,017
Other current costs	7,817,430	7,429,268	8,815,359	9,643,452	10,640,864	10,676,595	10,045,648	9,100,222
Current expenditure Subtotal	**20,930,767**	**19,891,483**	**22,379,068**	**23,001,973**	**25,381,044**	**25,466,271**	**23,961,308**	**21,706,239**
Land and buildings	522,948	496,982	752,610	654,840	722,570	724,996	682,151	617,952
Instruments and equipment	878,322	834,710	1,658,381	2,131,626	2,352,097	2,359,996	2,220,529	2,011,548
Capital expenditure Subtotal	**1,401,270**	**1,331,692**	**2,410,991**	**2,786,466**	**3,074,667**	**3,084,992**	**2,902,680**	**2,629,500**
Total Government sector	**22,332,036**	**21,223,174**	**24,790,059**	**25,788,439**	**28,455,711**	**28,551,263**	**26,863,988**	**24,335,739**
Higher Education								
Labour costs	11,935,197	12,483,088	11,062,115	10,577,984	11,731,178	12,042,703	11,752,395	11,213,613
Other current costs	4,517,729	4,725,117	4,335,900	4,754,409	5,272,727	5,412,746	5,282,263	5,040,101
Current expenditure Subtotal	**16,452,926**	**17,208,205**	**15,398,015**	**15,332,394**	**17,003,905**	**17,455,449**	**17,034,658**	**16,253,714**
Land and buildings	186,611	195,178	310,204	340,065	377,139	387,154	377,821	360,500
Instruments and equipment	2,616,254	2,736,354	2,254,332	2,074,373	2,300,518	2,361,609	2,304,679	2,199,022
Capital expenditure Subtotal	**2,802,865**	**2,931,531**	**2,564,536**	**2,414,439**	**2,677,657**	**2,748,763**	**2,682,500**	**2,559,522**
Total Higher Education Sector	**19,255,791**	**20,139,737**	**17,962,551**	**17,746,832**	**19,681,561**	**20,204,212**	**19,717,158**	**18,813,236**
Non profit Private								
Labour costs	414,138	432,387	1,324,429	1,347,888	1,528,922	1,736,632	1,948,682	2,189,811
Other current costs	407,425	425,378	1,487,596	1,407,835	1,596,920	1,813,868	2,035,349	2,287,202
Current expenditure Subtotal	**821,564**	**857,765**	**2,812,025**	**2,755,724**	**3,125,842**	**3,550,500**	**3,984,031**	**4,477,013**
Land and buildings	189,411	197,757	41,546	158,231	179,483	203,867	228,760	257,066
Instruments and equipment	76,950	80,340	288,831	260,646	295,653	335,818	376,823	423,451
Capital expenditure Subtotal	**266,360**	**278,097**	**330,378**	**418,877**	**475,136**	**539,685**	**605,583**	**680,517**
Total Higher Education Sector	**1,087,924**	**1,135,862**	**3,142,402**	**3,174,601**	**3,600,977**	**4,090,185**	**4,589,614**	**5,157,531**
Total								
Labour costs	32,821,698	32,699,721	27,561,354	28,886,439	31,427,496	32,115,418	31,361,305	30,163,065
Other current costs	20,151,748	19,951,681	20,213,127	23,769,387	25,860,312	26,426,372	25,805,846	24,819,867
Current expenditure Subtotal	**52,973,446**	**52,651,402**	**47,774,481**	**52,655,826**	**57,287,808**	**58,541,790**	**57,167,151**	**54,982,931**
Land and buildings	1,490,391	1,478,364	1,126,852	2,702,718	2,940,468	3,004,833	2,934,275	2,822,163
Instruments and equipment	11,508,305	11,548,285	16,384,199	12,511,688	13,612,306	13,910,268	13,583,636	13,064,638
Capital expenditure Subtotal	**12,998,696**	**13,026,650**	**17,511,051**	**15,214,406**	**16,552,774**	**16,915,100**	**16,517,911**	**15,886,801**
Total GERD	**65,972,142**	**65,678,052**	**65,285,532**	**67,870,232**	**73,840,582**	**75,456,890**	**73,685,062**	**70,869,732**
GDP deflator 2008	108.18	113.90	117.61	119.67	125.31	128.47	132.71	137.11

e/ Estimated numbers.
Totals may not equal the sum of the columns due to rounding of the amounts.
The GERD figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual.
Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm.
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.
GDP Deflator: INEGI, Mexico´s National Accounts System.

I.7 GERD BY EXECUTION SECTOR AND ACTIVITY TYPE, 2010-2017

Thousand pesos

Execution sector Activity	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productive								
Basic investigation	920,377	1,733,563	727,855	1,088,085	1,190,043	1,248,141	1,283,784	1,329,212
Applied investigation	7,428,853	8,048,741	2,768,584	3,726,233	4,075,397	4,274,356	4,396,418	4,551,991
Experimental development	16,852,976	16,619,169	19,307,931	20,509,180	22,430,974	23,526,043	24,197,873	25,054,148
Total Productive Sector	**25,202,206**	**26,401,473**	**22,804,371**	**25,323,499**	**27,696,413**	**29,048,539**	**29,878,075**	**30,935,351**
Government								
Basic investigation	8,923,584	9,172,149	11,301,923	11,975,139	13,835,974	14,232,471	13,833,098	12,946,526
Applied investigation	6,151,302	6,034,369	9,350,665	9,922,094	11,463,904	11,792,424	11,461,521	10,726,945
Experimental development	9,084,074	8,966,929	8,501,952	8,964,883	10,357,949	10,654,777	10,355,797	9,692,087
Total Government sector	**24,158,960**	**24,173,447**	**29,154,540**	**30,862,116**	**35,657,827**	**36,679,672**	**35,650,416**	**33,365,558**
Higher Education								
Basic investigation	11,132,720	11,458,520	9,331,505	8,879,922	10,311,756	10,852,497	10,940,220	10,784,624
Applied investigation	5,389,504	5,514,734	9,407,511	9,726,946	11,295,357	11,887,678	11,983,768	11,813,330
Experimental development	4,308,831	5,966,145	2,385,980	2,631,518	3,055,835	3,216,081	3,242,077	3,195,967
Total Higher Education Sector	**20,831,055**	**22,939,399**	**21,124,996**	**21,238,386**	**24,662,948**	**25,956,256**	**26,166,065**	**25,793,921**
Non profit Private								
Basic investigation	218,437	209,199	996,506	926,463	1,100,383	1,281,390	1,485,280	1,724,383
Applied investigation	614,913	683,949	802,350	1,016,368	1,207,166	1,405,737	1,629,414	1,891,720
Experimental development	343,574	400,613	1,896,790	1,856,349	2,204,833	2,567,515	2,976,049	3,455,139
Total Non profit Private Sector	**1,176,924**	**1,293,760**	**3,695,646**	**3,799,179**	**4,512,382**	**5,254,642**	**6,090,742**	**7,071,241**
Total								
Basic investigation	21,195,118	22,573,431	22,357,790	22,869,608	26,438,156	27,614,498	27,542,382	26,784,745
Applied investigation	19,584,572	20,281,792	22,329,109	24,391,641	28,041,823	29,360,195	29,471,121	28,983,986
Experimental development	30,589,456	31,952,857	32,092,653	33,961,930	38,049,591	39,964,415	40,771,796	41,397,341
Total IDE Current expenditure	**71,369,146**	**74,808,080**	**76,779,553**	**81,223,180**	**92,529,570**	**96,939,109**	**97,785,298**	**97,166,071**

[e/] Estimated numbers.
Totals may not equal the sum of the columns due to rounding of the amounts.
The GERD figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual.
Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.

I.8 GERD BY EXECUTION SECTOR AND ACTIVITY TYPE, 2010-2017

Thousand pesos, 2017

Execution sector Activity	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productive								
Basic investigation	1,234,189	2,196,949	885,944	1,304,498	1,367,158	1,395,759	1,362,880	1,329,212
Applied investigation	9,961,792	10,200,189	3,369,913	4,467,357	4,681,939	4,779,887	4,667,291	4,551,991
Experimental development	22,599,162	21,061,515	23,501,567	24,588,319	25,769,379	26,308,487	25,688,760	25,054,148
Total Productive Sector	**33,795,143**	**33,458,654**	**27,757,424**	**30,360,174**	**31,818,475**	**32,484,133**	**31,718,931**	**30,935,351**
Government								
Basic investigation	11,966,166	11,623,888		14,356,914	15,895,184	15,915,757	14,685,387	12,946,526
Applied investigation	8,248,648	7,647,371	11,381,606	11,895,533	13,170,078	13,187,124	12,167,691	10,726,945
Experimental development	12,181,378	11,363,812	10,348,555	10,747,938	11,899,525	11,914,926	10,993,841	9,692,087
Total Government sector	**32,396,192**	**30,635,071**	**35,486,834**	**37,000,386**	**40,964,786**	**41,017,807**	**37,846,919**	**33,365,558**
Higher Education								
Basic investigation	14,928,529	14,521,411	11,358,285	10,646,079	11,846,456	12,136,030	11,614,272	10,784,624
Applied investigation	7,227,108	6,988,836	11,450,800	11,661,570	12,976,447	13,293,643	12,722,116	11,813,330
Experimental development	5,777,969	7,560,911	2,904,209	3,154,910	3,510,635	3,596,449	3,441,829	3,195,967
Total Higher Education Sector	**27,933,606**	**29,071,158**	**25,713,294**	**25,462,559**	**28,333,538**	**29,026,123**	**27,778,216**	**25,793,921**
Non profit Private								
Basic investigation	292,915	265,118	1,212,945	1,110,730	1,264,153	1,432,941	1,576,791	1,724,383
Applied investigation	824,573	866,770	976,618	1,218,517	1,386,829	1,571,995	1,729,805	1,891,720
Experimental development	460,719	507,698	2,308,769	2,225,564	2,532,978	2,871,177	3,159,410	3,455,139
Total Non profit Private Sector	**1,578,208**	**1,639,586**	**4,498,332**	**4,554,811**	**5,183,960**	**5,876,113**	**6,466,007**	**7,071,241**
Total								
Basic investigation	28,421,799	28,607,366	27,213,847	27,418,221	30,372,950	30,880,487	29,239,331	26,784,745
Applied investigation	26,262,122	25,703,166	27,178,937	29,242,976	32,215,292	32,832,649	31,286,904	28,983,986
Experimental development	41,019,228	40,493,936	39,063,099	40,716,732	43,712,517	44,691,039	43,283,839	41,397,341
Total IDE Current expenditure	**95,703,149**	**94,804,469**	**93,455,883**	**97,377,930**	**106,300,760**	**108,404,176**	**103,810,074**	**97,166,071**
GDP deflator 2017	74.57	78.91	82.16	83.41	87.05	89.42	94.20	100.00

[e/] Estimated numbers.
Totals may not equal the sum of the columns due to rounding of the amounts.
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I.9 GERD BY EXECUTION SECTOR AND ACTIVITY TYPE, 2010-2017

Thousand pesos 2008

Execution sector Activity	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productive								
Basic investigation	850,778	1,521,989	618,894	909,206	949,680	971,546	967,381	969,483
Applied investigation	6,867,076	7,066,424	2,354,122	3,113,647	3,252,254	3,327,136	3,312,873	3,320,072
Experimental development	15,578,538	14,590,866	16,417,503	17,137,507	17,900,398	18,312,548	18,234,048	18,273,670
Total Productive Sector	**23,296,391**	**23,179,279**	**19,390,520**	**21,160,360**	**22,102,332**	**22,611,229**	**22,514,303**	**22,563,226**
Government								
Basic investigation	8,248,774	8,052,725	9,610,007	10,006,447	11,041,404	11,078,480	10,423,783	9,442,770
Applied investigation	5,686,135	5,297,898	7,950,855	8,290,920	9,148,441	9,179,161	8,636,706	7,823,880
Experimental development	8,397,128	7,872,551	7,229,196	7,491,072	8,265,866	8,293,622	7,803,500	7,069,089
Total Government sector	**22,332,036**	**21,223,174**	**24,790,059**	**25,788,439**	**28,455,711**	**28,551,263**	**26,863,988**	**24,335,739**
Higher Education								
Basic investigation	10,290,853	10,060,053	7,934,564	7,420,078	8,229,002	8,447,526	8,243,885	7,865,949
Applied investigation	4,981,945	4,841,682	7,999,192	8,127,853	9,013,937	9,253,306	9,030,240	8,616,254
Experimental development	3,982,993	5,238,001	2,028,795	2,198,901	2,438,622	2,503,380	2,443,032	2,331,033
Total Higher Education Sector	**19,255,791**	**20,139,737**	**17,962,551**	**17,746,832**	**19,681,561**	**20,204,212**	**19,717,158**	**18,813,236**
Non profit Private								
Basic investigation	201,919	183,667	847,328	774,154	878,129	997,427	1,119,217	1,257,708
Applied investigation	568,413	600,475	682,237	849,279	963,344	1,094,219	1,227,827	1,379,758
Experimental development	317,593	351,720	1,612,838	1,551,168	1,759,504	1,998,540	2,242,570	2,520,064
Total Non profit Private Sector	**1,087,924**	**1,135,862**	**3,142,402**	**3,174,601**	**3,600,977**	**4,090,185**	**4,589,614**	**5,157,531**
Total								
Basic investigation	19,592,323	19,818,434	19,010,793	19,109,885	21,098,215	21,494,979	20,754,266	19,535,911
Applied investigation	18,103,568	17,806,480	18,986,406	20,381,698	22,377,977	22,853,821	22,207,647	21,139,965
Experimental development	28,276,252	28,053,138	27,288,332	28,378,649	30,364,390	31,108,090	30,723,149	30,193,857
Total IDE Current expenditure	**65,972,142**	**65,678,052**	**65,285,532**	**67,870,232**	**73,840,582**	**75,456,890**	**73,685,062**	**70,869,732**
GDP deflator 2008	108.18	113.90	117.61	119.67	125.31	128.47	132.71	137.11

[e/] Estimated numbers.

Totals may not equal the sum of the columns due to rounding of the amounts.

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I.10 GERD BY EXECUTION SECTOR AND FIELD OF SCIENCE, 2010-2017

Thousand pesos

Execution sector Field of science	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productive								
Natural Sciences and Engineering	25,162,370	26,360,940	22,788,517	25,291,005	27,660,875	29,011,266	29,839,737	30,895,657
Social Sciences and Humanities	39,836	40,533	15,854	32,493	35,538	37,273	38,337	39,694
Total Productive Sector	**25,202,206**	**26,401,473**	**22,804,371**	**25,323,499**	**27,696,413**	**29,048,539**	**29,878,075**	**30,935,351**
Government								
Natural Sciences and Engineering	19,947,486	19,682,354	24,109,433	25,799,724	29,808,781	30,663,011	29,802,586	27,892,520
Social Sciences and Humanities	4,211,474	4,491,093	5,045,107	5,062,393	5,849,045	6,016,661	5,847,830	5,473,039
Total Government sector	**24,158,960**	**24,173,447**	**29,154,540**	**30,862,116**	**35,657,827**	**36,679,672**	**35,650,416**	**33,365,558**
Higher Education								
Natural Sciences and Engineering	17,159,749	19,190,744	16,019,258	15,990,505	18,568,878	19,542,617	19,700,584	19,420,394
Social Sciences and Humanities	3,671,306	3,748,655	5,105,738	5,247,881	6,094,070	6,413,639	6,465,482	6,373,527
Total Higher Education Sector	**20,831,055**	**22,939,399**	**21,124,996**	**21,238,386**	**24,662,948**	**25,956,256**	**26,166,065**	**25,793,921**
Non profit Private								
Natural Sciences and Engineering	899,786	1,030,078	3,160,605	3,250,776	3,861,030	4,496,146	5,211,557	6,050,524
Social Sciences and Humanities	277,138	263,682	535,042	548,403	651,352	758,496	879,185	1,020,718
Total Non profit Private Sector	**1,176,924**	**1,293,760**	**3,695,646**	**3,799,179**	**4,512,382**	**5,254,642**	**6,090,742**	**7,071,241**
Total								
Natural Sciences and Engineering	63,169,392	66,264,116	66,077,812	70,332,010	79,899,564	83,713,040	84,554,465	84,259,094
Social Sciences and Humanities	8,199,754	8,543,963	10,701,740	10,891,170	12,630,006	13,226,069	13,230,834	12,906,977
Total GERD	**71,369,146**	**74,808,080**	**76,779,553**	**81,223,180**	**92,529,570**	**96,939,109**	**97,785,298**	**97,166,071**

[e/] Estimated numbers .

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GDP Deflator: INEGI, Mexico´s National Accounts System.

I.11 GERD BY EXECUTION SECTOR AND FIELD OF SCIENCE, 2010-2017

Thousand pesos 2017

Execution sector Field of science	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productive								
Natural Sciences and Engineering	33,741,725	33,407,286	27,738,126	30,321,218	31,777,648	32,442,452	31,678,232	30,895,657
Social Sciences and Humanities	53,418	51,367	19,297	38,956	40,827	41,681	40,699	39,694
Total Productive Sector	**33,795,143**	**33,458,654**	**27,757,424**	**30,360,174**	**31,818,475**	**32,484,133**	**31,718,931**	**30,935,351**
Government								
Natural Sciences and Engineering	26,748,775	24,943,497	29,345,943	30,931,117	34,245,227	34,289,550	31,638,792	27,892,520
Social Sciences and Humanities	5,647,417	5,691,573	6,140,891	6,069,269	6,719,560	6,728,257	6,208,128	5,473,039
Total Government sector	**32,396,192**	**30,635,071**	**35,486,834**	**37,000,386**	**40,964,786**	**41,017,807**	**37,846,919**	**33,365,558**
Higher Education								
Natural Sciences and Engineering	23,010,532	24,320,478	19,498,602	19,170,910	21,332,487	21,853,938	20,914,382	19,420,394
Social Sciences and Humanities	4,923,074	4,750,680	6,214,692	6,291,649	7,001,051	7,172,185	6,863,835	6,373,527
Total Higher Education Sector	**27,933,606**	**29,071,158**	**25,713,294**	**25,462,559**	**28,333,538**	**29,026,123**	**27,778,216**	**25,793,921**
Non profit Private								
Natural Sciences and Engineering	1,206,576	1,305,421	3,847,080	3,897,334	4,435,667	5,027,909	5,532,653	6,050,524
Social Sciences and Humanities	371,632	334,165	651,252	657,477	748,293	848,204	933,353	1,020,718
Total Non profit Private Sector	**1,578,208**	**1,639,586**	**4,498,332**	**4,554,811**	**5,183,960**	**5,876,113**	**6,466,007**	**7,071,241**
Total								
Natural Sciences and Engineering	84,707,609	83,976,683	80,429,751	84,320,579	91,791,029	93,613,849	89,764,058	84,259,094
Social Sciences and Humanities	10,995,540	10,827,786	13,026,132	13,057,351	14,509,731	14,790,327	14,046,016	12,906,977
Total GERD	**95,703,149**	**94,804,469**	**93,455,883**	**97,377,930**	**106,300,760**	**108,404,176**	**103,810,074**	**97,166,071**
Deflactor del GDP 2017	74.57	78.91	82.16	83.41	87.05	89.42	94.20	100.00

[e/] Estimated numbers .
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GDP Deflator: INEGI, Mexico´s National Accounts System.

I.12 GERD BY EXECUTION SECTOR AND FIELD OF SCIENCE, 2010-2017
Thousand pesos, 2008

Execution sector Field of science	2010	2011	2012	2013	2014[e/]	2015[e/]	2016[e/]	2017[e/]
Productive								
Natural Sciences and Engineering	23,259,568	23,143,693	19,377,040	21,133,209	22,073,972	22,582,216	22,485,414	22,534,275
Social Sciences and Humanities	36,823	35,586	13,481	27,151	28,360	29,013	28,889	28,951
Total Productive Sector	**23,296,391**	**23,179,279**	**19,390,520**	**21,160,360**	**22,102,332**	**22,611,229**	**22,514,303**	**22,563,226**
Government								
Natural Sciences and Engineering	18,439,038	17,280,201	20,500,213	21,558,294	23,788,047	23,867,926	22,457,419	20,343,885
Social Sciences and Humanities	3,892,998	3,942,973	4,289,846	4,230,144	4,667,664	4,683,337	4,406,569	3,991,854
Total Higher Education Sector	**22,332,036**	**21,223,174**	**24,790,059**	**25,788,439**	**28,455,711**	**28,551,263**	**26,863,988**	**24,335,739**
Higher Education								
Natural Sciences and Engineering	15,862,113	16,848,590	13,621,150	13,361,694	14,818,363	15,211,870	14,845,163	14,164,596
Social Sciences and Humanities	3,393,678	3,291,147	4,341,401	4,385,138	4,863,199	4,992,343	4,871,994	4,648,641
Total sector educación superior	**19,255,791**	**20,139,737**	**17,962,551**	**17,746,832**	**19,681,561**	**20,204,212**	**19,717,158**	**18,813,236**
Non profit Private								
Natural Sciences and Engineering	831,743	904,361	2,687,457	2,716,354	3,081,185	3,499,776	3,927,113	4,413,053
Social Sciences and Humanities	256,181	231,501	454,945	458,246	519,793	590,409	662,500	744,478
Total Non profit Private Sector	**1,087,924**	**1,135,862**	**3,142,402**	**3,174,601**	**3,600,977**	**4,090,185**	**4,589,614**	**5,157,531**
Total								
Natural Sciences and Engineering	58,392,462	58,176,845	56,185,859	58,769,551	63,761,566	65,161,788	63,715,109	61,455,808
Social Sciences and Humanities	7,579,681	7,501,206	9,099,673	9,100,680	10,079,015	10,295,102	9,969,953	9,413,924
Total GERD	**65,972,142**	**65,678,052**	**65,285,532**	**67,870,232**	**73,840,582**	**75,456,890**	**73,685,062**	**70,869,732**
GDP deflator, 2008	108.18	113.90	117.61	119.67	125.31	128.47	132.71	137.11

[e/] Estimated numbers
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I.13 GERD BY PRIVATE SECTOR BY INDUSTRY, 2010-2017
Thousand pesos

Industry	2010		2011		2012	
	Amount	%	Amount	%	Amount	%
Agriculture	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Mining	**280,285**	**1.1**	**393,781**	**1.5**	**46,758**	**0.2**
Manufacture	**13,479,664**	**53.5**	**15,485,551**	**58.7**	**10,366,317**	**45.5**
Food, beverages and tobacco	**1,152,019**	**8.5**	**1,339,840**	**8.7**	**1,180,474**	**11.4**
Food and beverage products	1,152,019	100.0	1,339,840	100.0	1,180,474	100.0
Tobacco products	0	0.0	0	0.0	0	0.0
Textiles, clothing, hide and leathergoods	**318,793**	**2.4**	**322,324**	**2.1**	**193,376**	**1.9**
Textiles	152,532	47.8	174,638	54.2	190,686	98.6
Clothing	13,703	4.3	0	0.0	2,111	1.1
Leathergoods and footwear industry	152,558	47.9	147,687	45.8	580	0.3
Wood, paper, printing and publishing	**167,250**	**1.2**	**172,580**	**1.1**	**196,826**	**1.9**
Wood and cork (except furniture)	37,477	22.4	37,473	21.7	24,092	12.2
Pulp, paper and paper products	125,048	74.8	133,181	77.2	128,561	65.3
Publishing, printing and reproduction of recording media	4,725	2.8	1,925	1.1	44,173	22.4
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	**5,060,192**	**37.5**	**5,992,851**	**38.7**	**2,079,168**	**20.1**
Coal, petroleum products and nuclear energy	78,382	1.5	104,711	1.7	68,910	3.3
Chemicals and chemical products	4,746,252	93.8	5,585,371	93.2	1,909,656	91.8
Chemicals and chemical products (except pharmaceutical)	889,390	18.7	1,062,840	19.0	593,434	31.1
Pharmaceutical	3,856,862	81.3	4,522,530	81.0	1,316,222	68.9
Rubber and plastic products	235,558	4.7	302,770	5.1	100,602	4.8
Non-metallic mineral products	**199,268**	**1.5**	**163,373**	**1.1**	**384,675**	**3.7**
Basic metals	**555,355**	**4.1**	**817,275**	**5.3**	**207,253**	**2.0**
Ferrous Basic metals	516,763	93.1	774,728	94.8	188,774	91.1
Non-ferrous basic metals	38,592	6.9	42,547	5.2	18,479	8.9
Fabricated metal products (except machinery and equipment)	**1,518,630**	**11.3**	**1,338,990**	**8.6**	**1,119,961**	**10.8**
Machinery, equipment, instruments and transport	**4,503,026**	**33.4**	**5,325,424**	**34.4**	**4,985,565**	**48.1**
Machinery not specified elsewhere	599,672	13.3	528,099	9.9	318,268	6.4
Office, accounting and computing machinery	34,440	0.8	35,064	0.7	410,104	8.2
Electrical machinery	1,457,519	32.4	1,655,150	31.1	1,281,739	25.7
Electronic material (radio, television and communications equipment)	160,884	3.6	195,689	3.7	163,254	3.3
Electronic components (including semiconductors)	3,749	2.3	7,123	3.6	0	0.0
Radio, television and communications	157,135	97.7	188,566	96.4	163,254	100.0
Medical, precision and optical instruments, clocks, timers and counter	5,829	0.1	911	0.0	59,655	1.2
Motor vehicles	2,103,981	46.7	2,698,453	50.7	2,592,872	52.0
Other transport equipment	140,701	3.1	212,059	4.0	159,673	3.2
Ships	0	0.0	0	0.0	0	0.0
Planes	140,701	100.0	170,290	80.3	151,610	95.0
Other transport not elsewhere specified	0	0.0	41,770	19.7	8,063	5.0
Furniture and other manufactured goods not specified elsewhere	**5,130**	**0.0**	**12,893**	**0.1**	**19,018**	**0.2**
Furniture	4,151	80.9	11,853	91.9	857	4.5
Other manufactured goods not specified elsewhere	979	19.1	1,040	8.1	18,161	95.5
Recycling	0	0.0	0	0.0	0	0.0
Electricity, gas and water supply (public services)	**0**	**0.0**	**0**	**0.0**	**81,733**	**0.4**
Building	**804,153**	**3.2**	**12,121**	**0.0**	**49,139**	**0.2**
Services	**10,638,104**	**42.2**	**10,510,021**	**39.8**	**12,260,424**	**53.8**
Wholesale and retail sales and repair of motor vehicles, etc.	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Hotels and restaurants	**3,882**	**0.0**	**4,454**	**0.0**	**8,612**	**0.1**
Transport and Storage	**91,850**	**0.9**	**12,501**	**0.1**	**168,715**	**1.4**
Communications	**3,230,798**	**30.4**	**3,094,444**	**29.4**	**3,550,956**	**29.0**
Mail	8,374	0.3	8,482	0.3	41,501	1.2
Telecommunications	3,222,424	99.7	3,085,962	99.7	3,509,454	98.8
Financial intermediation; property assets, income and business activities; computers, and other business activities	**7,311,573**	**68.7**	**7,398,622**	**70.4**	**8,532,141**	**69.6**
Financial intermediation (including insurers)	1,051,037	14.4	1,124,438	15.2	3,351,851	39.3
Property assets, income and business activities	16,503	0.2	46,453	0.6	83,874	1.0
Computers, and related activities	272,991	3.7	396,773	5.4	238,737	2.8
Software consulting	272,991	100.0	396,773	100.0	238,737	100.0
Other computer services not elsewhere specified	0	0.0	0	0.0	0	0.0
Research and development	3,230,702	44.2	2,807,079	37.9	709,636	8.3
Other business activities not specified elsewhere	0	0.0	0	0.0	0	0.0
Community, social and personal services	2,740,340	37.5	3,023,879	40.9	4,148,043	48.6
Total	**25,202,206**	**100.0**	**26,401,473**	**100.0**	**22,804,371**	**100.0**

Continues

I.13 GERD BY PRIVATE SECTOR, BY INDUSTRY, 2010-2017
Thousand pesos

Industry	2013		2014e/		2015e/	
	Amount	%	Amount	%	Amount	%
Agriculture	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Mining	**222,484**	**0.9**	**243,332**	**0.9**	**255,211**	**0.9**
Manufacture	**13,683,487**	**54.0**	**14,965,686**	**54.0**	**15,696,303**	**54.0**
Food, beverages and tobacco	**1,603,756**	**11.7**	**1,754,035**	**11.7**	**1,839,666**	**11.7**
Food and beverage products	1,603,756	100.0	1,754,035	100.0	1,839,666	100.0
Tobacco products	0	0.0	0	0.0	0	0.0
Textiles, clothing, hide and leathergoods	**220,529**	**1.6**	**241,193**	**1.6**	**252,968**	**1.6**
Textiles	217,376	98.6	237,745	98.6	249,352	98.6
Clothing	2,371	1.1	2,594	1.1	2,720	1.1
Leathergoods and footwear industry	781	0.4	854	0.4	896	0.4
Wood, paper, printing and publishing	**246,271**	**1.8**	**269,347**	**1.8**	**282,497**	**1.8**
Madera y corcho (no muebles)	51,768	21.0	56,619	21.0	59,383	21.0
Pulp, paper and paper products	169,486	68.8	185,367	68.8	194,417	68.8
Publishing, printing and reproduction of recording media	25,017	10.2	27,361	10.2	28,697	10.2
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	**2,878,065**	**21.0**	**3,147,751**	**21.0**	**3,301,423**	**21.0**
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	89,376	3.1	97,751	3.1	102,523	3.1
Chemicals and chemical products	2,634,227	91.5	2,881,064	91.5	3,021,717	91.5
Chemicals and chemical products (excepto farmacéuticos)	695,612	26.4	760,793	26.4	797,935	26.4
Pharmaceutical	1,938,615	73.6	2,120,271	73.6	2,223,782	73.6
Rubber and plastic products	154,462	5.4	168,936	5.4	177,184	5.4
Non-metallic mineral products	**379,891**	**2.8**	**415,488**	**2.8**	**435,772**	**2.8**
Basic metals	**253,196**	**1.9**	**276,922**	**1.9**	**290,441**	**1.9**
Ferrous Basic metals	205,251	81.1	224,484	81.1	235,443	81.1
Non-ferrous basic metals	47,945	18.9	52,438	18.9	54,998	18.9
Fabricated metal products (except machinery and equipment)	**846,371**	**6.2**	**925,679**	**6.2**	**970,871**	**6.2**
Machinery, equipment, instruments and transport equipment	**7,222,885**	**52.8**	**7,899,699**	**52.8**	**8,285,358**	**52.8**
Machinery not specified elsewhere	462,527	6.4	505,867	6.4	530,564	6.4
Office, accounting and computing machinery	488,495	6.8	534,269	6.8	560,352	6.8
Electrical machinery	2,130,018	29.5	2,329,610	29.5	2,443,340	29.5
Electronic material (radio, television and communications equipment)	212,645	2.9	232,571	2.9	243,925	2.9
Electronic components (including semiconductors)	16,956	8.0	18,545	8.0	19,451	8.0
Radio, television and communications equipment	195,689	92.0	214,025	92.0	224,474	92.0
Medical, precision and optical instruments, clocks, timers and counter	42,472	0.6	46,452	0.6	48,720	0.6
Motor vehicles	3,669,544	50.8	4,013,395	50.8	4,209,327	50.8
Other transport equipment	217,184	3.0	237,535	3.0	249,131	3.0
Ships	0	0.0	0	0.0	0	0.0
Planes	214,919	99.0	235,058	99.0	246,533	99.0
Other transport not elsewhere specified	2,265	1.0	2,478	1.0	2,598	1.0
Furniture and other manufactured goods not specified elsewhere	**32,523**	**0.2**	**35,571**	**0.2**	**37,307**	**0.2**
Furniture	264	0.8	289	0.8	303	0.8
Other manufactured goods not specified elsewhere	32,259	99.2	35,282	99.2	37,004	99.2
Recycling	0	0.0	0	0.0	0	0.0
Electricity, gas and water supply (public services)	**135,161**	**0.5**	**147,826**	**0.5**	**155,042**	**0.5**
Building	**96,552**	**0.4**	**105,599**	**0.4**	**110,754**	**0.4**
Services	**11,185,815**	**44.2**	**12,233,971**	**44.2**	**12,831,228**	**44.2**
Wholesale and retail sales and repair of motor vehicles, etc.	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Hotels and restaurant	**14,513**	**0.1**	**15,873**	**0.1**	**16,648**	**0.1**
Transport and Storage	**1,461,219**	**13.1**	**1,598,141**	**13.1**	**1,676,161**	**13.1**
Communications	**1,890,576**	**16.9**	**2,067,731**	**16.9**	**2,168,676**	**16.9**
Mail	52,395	2.8	57,305	2.8	60,102	2.8
Telecommunications	1,838,181	97.2	2,010,426	97.2	2,108,574	97.2
Financial intermediation; property assets, income and business activities; computers, and other business activities	**7,819,507**	**69.9**	**8,552,227**	**69.9**	**8,969,742**	**69.9**
Financial intermediation (including insurers)	1,935,004	24.7	2,116,322	24.7	2,219,640	24.7
Property assets, income and business activities	101,806	1.3	111,345	1.3	116,781	1.3
Computers, and related activities	230,767	3.0	252,391	3.0	264,713	3.0
Software consulting	230,767	100.0	252,391	100.0	264,713	100.0
Other computer services not elsewhere specified	0	0.0	0	0.0	0	0.0
Research and development	908,546	11.6	993,681	11.6	1,042,192	11.6
Other business activities not specified elsewhere	0	0.0	0	0.0	0	0.0
Community, social and personal services	4,643,384	59.4	5,078,488	59.4	5,326,417	59.4
Total	**25,323,499**	**100.0**	**27,696,413**	**100.0**	**29,048,539**	**100.0**

Continues

I.13 GERD BY PRIVATE SECTOR, BY INDUSTRY, 2010-2017
Thousand pesos

Industry	2016e/		2017e/	
	Amount	%	Amount	%
Agriculture	**0**	**0.0**	**0**	**0.0**
Mining	**262,499**	**0.9**	**271,788**	**0.9**
Manufacture	**16,144,541**	**54.0**	**16,715,837**	**54.0**
Food, beverages and tobacco	**1,892,201**	**11.7**	**1,959,159**	**11.7**
Food and beverage products	1,892,201	100.0	1,959,159	100.0
Tobacco products	0	0.0	0	0.0
Textiles, clothing, hide and leathergoods	**260,192**	**1.6**	**269,400**	**1.6**
Textiles	256,473	98.6	265,548	98.6
Clothing	2,798	1.1	2,897	1.1
Leathergoods and footwear industry	921	0.4	954	0.4
Wood, paper, printing and publishing	**290,564**	**1.8**	**300,846**	**1.8**
Madera y corcho (no muebles)	61,079	21.0	63,240	21.0
Pulp, paper and paper products	199,969	68.8	207,045	68.8
Publishing, printing and reproduction of recording media	29,517	10.2	30,561	10.2
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	**3,395,701**	**21.0**	**3,515,863**	**21.0**
Coal, petroleum, nuclear energy	105,451	3.1	109,182	3.1
Chemicals and chemical products	3,108,007	91.5	3,217,988	91.5
Chemicals and chemical products (except pharmaceutical)	820,721	26.4	849,764	26.4
Pharmaceutical	2,287,286	73.6	2,368,225	73.6
Rubber and plastic products	182,243	5.4	188,692	5.4
Non-metallic mineral products	**448,216**	**2.8**	**464,077**	**2.8**
Basic metals	**298,735**	**1.9**	**309,306**	**1.9**
Ferrous Basic metals	242,167	81.1	250,736	81.1
Non-ferrous basic metals	56,568	18.9	58,570	18.9
Fabricated metal products (except machinery and equipment)	**998,596**	**6.2**	**1,033,932**	**6.2**
Machinery, equipment, instruments and transport	**8,521,962**	**52.8**	**8,823,523**	**52.8**
Machinery not specified elsewhere	545,715	6.4	565,026	6.4
Office, accounting and computing machinery	576,354	6.8	596,749	6.8
Electrical machinery	2,513,114	29.5	2,602,044	29.5
Electronic material (radio, television and communications equipment	250,890	2.9	259,768	2.9
Electronic components (including semiconductors)	20,006	8.0	20,714	8.0
Radio, television and communications equipment	230,884	92.0	239,054	92.0
Medical, precision and optical instruments, clocks, timers and counter	50,111	0.6	51,884	0.6
Motor vehicles	4,329,532	50.8	4,482,738	50.8
Other transport equipment	256,246	3.0	265,313	3.0
Ships	0	0.0	0	0.0
Planes	253,573	99.0	262,546	99.0
Other transport not elsewhere specified	2,673	1.0	2,767	1.0
Furniture and other manufactured goods not specified elsewhere	**38,373**	**0.2**	**39,731**	**0.2**
Furniture	312	0.8	323	0.8
Other manufactured goods not specified elsewhere	38,061	99.2	39,408	99.2
Recycling	0	0.0	0	0.0
Electricity, gas and water supply (public services)	**159,470**	**0.5**	**165,113**	**0.5**
Building	**113,917**	**0.4**	**117,948**	**0.4**
Services	**13,197,648**	**44.2**	**13,664,664**	**44.2**
Wholesale and retail sales and repair of motor vehicles, etc.	**0**	**0.0**	**0**	**0.0**
Hotels and restaurant	**17,123**	**0.1**	**17,729**	**0.1**
Transport and Storage	**1,724,027**	**13.1**	**1,785,034**	**13.1**
Communications	**2,230,607**	**16.9**	**2,309,540**	**16.9**
Mail	61,819	2.8	64,006	2.8
Telecommunications	2,168,789	97.2	2,245,534	97.2
Financial intermediation; property assets, income and business activities; computers, and other business activities	**9,225,890**	**69.9**	**9,552,361**	**69.9**
Financial intermediation (including insurers)	2,283,026	24.7	2,363,814	24.7
Property assets, income and income and business activities	120,116	1.3	124,366	1.3
Computers, and related activities	272,272	3.0	281,907	3.0
Software consulting	272,272	100.0	281,907	100.0
Other computer services not elsewhere specified	0	0.0	0	0.0
Research and development	1,071,953	11.6	1,109,886	11.6
Other business activities not specified elsewhere	0	0.0	0	0.0
Community, social and personal services	5,478,523	59.4	5,672,388	59.4
Total	**29,878,075**	**100.0**	**30,935,351**	**100.0**

e/ Estimated numbers
Totals may not equal the sum of the columns due to rounding of the amounts.
The totals for 2012 and 2013 may not coincide due to the Supplements reported by INEGI in the ESIDET 2014 survey.
Figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.
GDP Deflator: INEGI, Mexico´s National Accounts System.evantada en colaboración entre el INEGI y el Conacyt.

I.14 GERD BY PRIVATE SECTOR, BY INDUSTRY, 2010-2017
Thousand pesos, 2017

Industry	2010	2011	2012	2013
Agriculture	**0**	**0**	**0**	**0**
Mining	**468,946**	**591,529**	**65,306**	**300,808**
Manufacture	**22,552,889**	**23,262,057**	**14,478,467**	**18,500,641**
Food, beverages and tobacco	**1,927,449**	**2,012,679**	**1,648,749**	**2,168,345**
Food and beverage products	1,927,449	2,012,679	1,648,749	2,168,345
Tobacco products	0	0	0	0
Textiles, clothing, hide and leathergoods	**533,374**	**484,189**	**270,086**	**298,164**
Textiles	255,202	262,337	266,328	293,902
Clothing	22,926	0	2,948	3,206
Leathergoods and footwear industry	255,245	221,852	810	1,056
Wood, paper, printing and publishing	**279,828**	**259,246**	**274,903**	**332,968**
Madera y corcho (no muebles)	62,702	56,292	33,649	69,993
Pulp, paper and paper products	209,219	200,062	179,558	229,152
Publishing, printing and reproduction of recording media	7,906	2,892	61,696	33,824
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	**8,466,231**	**9,002,330**	**2,903,941**	**3,891,263**
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	131,142	157,294	96,246	120,840
Chemicals and chemical products	7,940,976	8,390,222	2,667,186	3,561,583
Chemicals and chemical products (excepto farmacéuticos)	1,488,043	1,596,575	828,840	940,496
Pharmaceutical	6,452,933	6,793,647	1,838,346	2,621,088
Rubber and plastic products	394,114	454,814	140,509	208,840
Non-metallic mineral products	**333,396**	**245,416**	**537,269**	**513,628**
Basic metals	**929,166**	**1,227,693**	**289,467**	**342,332**
Ferrous Basic metals	864,598	1,163,780	263,657	277,508
Non-ferrous basic metals	64,569	63,913	25,810	64,824
Fabricated metal products (except machinery and equipment)	**2,540,828**	**2,011,402**	**1,564,231**	**1,144,329**
Machinery not specified elsewhere	**7,534,035**	**7,999,736**	**6,963,258**	**9,765,639**
Machinery not specified elsewhere	1,003,314	793,299	444,520	625,355
Office, accounting and computing machinery	57,621	52,672	572,786	660,466
Electrical machinery	2,438,582	2,486,330	1,790,185	2,879,873
Electronic material (radio, television and communications equipment	269,176	293,960	228,015	287,505
Electronic components (including semiconductors)	6,273	10,700	0	22,926
Radio, television and communications equipment	262,903	283,259	228,015	264,579
Medical, precision and optical instruments, clocks, timers and counter	9,753	1,368	83,319	57,424
Motor vehicles	3,520,181	4,053,557	3,621,422	4,961,375
Other transport equipment	235,407	318,551	223,013	293,642
Ships	0	0	0	0
Planes	235,407	255,805	211,752	290,579
Other transport not elsewhere specified	0	62,745	11,261	3,063
Furniture and other manufactured goods not specified elsewhere	**8,583**	**19,368**	**26,563**	**43,973**
Furniture	6,946	17,806	1,197	357
Other manufactured goods not specified elsewhere	1,638	1,562	25,365	43,616
Recycling	0	0	0	0
Electricity, gas and water supply (public services)	**0**	**0**	**114,155**	**182,743**
Building	**1,345,432**	**18,207**	**68,631**	**130,542**
Services	**17,798,662**	**15,787,925**	**17,123,937**	**15,123,684**
Wholesale and retail sales and repair of motor vehicles, etc.	**0**	**0**	**0**	**0**
Hotels and restaurant	**6,496**	**6,690**	**12,028**	**19,622**
Transport and Storage	**153,675**	**18,778**	**235,642**	**1,975,628**
Communications	**5,405,464**	**4,648,407**	**4,959,562**	**2,556,137**
Mail	14,010	12,742	57,964	70,840
Telecommunications	5,391,453	4,635,665	4,901,598	2,485,297
Financial intermediation; property assets, income and business activities; computers, and other business activities	**12,233,027**	**11,114,050**	**11,916,704**	**10,572,297**
Financial intermediation (including insurers)	1,758,495	1,689,106	4,681,477	2,616,206
Bienes raíces, renta y actividades empresariales	**27,611**	**69,781**	**117,145**	**137,645**
Computers, and related activities	456,743	596,024	333,440	312,007
Software consulting	456,743	596,024	333,440	312,007
Other computer services not elsewhere specified	0	0	0	0
Research and development	5,405,302	4,216,734	991,137	1,228,392
Other business activities not specified elsewhere	0	0	0	0
Community, social and personal services	4,584,876	4,542,405	5,793,505	6,278,047
Total	**42,165,928**	**39,659,718**	**31,850,496**	**34,238,417**
Deflactor del GDP 2017	74.57	78.91	82.16	83.41

Continúa

I.14 GERD BY PRIVATE SECTOR, BY INDUSTRY, 2010-2017
Thousand pesos, 2017

Industry	2014e/	2015e/	2016e/	2017e/
Agriculture	**0**	**0**	**0**	**0**
Mining	**301,102**	**298,486**	**278,672**	**271,788**
Manufacture	**18,518,755**	**18,357,828**	**17,139,243**	**16,715,837**
Food, beverages and tobacco	**2,170,468**	**2,151,607**	**2,008,784**	**1,959,159**
Food and beverage products	2,170,468	2,151,607	2,008,784	1,959,159
Tobacco products	0	0	0	0
Textiles, clothing, hide and leathergoods	**298,456**	**295,863**	**276,223**	**269,400**
Textiles	294,190	291,633	272,275	265,548
Clothing	3,209	3,182	2,970	2,897
Productos de cuero e industria del calzado	1,057	1,048	978	954
Wood, paper, printing and publishing	**333,294**	**330,398**	**308,466**	**300,846**
Madera y corcho (no muebles)	70,061	69,452	64,842	63,240
Pulp, paper and paper products	229,376	227,383	212,289	207,045
Publishing, printing and reproduction of recording media	33,857	33,563	31,335	30,561
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	**3,895,073**	**3,861,225**	**3,604,918**	**3,515,863**
Coal, petroleum, nuclear energy, chemicals and rubber and plastic products	120,958	119,907	111,948	109,182
Chemicals and chemical products	3,565,071	3,534,090	3,299,499	3,217,988
Chemicals and chemical products (excepto farmacéuticos)	941,417	933,236	871,288	849,764
Pharmaceutical	2,623,654	2,600,855	2,428,211	2,368,225
Rubber and plastic products	209,044	207,228	193,472	188,692
Non-metallic mineral products	**514,131**	**509,663**	**475,832**	**464,077**
Basic metals	**342,667**	**339,689**	**317,141**	**309,306**
Ferrous Basic metals	277,780	275,366	257,087	250,736
Non-ferrous basic metals	64,887	64,323	60,054	58,570
Fabricated metal products (except machinery and equipment)	**1,145,449**	**1,135,495**	**1,060,121**	**1,033,932**
Machinery, equipment, instruments and transport	**9,775,201**	**9,690,255**	**9,047,020**	**8,823,523**
Machinery not specified elsewhere	625,968	620,528	579,338	565,026
Office, accounting and computing machinery	661,112	655,367	611,864	596,749
Electrical machinery	2,882,693	2,857,642	2,667,953	2,602,044
Electronic material (radio, television and communications equipment	287,786	285,285	266,348	259,768
Electronic components (including semiconductors)	22,948	22,749	21,239	20,714
Radio, television and communications equipment	264,838	262,537	245,110	239,054
Medical, precision and optical instruments, clocks, timers and counter	57,480	56,981	53,199	51,884
Motor vehicles	4,966,232	4,923,076	4,596,284	4,482,738
Other transport equipment	293,929	291,375	272,034	265,313
Ships	0	0	0	0
Planes	290,864	288,336	269,196	262,546
Other transport not elsewhere specified	3,066	3,039	2,837	2,767
Furniture and other manufactured goods not specified elsewhere	**44,016**	**43,633**	**40,737**	**39,731**
Furniture	358	354	331	323
Other manufactured goods not specified elsewhere	43,658	43,279	40,406	39,408
Recycling	0	0	0	0
Electricity, gas and water supply (public services)	**182,922**	**181,332**	**169,295**	**165,113**
Building	**130,670**	**129,534**	**120,936**	**117,948**
Services	**15,138,493**	**15,006,940**	**14,010,785**	**13,664,664**
Wholesale and retail sales and repair of motor vehicles, etc.	**0**	**0**	**0**	**0**
Hotels and restaurant	**19,641**	**19,471**	**18,178**	**17,729**
Transport and Storage	**1,977,563**	**1,960,378**	**1,830,249**	**1,785,034**
Comunicaciones	**2,558,640**	**2,536,405**	**2,368,040**	**2,309,540**
Mail	70,910	70,293	65,627	64,006
Telecommunications	2,487,730	2,466,112	2,302,413	2,245,534
Financial intermediation; property assets, income and business activities; computers, and other business activities	**10,582,649**	**10,490,686**	**9,794,318**	**9,552,361**
Financial intermediation (including insurers)	**2,618,767**	**2,596,010**	**2,423,688**	**2,363,814**
Property assets, income and business activities	137,780	136,583	127,517	124,366
Computers, and related activities	312,313	309,599	289,048	281,907
Software consulting	312,313	309,599	289,048	281,907
Other computer services not elsewhere specified	0	0	0	0
Research and development	1,229,595	1,218,910	1,137,999	1,109,886
Other business activities not specified elsewhere	0	0	0	0
Servicios comunales, sociales y personales	**6,284,194**	**6,229,585**	**5,816,067**	**5,672,388**
Total	**34,271,942**	**33,974,119**	**31,718,931**	**30,935,351**
Deflactor del GDP 2017	87.05	89.42	94.20	100.00

e/ Estimated numbers .
Totals may not equal the sum of the columns due to rounding of the amounts.
The totals for 2012 and 2013 may not coincide due to the Supplements reported by INEGI in the ESIDET 2014 survey.
Figures for 2010 to 2017 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available in: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Source: Data calculated by the Conacyt based on information from the Survey of Research and Technological Development (ESIDET) 2010, 2012, 2014, built in collaboration between INEGI and Conacyt.
GDP Deflator: INEGI, Mexico´s National Accounts System.

I.15 GERD BY COUNTRY, 2016

Country	**GERD current USD millions and PPP[1/]**	**GERD/GDP %**
Germany[e/]	118,473.4	2.94
Argentina (2015)	5,555.6	0.63
Australia (2015)[e/]	21,198.5	1.88
Austria[p/]	13,625.5	3.09
Brazil* (2015)	41,018.2	1.28
Belgium[p/]	13,087.9	2.49
Canadá[p/]	26,072.0	1.60
Chile[p/]	1,523.9	0.37
China	451,201.4	2.12
Corea	79,354.3	4.24
Denmark[e/]	8,063.6	2.87
Slovenia[p/]	1,352.9	2.00
Spain[p/]	20,077.4	1.19
Estonia	501.4	1.28
United States of America[p/]	511,089.0	2.74
Finland	6,546.9	2.75
France[p/]	62,162.7	2.25
Greece[p/]	2,869.4	0.99
Hungary	3,160.4	1.21
Ireland[e/]	3,995.0	1.18
Iceland	353.3	2.10
Israel[e/]	13,536.2	4.25
Italy[p/]	29,915.9	1.29
Japan	168,644.9	3.14
Luxemburg[p/]	741.1	1.24
Mexico[e/]	11,025.5	0.51
Norway[p/]	6,274.1	2.04
New Zealand (2015)	2,197.2	1.28
Netherlands[p/]	17,493.3	2.03
Poland (2015)	10,139.9	1.00
Portugal[p/]	4,006.6	1.27
United Kingdom[p/]	47,244.5	1.69
Czech Republic[p/]	6,162.2	1.68
Slovak Republic	1,306.3	0.79
Romania	2,189.3	0.48
Russia	39,881.9	1.10
Singapore (2014)	10,102.5	2.18
South Africa (2015)	5,811.3	0.80
Sweden[p/]	15,795.5	3.25
Switzerland (2015)	17,788.0	3.37
Turkey (2015)	17,142.1	0.88

[e/]Estimated numbers.
[p/] Preliminary figures.
[1/] The purchasing power parity (PPP) is the rate of currency conversion which eliminates the differences in price levels between countries.
The GERD figures for Mexico in 2016 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available at: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.
* RICYT, Network of Science and Technology Indicators-Ibero-American and Inter-American. Date of consultation: June 20, 2018.

I.16 GERD FINANCING SOURCE BY COUNTRY, 2016

Percentage

Country	Financing sources		
	Government	Industry	Others[1/]
Germany[e/]	27.89	65.60	6.51
Argentina (2015)	76.39	17.22	6.39
Australia (2015)[e/]	34.60	61.91	3.50
Austria[p/]	30.68	53.39	15.93
Brazil* (2015)	22.51	58.60	18.90
Belgium[p/]	50.17	47.50	2.33
Canadá[p/]	33.08	40.60	26.32
Chile[p/]	46.42	35.84	17.74
China	21.26	74.73	4.01
Corea	22.68	75.42	1.90
Denmark[e/]	29.40	59.37	11.23
Slovenia[p/]	19.89	69.21	10.90
Spain[p/]	40.93	45.85	13.23
Estonia	46.37	41.00	12.63
United States of America[p/]	25.08	62.32	12.59
Finland	28.89	54.76	16.35
France[p/]	34.81	54.04	11.15
Greece[p/]	42.53	39.87	17.60
Hungary	34.62	49.72	15.66
Ireland[e/]	25.91	48.37	25.72
Iceland	34.15	35.03	30.81
Israel[e/]	12.83	34.26	52.90
Italy[p/]	37.98	49.99	12.03
Japan	15.02	78.09	6.90
Luxemburg[p/]	47.67	47.08	5.24
Mexico[e/]	67.35	20.67	11.97
Norway[p/]	44.92	44.23	10.84
New Zealand (2015)	37.10	43.10	19.81
Netherlands[p/]	33.36	48.70	17.94
Poland (2015)	41.82	39.00	19.17
Portugal[p/]	44.30	42.65	13.05
United Kingdom[p/]	27.98	48.04	23.97
Czech Republic[p/]	32.21	34.53	33.26
Slovak Republic	31.94	25.06	43.01
Romania	41.69	37.29	21.02
Russia	68.17	28.11	3.72
Singapore (2014)	37.09	54.10	8.80
South Africa (2015)	44.61	38.90	16.49
Sweden[p/]	28.27	60.96	10.77
Switzerland (2015)	24.37	63.48	12.16
Turkey (2015)	27.56	50.10	22.35

[e/] Estimated numbers.
[p/] Preliminary figures.
[1/] The purchasing power parity (PPP) is the rate of currency conversion which eliminates the differences in price levels between countries.
The GERD figures for Mexico in 2016 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available at: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.
* RICYT, Network of Science and Technology Indicators-Ibero-American and Inter-American. Date of consultation: June 20, 2018.

I.17 GERD BY GOVERNMENT SECTOR, BY COUNTRY, 2016

Country	GERDGS current USD millions and PPP[1/]	GERDGS/GERD %	GERDGS/GDP %
Germany[e/]	16,280.3	13.74	0.40
Argentina (2015)	2,842.6	51.17	0.32
Australia (2015)[e/]	2,691.7	12.70	0.24
Austria[p/]	624.4	4.58	0.14
Belgium[p/]	1,244.3	9.51	0.24
Canada[p/]	1,967.5	7.55	0.12
Chile[p/]	200.6	13.16	0.05
China	70,818.5	15.70	0.33
Korea	9,161.1	11.54	0.49
Denmark[e/]	177.0	2.19	0.06
Slovenia[p/]	182.5	13.49	0.27
Spain[p/]	3,701.1	18.43	0.22
Estonia	57.3	11.43	0.15
United States of America[p/]	59,028.0	11.55	0.32
Finland	534.0	8.16	0.22
France[p/]	8,007.9	12.88	0.29
Greece[p/]	710.1	24.75	0.25
Hungary	423.9	13.41	0.16
Ireland[e/]	164.5	4.12	0.05
Iceland	17.1	4.85	0.10
Israel[e/]	229.8	1.70	0.07
Italy[p/]	3,952.1	13.21	0.17
Japan	12,730.4	7.55	0.24
Luxemburg[p/]	221.4	29.87	0.37
Mexico[e/]	**4,019.7**	**36.46**	**0.19**
Norway[p/]	888.8	14.17	0.29
New Zealand (2015)	446.8	20.34	0.26
Netherlands[p/]	2,019.9	11.55	0.23
Poland (2015)	2,473.6	24.39	0.24
Portugal[p/]	216.1	5.39	0.07
United Kingdom[p/]	2,998.6	6.35	0.11
Czech Republic[p/]	1,119.2	18.16	0.30
Slovak Republic	280.1	21.44	0.17
Rumania	728.2	33.26	0.16
Russia	12,751.8	31.97	0.35
Singapore (2014)	1,151.8	11.40	0.25
South Africa (2015)	1,393.5	23.98	0.19
Sweden[p/]	537.7	3.40	0.11
Switzerland (2015)	156.4	0.88	0.03
Turkey (2015)	1,771.8	10.34	0.09

[e/] Estimated numbers.
[p/] Preliminary figures.
[1/] The purchasing power parity (PPP) is the rate of currency conversion which eliminates the differences in price levels between countries.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.

I.18 GERD BY HIGH EDUCATION INSTITUTIONS, BY COUNTRY, 2016

Country	GERDHEI current USD millions and PPP[1/]	GERDHEI/GERD %	GERDHEI/GDP %
Germany[e/]	21,655.6	18.28	0.54
Argentina (2015)	1,443.2	25.98	0.16
Australia (2015)[e/]	6,492.3	30.63	0.58
Austria[p/]	3,203.2	23.51	0.73
Belgium[p/]	2,639.4	20.17	0.50
Canadá[p/]	10,700.8	41.04	0.66
Chile[p/]	637.6	41.84	0.15
China	30,860.8	6.84	0.14
Corea	7,248.7	9.13	0.39
Denmark[e/]	2,551.1	31.64	0.91
Slovenia[p/]	147.0	10.87	0.22
Spain[p/]	5,505.6	27.42	0.33
Estonia	178.2	35.53	0.46
United States of America[p/]	67,520.0	13.21	0.36
Finland	1,645.9	25.14	0.69
France[p/]	13,647.7	21.95	0.49
Greece[p/]	938.0	32.69	0.33
Hungary	352.2	11.15	0.13
Ireland[e/]	1,006.0	25.18	0.30
Iceland	113.5	32.12	0.68
Israel[e/]	1,584.9	11.71	0.50
Italy[p/]	7,639.8	25.54	0.33
Japan	20,773.0	12.32	0.39
Luxemburg[p/]	138.2	18.64	0.23
Mexico[e/]	2,950.3	26.76	0.14
Norway[p/]	2,045.4	32.60	0.66
New Zealand (2015)	655.9	29.85	0.38
Netherlands[p/]	5,512.2	31.51	0.64
Poland (2015)	2,928.0	28.88	0.29
Portugal[p/]	1,807.8	45.12	0.57
United Kingdom[p/]	11,600.9	24.56	0.41
Czech Republic[p/]	1,260.2	20.45	0.34
Slovak Republic	362.0	27.71	0.22
Romania	247.8	11.32	0.05
Russia	3,631.2	9.10	0.10
Singapore (2014)	2,771.0	27.43	0.60
South Africa (2015)	1,774.9	30.54	0.24
Sweden[p/]	4,236.3	26.82	0.87
Switzerland (2015)	4,745.2	26.68	0.90
Turkey (2015)	6,798.3	39.66	0.35

[e/] Estimated numbers.
[p/] Preliminary figures.
[1/] The purchasing power parity (PPP) is the rate of currency conversion which eliminates the differences in price levels between countries.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.

I.19 GERD BY PRIVATE SECTOR, BY COUNTRY , 2016

Country	GERDPS current USD millions and PPP[1/]	GERDPS/GERD %	GERDPS/GDP %
Germany[e/]	80,537.5	67.98	2.00
Argentina (2015)	1,180.3	21.25	0.13
Australia (2015)[e/]	11,326.6	53.43	1.00
Austria[p/]	9,731.3	71.42	2.20
Belgium[p/]	9,123.0	69.71	1.73
Canadá[p/]	13,271.9	50.91	0.82
Chile[p/]	586.8	38.51	0.14
China	349,522.2	77.46	1.64
Corea	61,686.1	77.74	3.29
Denmark[e/]	5,307.4	65.82	1.89
Slovenia[p/]	1,023.0	75.62	1.51
Spain[p/]	10,824.0	53.91	0.64
Estonia	258.2	51.50	0.66
United States of America[p/]	363,753.0	71.17	1.95
Finland	4,310.4	65.84	1.81
France[p/]	39,538.8	63.61	1.43
Greece[p/]	1,196.9	41.71	0.41
Hungary	2,343.0	74.14	0.89
Ireland[e/]	2,824.6	70.70	0.83
Iceland	222.7	63.03	1.32
Israel[e/]	11,584.5	85.58	3.64
Italy[p/]	17,428.1	58.26	0.75
Japan	132,812.4	78.75	2.47
Luxemburg[p/]	381.5	51.47	0.64
Mexico[e/]	3,368.8	30.55	0.16
Norway[p/]	3,339.9	53.23	1.08
New Zealand (2015)	1,094.5	49.81	0.64
Netherlands[p/]	9,961.2	56.94	1.16
Poland (2015)	4,722.4	46.57	0.47
Portugal[p/]	1,916.9	47.84	0.61
United Kingdom[p/]	31,673.1	67.04	1.13
Czech Republic[p/]	3,767.7	61.14	1.03
Slovak Republic	657.8	50.36	0.40
Romania	1,208.3	55.19	0.27
Russia	23,413.8	58.71	0.64
Singapore (2014)	6,179.7	61.17	1.34
South Africa (2015)	2,482.7	42.72	0.34
Sweden[p/]	10,990.8	69.58	2.26
Switzerland (2015)	12,628.0	70.99	2.40
Turkey (2015)	8,572.0	50.01	0.44

[e/] Estimated numbers.
[p/] Preliminary figures.
[1/] The purchasing power parity (PPP) is the rate of currency conversion which eliminates the differences in price levels between countries.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.

I.20 GROSS DOMESTIC EXPENDITURE ON R&D (GERD) BY COUNTRY, 2009-2016

PPP[1] Million / current USD

Country	2009	2010	2011	2012	2013	2014	2015	2016
Germany	82,702	87,048	95,810	100,490	102,905	109,563	113,922	118,473e/
Argentina	3,980[bp/]	4,263[p/]	4,655[p/]	5,266[p/]	5,338[p/]	5,043[p/]	5,556	n.a.
Australia	n.a.	20,592[e/]	20,978[e/]	n.a.	23,130[e/]	n.d.	21,199[e/]	n.a.
Austria	8,865	9,587[e/]	9,955	11,415[e/]	12,008	12,797[e/]	13,139	13,625[p/]
Brazil*	28,847	32,515	33,904	35,463	39,704	42,553	41,018	n.a.
Belgium	8,146	8,958	9,822	10,715	11,359	11,936	12,627	13,088[p/]
Canada	25,076	24,903	25,571	26,019[b/]	26,507	27,794[b/]	26,386	26,072[p/]
Chile	961[b/]	1,023	1,232	1,356	1,533	1,518[b/]	1,540	1,524[bp/]
China	185,301[b/]	213,486	247,808	292,196	334,117	370,590	407,415	451,201
Corea	45,987	52,173	58,380	64,862	68,234	73,100	75,734	79,354
Spain	20,290	20,087	19,862	19,269	19,282	19,356	19,723	20,077[p/]
United States of America	406,405[d/]	410,093[d/]	429,792[d/]	434,348[d/]	454,821[d/]	476,460[d/]	496,585[dp/]	511,089[dp/]
Finland	7,570	7,749	7,977	7,520	7,383	7,178	6,677	6,547
France	49,638	50,908[b/]	53,617	55,098	58,353	60,586[b/]	61,240	62,163[p/]
Greece	2,109[e/]	1,875[e/]	1,951	1,954	2,322	2,436	2,792	2,869[p/]
Ireland	3,035[e/]	3,145[e/]	3,206[e/]	3,351[e/]	3,512[e/]	3,625[e/]	3,856	3,995[e/]
Italy	24,905	25,406	26,112	27,420	28,459	29,448[e/]	29,833	29,916[p/]
Japan	137,342	140,619	148,389	152,326	164,656[b/]	169,554	169,673	168,645
Mexico	8,460	9,291	9,775	9,799	10,293	11,519[ep/]	11,376[ep/]	11,026ep/
Norway	4,611	4,677	5,003	5,316	5,620	5,806	6,186	6,274[p/]
New Zealand	12,269	12,765	14,634[b/]	15,178[b/]	15,969	16,404	16,813	17,493[p/]
Portugal	4,418	4,429	4,119	3,832	3,870	3,856	3,801	4,007[p/]
United Kingdom	36,425[e/]	37,573[e/]	38,779	38,490[e/]	41,532	43,811[e/]	45,345	47,245[p/]
Russia	34,655	33,094	35,192	37,911	38,607	40,330	39,727	39,882
South Africa	4,814	4,428	4,652	4,837	4,978	5,478	n.d.	n.d.
Sweden	12,717	12,555[e/]	13,434	13,970[e/]	14,496[e/]	14,191[e/]	15,325	15,796[p/]
Switzerland	n.a.	n.a.	n.a.	14,745	n.a.	n.a.	17,788	n.a.
Turkey	8,940	10,079	11,545	12,808	13,835	15,933	17,142	n.a.

n.a.: Not available.
[1/] The purchasing power parity (PPP) is the rate of currency conversion which eliminates the differences in price levels between countries.
[b/] Rupture of time series.
[d/] Differences in definition.
[e/] Estimated numbers.
[p/] Preliminary figures.
GERD figures for Mexico from 2014 to 2016 are estimates.
The GERD figures for Mexico in 2016 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available at: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
Comparisons are presented until 2016 as they are the latest data published by the OECD and the RICYT .
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.
*RTIN, Science and Technology Indicators Network-Ibero-American and Inter-American. Date of consultation: June 20, 2018.

I.21 GERD PER CAPITA POPULATION, BY COUNTRY, 2010-2016

PPP Units[1/]

Country	2010	2011	2012	2013	2014	2015	2016
Germany	1,084	1,194	1,249	1,276	1,353	1,395	1,439[e/]
Argentina	106[p/]	114[p/]	128[p/]	129[p/]	121[p/]	132	n.d.
Australia	922[e/]	923[e/]	n.d.	986[e/]	n.d.	879[e/]	n.d.
Brazil*	166	172	178	197	210	201	n.d.
Canada	732	745	749[b/]	754	782[b/]	736	719[p/]
Chile	60	71	78	87	85[b/]	85	83[bp/]
China	159	184	216	246	271	296	326
Corea	1,053	1,169	1,292	1,353	1,440	1,485	1,548
España	431	425	412	414	417	425	432
United States of America	1,324[d/]	1,377[d/]	1,382[d/]	1,437[d/]	1,494[d/]	1,546[dp/]	1,580[dp/]
Finland	1,445	1,480	1,389	1,357	1,314	1,218	1,191
France	784[b/]	821	840	885	914[b/]	920	930[p/]
Greece	169[e/]	176	177	212	224	258	266[p/]
Ireland	690[e/]	700[e/]	730[e/]	763[e/]	786[e/]	831	853[e/]
Italy	425	435	454	469	484[e/]	491	493[p/]
Japan	1,098	1,161	1,194	1,293[b/]	1,334	1,336	1,330
Mexico	**81**	**85**	**84**	**87**	**96[ep/]**	**94[ep/]**	**90[ep/]**
Norway	957	1,010	1,059	1,106	1,130	1,192	1,198[p/]
Netherlands	768	877[b/]	906[b/]	951	973	993	1,027[p/]
Portugal	419	390	364	370	371	367	388[p/]
United Kingdom	599[e/]	613	604[e/]	648	678[e/]	696	720[p/]
Russia	232	246	265	269	281	272	273
South Africa	87	90	92	94	101	106	n.d.
Sweden	1,339[e/]	1,422	1,468[e/]	1,510[e/]	1,464[e/]	1,564	1,592[p/]
Switzerland	n.d.	n.d.	1,844	n.d.	n.d.	2,148	n.d.
Turkey	138	156	171	183	208	221	n.d.

n.a.: Not available.
[1/] The purchasing power parity (PPP) is the rate of currency conversion which eliminates the differences in price levels between countries.
[b/] Rupture of time series.
[d/] Differences in definition.
[e/] Estimated numbers.
[p/] Preliminary figures.
GERD figures for Mexico from 2014 to 2016 are estimates.
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OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.
* RICYT, Science and Technology Indicators Network-Ibero-American and Inter-American. Date of consultation: June 20, 2018.

I.22 GROSS DOMESTIC EXPENDITURE ON R&D AS A RELATION OF GDP BY COUNTRY, 2010-2016

Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	2.71	2.80	2.87	2.82	2.87	2.92	2.94[e/]
Argentina	0.56[p/]	0.57[p/]	0.64[p/]	0.62[p/]	0.59[p/]	0.63	n.d.
Australia	2.19[e/]	2.12[e/]	n.d.	2.10[e/]	n.d.	1.88[e/]	n.d.
Brazil*	1.16	1.14	1.13	1.20	1.27	1.28	n.d.
Canada	1.83	1.79	1.78[b/]	1.71	1.72[b/]	1.65	1.60[p/]
Chile	0.33	0.35	0.36	0.39	0.37[b/]	0.38	0.37[bp/]
China	1.71	1.78	1.91	1.99	2.02	2.07	2.12[e/]
Corea	3.47	3.74	4.03	4.15	4.29	4.22	4.24
España	1.35	1.33	1.29	1.27	1.24	1.22	1.19[p/]
United States of America	2.74[d/]	2.77[d/]	2.69[d/]	2.72[d/]	2.73[d/]	2.74[dp/]	2.74[dp/]
Finland	3.73	3.64	3.42	3.29	3.17	2.90	2.75
France	2.18[b/]	2.19	2.23	2.24	2.28[b/]	2.27	2.25[p/]
Greece	0.60[e/]	0.67	0.70	0.81	0.83	0.97	0.99[p/]
Ireland	1.59[e/]	1.55[e/]	1.57[e/]	1.58[e/]	1.53[e/]	1.20	1.18[e/]
Italy	1.22	1.21	1.27	1.31	1.34[e/]	1.34	1.29[p/]
Japan	3.14	3.24	3.21	3.31[b/]	3.40	3.28	3.14
Mexico	**0.54**	**0.52**	**0.49**	**0.50**	**0.54[ep/]**	**0.53[ep/]**	**0.50[ep/]**
Norway	1.65	1.63	1.62	1.65	1.71	1.93	2.04[p/]
Netherlands	1.72	1.90[b/]	1.94[b/]	1.95	2.00	2.00	2.03[p/]
Portugal	1.53	1.46	1.38	1.33	1.29	1.24	1.27[p/]
United Kingdom	1.67[e/]	1.67	1.60[e/]	1.65	1.67[e/]	1.67	1.69[p/]
Russia	1.05	1.01	1.03	1.03	1.07	1.10	1.10
South Africa	0.74	0.73	0.73	0.72	0.77	0.80	n.d.
Sweden	3.22[e/]	3.25	3.28[e/]	3.31[e/]	3.15[e/]	3.27	3.25[p/]
Switzerland	n.d.	n.d.	3.19	n.d.	n.d.	3.37	n.d.
Turkey	0.80	0.80	0.83	0.82	0.86	0.88	n.d.

n.a.: Not available
[b/] Rupture of time series.
[d/] Differences in definition.
[e/] Estimated numbers.
[p/] Preliminary figures.
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OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.
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I.23 COMPANY-FINANCED GERD BY COUNTRY 2010-2016

Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	65.5	65.6	66.1	65.4	66.0	65.6	n.d.
Argentina	n.d.	n.d.	n.d.	n.d.	n.d.	17.2[b/]	n.d.
Australia	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Brazil*	47.0	45.2	43.1	40.4	44.9	47.5	n.d.
Canada	47.2	49.1	47.4[b/]	46.7	45.8[b/]	41.6	40.6[p/]
Chile	25.4	33.9	34.9	34.2	31.9[b/]	32.8	35.8[pb/]
China	71.7	73.9	74.0	74.6	75.4	74.7	76.1
Corea	71.8	73.7	74.7	75.7	75.3	74.5	75.4
España	43.0	44.3	45.6	46.3	46.4	45.8	n.d.
United States of America	56.9[d/]	58.4[d/]	59.5[d/]	61.1[d/]	62.0[d/]	62.4[dp/]	62.3[dp/]
Finland	66.1	67.0	63.1	60.8	53.5	54.8	n.d.
France	53.5[b/]	55.0	55.3	55.1	54.5[b/]	54.0	n.d.
Greece	36.5[e/]	32.7	31.0	30.3	29.8	31.4	39.9[p/]
Ireland	52.2[e/]	48.9[e/]	49.7[e/]	52.0[e/]	52.1[e/]	48.4	n.d.
Italy	44.7	45.1	44.3	45.2	47.3[e/]	50.0	n.d.
Japan	75.9	76.5	76.1	75.5[b/]	77.3	78.0	78.1
Mexico	**32.9**	**32.3**	**24.5**	**21.0**	**19.5[ep/]**	**19.7[ep/]**	**20.7[ep/]**
Norway	n.d.	44.2	n.d.	43.1	n.d.	44.2	n.d.
Netherlands	n.d.	51.1[b/]	51.6[b/]	51.1	51.1	48.6	n.d.
Portugal	43.9	44.7	46.0	42.3	41.8	42.7	n.d.
United Kingdom	44.0[e/]	45.9	45.6[e/]	46.2	48.0[e/]	49.0	n.d.
Russia	25.5	27.7	27.2	28.2	27.1	26.5	28.1
South Africa	40.1	39.0	38.3	41.4	40.8	38.9	n.d.
Sweden	n.d.	57.6	n.d.	61.0[e/]	n.d.	57.3	n.d.
Switzerland	n.d.	n.d.	63.6	n.d.	n.d.	63.5	n.d.
Turkey	45.1	45.8	46.8	48.9	50.9	50.1	n.d.

n.a.: Not available
b/ Rupture of time series.
d/ Differences in definition.
e/ Estimated numbers.
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I.24 GOVERNMENT-FINANCED GERD BY COUNTRY, 2010-2016

Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	30.4	29.9	29.2[d/]	29.1[d/]	28.7[d/]	27.9[d/]	n.d.
Argentina	n.d.	n.d.	n.d.	n.d.	n.d.	76.4[b/]	n.d.
Australia	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Brazil*	51.1	52.9	54.9	57.7	52.9	50.2	n.d.
Canada	34.9[be/]	33.8[e/]	34.1[be/]	33.8[e/]	32.1[be/]	32.2[e/]	33.1[p/]
Chile	40.4	33.7	36.0	38.4	44.2[b/]	42.6	46.4[bp/]
China	24.0	21.7	21.6	21.1	20.3	21.3	20.0
Corea	26.7	24.9	23.8	22.8	23.0	23.7	22.7
España	46.6	44.5	43.1	41.6	41.4	40.9	n.d.
United States of America	32.6[d/]	31.3[d/]	29.6[d/]	27.5[d/]	25.9[d/]	25.5[dp/]	25.1[dp/]
Finland	25.7	25.0[b/]	26.7	26.0	27.5	28.9	n.d.
France	37.1[b/]	35.1	35.4	35.3	34.3[b/]	34.8	n.d.
Greece	48.3[e/]	49.2	50.4	52.3	53.3	53.1	42.5[p/]
Ireland	29.4[e/]	29.4[e/]	28.2[e/]	27.9[e/]	27.5[e/]	25.9	n.d.
Italy	41.6	41.9	42.5	41.4	39.7[e/]	38.0	n.d.
Japan	17.2[e/]	16.4[e/]	16.8[e/]	17.3[be/]	16.0[e/]	15.4[e/]	15.0[e/]
Mexico	**62.3**	**63.0**	**67.8**	**70.7**	**71.8** [ep/]	**70.3** [ep/]	**67.4** [ep/]
Norway	n.d.	46.5	n.d.	45.8	n.d.	44.9	n.d.
Netherlands	n.d.	33.9[b/]	32.4[b/]	33.4	33.2	33.1	n.d.
Portugal	45.1	41.8	43.1	46.4	47.1	44.3	n.d.
United Kingdom	32.3[e/]	30.5	28.7[e/]	29.1	28.4[e/]	27.7	n.d.
Russia	70.3	67.1	67.8	67.6	69.2	69.5	68.2
South Africa	44.5	43.1	45.4	42.9	43.9	44.6	n.d.
Sweden	n.d.	27.5	n.d.	28.3[e/]	n.d.	n.d.[c/]	n.d.
Switzerland	n.d.	n.d.	23.6	n.d.	n.d.	24.4	n.d.
Turkey	30.8	29.2	28.2	26.6	26.3	27.6	n.d.

n.a.: Not available

[b/] Rupture of time series.

[d/] Differences in definition.

[e/] Estimated numbers.

[p/] Preliminary figures.

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I.25 GERD FINANCED BY OTHER NATIONAL SECTORS, BY COUNTRY, 2010-2016

Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	0.2	0.3	0.4 d/	0.3 d/	0.3 d/	0.4 d/	n.d.
Argentina*	n.d.	n.d.	n.d.	n.d.	n.d.	3.1 b/	n.d.
Australia	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Brazil*	1.9	1.9	2.0	2.0	2.2	2.3	n.d.
Canada	11.4 e/	11.1 e/	12.8 be/	13.7 e/	13.6 be/	14.4 e/	15.9 p/
Chile	14.4	11.2	11.6	12.5	10.2 b/	11.8	15.9 bp/
Corea	1.2	1.2	1.1	1.2	1.0	1.0	1.0
España	4.6	4.5	4.6	4.7	4.8	5.2	n.d.
United States of America	6.7 d/	6.6 d/	6.8 d/	6.9 d/	7.0 d/	7.1 dp/	7.4 dp/
Finland	1.3	1.4	1.4	1.6	1.7	1.8	n.d.
France	1.8 b/	2.1	1.7	1.7	3.5 b/	3.5	n.d.
Greece	3.4 e/	3.3	2.9	3.5	3.7	2.9	3.0 p/
Ireland	1.4 e/	1.3 e/	1.3 e/	1.5 e/	1.7 e/	1.9	n.d.
Italy	4.0	3.9	3.7	3.7	3.6 e/	3.7	n.d.
Japan	6.4 e/	6.6 e/	6.6 e/	6.7 be/	6.3 e/	6.1 e/	6.2 e/
Mexico	**4.3**	**4.1**	**7.3**	**8.0**	**8.4 ep/**	**9.6 ep/**	**11.4 ep/**
Norway	n.d.	1.5	n.d.	1.6	n.d.	1.6	n.d.
Netherlands	n.d.	3.6 b/	3.5 b/	3.4	3.1	2.7	n.d.
Portugal	7.8	7.5	5.7	5.2	5.4	5.7	n.d.
United Kingdom	6.0 e/	5.9	5.9 e/	6.0	6.1 e/	6.3	n.d.
Russia	0.6	1.0	1.0	1.2	1.2	1.4	1.0
South Africa	3.3	2.9	3.2	2.8	3.1	3.5	n.d.
Sweden	n.d.	3.9	n.d.	4.1 e/	n.d.	4.3	n.d.
Switzerland	n.d.	n.d.	1.6	n.d.	n.d.	1.9	n.d.
Turkey	23.2	24.2	24.4	23.7	21.8	21.3	n.d.

n.a.: Not available
b/ Rupture of time series.
d/ Differences in definition.
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I.26 GERD EXECUTED BY COMPANIES BY COUNTRIES, 2010-2016

Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	67.0	67.6	68.0	67.2	67.7	68.7	68.0[e/]
Argentina	27.0[p/]	27.6[p/]	25.3[p/]	24.2[p/]	20.1[p/]	21.2	n.d.
Australia	58.2[e/]	57.8[e/]	n.d.	56.3[e/]	n.d.	53.4[e/]	n.d.
Canada	52.0[d/]	53.3[d/]	51.6[bd/]	51.2[d/]	53.2[b/]	52.1	50.9[p/]
Chile	29.6	34.0	34.4	35.0	33.4[b/]	34.3	38.5[bp/]
China	73.4	75.7	76.2	76.6	77.3	76.8	77.5
Corea	74.8	76.5	77.9	78.5	78.2	77.5	77.7
España	51.5	52.1	53.0	53.1	52.9	52.5	53.9[p/]
United States of America	68.0[d/]	68.4[d/]	69.6[d/]	70.9[d/]	71.5[d/]	71.7[dp/]	71.2[dp/]
Finland	69.6	70.5	68.7	68.9	67.7	66.7	65.8
France	63.2[b/]	64.0	64.6	64.6	63.6[b/]	63.7	63.6[p/]
Greece	39.4[e/]	34.9	34.3	33.3	33.9	33.0	41.7[p/]
Ireland	68.7[e/]	69.8[e/]	71.1[e/]	71.0[e/]	71.0[e/]	71.3	70.7[e/]
Italy	53.9	54.6	54.2	54.7	56.7[e/]	58.2	58.3[p/]
Japan	76.5	77.0	76.6	76.1[b/]	77.8	78.5	78.8
Mexico	**35.2**	**34.9**	**29.7**	**31.2**	**29.9** [ep/]	**30.0**[ep/]	**30.6**[ep/]
Norway	51.2	52.2	52.3	52.5	53.7	53.9	53.2[p/]
Netherlands	47.9	56.6[b/]	56.6[b/]	55.7	56.0	56.0	56.9[p/]
Portugal	45.9	47.4	49.7	47.5	46.4	46.4	47.8[p/]
United Kingdom	60.9[e/]	63.6	63.3[e/]	63.9	65.1[e/]	66.0	67.0[p/]
Russia	60.5	61.0	58.3	60.6	59.6	59.2	58.7
South Africa	49.7	47.1	44.3	45.9	45.3	42.7	n.d.
Sweden	68.7[e/]	69.1	67.8[e/]	68.9[e/]	67.0[e/]	69.7	69.6[p/]
Switzerland	n.d.	n.d.	71.5	n.d.	n.d.	71.0	n.d.
Turkey	42.5	43.2	45.1	47.5	49.8	50.0	n.d.

n.a.: Not available

[b/] Rupture of time series.

[d/] Differences in definition.

[e/] Estimated numbers.

[p/] Preliminary figures.

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I.27 GERD GOVERNMENT EXECUTED BY COUNTRY, 2010-2016

Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	14.8 d/	14.5 d/	14.3 d/	14.9 d/	14.6 d/	14.1 d/	13.7 de/
Argentina	40.6 p/	43.4 p/	45.0 p/	47.7 p/	51.2	n.d.	n.d.
Australia	12.4 e/	11.2 e/	n.d.	11.2 e/	n.d.	12.7 e/	n.d.
Canada	10.6 b/	9.0	8.6 b/	8.9	8.6 b/	7.1	7.5 p/
Chile	3.7	4.0	4.1	8.4 b/	8.1 b/	7.8	13.2 bp/
China	16.3	16.3	16.2	15.8	16.2	15.7	n.d.
Corea	12.7	11.7	11.3	10.9	11.2	11.7	11.5
España	20.1	19.5	19.1	18.7	18.8	19.1	18.4 p/
United States of America	12.7 d/	12.8 d/	12.3 d/	11.5 d/	11.4 d/	11.3 dp/	11.5 dp/
Finland	9.2	8.8	9.0	8.9	8.6	8.2	8.2
France	14.0 b/	13.9	13.2	13.1	12.7 b/	12.8	12.9 p/
Greece	23.7 e/	23.8	24.8	28.0	27.7	28.1	24.7 p/
Ireland	4.8 e/	4.9 e/	4.8 e/	4.5 e/	4.4 e/	4.3	4.1 e/
Italy	13.7	13.4	14.8	14.0	13.6 e/	13.1	13.2 p/
Japan	9.0	8.4	8.6	9.2 b/	8.3	7.9	7.5
Mexico	**33.4**	**32.2**	**38.0**	**38.0**	**38.5 ep/**	**37.9 ep/**	**36.5 ep/**
Norway	16.4	16.4	16.4	16.0	15.2	15.0	14.2 p/
Netherlands	11.7 d/	10.8 bd/	11.8 bd/	12.2 d/	11.9 d/	11.9 d/	11.5 p/
Portugal	7.1	7.4	5.4	6.5	6.3	6.5	5.4 p/
United Kingdom	9.5 e/	8.6	8.0 e/	7.9	7.3 e/	6.6	6.3 p/
Russia	29.8	32.2	30.3	30.5	31.1	32.0	n.d.
South Africa	22.4	22.9	23.4	23.5	24.0	n.d.	n.d.
Sweden	4.9 e/	4.3	4.8 e/	3.7 e/	3.7 e/	3.4	3.4 p/
Switzerland	n.d.	n.d.	0.7 d/	n.d.	n.d.	0.9 d/	n.d.
Turkey	11.4	11.3	11.0	10.4	9.7	10.3	n.d.

n.a.: Not available
b/ Rupture of time series.
d/ Differences in definition.
e/ Estimated numbers.
p/ Preliminary figures.
GERD figures for Mexico from 2014 to 2016 are estimates.
The GERD figures for Mexico in 2016 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available at: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
The international comparison is presented until 2016 because they are the latest data published by the OECD and RICYT.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.

I.28 GERD EXECUTED BY HIGHER EDUCATION INSTITUTIONS BY COUNTRY, 2010-2016

Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	18.2	17.9	17.7	17.9	17.7	17.3	18.3[be/]
Argentina	30.2[p/]	29.6[p/]	29.1[p/]	30.5[p/]	26.0	n.d.	n.d.
Australia	26.4[e/]	28.0[e/]	n.d.	29.6[e/]	n.d.	30.6[e/]	n.d.
Canada	37.0	37.3	39.4[b/]	39.5	37.7[b/]	40.3	41.0[p/]
Chile	38.5	32.4	34.3	39.3	39.0[b/]	38.5	41.8[bp/]
China	7.9	7.6	7.2	6.9	7.0	6.8	n.d.
Corea	10.8	10.1	9.5	9.2	9.0	9.1	9.1
España	28.3	28.2	27.7	28.0	28.1	28.1	27.4[p/]
United States of America	14.7[d/]	14.5[d/]	14.0[d/]	13.5[d/]	13.1[d/]	13.0[dp/]	13.2[dp/]
Finland	20.4	20.0	21.6	21.5	22.9	24.4	25.1
France	21.6[b/]	20.9	20.8	20.9	22.1[b/]	22.0	22.0[p/]
Greece	35.7[e/]	40.2	39.9	37.4	37.2	37.8	32.7[p/]
Ireland	26.5[e/]	25.3[e/]	24.1[e/]	24.5[e/]	24.7[e/]	24.4	25.2[e/]
Italy	28.8	28.6	28.0	28.3	26.7[e/]	25.5[e/]	25.5[p/]
Japan	12.9	13.2	13.4	13.5[b/]	12.6	12.3	12.3
Mexico	**29.1**	**30.8**	**27.5**	**26.1**	**26.6[e/]**	**26.8[e/]**	**26.8[ep/]**
Norway	32.3	31.4	31.3	31.5	31.0	31.1	32.6[p/]
Netherlands	40.4	32.6[b/]	31.6[b/]	32.1	32.1	32.1	31.5[p/]
Portugal	36.9	36.4	36.5	44.6[b/]	45.6	45.5	45.1[p/]
United Kingdom	27.0[e/]	26.0	26.7[e/]	26.4	25.8[e/]	25.3	24.6[p/]
Russia	9.0	9.3	9.0	9.8	9.6	9.1	n.d.
South Africa	29.8	30.7	28.4	28.5	30.5	n.d.	n.d.
Sweden	26.3[e/]	26.3	27.1[e/]	27.1[e/]	29.0[e/]	26.7	26.8[p/]
Switzerland	n.d.	n.d.	26.1	n.d.	n.d.	26.7	n.d.
Turkey	46.0	45.5	43.9	42.1	40.5	39.7	n.d.

n.a.: Not available
[b/] Rupture of time series.
[d/] Differences in definition.
[e/] Estimated numbers.
[p/] Preliminary figures.
GERD figures for Mexico from 2014 to 2016 are estimates.
The GERD figures for Mexico in 2016 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available at: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
The international comparison is presented until 2016 because they are the latest data published by the OECD and RICYT.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.

I.29 EXPENDITURE ON BASIC RESEARCH BY COUNTRIES, 2010-2016

GDP Percentage

Country	2010	2011	2012	2013	2014	2015	2016
Germany	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Australia	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Canada	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Chile	0.06[m/]	0.08[m/]	0.09[m/]	0.11[m/]	0.11[m/]	0.13[m/]	0.10[m/]
China	0.08[b/]	0.08	0.09	0.09	0.10	0.10	0.11
Corea	0.63	0.68	0.74	0.75	0.76	0.73	0.68
España	0.26[m/]	0.27[m/]	0.27[m/]	0.29[e/]	0.28[e/]	0.27[e/]	n.d.
United States of America	0.50[d/]	0.48[d/]	0.45[d/]	0.47[d/]	0.47[d/]	0.46[d/]	0.46[d/]
Finland	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
France	0.55[b/]	0.53	0.54	0.54	0.54	0.54	n.d.
Greece	n.d.	0.20	n.d.	0.28	n.d.	0.35	n.d.
Ireland	0.31[e/]	0.27[e/]	n.d.	0.30[e/]	n.d.	0.20	n.d.
Italy	0.31	0.29	0.32	0.33	0.32[e/]	0.33	n.d.
Japan	0.38	0.40	0.40	0.42[b/]	0.42	0.39	0.39
Mexico	**0.16**	**0.15**	**0.14**	**0.14**	**0.15**	**0.15**	**0.14[e/]**
Norway	n.d.	0.29[m/]	n.d.	0.29[m/]	n.d.	0.33[d/]	n.d.
Netherlands	n.d.	0.57[b/]	0.54[b/]	0.55	0.55	0.54	n.d.
Portugal	0.35	0.30	0.29	0.30	0.30	0.29	n.d.
United Kingdom	0.30	0.27[e/]	0.27[e/]	0.28[e/]	0.28[e/]	0.28[e/]	n.d.
Russia	0.19[m/]	0.18[m/]	0.16[m/]	0.16[m/]	0.16[m/]	0.16[m/]	0.15[d/]
South Africa	0.18	0.18	0.19	0.17	0.19	0.20	n.d.
Sweden	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Switzerland	n.d.	n.d.	0.94	n.d.	n.d.	1.29	n.d.
Turkey	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

n.a.: Not available
[b/] Rupture of time series.
[d/] Differences in definition.
[e/] Estimated numbers.
[m/] Underestimate.
[p/] Preliminary figures.
GERD figures for Mexico from 2014 to 2016 are estimates.
The GERD figures for Mexico in 2016 were calculated based on the methodology proposed in the new edition of the 2015 Frascati Manual. Available at: http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm
The international comparison is presented until 2016 because they are the latest data published by the OECD and RICYT.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2014, developed in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Date of consultation: June 20, 2018.

I.30 FEDERAL EXPENDITURE ON SCIENCE, TECHNOLOGY AND INNOVATION -GFCYT-, 2008-2017

Millions pesos

Year	GFCyT		GDP		GFCyT/GDP	GPSPF		GFCyT/GPSPF	FBCFP		GFCyT/FBCFP
	Current price	2017 price	Current price[1/]	2017 price		Current price	2017 price		Current price[2/]	2017 price	
2008	43,829	60,092	12,256,863	16,804,794	0.36	2,229,155	3,056,286	1.97	690,408	946,585	6.35
2009	45,974	60,879	12,093,890	16,014,912	0.38	2,459,610	3,257,052	1.87	725,121	960,216	6.34
2010	54,436	68,991	13,282,061	16,833,306	0.41	2,640,625	3,346,653	2.06	749,932	950,442	7.26
2011	58,810	70,791	14,550,014	17,514,148	0.40	2,884,916	3,472,632	2.04	752,993	906,393	7.81
2012	62,671	73,062	15,626,907	18,217,897	0.40	3,122,058	3,639,705	2.01	723,169	843,072	8.67
2013	68,317	78,267	16,118,031	18,465,674	0.42	3,343,529	3,830,525	2.04	717,644	822,171	9.52
2014	83,551	91,415	17,256,000	18,880,286	0.48	3,612,055	3,952,053	2.31	722,764	790,796	11.56
2015	85,156	90,880	18,127,178	19,345,676	0.47	3,853,982	4,113,044	2.21	675,662	721,080	12.60
2016	84,184	86,974	19,172,496	19,807,898	0.44	4,190,238	4,329,108	2.01	686,539	709,292	12.26
2017	86,214	86,214	20,300,289	20,300,289	0.42	3,931,022	3,931,022	2.19	692,652	692,652	12.45

Note: Updated figures for GDP with base year 2008, from the Mexico´s National Accounts System.
[1/] Data are annual averages of quarterly observations. For 2017, revised and preliminary figures.
[2/] Updated figures based year 2008. By 2017, revised and preliminary figures.
Updated figures for GDP with base year 2008, from the Mexico´s National Accounts System.
Source: Ministry of Public Finance and Credit, 2008-2017.
INEGI, Mexico´s National Accounts System..
GFPFC: Gross Formation of Public Fixed Capital

I.31 FEDERAL EXPENDITURE ON SCIENCE, TECHNOLOGY AND INNOVATION -GFCYT-, 2008-2017

Million pesos

Year	GFCyT		GDP		GFCyT/GDP	GPSPF		GFCyT/GPSPF	GFPFC		GFCyT/FBCFP
	Current price	2008 price	Current price[1/]	2008 price		Current price	2008 price		Current price[2/]	2008 price	
2008	43,829	43,829	12,328,694	12,256,863	0.36	2,229,155	2,229,154	1.97	690,408	690,408	6.35
2009	45,974	44,403	12,163,211	11,680,749	0.38	2,459,610	2,375,587	1.87	725,121	700,350	6.34
2010	54,436	50,320	13,369,602	12,277,659	0.41	2,640,625	2,440,939	2.06	749,932	693,221	7.26
2011	58,810	51,632	14,667,909	12,774,243	0.40	2,884,916	2,532,823	2.04	752,993	661,093	7.81
2012	62,671	53,289	15,795,407	13,287,534	0.40	3,122,058	2,654,681	2.01	723,169	614,909	8.67
2013	68,317	57,085	16,281,835	13,468,255	0.42	3,343,529	2,793,858	2.04	717,644	599,665	9.52
2014	83,551	66,675	17,476,198	13,773,356	0.48	3,612,055	2,882,497	2.31	722,764	576,781	11.56
2015	85,156	66,285	18,545,476	14,135,513	0.46	3,853,982	2,999,919	2.21	675,662	525,932	12.60
2016	84,184	63,436	20,069,660	14,460,968	0.42	4,190,238	3,157,509	2.01	686,539	517,334	12.26
2017	86,214	62,882	21,776,432	14,460,968	0.40	3,931,022	2,867,158	2.19	692,652	505,197	12.45

Note: Updated figures for GDP with base year 2008, from the Mexico´s National Accounts System.
[1/] Data are annual averages of quarterly observations. For 2017, revised and preliminary figures.
[2/] Updated figures based year 2008. By 2017, revised and preliminary figures.
Updated figures for GDP with base year 2008, from the Mexico´s National Accounts System.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.2008-2017.
INEGI, Mexico´s National Accounts System.

I.32 GFCYT BY ADMINISTRATIVE SECTOR, 2008-2017

Million pesos

	By administrative sector	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
008	Agriculture, Livestock, Rural Development, Fishing and Food 1/	2,530	2,583	2,540	2,622	3,049	3,356	7,090	7,492	6,661	6,958
09	Communications and Transport	166	113	140	177	189	231	316	323	328	318
10	Economics	2,324	1,448	1,808	2,048	1,704	1,551	2,130	2,013	1,895	1,600
11	Public Education	12,896	13,523	15,848	16,136	18,174	17,629	20,061	21,100	22,689	31,155
12	Health and Social Security	4,085	4,217	4,093	5,214	4,421	5,887	6,071	6,427	6,880	6,735
13	Navy	394	370	392	464	611	536	383	140	206	341
16	Environment and Natural Resources	588	625	737	505	721	645	812	837	730	765
17	General Attorney Office	109	92	118	146	177	123	130	182	206	176
18	Energy	6,661	5,997	9,561	10,696	10,863	10,641	12,693	11,165	9,152	7,852
38	Conacyt	13,948	16,920	19,005	20,718	22,554	27,511	33,660	35,271	35,250	30,002
	Others	129	86	193	85	209	204	204	208	189	312
	Total	43,829	45,974	54,436	58,810	62,671	68,317	83,551	85,156	84,184	86,214

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.33 GFCYT BY ADMINISTRATIVE SECTOR, 2008-2017

Million pesos, 2017

	By administrative sector	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
008	Agriculture, Livestock, Rural Development, Fishing and Food[1/]	3,469	3,421	3,219	3,156	3,554	3,845	7,757	7,995	6,882	6,958
09	Communications and Transport	228	149	178	213	220	265	346	345	338	318
10	Economics	3,187	1,918	2,291	2,465	1,987	1,777	2,331	2,148	1,958	1,600
11	Public Education	17,681	17,908	20,086	19,423	21,187	20,196	21,950	22,518	23,441	31,155
12	Health and Social Security	5,600	5,584	5,188	6,276	5,154	6,745	6,642	6,859	7,108	6,735
13	Navy	540	490	497	558	712	615	419	149	213	341
16	Environment and Natural Resources	806	828	934	608	841	739	889	894	754	765
17	General Attorney Office	149	121	149	176	206	141	142	194	213	176
18	Energy	9,132	7,941	12,118	12,875	12,664	12,191	13,888	11,916	9,455	7,852
38	Conacyt	19,124	22,405	24,086	24,939	26,294	31,518	36,829	37,642	36,418	30,002
	Others	177	114	245	102	243	234	224	221	195	312
	Total	**60,092**	**60,879**	**68,991**	**70,791**	**73,062**	**78,267**	**91,415**	**90,880**	**86,974**	**86,214**

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.34 GFCYT BY ADMINISTRATIVE SECTOR, 2008-2017

Million pesos, 2008

	By administrative sector	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
008	Agriculture, Livestock, Rural Development, Fishing and Food 1/	2,530	2,495	2,348	2,302	2,592	2,805	5,658	5,832	5,020	5,075
09	Communications and Transport	166	109	130	155	160	193	252	251	247	232
10	Economics	2,324	1,399	1,671	1,798	1,449	1,296	1,700	1,567	1,428	1,167
11	Public Education	12,896	13,061	14,650	14,167	15,453	14,731	16,009	16,424	17,097	22,723
12	Health and Social Security	4,085	4,073	3,784	4,577	3,759	4,919	4,844	5,002	5,184	4,912
13	Navy	394	358	362	407	520	448	306	109	155	249
16	Environment and Natural Resources	588	604	681	443	613	539	648	652	550	558
17	General Attorney Office	109	89	109	128	150	103	103	141	155	128
18	Energy	6,661	5,792	8,838	9,390	9,237	8,892	10,129	8,691	6,896	5,727
38	Conacyt	13,948	16,342	17,568	18,190	19,178	22,988	26,862	27,454	26,562	21,882
	Others	129	83	179	75	178	171	163	162	142	227
	Total	**43,829**	**44,403**	**50,320**	**51,632**	**53,289**	**57,085**	**66,675**	**66,285**	**63,436**	**62,882**

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.35 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFCYT, 2008-2017

Million pesos

Administrativo sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Public Education	**12,896**	**13,523**	**15,848**	**16,136**	**18,174**	**17,629**	**20,061**	**21,100**	**22,689**	**31,155**
National Autonomous University of Mexico	5,285	5,522	8,223	7,938	10,105	9,562	10,606	11,416	11,682	14,174
Center for Research and Advanced Studies	1,865	2,045	2,176	2,336	2,624	2,642	2,618	2,797	2,968	3,302
Autonomous Metropolitan University	1,379	1,577	1,308	1,614	1,793	1,744	1,957	2,325	2,420	3,861
National Polytechnical Institute	1,815	2,151	1,820	1,684	1,181	1,221	2,022	2,721	2,958	4,037
The College of Mexico, A.C.	460	495	536	570	605	612	651	723	659	771
Antonio Narro Autonomous Agrarian University	77	101	102	193	183	142	154	191	199	333
Others	2,015	1,634	1,683	1,801	1,682	1,705	2,054	928	1,801	4,677
Energy[1/]	**6,661**	**5,997**	**9,561**	**10,696**	**10,863**	**10,641**	**12,693**	**11,165**	**9,152**	**7**,852
Mexican Institute of Petroleum	4,291	4,061	4,830	5,685	5,338	5,242	6,240	5,305	4,712	4,011
National Institute of Electricity and Clean Energy[2/]	645	706	719	794	763	805	906	921	926	868
National Institute of Nuclear Research	674	578	652	654	700	746	749	761	819	825
Mexican Petroleum	1,050	652	3,361	3,563	4,061	3,849	4,798	4,177	2,685	2,138
Agriculture, Livestock, Rural Development, Fishing and Food	**2,530**	**2,583**	**2,540**	**2,622**	**3,049**	**3,356**	**7,090**	**7,492**	6,661	6,958
National Institute of Research on Forests, Agriculture and Livestock	1,257	1,355	1,204	1,263	1,278	1,331	1,536	1,495	1,500	1,409
The College of Postgraduates	814	779	855	841	934	1,085	1,286	1,242	1,318	1,425
Autonomous University of Chapingo	361	215	191	250	200	239	445	265	614	589
National Institute of Fishing and Aquaculture[3/]	85	204	202	209	558	640	476	478	538	576
Other	14	29	88	59	79	61	3,346	4,011	2,692	2,958
Health and Social Security	4,085	4,217	4,093	5,214	4,421	5,887	6,071	6,427	6,880	6,735
National Institute of Public Health	1,773	2,028	1,953	2,229	2,040	2,458	2,511	2,536	2,674	2,590
Mexican Institute of Social Security	413	436	436	433	370	477	513	691	705	624
Institute of Social Security and Services for Workers at the Service of the State	37	41	41	91	51	82	71	67	91	109
General Directorate of Quality and Health Education	1,179	1,266	1,305	1,536	1,541	2,285	2,413	2,398	2,505	2,629
Others	682	446	357	926	420	585	562	733	904	782
Conacyt	**13,948**	**16,920**	**19,005**	**20,718**	**22,554**	**27,511**	**33,660**	**35,271**	**35,250**	**30,002**
National Council for Science and Technology	8,241	10,554	11,922	13,170	14,114	18,421	23,903	25,109	25,180	21,399
Research Centers - Conacyt	5,707	6,365	7,083	7,548	8,440	9,089	9,757	10,161	10,069	8,603
Other administrative sectors	**3,710**	**2,734**	**3,389**	**3,424**	**3,611**	**3,293**	**3,976**	**3,702**	**3,553**	**3,513**
Total	**43,829**	**45,974**	**54,436**	**58,810**	**62,671**	**68,317**	**83,551**	**85,156**	**84,184**	**86,214**

[1/] For 2016 and 2017 the total includes 10.4 and 10.7 million pesos exercised by the General Directorate of Research, Technological Development and Human Resources Training.
[2/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
[3/] As of 2017, the name of the National Fisheries Institute is changed to the National Institute of Fisheries and Aquaculture.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.36 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFCYT, 2008-2017

Milllon pesos, 2017

Administrative sectors Entity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Public Education	**17,681**	**17,908**	**20,086**	**19,423**	**21,187**	**20,196**	**21,950**	**22,518**	**23,441**	**31,155**
National Autonomous University of Mexico	7,246	7,312	10,421	9,555	11,781	10,955	11,605	12,183	12,069	14,174
Center for Research and Advanced Studies	2,558	2,708	2,758	2,812	3,059	3,026	2,864	2,985	3,066	3,302
Autonomous Metropolitan University	1,891	2,088	1,657	1,942	2,090	1,998	2,141	2,481	2,501	3,861
National Polytechnical Institute	2,488	2,849	2,307	2,027	1,377	1,399	2,212	2,904	3,056	4,037
The College of Mexico, A.C.	630	655	680	686	705	701	712	771	681	771
Antonio Narro Autonomous Agrarian University	105	133	130	232	214	163	169	204	206	333
Others	2,762	2,163	2,133	2,168	1,961	1,954	2,247	990	1,861	4,677
Energy[1/]	**9,132**	**7,941**	**12,118**	**12,875**	**12,664**	**12,191**	**13,888**	**11,916**	**9,455**	**7,852**
Mexican Institute of Petroleum	5,884	5,378	6,122	6,843	6,223	6,005	6,828	5,662	4,868	4,011
National Institute of Electricity and Clean Energy[2/]	884	935	911	955	889	922	991	983	956	868
National Institute of Nuclear Research	924	765	826	787	817	854	820	813	846	825
Mexican Petroleum	1,440	863	4,260	4,289	4,735	4,409	5,250	4,458	2,774	2,138
Agriculture, Livestock, Rural Development, Fishing and Food	**3,469**	**3,421**	**3,219**	**3,156**	**3,554**	**3,845**	**7,757**	**7,995**	**6,882**	**6,958**
National Institute of Research on Forests, Agriculture and Livestock	1,723	1,795	1,525	1,521	1,490	1,525	1,681	1,596	1,550	1,409
The College of Postgraduates	1,116	1,031	1,083	1,012	1,088	1,244	1,407	1,326	1,361	1,425
Autonomous University of Chapingo	495	285	242	300	233	273	487	283	634	589
National Institute of Fishing and Aquaculture[3/]	116	271	256	252	651	733	521	511	556	576
Other	19	38	112	71	92	70	3,661	4,280	2,781	2,958
Health and Social Security	**5,600**	**5,584**	**5,188**	**6,276**	**5,154**	**6,745**	**6,642**	**6,859**	**7,108**	**6,735**
National Institute of Public Health	2,431	2,686	2,476	2,683	2,378	2,816	2,748	2,707	2,763	2,590
Mexican Institute of Social Security	566	578	553	521	431	546	561	738	729	624
Institute of Social Security and Services for Workers at the Service of the State	51	54	52	109	60	94	78	72	94	109
General Directorate of Quality and Health Education	1,617	1,676	1,654	1,849	1,796	2,618	2,640	2,560	2,588	2,629
Others	935	590	453	1,114	489	671	615	783	934	782
Conacyt	**19,124**	**22,405**	**24,086**	**24,939**	**26,294**	**31,518**	**36,829**	**37,642**	**36,418**	**30,002**
National Council for Science and Technology	11,298	13,976	15,110	15,853	16,454	21,104	26,153	26,797	26,015	21,399
Research Centers - Conacyt	7,825	8,429	8,976	9,086	9,840	10,413	10,675	10,844	10,403	8,603
Other administrative sectors		**5,086**	**3,621**	**4,295**	**4,122**	**4,209**	**3,772**	**4,350**	**3,951**	**3,670**
3,513Total	**60,092**	**60,879**	**68,991**	**70,791**	**73,062**	**78,267**	**91,415**	**90,880**	**86,974**	**86,214**

[1/] For 2016 and 2017 the total includes 10.4 and 10.7 million pesos exercised by the General Directorate of Research, Technological Development and Human Resources Training.

[2/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.

[3/] As of 2017, the name of the National Fisheries Institute is changed to the National Institute of Fisheries and Aquaculture.

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.37 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFCYT, 2008-2017

Million pesos, 2008

Administrative sectors Entity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Public Education	**12,896**	**13,061**	**14,650**	**14,167**	**15,453**	**14,731**	**16,009**	**16,424**	**17,097**	**22,723**
National Autonomous University of Mexico	5,285	5,333	7,601	6,969	8,593	7,990	8,464	8,886	8,803	10,338
Center for Research and Advanced Studies	1,865	1,975	2,012	2,051	2,231	2,207	2,089	2,177	2,237	2,409
Autonomous Metropolitan University	1,379	1,523	1,209	1,417	1,524	1,457	1,562	1,810	1,824	2,816
National Polytechnical Institute	1,815	2,078	1,682	1,479	1,004	1,020	1,613	2,118	2,229	2,945
The College of Mexico, A.C.	460	478	496	500	515	512	519	562	497	562
Antonio Narro Autonomous Agrarian University	77	97	95	169	156	119	123	149	150	243
Others	2,015	1,578	1,556	1,581	1,430	1,425	1,639	722	1,357	3,411
Energy[1/]	**6,661**	**5,792**	**8,838**	**9,390**	**9,237**	**8,892**	**10,129**	**8,691**	**6,896**	**5,727**
Mexican Institute of Petroleum	4,291	3,922	4,465	4,991	4,539	4,380	4,980	4,130	3,550	2,926
National Institute of Electricity and Clean Energy[2/]	645	682	664	697	649	672	723	717	698	633
National Institute of Nuclear Research	674	558	602	574	596	623	598	593	617	601
Mexican Petroleum	1,050	630	3,107	3,128	3,453	3,216	3,829	3,252	2,024	1,559
Agriculture, Livestock, Rural Development, Fishing and Food	**2,530**	**2,495**	**2,348**	**2,302**	**2,592**	**2,805**	**5,658**	**5,832**	**5,020**	**5,075**
National Institute of Research on Forests, Agriculture and Livestock	1,257	1,309	1,113	1,109	1,086	1,112	1,226	1,164	1,131	1,028
The College of Postgraduates	814	752	790	738	794	907	1,026	967	993	1,039
Autonomous University of Chapingo	361	208	177	219	170	199	355	206	462	430
National Institute of Fishing and Aquaculture[3/]	85	197	187	184	475	535	380	372	406	420
Other	14	28	82	52	67	51	2,670	3,122	2,028	2,157
Health and Social Security		**4,085**	**4,073**	**3,784**	**4,577**	**3,759**	**4,919**	**4,844**	**5,002**	**5,184**
4,912										
National Institute of Public Health	1,773	1,959	1,806	1,957	1,734	2,054	2,004	1,974	2,015	1,889
Mexican Institute of Social Security	413	422	403	380	315	398	409	538	531	455
Institute of Social Security and Services for Workers at the Service of the State	37	39	38	80	43	68	57	52	68	80
General Directorate of Quality and Health Education	1,179	1,223	1,206	1,349	1,310	1,910	1,925	1,867	1,888	1,917
Others	682	430	330	813	357	489	449	571	681	571
Conacyt	**13,948**	**16,342**	**17,568**	**18,190**	**19,178**	**22,988**	**26,862**	**27,454**	**26,562**	**21,882**
National Council for Science and Technology	8,241	10,194	11,021	11,563	12,001	15,393	19,075	19,545	18,974	15,607
Research Centers - Conacyt	5,707	6,148	6,547	6,627	7,177	7,595	7,786	7,910	7,588	6,275
Other administrative sectors	**3,710**	**2,641**	**3,132**	**3,006**	**3,070**	**2,751**	**3,173**	**2,882**	**2,677**	**2,562**
Total	**43,829**	**44,403**	**50,320**	**51,632**	**53,289**	**57,085**	**66,675**	**66,285**	**63,436**	**62,882**

[1/] For 2016 and 2017 the total includes 10.4 and 10.7 million pesos exercised by the General Directorate of Research, Technological Development and Human Resources Training.
[2/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
[3/] As of 2017, the name of the National Fisheries Institute is changed to the National Institute of Fisheries and Aquaculture.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.38 GFCYT BY SECTOR ALLOCATION, 2008-2017

Million pesos

Year	Central Administration[1/]	Public Higher Education Centers	Public enterprises	Total
2008	34,365	8,947	517	43,829
2009	35,745	9,596	632	45,974
2010	42,174	11,661	602	54,436
2011	46,394	11,723	692	58,810
2012	48,347	13,503	821	62,671
2013	54,626	12,951	740	68,317
2014	67,295	15,408	848	83,551
2015	67,298	17,148	709	85,156
2016	65,799	17,917	468	84,184
2017	62,666	23,083	465	86,214

[1/] Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.39 GFCYT BY SECTOR ALLOCATION, 2008-2017

Million pesos, 2017

Year	Central Administration1/	Public Higher Education Centers	Public enterprises	Total
2008	47,116	12,267	709	60,092
2009	47,334	12,708	837	60,879
2010	53,450	14,779	763	68,991
2011	55,845	14,112	833	70,791
2012	56,363	15,742	957	73,062
2013	62,583	14,837	847	78,267
2014	73,630	16,858	927	91,415
2015	71,822	18,301	757	90,880
2016	67,979	18,511	484	86,974
2017	62,666	23,083	465	86,214

1/ Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.40 GFCYT BY SECTOR ALLOCATION, 2008-2017

Million pesos, 2008

Year	Central Administration1/	Public Higher Education Centers	Public enterprises	Total
2008	34,365	8,947	517	43,829
2009	34,524	9,269	610	44,403
2010	38,985	10,779	556	50,320
2011	40,732	10,293	608	51,632
2012	41,109	11,482	698	53,289
2013	45,646	10,822	618	57,085
2014	53,703	12,296	676	66,675
2015	52,385	13,348	552	66,285
2016	49,582	13,501	353	63,436
2017	45,706	16,836	339	62,882

1/ Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.41 GFIDE BY SECTOR ALLOCATION, 2008-2017

Million pesos, 2017

Year	Central administration1/	Public Higher Education Centers	Public enterprises	GFIDE	GFIDE/ GFCyT %	GFIDE/GDP %	GFIDE/GPSPF %
2008	32,417	8,013	700	41,130	68.44	0.24	1.35
2009	32,023	8,200	825	41,049	67.43	0.26	1.26
2010	37,847	11,364	751	49,961	72.42	0.30	1.49
2011	39,685	9,370	823	49,878	70.46	0.28	1.44
2012	40,879	11,779	945	53,603	73.37	0.29	1.47
2013	44,524	11,734	838	57,096	72.95	0.31	1.49
2014	49,694	12,633	918	63,244	69.18	0.33	1.60
2015	48,034	14,251	747	63,032	69.36	0.33	1.53
2016	43,400	13,692	478	57,570	66.19	0.29	1.33
2017	36,305	13,771	459	50,535	58.62	0.25	1.29

1/ Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.42 GFIDE BY SECTOR ALLOCATION, 2008-2017
Million pesos, 2008

Year	Central administration[1/]	Public Higher Education centers	Public enterprices	GFIDE	GFIDE/ GFCyT %	GFIDE/GDP %	GFIDE/GPSPF %
2008	23,644	5,844	511	29,999	68.44	0.24	1.35
2009	23,357	5,981	602	29,940	67.43	0.26	1.26
2010	27,604	8,288	548	36,440	72.42	0.30	1.49
2011	28,945	6,834	600	36,379	70.46	0.28	1.44
2012	29,816	8,591	689	39,096	73.37	0.29	1.47
2013	32,474	8,558	611	41,644	72.95	0.31	1.49
2014	36,245	9,214	669	46,128	69.18	0.33	1.60
2015	35,034	10,394	545	45,973	69.36	0.33	1.53
2016	31,654	9,987	349	41,990	66.19	0.29	1.33
2017	26,480	10,044	335	36,859	58.62	0.25	1.29

[1/] Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.43 GFEECYT BY SECTOR ALLOCATION, 2008-2017
Million pesos, 2017

Year	Central administration[1/]	Public Higher Education centers	Public enterprices	GFEECyT	GFEECyT/ GFCyT %	GFEECyT/GDP %	GFEECyT/GPSPF %
2008	10,936	4,254	0	15,191	25.28	0.09	0.50
2009	10,555	4,508	2	15,065	24.75	0.09	0.46
2010	10,595	3,415	2	14,012	20.31	0.08	0.42
2011	11,550	4,742	1	16,293	23.02	0.09	0.47
2012	11,857	3,963	2	15,823	21.66	0.09	0.43
2013	14,367	3,103	3	17,473	22.33	0.09	0.46
2014	16,072	4,225	3	20,300	22.21	0.11	0.51
2015	15,403	4,050	2	19,455	21.41	0.10	0.47
2016	17,294	4,819	0	22,113	25.42	0.11	0.51
2017	20,237	9,312	0	29,549	34.27	0.15	0.75

[1/] Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.44 GFEECYT BY SECTOR ALLOCATION, 2008-2017
Million pesos, 2008

Year	Central administration[1/]	Public Higher Education centers	Public enterprices	GFEECyT	GFEECyT/ GFCyT %	GFEECyT/GDP %	GFEECyT/GPSPF %
2008	7,977	3,103	0	11,080	25.28	0.09	0.50
2009	7,699	3,288	1	10,988	24.75	0.09	0.46
2010	7,728	2,491	2	10,220	20.31	0.08	0.42
2011	8,424	3,459	1	11,884	23.02	0.09	0.47
2012	8,648	2,891	2	11,541	21.66	0.09	0.43
2013	10,479	2,263	2	12,744	22.33	0.09	0.46
2014	11,722	3,082	2	14,806	22.21	0.11	0.51
2015	11,234	2,954	2	14,190	21.41	0.10	0.47
2016	12,614	3,515	0	16,128	25.42	0.11	0.51
2017	14,760	6,792	0	21,552	34.27	0.15	0.75

[1/] Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.45 GFSCYT BY SECTOR ALLOCATION, 2008-2017

Million pesos, 2017

Year	Central administration[1/]	Public Higher Education Centers	Public enterprises	GFSCyT	GFSCyT/ GFCyT %	GFSCyT/GDP %	GFSCyT/GPSPF %
2008	3,250	0	9	3,259	5.42	0.02	0.11
2009	2,881	0	10	2,891	4.75	0.02	0.09
2010	2,933	0	10	2,943	4.27	0.02	0.09
2011	2,944	0	10	2,954	4.17	0.02	0.09
2012	2,317	0	10	2,327	3.18	0.01	0.06
2013	2,063	0	7	2,070	2.64	0.01	0.05
2014	2,532	0	7	2,538	2.78	0.01	0.06
2015	3,311	0	8	3,319	3.65	0.02	0.08
2016	4,425	0	6	4,431	5.09	0.02	0.10
2017	3,238	0	6	3,244	3.76	0.02	0.08

[1/] Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.46 GFSCYT BY SECTOR ALLOCATION, 2008-2017

Million pesos, 2008

Year	Central administration[1/]	Public Higher Education Centers	Public enterprises	GFSCyT	GFSCyT/ GFCyT %	GFSCyT/GDP %	GFSCyT/GPSPF %
2008	2,371	0	6	2,377	5.42	0.02	0.11
2009	2,101	0	7	2,108	4.75	0.02	0.09
2010	2,140	0	7	2,147	4.27	0.02	0.09
2011	2,147	0	7	2,154	4.17	0.02	0.09
2012	1,690	0	7	1,697	3.18	0.01	0.06
2013	1,505	0	5	1,510	2.64	0.01	0.05
2014	1,847	0	5	1,851	2.78	0.01	0.06
2015	2,415	0	6	2,421	3.65	0.02	0.08
2016	3,227	0	4	3,232	5.09	0.02	0.10
2017	2,362	0	4	2,366	3.76	0.02	0.08

[1/] Institutional service entities included.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.47 GFCYT BY ACTIVITY, 2008-2017

Million pesos

Year	Scientific Research and Experimental Development	Scientific and Technical Education and Teaching	Scientific and Technological Services	Technological Innovation	Total
2008	29,999	11,080	2,377	374	43,829
2009	30,999	11,376	2,183	1,416	45,974
2010	39,421	11,056	2,322	1,637	54,436
2011	41,436	13,536	2,454	1,384	58,810
2012	45,980	13,572	1,996	1,123	62,671
2013	49,837	15,252	1,807	1,421	68,317
2014	57,803	18,554	2,320	4,873	83,551
2015	59,062	18,230	3,110	4,754	85,156
2016	55,723	21,404	4,289	2,769	84,184
2017	50,535	29,549	3,244	2,886	86,214

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.48 GFCYT BY ACTIVITY, 2008-2017

Million pesos, 2017

Year	Scientific Research and Experimental Development	Scientific and Technical Education and Teaching	Scientific and Technological Services	Technological Innovation	Total
2008	41,130	15,191	3,259	513	60,092
2009	41,049	15,065	2,891	1,875	60,879
2010	49,961	14,012	2,943	2,075	68,991
2011	49,878	16,293	2,954	1,666	70,791
2012	53,603	15,823	2,327	1,309	73,062
2013	57,096	17,473	2,070	1,628	78,267
2014	63,244	20,300	2,538	5,332	91,415
2015	63,032	19,455	3,319	5,074	90,880
2016	57,570	22,113	4,431	2,860	86,974
2017	50,535	29,549	3,244	2,886	86,214

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.49 GFCYT BY ACTIVITY, 2008-2017

Million pesos, 2008

Year	Scientific Research and Experimental Development	Scientific and Technical Education and Teaching	Scientific and Technological Services	Technological Innovation	Total
2008	29,999	11,080	2,377	374	43,829
2009	29,940	10,988	2,108	1,367	44,403
2010	36,440	10,220	2,147	1,513	50,320
2011	36,379	11,884	2,154	1,215	51,632
2012	39,096	11,541	1,697	955	53,289
2013	41,644	12,744	1,510	1,188	57,085
2014	46,128	14,806	1,851	3,889	66,675
2015	45,973	14,190	2,421	3,701	66,285
2016	41,990	16,128	3,232	2,086	63,436
2017	36,859	21,552	2,366	2,105	62,882

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.50 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFIDE, 2008-2017

Million pesos

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**8,424**	**8,941**	**11,989**	**11,134**	**13,687**	**13,826**	**14,527**	**16,325**	**16,357**	**17,228**
National Autonomous University of Mexico	3,720	3,865	7,015	5,501	8,045	8,273	8,830	9,993	9,979	10,574
Center for Research and Advanced Studies	1,523	1,808	1,967	2,136	2,404	2,388	1,640	1,810	1,909	2,170
Autonomous Metropolitan University	878	1,056	829	941	1,130	1,078	1,210	1,318	1,333	1,394
National Polytechnical Institute	970	1,049	929	1,016	651	660	1,162	1,631	1,804	1,659
The College of Mexico, A.C.	358	398	440	484	515	539	597	649	598	690
Antonio Narro Autonomous Agrarian University	52	72	68	150	131	88	87	93	97	106
Others	924	694	741	905	811	800	1,002	831	638	634
Energy[1/]	**6,600**	**5,934**	**9,498**	**10,633**	**10,800**	**10,580**	**12,627**	**11,102**	**9,086**	**7,794**
Mexican Institute of Petroleum	4,252	4,021	4,791	5,643	5,297	5,205	6,200	5,266	4,671	3,979
National Institute of Electricity and Clean Energy[2/]	634	694	706	783	752	794	893	909	913	855
National Institute of Nuclear Research	663	567	640	644	689	732	736	750	806	812
Mexican Petroleum	1,050	652	3,361	3,563	4,061	3,849	4,798	4,177	2,685	2,138
Agriculture, Livestock, Rural Development, Fishing and Food	**1,557**	**1,715**	**1,607**	**1,685**	**2,029**	**2,142**	**2,487**	**2,672**	**2,490**	**2,487**
National Institute of Research on Forests, Agriculture and Livestock	1,256	1,353	1,203	1,262	1,272	1,325	1,531	1,489	1,495	1,403
The College of Postgraduates	0	0	0	0	0	0	0	0	0	0
Autonomous University of Chapingo	203	129	114	154	120	116	125	128	11	1
National Institute of Fishing and Aquaculture[3/]	85	204	202	209	558	640	473	477	536	576
Other	14	29	88	59	79	61	359	579	447	507
Health and Social Security	**2,218**	**2,328**	**2,344**	**2,737**	**2,251**	**2,845**	**2,910**	**3,208**	**3,430**	**3,205**
National Institute of Public Health	1,536	1,588	1,626	1,864	1,603	1,980	1,816	2,022	2,131	2,048
Mexican Institute of Social Security	413	436	436	433	370	477	513	691	705	624
Institute of Social Security and Services for Workers at the Service of the State	37	41	41	91	51	82	71	67	91	109
Others	232	263	241	350	227	306	510	428	503	423
Conacyt	**9,537**	**10,948**	**12,702**	**14,092**	**15,271**	**18,554**	**23,018**	**23,957**	**22,641**	**17,806**
National Council for Science and Technology	4,119	4,878	5,919	6,818	7,191	9,885	13,731	14,305	12,834	9,473
Research Centers - Conacyt	5,418	6,070	6,782	7,274	8,080	8,669	9,287	9,652	9,806	8,333
Other administrative sectors	**1,662**	**1,132**	**1,282**	**1,156**	**1,943**	**1,890**	**2,234**	**1,797**	**1,719**	**2,017**
Total	**29,999**	**30,999**	**39,421**	**41,436**	**45,980**	**49,837**	**57,803**	**59,062**	**55,723**	**50,535**

[1/] For 2016 and 2017 the total includes 10.4 and 10.7 million pesos exercised by the General Directorate of Research, Technological Development and Human Resources Training.

[2/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.

[3/] As of 2017, the name of the National Fisheries Institute is changed to the National Institute of Fisheries and Aquaculture.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.51 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFIDE, 2008-2017

Million pesos, 2017

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**11,549**	**11,840**	**15,195**	**13,402**	**15,957**	**15,840**	**15,895**	**17,423**	**16,899**	**17,228**
National Autonomous University of Mexico	5,100	5,118	8,891	6,622	9,379	9,478	9,661	10,665	10,310	10,574
Center for Research and Advanced Studies	2,088	2,394	2,493	2,572	2,802	2,736	1,794	1,932	1,972	2,170
Autonomous Metropolitan University	1,204	1,398	1,050	1,133	1,317	1,234	1,324	1,407	1,377	1,394
National Polytechnical Institute	1,330	1,390	1,177	1,223	758	756	1,271	1,741	1,863	1,659
The College of Mexico, A.C.	490	527	558	582	601	617	653	693	618	690
Antonio Narro Autonomous Agrarian University	71	95	86	181	153	101	96	99	100	106
Others	1,267	919	939	1,089	946	917	1,096	887	659	634
Energy[1/]	**9,049**	**7,858**	**12,037**	**12,799**	**12,590**	**12,121**	**13,816**	**11,848**	**9,387**	**7,794**
Mexican Institute of Petroleum	5,830	5,325	6,072	6,792	6,175	5,963	6,784	5,620	4,826	3,979
National Institute of Electricity and Clean Energy[2/]	869	919	895	943	877	910	977	970	943	855
National Institute of Nuclear Research	909	751	811	775	803	839	805	800	833	812
Mexican Petroleum	1,440	863	4,260	4,289	4,735	4,409	5,250	4,458	2,774	2,138
Agriculture, Livestock, Rural Development, Fishing and Food	**2,135**	**2,272**	**2,037**	**2,028**	**2,365**	**2,454**	**2,722**	**2,852**	**2,572**	**2,487**
National Institute of Research on Forests, Agriculture and Livestock	1,722	1,792	1,524	1,520	1,483	1,518	1,675	1,589	1,545	1,403
The College of Postgraduates	0	0	0	0	0	0	0	0	0	0
Autonomous University of Chapingo	278	171	144	186	140	132	137	136	12	1
National Institute of Fishing and Aquaculture[3/]	116	270	256	251	650	733	518	509	554	576
Other	19	38	112	71	92	70	393	617	462	507
Health and Social Security	**3,041**	**3,083**	**2,971**	**3,295**	**2,624**	**3,259**	**3,183**	**3,424**	**3,544**	**3,205**
National Institute of Public Health	2,106	2,102	2,060	2,244	1,869	2,268	1,987	2,158	2,202	2,048
Mexican Institute of Social Security	566	578	553	521	431	546	561	738	729	624
Institute of Social Security and Services for Workers at the Service of the State	51	54	52	109	60	94	78	72	94	109
Others	319	348	306	421	265	351	558	456	520	423
Conacyt	**13,076**	**14,498**	**16,098**	**16,963**	**17,802**	**21,256**	**25,185**	**25,568**	**23,391**	**17,806**
National Council for Science and Technology	5,648	6,459	7,502	8,207	8,383	11,324	15,023	15,267	13,260	9,473
Research Centers - Conacyt	7,429	8,038	8,596	8,756	9,419	9,932	10,161	10,301	10,131	8,333
Other administrative sectors	**2,279**	**1,499**	**1,624**	**1,391**	**2,265**	**2,165**	**2,444**	**1,918**	**1,776**	**2,017**
Total	**41,130**	**41,049**	**49,961**	**49,878**	**53,603**	**57,096**	**63,244**	**63,032**	**57,570**	**50,535**

[1/] For 2016 and 2017 the total includes 10.4 and 10.7 million pesos exercised by the General Directorate of Research, Technological Development and Human Resources Training.

[2/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.

[3/] As of 2017, the name of the National Fisheries Institute is changed to the National Institute of Fisheries and Aquaculture.

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Sistema de Cuentas Nacionales de México. INEGI, Mexico´s National Accounts System.

I.52 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFIDE, 2008-2017

Million pesos, 2008

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**8,424**	**8,636**	**11,083**	**9,775**	**11,638**	**11,553**	**11,593**	**12,708**	**12,326**	**12,565**
National Autonomous University of Mexico	3,720	3,733	6,485	4,830	6,840	6,913	7,046	7,779	7,519	7,713
Center for Research and Advanced Studies	1,523	1,746	1,818	1,876	2,044	1,996	1,309	1,409	1,438	1,583
Autonomous Metropolitan University	878	1,020	766	826	961	900	965	1,026	1,004	1,017
National Polytechnical Institute	970	1,014	859	892	553	551	927	1,270	1,359	1,210
The College of Mexico, A.C.	358	384	407	425	438	450	476	505	451	503
Antonio Narro Autonomous Agrarian University	52	69	63	132	112	74	70	72	73	77
Others	924	670	685	794	690	669	799	647	481	462
Energy1/	**6,600**	**5,731**	**8,779**	**9,335**	**9,183**	**8,841**	**10,077**	**8,642**	**6,847**	**5,684**
Mexican Institute of Petroleum	4,252	3,884	4,428	4,954	4,504	4,349	4,948	4,099	3,520	2,902
National Institute of Electricity and Clean Energy2/	634	670	653	688	640	664	713	707	688	624
National Institute of Nuclear Research	663	548	591	565	586	612	587	583	607	592
Mexican Petroleum	1,050	630	3,107	3,128	3,453	3,216	3,829	3,252	2,024	1,559
Agriculture, Livestock, Rural Development, Fishing and Food	**1,557**	**1,657**	**1,485**	**1,479**	**1,725**	**1,790**	**1,985**	**2,080**	**1,876**	**1,814**
National Institute of Research on Forests, Agriculture and Livestock	1,256	1,307	1,112	1,108	1,081	1,107	1,221	1,159	1,127	1,023
The College of Postgraduates	0	0	0	0	0	0	0	0	0	0
Autonomous University of Chapingo	203	125	105	135	102	97	100	100	9	0
National Institute of Fishing and Aquaculture3/	85	197	187	183	474	535	378	371	404	420
Other	14	28	82	52	67	51	286	450	337	370
Health and Social Security	**2,218**	**2,248**	**2,167**	**2,403**	**1,914**	**2,377**	**2,322**	**2,497**	**2,585**	**2,338**
National Institute of Public Health	1,536	1,533	1,503	1,637	1,363	1,654	1,449	1,574	1,606	1,494
Mexican Institute of Social Security	413	422	403	380	315	398	409	538	531	455
Institute of Social Security and Services for Workers at the Service of the State	37	39	38	80	43	68	57	52	68	80
Others	232	254	223	307	193	256	407	333	379	309
Conacyt	**9,537**	**10,574**	**11,741**	**12,372**	**12,984**	**15,503**	**18,369**	**18,648**	**17,061**	**12,987**
National Council for Science and Technology	4,119	4,711	5,472	5,986	6,114	8,260	10,958	11,135	9,671	6,909
Research Centers - Conacyt	5,418	5,863	6,269	6,386	6,870	7,244	7,411	7,513	7,389	6,078
Other administrative sectors	**1,662**	**1,093**	**1,185**	**1,015**	**1,652**	**1,579**	**1,783**	**1,399**	**1,296**	**1,471**
Total	**29,999**	**29,940**	**36,440**	**36,379**	**39,096**	**41,644**	**46,128**	**45,973**	**41,990**	**36,859**

1/ For 2016 and 2017 the total includes 10.4 and 10.7 million pesos exercised by the General Directorate of Research, Technological Development and Human Resources Training.

2/ As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.

3/ As of 2017, the name of the National Fisheries Institute is changed to the National Institute of Fisheries and Aquaculture.

Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Sistema de Cuentas Nacionales de México. INEGI, Mexico´s National Accounts System.

I.53 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFEECYT, 2008-2017

Million pesos

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**4,434**	**4,543**	**3,819**	**4,960**	**4,442**	**3,796**	**5,519**	**4,767**	**6,324**	**13,919**
National Autonomous University of Mexico	1,566	1,657	1,208	2,437	2,061	1,289	1,776	1,422	1,703	3,599
Center for Research and Advanced Studies	339	233	206	196	215	249	964	981	1,054	1,126
Autonomous Metropolitan University	501	521	479	672	663	666	747	1,007	1,088	2,466
National Polytechnical Institute	845	1,102	891	668	531	561	860	1,089	1,155	2,379
The College of Mexico, A.C.	67	62	59	48	51	72	52	72	59	79
Antonio Narro Autonomous Agrarian University	25	29	34	43	52	54	67	98	103	227
Others	1,091	940	942	896	871	905	1,052	97	1,163	4,043
Energy[1/]	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mexican Institute of Petroleum	0	0	0	0	0	0	0	0	0	0
National Institute of Electricity and Clean Energy[2/]	0	0	0	0	0	0	0	0	0	0
National Institute of Nuclear Research	0	0	0	0	0	0	0	0	0	0
Agriculture, Livestock, Rural Development, Fishing and Food	**970**	**864**	**931**	**935**	**1,012**	**1,203**	**1,597**	**1,368**	**1,918**	**2,011**
The College of Postgraduates	812	778	854	839	932	1,080	1,277	1,230	1,315	1,423
Autonomous University of Chapingo	158	86	77	95	80	123	320	137	602	589
Health and Social Security	**1,866**	**1,889**	**1,749**	**2,476**	**2,170**	**3,042**	**3,161**	**3,219**	**3,449**	**3,530**
National Institute of Public Health	237	440	328	364	437	478	508	514	544	542
Institute of Social Security and Services for Workers at the Service of the State	1,179	1,266	1,305	1,536	1,541	2,285	2,413	2,398	2,505	2,629
Others	450	183	116	576	193	279	241	306	401	359
Conacyt	**3,704**	**3,999**	**4,444**	**5,020**	**5,894**	**7,188**	**8,248**	**8,824**	**9,641**	**10,045**
National Council for Science and Technology	3,437	3,731	4,174	4,780	5,578	6,821	7,834	8,369	9,434	9,836
Research Centers - Conacyt	266	268	270	240	317	367	413	455	207	209
Other administrative sectors	**105**	**82**	**113**	**144**	**54**	**22**	**29**	**53**	**72**	**43**
Total	**11,080**	**11,376**	**11,056**	**13,536**	**13,572**	**15,252**	**18,554**	**18,230**	**21,404**	**29,549**

[1/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.54 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFEECYT, 2008-2017

Million pesos , 2017

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**6,079**	**6,016**	**4,840**	**5,971**	**5,179**	**4,349**	**6,038**	**5,087**	**6,534**	**13,919**
National Autonomous University of Mexico	2,146	2,195	1,531	2,933	2,402	1,476	1,944	1,518	1,760	3,599
Center for Research and Advanced Studies	465	309	260	236	250	285	1,055	1,047	1,088	1,126
Autonomous Metropolitan University	687	689	607	809	773	763	817	1,075	1,124	2,466
National Polytechnical Institute	1,159	1,459	1,129	804	619	643	941	1,163	1,193	2,379
The College of Mexico, A.C.	92	82	75	58	59	82	57	76	61	79
Antonio Narro Autonomous Agrarian University	34	39	44	51	61	62	73	105	106	227
Others	1,495	1,244	1,194	1,079	1,015	1,037	1,151	104	1,202	4,043
Energy[1/]	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mexican Institute of Petroleum	0	0	0	0	0	0	0	0	0	0
National Institute of Electricity and Clean Energy[2/]	0	0	0	0	0	0	0	0	0	0
National Institute of Nuclear Research	0	0	0	0	0	0	0	0	0	0
Agriculture, Livestock, Rural Development, Fishing and Food	**1,331**	**1,144**	**1,180**	**1,125**	**1,180**	**1,378**	**1,747**	**1,460**	**1,981**	**2,011**
The College of Postgraduates	1,114	1,030	1,082	1,010	1,086	1,238	1,397	1,313	1,359	1,423
Autonomous University of Chapingo	217	114	98	115	93	141	350	146	622	589
Health and Social Security	**2,559**	**2,501**	**2,217**	**2,981**	**2,530**	**3,486**	**3,459**	**3,435**	**3,564**	**3,530**
National Institute of Public Health	325	583	416	439	509	547	555	549	562	542
Institute of Social Security and Services for Workers at the Service of the State	1,617	1,676	1,654	1,849	1,796	2,618	2,640	2,560	2,588	2,629
Others	617	242	147	693	225	320	263	326	414	359
Conacyt	**5,078**	**5,296**	**5,632**	**6,043**	**6,872**	**8,235**	**9,024**	**9,417**	**9,960**	**10,045**
National Council for Science and Technology	4,713	4,940	5,290	5,754	6,502	7,814	8,572	8,932	9,746	9,836
Research Centers - Conacyt	365	355	342	289	369	421	452	485	214	209
Other administrative sectors	**144**	**108**	**143**	**173**	**63**	**26**	**32**	**57**	**74**	**43**
Total	**15,191**	**15,065**	**14,012**	**16,293**	**15,823**	**17,473**	**20,300**	**19,455**	**22,113**	**29,549**

[1/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Sistema de Cuentas Nacionales de México. INEGI, Mexico´s National Accounts System.

I.55 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFEECYT, 2008-2017

Million pesos , 2008

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**4,434**	**4,388**	**3,530**	**4,355**	**3,777**	**3,172**	**4,404**	**3,710**	**4,765**	**10,152**
National Autonomous University of Mexico	1,566	1,601	1,116	2,139	1,752	1,077	1,418	1,107	1,283	2,625
Center for Research and Advanced Studies	339	225	190	172	183	208	769	763	794	822
Autonomous Metropolitan University	501	503	443	590	564	557	596	784	820	1,799
National Polytechnical Institute	845	1,064	824	586	451	469	686	848	870	1,735
The College of Mexico, A.C.	67	60	55	42	43	60	41	56	45	58
Antonio Narro Autonomous Agrarian University	25	28	32	37	44	45	53	76	77	166
Others	1,091	907	871	787	740	756	839	76	876	2,948
Energy[1/]	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mexican Institute of Petroleum	0	0	0	0	0	0	0	0	0	0
National Institute of Electricity and Clean Energy[2/]	0	0	0	0	0	0	0	0	0	0
National Institute of Nuclear Research	0	0	0	0	0	0	0	0	0	0
Agriculture, Livestock, Rural Development, Fishing and Food	**970**	**834**	**860**	**821**	**860**	**1,005**	**1,274**	**1,065**	**1,445**	**1,467**
The College of Postgraduates	812	751	789	737	792	903	1,019	958	991	1,038
Autonomous University of Chapingo	158	83	71	84	68	103	256	107	454	429
Health and Social Security	**1,866**	**1,824**	**1,617**	**2,174**	**1,845**	**2,542**	**2,523**	**2,505**	**2,599**	**2,574**
National Institute of Public Health	237	425	303	320	371	399	405	400	410	395
Institute of Social Security and Services for Workers at the Service of the State	1,179	1,223	1,206	1,349	1,310	1,910	1,925	1,867	1,888	1,917
Others	450	176	108	506	164	233	192	238	302	262
Conacyt	**3,704**	**3,862**	**4,108**	**4,408**	**5,012**	**6,006**	**6,582**	**6,868**	**7,265**	**7,327**
National Council for Science and Technology	3,437	3,603	3,858	4,197	4,743	5,699	6,252	6,514	7,109	7,174
Research Centers - Conacyt	266	259	250	211	269	307	330	354	156	153
Other administrative sectors	**105**	**79**	**105**	**126**	**46**	**19**	**23**	**41**	**54**	**32**
Total	**11,080**	**10,988**	**10,220**	**11,884**	**11,541**	**12,744**	**14,806**	**14,190**	**16,128**	21,552

[1/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Sistema de Cuentas Nacionales de México. INEGI, Mexico´s National Accounts System.

I.56 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFSCYT, 2008-2017

Million pesos

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**39**	**39**	**40**	**42**	**44**	**7**	**16**	**8**	**8**	**8**
Center for Research and Advanced Studies	3	4	4	4	5	5	14	6	6	6
The College of Mexico, A.C.	35	35	37	38	39	2	2	2	2	2
Others	0	0	0	0	0	0	0	0	0	0
Energy1/	**61**	**63**	**64**	**63**	**63**	**61**	**66**	**63**	**66**	**58**
Mexican Institute of Petroleum	39	40	39	42	41	37	40	39	40	32
National Institute of Electricity and Clean Energy[2/]	11	12	12	10	11	10	12	12	13	13
National Institute of Nuclear Research	11	11	12	10	11	14	14	12	13	13
Mexican Petroleum	0	0	0	0	0	0	0	0	0	0
Economics	**1,600**	**1,448**	**1,474**	**1,743**	**1,159**	**1,004**	**1,262**	**1,638**	**1,647**	**1,347**
National Metrology Center	260	218	316	277	190	116	61	26	24	20
Mexican Geological Service	317	291	436	323	88	48	334	580	609	932
Mexican Institute of Industrial Property	378	404	95	460	117	135	132	177	152	129
Others	645	536	626	682	764	705	734	856	862	266
Conacyt	**557**	**557**	**556**	**527**	**584**	**627**	**858**	**1,277**	**1,507**	**1,717**
National Council for Science and Technology	534	530	526	493	540	574	802	1,222	1,451	1,656
Research Centers - Conacyt	23	27	30	34	44	53	56	55	56	61
Other administrative sectors	**120**	**77**	**188**	**80**	**147**	**109**	**118**	**124**	**1,062**	**114**
Total	**2,377**	**2,183**	**2,322**	**2,454**	**1,996**	**1,807**	**2,320**	**3,110**	**4,289**	**3,244**

[1/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.57 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFSCYT, 2008-2017

Million pesos, 2017

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**53**	**51**	**51**	**50**	**51**	**8**	**17**	**8**	**8**	**8**
Center for Research and Advanced Studies	5	5	5	4	6	6	15	6	6	6
The College of Mexico, A.C.	48	46	46	46	45	2	2	2	2	2
Others	0	0	0	0	0	0	0	0	0	0
Energy[1/]	**83**	**83**	**81**	**76**	**74**	**70**	**72**	**67**	**68**	**58**
Mexican Institute of Petroleum	54	53	50	51	48	42	44	42	42	32
National Institute of Electricity and Clean Energy[2/]	15	16	15	12	12	12	13	13	13	13
National Institute of Nuclear Research	15	14	15	12	13	16	15	13	13	13
Mexican Petroleum	0	0	0	0	0	0	0	0	0	0
Economics	**2,194**	**1,918**	**1,868**	**2,098**	**1,351**	**1,150**	**1,381**	**1,748**	**1,702**	**1,347**
National Metrology Center	357	289	401	334	222	132	67	27	24	20
Mexican Geological Service	435	386	553	388	102	56	366	619	629	932
Mexican Institute of Industrial Property	518	535	121	554	136	155	145	188	157	129
Others	885	709	793	821	890	807	804	914	891	266
Conacyt	**764**	**737**	**705**	**634**	**680**	**718**	**939**	**1,363**	**1,557**	**1,717**
National Council for Science and Technology	733	702	667	593	629	657	877	1,305	1,499	1,656
Research Centers - Conacyt	31	35	38	41	51	60	61	58	58	61
Other administrative sectors	**165**	**101**	**238**	**96**	**171**	**124**	**129**	**132**	**1,097**	**114**
Total	**3,259**	**2,891**	**2,943**	**2,954**	**2,327**	**2,070**	**2,538**	**3,319**	**4,431**	**3,244**

[1/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Sistema de Cuentas Nacionales de México. INEGI, Mexico´s National Accounts System.

I.58 ADMINISTRATIVE SECTORS AND MAIN ENTITIES PARTICIPATION IN GFSCYT, 2008-2017

Million pesos, 2008

Administrative Sectors Entities	2008	2009	2010	2011	2012	2013	2014	2015	2006	2017
Public Education	**39**	**37**	**37**	**37**	**37**	**6**	**12**	**6**	**6**	**6**
Center for Research and Advanced Studies	3	4	3	3	4	4	11	5	4	4
The College of Mexico, A.C.	35	34	34	33	33	2	1	1	1	1
Others	0	0	0	0	0	0	0	0	0	0
Energy1/	**61**	**60**	**59**	**55**	**54**	**51**	**53**	**49**	**50**	**42**
Mexican Institute of Petroleum	39	38	36	37	35	31	32	31	31	24
National Institute of Electricity and Clean Energy[2/]	11	12	11	9	9	9	10	9	10	9
National Institute of Nuclear Research	11	10	11	9	10	11	11	9	10	10
Mexican Petroleum	0	0	0	0	0	0	0	0	0	0
Economics	**1,600**	**1,399**	**1,362**	**1,530**	**985**	**839**	**1,007**	**1,275**	**1,241**	**983**
National Metrology Center	260	211	292	244	162	97	49	20	18	15
Mexican Geological Service	317	281	403	283	74	41	267	451	459	680
Mexican Institute of Industrial Property	378	390	88	404	99	113	106	137	115	94
Others	645	517	578	599	649	589	586	666	650	194
Conacyt	**557**	**538**	**514**	**463**	**496**	**524**	**685**	**994**	**1,135**	**1,252**
National Council for Science and Technology	534	512	487	433	459	480	640	952	1,093	1,208
Research Centers - Conacyt	23	26	28	30	37	44	45	43	42	44
Other administrative sectors	**120**	**74**	**174**	**70**	**125**	**91**	**94**	**96**	**800**	**83**
Total	**2,377**	**2,108**	**2,147**	**2,154**	**1,697**	**1,510**	**1,851**	**2,421**	**3,232**	**2,366**

[1/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.59 GFCYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	2,032	2,158	2,266	2,315	2,732	2,969	3,098	2,672	2,729	2,600
Environment	483	500	560	603	745	589	626	666	664	693
Exploration and exploitation of space	0	0	0	0	0	61	105	107	93	94
Transport, telecommunication and other infrastructures	166	113	140	177	189	171	212	216	235	225
Energy	6,661	5,997	9,561	10,696	10,863	10,641	12,693	11,165	9,152	7,852
Production and industrial technology	4,533	4,034	4,793	5,091	5,202	5,137	6,106	6,220	5,958	5,069
Health	4,085	4,217	4,093	5,214	4,421	5,887	6,071	6,427	6,880	6,735
Agriculture	1,355	1,589	1,494	1,532	1,915	2,032	5,359	5,984	4,730	4,944
Culture, recreation, religion and mass media	172	209	175	251	213	213	243	267	229	126
Systems, structures and political and social processes	1,161	1,213	1,392	1,444	1,633	1,730	1,928	2,133	2,208	1,797
General advance of knowledge GUF	14,942	15,390	18,039	18,318	20,576	20,360	23,110	24,093	26,045	34,602
General advance of knowledge in others, no GUF	8,241	10,554	11,922	13,170	14,114	18,421	23,903	25,109	25,180	21,399
Defense	0	0	0	0	69	104	98	96	83	79
Total	**43,829**	**45,974**	**54,436**	**58,810**	**62,671**	**68,317**	**83,551**	**85,156**	**84,184**	**86,214**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.60 GFCYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos, 2017

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	2,785	2,858	2,871	2,787	3,185	3,401	3,389	2,852	2,819	2,600
Environment	662	662	710	726	868	675	685	711	686	693
Exploration and exploitation of space	0	0	0	0	0	70	115	114	96	94
Transport, telecommunication and other infrastructures	228	149	178	213	220	195	232	230	242	225
Energy	9,132	7,941	12,118	12,875	12,664	12,191	13,888	11,916	9,455	7,852
Production and industrial technology	6,215	5,342	6,075	6,128	6,064	5,886	6,681	6,638	6,155	5,069
Health	5,600	5,584	5,188	6,276	5,154	6,745	6,642	6,859	7,108	6,735
Agriculture	1,858	2,104	1,893	1,844	2,233	2,328	5,863	6,387	4,887	4,944
Culture, recreation, religion and mass media	236	276	222	302	249	244	266	285	236	126
Systems, structures and political and social processes	1,592	1,607	1,765	1,738	1,904	1,982	2,110	2,276	2,281	1,797
General advance of knowledge GUF	20,486	20,380	22,862	22,050	23,987	23,325	25,285	25,713	26,909	34,602
General advance of knowledge in others, no GUF	11,298	13,976	15,110	15,853	16,454	21,104	26,153	26,797	26,015	21,399
Defense	0	0	0	0	80	119	107	103	85	79
Total	**60,092**	**60,879**	**68,991**	**70,791**	**73,062**	**78,267**	**91,415**	**90,880**	**86,974**	**86,214**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.61 GFCYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos, 2008

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	2,032	2,084	2,094	2,033	2,323	2,481	2,472	2,080	2,056	1,896
Environment	483	483	518	529	633	493	500	519	500	505
Exploration and exploitation of space	0	0	0	0	0	51	84	83	70	68
Transport, telecommunication and other infrastructures	166	109	130	155	160	143	169	168	177	164
Energy	6,661	5,792	8,838	9,390	9,237	8,892	10,129	8,691	6,896	5,727
Production and industrial technology	4,533	3,896	4,431	4,469	4,423	4,293	4,873	4,842	4,489	3,697
Health	4,085	4,073	3,784	4,577	3,759	4,919	4,844	5,002	5,184	4,912
Agriculture	1,355	1,535	1,381	1,345	1,628	1,698	4,276	4,658	3,564	3,606
Culture, recreation, religion and mass media	172	201	162	220	181	178	194	208	172	92
Systems, structures and political and social processes	1,161	1,172	1,287	1,267	1,388	1,446	1,539	1,660	1,664	1,311
General advance of knowledge GUF	14,942	14,865	16,675	16,083	17,495	17,013	18,442	18,754	19,626	25,238
General advance of knowledge in others, no GUF	8,241	10,194	11,021	11,563	12,001	15,393	19,075	19,545	18,974	15,607
Defense	0	0	0	0	59	87	78	75	62	58
Total	**43,829**	**44,403**	**50,320**	**51,632**	**53,289**	**57,085**	**66,675**	**66,285**	**63,436**	**62,882**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.62 GFIDE BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	2,010	2,135	2,214	2,286	2,705	2,925	3,023	2,618	2,714	2,585
Environment	477	494	552	593	733	578	615	655	660	690
Exploration and exploitation of space	0	0	0	0	0	61	105	107	89	92
Transport, telecommunication and other infrastructures	156	102	130	168	177	156	199	200	217	210
Energy	6,600	5,934	9,498	10,633	10,800	10,580	12,627	11,102	9,086	7,794
Production and industrial technology	2,672	2,524	2,967	3,024	3,699	3,802	4,422	4,420	4,288	3,698
Health	2,218	2,328	2,344	2,737	2,251	2,845	2,910	3,208	3,430	3,205
Agriculture	1,354	1,586	1,493	1,531	1,909	2,026	2,363	2,544	2,479	2,486
Culture, recreation, religion and mass media	172	209	175	251	213	213	243	267	229	126
Systems, structures and political and social processes	775	910	924	1,062	1,247	1,427	1,599	1,752	1,828	1,448
General advance of knowledge GUF	9,444	9,899	13,204	12,335	14,987	15,234	15,870	17,786	17,785	18,650
General advance of knowledge in others, no GUF	4,119	4,878	5,919	6,818	7,191	9,885	13,731	14,305	12,834	9,473
Defense	0	0	0	0	69	104	98	96	83	79
Total	**29,999**	**30,999**	**39,421**	**41,436**	**45,980**	**49,837**	**57,803**	**59,062**	**55,723**	**50,535**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.63 GFIDE BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos, 2017

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	2,756	2,827	2,806	2,752	3,153	3,351	3,307	2,794	2,804	2,585
Environment	655	654	699	713	854	662	673	699	682	690
Exploration and exploitation of space	0	0	0	0	0	70	115	114	92	92
Transport, telecommunication and other infrastructures	214	136	165	202	206	179	218	214	225	210
Energy	9,049	7,858	12,037	12,799	12,590	12,121	13,816	11,848	9,387	7,794
Production and industrial technology	3,663	3,343	3,760	3,640	4,312	4,356	4,838	4,717	4,431	3,698
Health	3,041	3,083	2,971	3,295	2,624	3,259	3,183	3,424	3,544	3,205
Agriculture	1,857	2,100	1,892	1,842	2,225	2,321	2,585	2,715	2,561	2,486
Culture, recreation, religion and mass media	236	276	222	302	249	244	266	285	236	126
Systems, structures and political and social processes	1,062	1,205	1,171	1,278	1,454	1,635	1,749	1,870	1,889	1,448
General advance of knowledge GUF	12,949	13,108	16,735	14,848	17,471	17,453	17,364	18,982	18,375	18,650
General advance of knowledge in others, no GUF	5,648	6,459	7,502	8,207	8,383	11,324	15,023	15,267	13,260	9,473
Defense	0	0	0	0	80	119	107	103	85	79
Total	**41,130**	**41,049**	**49,961**	**49,878**	**53,603**	**57,096**	**63,244**	**63,032**	**57,570**	**50,535**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.64 GFIDE BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos, 2008

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	2,010	2,062	2,046	2,007	2,300	2,444	2,412	2,038	2,045	1,885
Environment	477	477	510	520	623	483	491	510	497	503
Exploration and exploitation of space	0	0	0	0	0	51	84	83	67	67
Transport, telecommunication and other infrastructures	156	99	121	147	150	131	159	156	164	153
Energy	6,600	5,731	8,779	9,335	9,183	8,841	10,077	8,642	6,847	5,684
Production and industrial technology	2,672	2,438	2,743	2,655	3,145	3,177	3,529	3,441	3,231	2,697
Health	2,218	2,248	2,167	2,403	1,914	2,377	2,322	2,497	2,585	2,338
Agriculture	1,354	1,532	1,380	1,344	1,623	1,693	1,885	1,981	1,868	1,813
Culture, recreation, religion and mass media	172	201	162	220	181	178	194	208	172	92
Systems, structures and political and social processes	775	879	854	932	1,061	1,192	1,276	1,364	1,378	1,056
General advance of knowledge GUF	9,444	9,560	12,206	10,830	12,743	12,730	12,665	13,845	13,402	13,603
General advance of knowledge in others, no GUF	4,119	4,711	5,472	5,986	6,114	8,260	10,958	11,135	9,671	6,909
Defense	0	0	0	0	59	87	78	75	62	58
Total	**29,999**	**29,940**	**36,440**	**36,379**	**39,096**	**41,644**	**46,128**	**45,973**	**41,990**	**36,859**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.65 GFEECYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	13	14	39	18	14	29	61	40	0	0
Environment	5	6	7	10	11	8	8	8	0	0
Exploration and exploitation of space	0	0	0	0	0	0	0	0	0	0
Transport, telecommunication and other infrastructures	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0
Production and industrial technology	28	50	6	5	10	31	48	29	0	0
Health	1,866	1,889	1,749	2,476	2,170	3,042	3,161	3,219	3,449	3,530
Agriculture	0	0	0	0	0	0	0	0	0	0
Culture, recreation, religion and mass media	0	0	0	0	0	0	0	0	0	0
Systems, structures and political and social processes	276	238	291	310	253	213	236	286	279	253
General advance of knowledge GUF	5,454	5,448	4,788	5,936	5,536	5,106	7,206	6,279	8,242	15,931
General advance of knowledge in others, no GUF	3,437	3,731	4,174	4,780	5,578	6,821	7,834	8,369	9,434	9,836
Defense	0	0	0	0	0	0	0	0	0	0
Total	**11,080**	**11,376**	**11,056**	**13,536**	**13,572**	**15,252**	**18,554**	**18,230**	**21,404**	**29,549**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.66 GFEECYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos, 2017

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	18	19	50	21	17	34	66	43	0	0
Environment	7	8	9	12	12	10	8	9	0	0
Exploration and exploitation of space	0	0	0	0	0	0	0	0	0	0
Transport, telecommunication and other infrastructures	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0
Production and industrial technology	38	67	8	6	12	36	52	31	0	0
Health	2,559	2,501	2,217	2,981	2,530	3,486	3,459	3,435	3,564	3,530
Agriculture	0	0	0	0	0	0	0	0	0	0
Culture, recreation, religion and mass media	0	0	0	0	0	0	0	0	0	0
Systems, structures and political and social processes	379	316	369	373	295	245	258	305	288	253
General advance of knowledge GUF	7,478	7,214	6,069	7,145	6,454	5,850	7,884	6,701	8,515	15,931
General advance of knowledge in others, no GUF	4,713	4,940	5,290	5,754	6,502	7,814	8,572	8,932	9,746	9,836
Defense	0	0	0	0	0	0	0	0	0	0
Total	**15,191**	**15,065**	**14,012**	**16,293**	**15,823**	**17,473**	**20,300**	**19,455**	**22,113**	**29,549**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.67 GFEECYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos, 2008

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	13	14	36	16	12	25	48	31	0	0
Environment	5	6	7	9	9	7	6	6	0	0
Exploration and exploitation of space	0	0	0	0	0	0	0	0	0	0
Transport, telecommunication and other infrastructures	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0
Production and industrial technology	28	49	6	5	9	26	38	23	0	0
Health	1,866	1,824	1,617	2,174	1,845	2,542	2,523	2,505	2,599	2,574
Agriculture	0	0	0	0	0	0	0	0	0	0
Culture, recreation, religion and mass media	0	0	0	0	0	0	0	0	0	0
Systems, structures and political and social processes	276	230	269	272	215	178	188	223	210	184
General advance of knowledge GUF	5,454	5,262	4,426	5,211	4,707	4,267	5,751	4,887	6,210	11,619
General advance of knowledge in others, no GUF	3,437	3,603	3,858	4,197	4,743	5,699	6,252	6,514	7,109	7,174
Defense	0	0	0	0	0	0	0	0	0	0
Total	**11,080**	**10,988**	**10,220**	**11,884**	**11,541**	**12,744**	**14,806**	**14,190**	**16,128**	**21,552**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.68 GFSCYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	8	9	12	11	13	14	14	14	14	15
Environment	0	0	0	0	1	3	3	3	3	3
Exploration and exploitation of space	0	0	0	0	0	0	0	0	4	2
Transport, telecommunication and other infrastructures	10	10	10	9	12	14	13	15	17	14
Energy	61	63	64	63	63	61	66	63	66	58
Production and industrial technology	1,609	1,460	1,486	1,756	1,176	1,025	1,286	1,661	1,669	1,371
Health	0	0	0	0	0	0	0	0	0	0
Agriculture	1	3	1	1	6	6	9	8	945	6
Culture, recreation, religion and mass media	0	0	0	0	0	0	0	0	0	0
Systems, structures and political and social processes	110	65	177	72	132	90	94	95	100	96
General advance of knowledge GUF	43	44	46	47	53	19	34	28	18	21
General advance of knowledge in others, no GUF	534	530	526	493	540	574	802	1,222	1,451	1,656
Defense	0	0	0	0	0	0	0	0	0	0
Total	**2,377**	**2,183**	**2,322**	**2,454**	**1,996**	**1,807**	**2,320**	**3,110**	**4,289**	**3,244**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.69 GFSCYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos, 2017

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	11	12	16	14	15	17	15	15	15	15
Environment	1	1	1	1	2	3	3	3	4	3
Exploration and exploitation of space	0	0	0	0	0	0	0	0	4	2
Transport, telecommunication and other infrastructures	13	14	13	11	14	16	14	16	18	14
Energy	83	83	81	76	74	70	72	67	68	58
Production and industrial technology	2,206	1,933	1,883	2,114	1,371	1,175	1,407	1,773	1,725	1,371
Health	0	0	0	0	0	0	0	0	0	0
Agriculture	1	4	1	1	7	7	10	8	976	6
Culture, recreation, religion and mass media	0	0	0	0	0	0	0	0	0	0
Systems, structures and political and social processes	151	86	224	87	154	103	102	101	104	96
General advance of knowledge GUF	59	58	58	57	62	22	37	30	19	21
General advance of knowledge in others, no GUF	733	702	667	593	629	657	877	1,305	1,499	1,656
Defense	0	0	0	0	0	0	0	0	0	0
Total	**3,259**	**2,891**	**2,943**	**2,954**	**2,327**	**2,070**	**2,538**	**3,319**	**4,431**	**3,244**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.70 GFSCYT BY SOCIAL-ECONOMIC OBJECTIVE, 2008-2017

Million pesos 2008

Objective	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Exploration and exploitation of the land	8	9	12	11	13	14	14	14	14	15
Environment	0	0	0	0	1	3	3	3	3	3
Exploration and exploitation of space	0	0	0	0	0	0	0	0	4	2
Transport, telecommunication and other infrastructures	10	10	10	9	12	14	13	15	17	14
Energy	61	63	64	63	63	61	66	63	66	58
Production and industrial technology	1,609	1,460	1,486	1,756	1,176	1,025	1,286	1,661	1,669	1,371
Health	0	0	0	0	0	0	0	0	0	0
Agriculture	1	3	1	1	6	6	9	8	945	6
Culture, recreation, religion and mass media	0	0	0	0	0	0	0	0	0	0
Systems, structures and political and social processes	110	65	177	72	132	90	94	95	100	96
General advance of knowledge GUF	43	44	46	47	53	19	34	28	18	21
General advance of knowledge in others, no GUF	534	530	526	493	540	574	802	1,222	1,451	1,656
Defense	0	0	0	0	0	0	0	0	0	0
Total	**2,377**	**2,183**	**2,322**	**2,454**	**1,996**	**1,807**	**2,320**	**3,110**	**4,289**	**3,244**

The classification and nomenclature of the socio-economic objectives is based on the methodology proposed by the OECD in the 2015 version of the Frascati Manual, related to the measurement of resources allocated to Scientific Research and Experimental Development.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.
INEGI, Mexico´s National Accounts System.

I.71 PARTICIPATION OF THE ADMINISTRATIVE SECTORS AND MAIN ENTITIES IN THE GFCYT BY ACTIVITY, 2017

Million pesos

Administrative Sectors Entitie	Federal Expenditure on Scientific Research and Experimental Development			Federal Expenditure on Scientific and Technological Education and Teaching			Federal Expenditure on Scientific and Technological Services			Federal Expenditure in Technological Innovation			National Expenditure on Science, Technology and Innovation		
	Amount	Sector Participation/ Total %	Entitie Participation/ Sector %	Amount	Sector Participation/ Total %	Entitie Participation/ Sector %	Amount	Sector Participation/ Total %	Entitie Participation/ Sector %	Amount	Sector Participation/ Total %	Entitie Participation/ Sector %	Total	Sector Participation/ Total %	Entitie Participation/ Sector %
Public Education	**17,228**	**34.1**	**100.0**	**13,919**	**47.1**	**100.0**	**8**	**0.2**	**100.0**				**31,155**	**36.1**	**100.0**
National Autonomous University of Mexico	10,574		61.4	3,599		25.9							14,174		45.5
Center for Research and Advanced Studies	2,170		12.6	1,126		8.1	6		75.5				3,302		10.6
Autonomous Metropolitan University	1,394		8.1	2,466		17.7							3,861		12.4
National Polytechnical Institute	1,659		9.6	2,379		17.1							4,037		13.0
The College of Mexico, A.C.	690		4.0	79		0.6	2		24.5				771		2.5
Antonio Narro Autonomous Agrarian University	106		0.6	227		1.6							333		1.1
Others	634		3.7	4,043		29.0							4,677		15.0
Energy[1/]	**7,794**	**15.4**	**100.0**	**0**	**0.0**	**0.0**	**58**	**1.8**	**100.0**				**7,852**	**9.1**	100.0
Mexican Institute of Petroleum	3,979		51.1				32		55.6				4,011		51.1
National Institute of Electricity and Clean Energy[2/]	855		11.0				13		21.9				868		11.1
National Institute of Nuclear Research	812		10.4				13		22.5				825		10.5
Mexican Petroleum	2,138		27.4										2,138		27.2
Others	11		0.1										11		0.1
Agriculture, Livestock, Rural Development, Fishing and Food	**2,487**	**4.9**	**100.0**	**2,011**	**6.8**	**100.0**	**9**	**0.3**	**100.0**	**2,451**	**84.9**	**100.0**	**6,958**	**8.1**	**100.0**
National Institute of Research on Forests, Agriculture and Livestock	1,403		56.4				6		70.8				1,409		20.3
The College of Postgraduates	0			1,423		70.7	2		27.2				1,425		20.5
Autonomous University of Chapingo	1		0.0	589		29.3							589		8.5
National Institute of Fishing and Aquaculture[3/]	576		23.2				0		2.0				576		8.3
General Directorate of Productivity and Technological Development	0									2,421		98.7	2,421		34.8
Others	507		20.4						0.0	31		1.3	538		7.7
Health and Social Services	**3,205**	**6.3**	**100.0**	**3,530**	**11.9**	**100.0**	**0**	**0.0**	**0.0**	**0**	**0.0**	**0.0**	**6,735**	**7.8**	**100.0**
National Institute of Public Health	2,048		63.9	542		15.3							2,590		38.5
Mexican Institute of Social Security	624		19.5										624		9.3
Institute of Social Security and Services for Workers at the Service of the State				109		3.4									
109		1.6													
General Directorate of Quality and Health Education	0			2,629		74.5							2,629		39.0
Others	423		13.2	359		10.2							782		11.6
Economics	**253**	**0.5**	**100.0**	**0**			**1,347**	**41.5**	**100.0**	**0**	**0.0**	**0.0**	**1,600**	**1.9**	**100.0**
National Metrology Center	253		100.0				20		1.5				273		17.1
Mexican Geological Service							932		69.2				932		58.2
Mexican Institute of Industrial Property							129		9.6				129		8.1
General Directorate of Innovation, Services and Internal Commerce												0			0
0.0															
Others							266		19.7				266		16.6
Conacyt	**18,240**	**36.1**	**100.0**	**10,045**	**34.0**	**100.0**	**1,717**	**52.9**	**100.0**	**434**	**15.1**	**100.0**	**30,436**	**35.3**	**100.0**
National Council for Science and Technology	9,907		54.3	9,836		97.9	1,656		96.5	434		100.0	21,833		71.7
Research Centers - Conacyt	8,333		45.7	209		2.1	61		3.5				8,603		28.3
Other administrative sectors	**1,329**	**2.6**		**43**	**0.1**		**105**	**3.3**		**0**	**0.0**		**1,478**	**1.7**	
Total		**50,535**	**100.0**		**29,549**	**100.0**		**3,244**	**100.0**		**2,886**	**100.0**		**86,214**	**100.0**

[1/] As of 2016, it changes its name from the Electric Research Institute to the National Institute of Electricity and Clean Energy.
[2/] As of 2017, the name of the National Fisheries Institute is changed to the National Institute of Fisheries and Aquaculture.
Source: SHCP, Account of the Federal Public Treasury, 2008-2017.

I.72 INTERNATIONAL COMPARISON OF GFIDE, 2008-2017

PPP/USD Million

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
U.S.A.	144,391.0	164,292.0	148,962.0	144,379.0	143,737.0	132,477.0	136,159.0	138,544.0	150,392.0	151,380.0
Japan	30,559.9	30,944.8	32,152.6	34,105.2	35,413.2	35,633.5	35,431.8	33,841.6	34,455.5	35,493.2
Germany	24,002.6	26,767.2	28,615.0	30,103.1	30,575.2	32,745.9	33,186.3	34,046.0	35,214.7	37,277.5
Russia	11,304.2	15,625.1	15,026.4	18,096.8	19,280.0	21,898.8	20,808.0	19,084.1	17,017.5	13,939.3
France	19,222.1	20,294.6	19,160.3	19,983.8	17,925.9	18,457.1	18,349.2	17,415.7	17,430.8	
United Kingdom	13,160.6	13,278.4	13,328.8	12,902.2	12,974.6	14,362.8	14,663.0	14,506.1	14,604.0	
Spain	11,592.3	12,105.6	11,439.4	10,155.5	8,899.8	8,420.5	8,721.4	9,047.4	9,136.1	
China	6,262.8	6,667.9	7,044.2	7,362.6	7,350.6	7,303.0	7,368.9	7,567.0	7,982.5	8,260.8
Mexico	**4,015.9**	**4,172.1**	**5,139.7**	**5,402.4**	**5,849.8**	**6,324.5**	**7,180.5**	**6,915.9**	**6,282.2**	**5,486.5**
Turkey	2,757.8	3,992.6	4,117.5	4,580.9	4,435.2	5,445.5	5,080.2	5,132.9	5,777.7	5,934.5
Israel	1,156.6	1,255.8	1,355.9	1,479.7	1,568.8	1,686.1	1,749.9	1,863.5	2,057.5	
Chile			616.0	726.4	812.3	859.7	833.1			

The conversion to US dollars was made with the Purchasing Power Parity (PPP) calculated by the OECD.
Source: Main Science and Technology Indicators, OECD, 2017/2.

CHAPTER II
HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY

II.1 CATEGORIES OF EDUCATION LEVEL ACCORDING TO ISCED

0	Preschool education (Before first level education)
1	Primary education (First grade of basic education)
2	Lower secondary education (Second level of basic education in first stage)
3	Upper secondary education (Second level of basic education in the second stage)
4	Post-secondary non-tertiary education
5	Tertiary Education (First stage not conducive to a university degree)
6	Tertiary Education (First stage leading to a university degree or equivalent)
7	Tertiary Education (Second stage leading to a university postgraduate or equivalent)

Source: UNESCO, International Standard Classification of Education ISCED, 1997.

II.2 MAIN GROUPS OF OCCUPANCY ACCORDING TO ISCO-88

0	Armed Forces
1	Chief Executives, Senior Officials, Managers and Legislators
2	Professionals
3	Technicians and Associate Professionals
4	Employees
5	Services and Sales Workers
6	Skilled Agricultural, Forestry and Fishery Workers
7	Artesanos y actividades relacionadas
8	Craft and Related Trades Workers
9	Elementary Occupations

Source: OECD, Canberra Manual, p. 47.

II.3 FIELDS OF SCIENCE ACCORDING TO CANBERRA'S MANUAL

Natural sciences
- Mathematics and computing
- Physical, chemical and biological sciences
- Earth and environmental sciences

Engineering and technology
- Civil Engineering
- Electrical and electronic engineering
- Other engineering sciencesa

Medical sciences
- Fundamental medicine
- Clinical medicine
- Health Sciences

Agricultural sciences
- Agricultura, silvicultura, pesca y ciencias afines
- Veterinary Medicine

Social sciences
- Psychology
- Economy
- Communication Sciences
- Other political sciences

Humanities and other fields
- History
- Language and literature
- Otras humanidades

Source: OECD, Canberra Manual, p. 89.

II.4 OCCUPATIONS THAT WERE INCLUDED TO CALCULATE THE HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY ACCORDING TO THE NATIONAL SYSTEM OF CLASSIFICATION OF OCCUPATIONS (SINCO)

Group 12	Directors and managers in financial, administrative and social services
Subgroup 121	Directors and managers in financial and administrative services
Subgroup 122	Directors and managers in health, education and social services (excludes 1225)
Group 13	Directors and managers in production, technology and transport
Subgroup 131	Directors and managers in agricultural, industrial, construction and maintenance production
Subgroup 132	Directors and managers in IT, telecommunications, transport and in research and technological development
Group 14	Directors and managers of sales, restaurants, hotels and other establishments
Subgroup 141	Directors and managers of sales, restaurants and hotels
Subgroup 142	Directors and managers of museums, cinemas and other establishments
Group 15	Coordinators and area responsible official in financial, administrative and social services
Subgroup 151	Coordinators and area responsible official in financial and administrative services
Subgroup 152	Coordinators and area responsible official in health services, education, social and judges qualifiers (excludes 1525)
Group 16	Coordinators and area responsible official in production and technology
Subgroup 161	Coordinators and area responsible official in agricultural, industrial, construction and maintenance production
Subgroup 162	Coordinators and area responsible official in computer science, telecommunications, transport and in research and technological development
Group 17	Coordinators and sales area responsible official, restaurants, hotels and other establishments
Subgroup 171	Coordinators and sales area responsible official, restaurants and hotels
Subgroup 172	Coordinators and area responsible official in museums, cinemas and other establishments
Group 19	Other directors, officers, managers, coordinators and area managers, not classified
Subgroup 199	Other directors, officers, managers, coordinators and area managers, not previously classified
Group 21	Specialists in economic-administrative sciences, social sciences, humanities and arts
Subgroup 211	Administrators and marketers
Subgroup 212	Accountants, auditors, specialists in finance and economics
Subgroup 213	Researchers and specialists in social sciences
Subgroup 214	Researchers and specialists in humanistic sciences
Subgroup 215	Authors, journalists and translators
Subgroup 216	Painters, designers and artists, sculptors and scenographers
Subgroup 217	Coordinators and area responsible official in health services, education, social and judges qualifiers (excludes 1525)
Group 22	Researchers and specialists in exact sciences, biology, engineering, computing and telecommunications
Subgroup 221	Researchers and specialists in physics, mathematics, statistics and acting
Subgroup 222	Researchers and specialists in the biological, chemical and environmental sciences
Subgroup 223	Specialists in agronomic sciences
Subgroup 224	Electrical and electronics engineers
Subgroup 225	Ingenieros químicos, mecánicos, industriales, mineros y metalúrgicos
Subgroup 226	Ingenieros civiles, topógrafos y arquitectos
Subgroup 227	Investigadores y especialistas en sistemas computacionales
Subgroup 228	Communications and telecommunications engineers
Group 23	Teachers and specialists in teaching
Subgroup 231	Educational supervisors and specialists in education sciences
Subgroup 232	Teachers of medium and higher level
Subgroup 233	Basic level teachers
Subgroup 234	Teachers in special education
Subgroup 239	Other professors and teaching specialists, not previously classified
Group 24	Doctors, nurses and other health specialists
Subgroup 241	General practitioners and specialists
Subgroup 242	Other health specialists
Group 25	Auxiliaries and technicians in economic-administrative sciences, social sciences, humanities and in arts
Subgroup 251	Auxiliaries in administration, accounting and finance
Subgroup 252	Public inspectors
Subgroup 253	Auxiliaries in social and humanistic sciences
Subgroup 254	Fashion designers, industrialists, graphics and interior decorators
Subgroup 255	Broadcasters, entertainers and clowns
Subgroup 256	Athletes, coaches and referees
Group 26	Auxiliary and technicians in exact sciences, biology, engineering, computing and telecommunications
Subgroup 261	Auxiliaries and technicians in physical, mathematical, biological, chemical, environmental and agronomic sciences
Subgroup 262	Auxiliaries and industrial technicians, surveyors, miners and technical draughtsmen
Subgroup 263	Mechanics and technicians in maintenance and repair of mechanical equipment, motor vehicles, industrial instruments and refrigeration equipment (only 2630, 2633 and 2639)
Subgroup 264	Electrical technicians, in electronics and equipment in telecommunications and electromechanics (only 2640, 2641 and 2649)
Subgroup 265	Auxiliaries and technicians in computer science and communications and recording equipment
Subgroup 266	Air traffic controllers and other transporters (2661 only)
Group 27	Auxiliaries and technicians in education, instructors and trainers
Subgroup 271	Auxiliaries and technicians in education, instructors and trainers
Group 28	Nurses, medical technicians and health support workers
Subgroup 281	Nurses and technicians in medicine
Subgroup 282	Health support workers (excludes 2827)
Group 29	Other specialists and technicians, not previously classified
Subgroup 299	Other specialists and technicians, not previously classified
Group 31	Secretaries, capturists, cashiers and file and transport control workers
Subgroup 310	Supervisors of secretaries, capturists, cashiers and file and transport control workers
Subgroup 311	Secretaries, stenographers, typists, data capturists and operators of office machines (only 3111)
Group 32	Workers who provide and manage information
Subgroup 320	Worker supervisors who provide and manage information
Group 42	Sales employees in establishments
Subgroup 422	Agents, sales representatives and catalog vendors
Group 43	Workers in the rent
Subgroup 431	Workers in rent (only 4311)
Group 71	Workers in the extraction and construction of buildings
Subgroup 710	Supervisors of workers in the extraction, masons and in construction finishes
Group 81	Facility operators and industrial machinery
Subgroup 810	Supervisors of industrial machinery operators
Subgroup 812	Operators of machines and equipment in metallurgical manufacturing, manufacture of machinery and metal products
Subgroup 813	Operators of machines and equipment in the production of chemical products, plastics, water treatment and petrochemicals (excludes 8133)
Subgroup 818	Operators of machines for power generation
Subgroup 819	Other operators of installations and fixed industrial machinery, not previously classified
Group 82	Assemblers and assemblers of tools, machinery, metallic and electronic products
Subgroup 820	Supervisors in assembly and installation processes of machinery, tools and metallic and electronic products
Group 83	Conductors of transport and of mobile machinery
Subgroup 831	Air transport drivers
Subgroup 832	Maritime transport drivers

Source: INEGI, National Classification System of Occupations (SINCO), 2011.

II.5 CRITERIA TO THE DIGIT CODING DEFINED BY THE MINISTRY OF PUBLIC EDUCATION

Instruction level	Scholar precedent	Education level	First digit of the code
05 Normal	1 Primary	Normal basic	N + academic training area
	2 Secondary		
	3 High school	Normal higher	5 + academic training area
06 Technical or commercial degree	1 Primary	Training for work	1800 key to training studies for work
	2 Secondary	Terminal technical professional	2 + academic training area
	3 High school	Senior university or associate professional technician	4 + academic training area
07 Professional	3 High school	Bachelor's degree	5 + academic training area
08 Master degree	------	Master's degree	7 + academic training area
09 Doctorate	------	Doctorate	8 + academic training area

Source: INEGI, Mexican classification of study programs by academic training areas, 2011 (CMPE).

II.6 FIELD OF KNOWLEDGE AND LEVEL CONSIDERED IN CANBERRA'S MANUAL

Field of knowledge	Bachelor and postgraduate (ISCED 6/7)	Professional technician (ISCED 5)
Natural and exact sciences	Nucleus	Extended
Engineering and technology	Nucleus	Extended
Health Sciences	Nucleus	Extended
Agricultural sciences	Nucleus	Extended
Social Sciences	Nucleus	Extended
Humanities	Extended	Complete
Others	Extended	Extended

Source: OECD, Canberra Manual, 1995..

II.7 SUB-GROUP OF OCCUPATION (ISCO-88) CONSIDERED

ISCO	Occupation group	
122	Administrators of the production and operation departments	Extended
123	Administrators from other departments	Extended
131	General Administrators	Extended
21	Professionals of the physical-mathematical sciences and engineering	Nucleus
22	Professionals in the health and life sciences	Nucleus
23	Education professionals	Extended
24	Other professionals	Extended
31	Technicians of the physical-mathematical sciences and engineering	Extended
32	Technicians of the health and life sciences	Extended
33	Education technicians	Complete
34	Other technicians	Complete

Source: OECD, Canberra Manual, 1995.

II.8 STOCK OF HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY (ARHCYT), 2010-2017

Population education completed ISCED level 5 or higher and / or is engaged in science and technology activities

Thousand people

	2010	2011	2012	2013	2014e/	2015e/	2016	2017
Total	**10,118,835**	**10,370,225**	**10,646,884**	**10,923,544**	**11,183,600**	**11,453,472**	**15,829,341**	**16,343,791**
Gender								
Men	5,176,291	5,279,360	5,395,064	5,510,767	5,616,150	5,728,864	7,874,271	8,000,064
Women	4,942,543	5,090,865	5,251,821	5,412,777	5,567,450	5,724,609	7,955,070	8,343,727
Occupation								
Managers	909,420	932,014	930,187	942,677	965,119	972,501	857,262	920,304
Professionals	3,475,276	3,561,615	3,666,534	3,764,269	3,853,885	3,952,277	4,985,030	4,943,374
Technicians	1,509,099	1,546,590	1,573,026	1,607,095	1,645,355	1,676,138	5,039,349	5,036,924
Other occupations	2,701,486	2,768,601	2,874,112	2,962,531	3,033,059	3,125,081	2,368,834	2,681,013
Unemployed	121,094	124,103	114,511	113,325	116,023	111,535	439,714	374,581
Inactive	1,402,460	1,437,302	1,488,514	1,533,647	1,570,158	1,615,939	2,139,152	2,387,595

e/Estimated figures..

Sources: INEGI-STPS, National Occupation and Employment Survey, several years.
INEGI, Database of the census sample, several years.

II.9 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 OR HIGHER LEVEL OF EDUCATION (RHCYTE), 2010-017

	Thousand people								Participation, with regard to the total PEA, 18 years or more							
	2010	2011	2012	2013	2014e/	2015e/	2016	2017	2010	2011	2012	2013	2014e/	2015e/	2016	2017
Total	**8,046,706.0**	**8,293,603.1**	**8,540,500.2**	**8,787,397.3**	**9,034,300.0**	**9,281,197.1**	**11,169,136**	**11,849,581**	**18.1**	**17.0**	**16.8**	**16.8**	**17.3**	**16.7**	**21.3**	**22.3**
Gender																
Men	4,167,310.2	4,274,351.7	4,381,393.1	4,488,434.5	4,595,500.0	4,702,541.4	5,587,547	5,876,291	9.4	8.7	8.6	8.6	8.8	8.4	10.6	11.1
Women	3,879,395.8	4,019,251.5	4,159,107.1	4,298,962.8	4,438,800.0	4,578,655.7	5,581,589	5,973,290	8.7	8.2	8.2	8.2	8.5	8.2	10.6	11.2
Occupation																
Managers	561,019.0	570915.4	580811.7	590,708.1	607,305.4	617,201.8	645,774	573,903	1.3	1.2	1.1	1.1	1.2	1.1	1.2	1.1
Professionals	2,904,607.7	2,996,916.2	3,089,224.7	3,181,533.3	3,270,925.9	3,363,234.5	4,139,310	4,322,317	6.5	6.1	6.1	6.1	6.3	6.1	7.9	8.1
Technicians	348,721.4	359034.3	369347.2	379,660.0	390,327.5	400,640.4	1,478,251	1,510,172	0.8	0.7	0.7	0.7	0.7	0.7	2.8	2.8
Other occupations	2,687,595.0	2,775,622.9	2,863,650.7	2,951,678.5	3,034,612.9	3,122,640.7	2,326,935	2,681,013	6.0	5.7	5.6	5.7	5.8	5.6	4.4	5.0
Unemployed	139,155.0	139816.3	140477.6	141,138.8	145,104.5	145,765.7	439,714	374,581	0.3	0.3	0.3	0.3	0.3	0.3	0.8	0.7
Inactive	1,405,607.9	1,451,298.1	1,496,988.4	1,542,678.6	1,586,023.8	1,631,714.0	2,139,152	2,387,595	3.2	3.0	2.9	3.0	3.0	2.9	4.1	4.5
Education																
Postgraduate	515,313.2	531152.6	546991.8	562,831.0	578,645.0	594,484.2	947,908	1,012,854	1.2	1.1	1.1	1.1	1.1	1.1	1.8	1.9
Bachelor's degree	6,614,351.1	6,828,347.3	7,042,300.0	7,256,339.4	7,460,223.4	7,674,219.5	9,865,082	10,498,762	14.9	14.0	13.8	13.9	14.3	13.8	18.8	19.8
Technical	917,041.8	934,103.6	951165.1	968,227.0	995,431.6	1,012,493.3	356,146	337,965	2.1	1.9	1.9	1.9	1.9	1.8	0.7	0.6
Field of science																
Natural and exact sciences	380,506.5	387789.2	395071.9	402,354.6	413,659.7	420,942.4	623,454	703,511	0.9	0.8	0.8	0.8	0.8	0.8	1.2	1.3
Engineering and technology	1,792,261.1	1,845,032.8	1,897,804.4	1,950,576.1	2,005,382.1	2,058,153.8	2,135,407	2,252,757	4.0	3.8	3.7	3.7	3.8	3.7	4.1	4.2
Health Sciences	778,589.1	801669.1	824749.2	847,829.2	871,651.0	894,731.0	1,012,716	1,087,001	1.8	1.6	1.6	1.6	1.7	1.6	1.9	2.0
Agricultural sciences	237,551.7	239521.5	241491.3	243,461.0	250,301.7	252,271.4	269,394	288,409	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5
Social Sciences	4,541,207.8	4,688,493.2	4,835,778.6	4,983,064.0	5,123,074.9	5,270,360.3	6,528,959	6,895,680	10.2	9.6	9.5	9.6	9.8	9.5	12.4	13.0
Humanities	243,511.2	254011.7	264512.3	275,012.8	282,739.9	293,240.4	471,357	502,579	0.5	0.5	0.5	0.5	0.5	0.5	0.9	0.9
Not specified	73,078.6	77,085.7	81,092.7	85,099.7	87,490.7	91,497.7	127,849	119,644	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

e/ Estimated figures.
Sources: INEGI-STPS, National Occupation and Employment Survey, several years.
INEGI, Database of the census sample, several years.

II.10 DISTRIBUTION OF THE POPULATION THAT IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES (RHCYTO), 2010-2017

	Thousand people								% of the Occupied PEA							
	2010	2011	2012	2013	2014e/	2015e/	2016	2017	2010	2011	2012	2013	2014e/	2015e/	2016	2017
Total	**5,893,795**	**6,169,764**	**6,241,081**	**6,314,041**	**6,487,725**	**6,620,922**	**10,881,641**	**10,900,602**	**13.3**	**13.4**	**12.9**	**12.7**	**12.3**	**12.2**	**20.0**	**20.5**
Gender																
Men	3,139,543	3,268,786	3,301,772	3,326,545	3,407,695	3,467,087	5,554,684	5,441,804	7.1	7.1	6.8	6.7	6.5	6.4	10.2	10.2
Women	2,754,253	2,900,977	2,939,309	2,987,496	3,080,030	3,153,835	5,326,957	5,458,798	6.2	6.3	6.1	6.0	5.8	5.8	9.8	10.3
Occupation																
Managers	909,420	930,193	920,334	942,677	968,608	973,504	857,262	920,304	2.0	2.0	1.9	1.9	1.8	1.8	1.6	1.7
Professionals	3,475,276	3,666,540	3,743,389	3,764,269	3,867,815	3,968,300	4,985,030	4,943,374	7.8	8.0	7.7	7.6	7.3	7.3	9.2	9.3
Technicians	1,509,099	1,573,031	1,577,358	1,607,095	1,651,302	1,679,118	5,039,349	5,036,924	3.4	3.4	3.3	3.2	3.1	3.1	9.3	9.5

e/ Estimated figures.

Sources: INEGI-STPS, National Occupation and Employment Survey, several years.
INEGI, Database of the census sample, several years.

II.11DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN ACTIVITIES OF SCIENCE AND TECHNOLOGY (ARHCYT), 2010-2017

	Thousand people								% of the Occupied PEA							
	2010	2011	2012	2013	2014e/	2015e/	2016	2017	2010	2011	2012	2013	2014e/	2015e/	2016	2017
Total	**3,787,041**	**3,887,066**	**4,127,546**	**4,150,646**	**4,243,085**	**4,338,425**	**4,454,831**	**6,221,436**	**8.6**	**8.7**	**8.5**	**8.6**	**8.6**	**8.2**	**8.3**	**11.4**
Gender																
Men	2,020,550	2,059,544	2,168,766	2,169,297	2,204,498	2,387,045	2,405,050	3,267,960	4.6	4.6	4.5	4.5	4.5	4.3	4.3	6.0
Women	1,766,491	1,827,522	1,958,780	1,981,349	2,038,587	1,951,380	2,049,780	2,953,476	4.0	4.1	4.0	4.1	4.1	4.0	4.0	5.4
Occupation																
Managers	565,145	577,755	621,243	600,242	602,353	615,888	620,709	574,286	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1
Professionals	2,842,699	2,924,272	3,066,337	3,129,105	3,214,986	3,287,225	3,386,751	4,136,642	6.5	6.6	6.3	6.5	6.5	6.2	6.3	7.6
Technicians	379,197	385,039	439,966	421,299	425,746	435,312	447,370	1,510,508	0.9	0.9	0.9	0.9	0.9	0.8	0.8	2.8
Education																
Postgraduate	397,527	417,040	488,525	440,101	461,745	472,120	480,921	720,803	0.9	0.9	1.0	0.9	0.9	0.9	0.9	1.3
Bachelor's degree	3,132,646	3,174,117	3,297,875	3,421,180	3,476,564	3,554,681	3,666,829	5,385,834	7.1	7.1	6.8	7.1	7.1	6.8	6.9	9.9
Technical	256,868	295,909	341,146	289,364	304,775	311,624	307,081	114,799	0.6	0.7	0.7	0.6	0.6	0.6	0.5	0.2
Campo de la ciencia																
Natural and exact sciences	202,689	205,317	231,354	221,162	223,210	228,225	233,155	308,265	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.6
Engineering and technology	649,317	666,280	706,652	710,794	727,177	743,516	763,383	1,198,792	1.5	1.5	1.5	1.5	1.5	1.4	1.4	2.2
Health Sciences	519,416	533,533	571,059	572,400	585,893	599,058	616,154	688,731	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.3
Agricultural sciences	113,489	112,872	135,664	122,225	121,028	123,748	125,242	123,445	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Social Sciences	2,108,879	2,169,933	2,254,397	2,302,630	2,363,105	2,416,203	2,481,628	3,596,665	4.8	4.9	4.6	4.8	4.8	4.6	4.6	6.6
Humanities	131,311	134,367	160,833	151,069	153,546	156,996	162,753	290,608	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5
Not specified	61,940	64,764	67,587	70,411	69,125	70,679	72,524	14,930	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0

e/Estimated figures.
Sources: INEGI-STPS, National Occupation and Employment Survey, several years.
INEGI, Database of the census sample, several years.

II.12 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2010

	Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total	**577,755**	**14.8**	**2,924,272**	**74.8**	**385,039**	**9.9**
Natural and exact sciences	34,044	0.9	144,576	3.7	26,698	0.7
Engineering and technology	127,834	3.3	450,900	11.5	87,546	2.2
Health Sciences	11,917	0.3	443,364	11.3	78,251	2.0
Agricultural sciences	24,076	0.6	76,990	2.0	11,806	0.3
Social Sciences	345,270	8.8	1,676,254	42.9	148,408	3.8
Humanities and others	13,295	0.3	110,123	2.8	10,949	0.3
Not specified	21,318	0.5	22,065	0.6	21,380	0.5
Postgraduate	**64,385**	**1.6**	**317,364**	**8.1**	**19,938**	**0.5**
Natural and exact sciences	3,939	0.1	28,757	0.7	3,836	0.1
Engineering and technology	9,118	0.2	22,704	0.6	2,354	0.1
Health Sciences	3,443	0.1	99,861	2.6	1,855	0.0
Agricultural sciences	1,358	0.0	5,743	0.1	882	0.0
Social Sciences	37,647	1.0	130,726	3.3	2,800	0.1
Humanities and others	2,309	0.1	23,625	0.6	1,628	0.0
Not specified	6,570	0.2	5,947	0.2	6,583	0.2
Bachelor's degree	**485,133**	**12.4**	**2,480,020**	**63.5**	**249,850**	**6.4**
Natural and exact sciences	28,632	0.7	114,210	2.9	14,670	0.4
Engineering and technology	115,726	3.0	421,513	10.8	52,045	1.3
Health Sciences	7,517	0.2	340,951	8.7	37,274	1.0
Agricultural sciences	22,011	0.6	70,123	1.8	8,684	0.2
Social Sciences	294,792	7.5	1,444,130	37.0	122,232	3.1
Humanities and others	10,102	0.3	83,913	2.1	8,387	0.2
Not specified	6,353	0.2	5,180	0.1	6,558	0.2
Technical	**28,237**	**0.7**	**126,888**	**3.2**	**115,251**	**2.9**
Natural and exact sciences	1,472	0.0	1,608	0.0	8,192	0.2
Engineering and technology	2,990	0.1	6,683	0.2	33,147	0.8
Health Sciences	958	0.0	2,552	0.1	39,122	1.0
Agricultural sciences	707	0.0	1,123	0.0	2,240	0.1
Social Sciences	12,832	0.3	101,398	2.6	23,376	0.6
Humanities and others	883	0.0	2,584	0.1	934	0.0
Not specified	8,395	0.2	10,938	0.3	8,239	0.2

Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.13 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2011

		Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total		**630,847**	**15.7**	**3,053,931**	**75.8**	**442,769**	**11.0**
	Natural and exact sciences	41,658	1.0	155,421	3.9	34,276	0.9
	Engineering and technology	136,596	3.4	473,529	11.8	96,528	2.4
	Health Sciences	18,409	0.5	464,145	11.5	88,506	2.2
	Agricultural sciences	31,257	0.8	85,746	2.1	18,660	0.5
	Social Sciences	360,080	8.9	1,730,065	42.9	164,252	4.1
	Humanities and others	20,618	0.5	121,953	3.0	18,263	0.5
	Not specifiedo	22,229	0.6	23,073	0.6	22,285	0.6
Postgraduate		**80,253**	**2.0**	**342,754**	**8.5**	**35,562**	**0.9**
	Natural and exact sciences	7,236	0.2	33,116	0.8	7,305	0.2
	Engineering and technology	11,735	0.3	25,617	0.6	4,741	0.1
	Health Sciences	5,671	0.1	103,899	2.6	4,177	0.1
	Agricultural sciences	3,608	0.1	8,125	0.2	3,191	0.1
	Social Sciences	41,792	1.0	139,854	3.5	6,598	0.2
	Humanities and others	4,650	0.1	27,227	0.7	3,983	0.1
	Not specified	5,560	0.1	4,916	0.1	5,567	0.1
Bachelor's degree		**508,946**	**12.6**	**2,570,642**	**63.8**	**274,356**	**6.8**
	Natural and exact sciences	32,549	0.8	120,297	3.0	18,379	0.5
	Engineering and technology	119,778	3.0	438,936	10.9	56,087	1.4
	Health Sciences	9,518	0.2	355,388	8.8	41,856	1.0
	Agricultural sciences	24,647	0.6	74,391	1.8	11,014	0.3
	Social Sciences	304,354	7.6	1,487,711	36.9	130,418	3.2
	Humanities and others	12,775	0.3	89,836	2.2	11,066	0.3
	Not specified	5,324	0.1	4,082	0.1	5,536	0.1
Technical		**41,648**	**1.0**	**140,535**	**3.5**	**132,851**	**3.3**
	Natural and exact sciences	1,872	0.0	2,008	0.0	8,592	0.2
	Engineering and technology	5,082	0.1	8,976	0.2	35,700	0.9
	Health Sciences	3,220	0.1	4,857	0.1	42,472	1.1
	Agricultural sciences	3,003	0.1	3,230	0.1	4,456	0.1
	Social Sciences	13,933	0.3	102,500	2.5	27,236	0.7
	Humanities and others	3,192	0.1	4,890	0.1	3,214	0.1
	Not specified	11,345	0.3	14,075	0.3	11,181	0.3

Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.14 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2012

	Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total	**600,245**	**14.5**	**3,129,103**	**75.4**	**421,298**	**10.2**
Natural and exact sciences	36,948	0.9	152,585	3.7	31,629	0.8
Engineering and technology	133,420	3.2	484,074	11.7	93,299	2.2
Health Sciences	12,964	0.3	472,842	11.4	86,550	2.1
Agricultural sciences	25,604	0.6	82,869	2.0	13,753	0.3
Social Sciences	353,561	8.5	1,788,010	43.1	161,059	3.9
Humanities and others	15,649	0.4	121,876	2.9	13,544	0.3
Not specified	22,100	0.5	26,847	0.6	21,464	0.5
Postgraduate	**71,126**	**1.7**	**344,137**	**8.3**	**25,564**	**0.6**
Natural and exact sciences	4,819	0.1	31,711	0.8	4,970	0.1
Engineering and technology	10,372	0.2	24,502	0.6	3,058	0.1
Health Sciences	3,921	0.1	103,910	2.5	2,429	0.1
Agricultural sciences	2,029	0.0	6,629	0.2	1,579	0.0
Social Sciences	39,684	1.0	142,678	3.4	4,050	0.1
Humanities and others	3,071	0.1	26,860	0.6	2,327	0.1
Not specified	7,230	0.2	7,848	0.2	7,152	0.2
Bachelor's degree	**508,274**	**12.2**	**2,639,058**	**63.6**	**273,301**	**6.6**
Natural and exact sciences	30,752	0.7	120,621	2.9	16,283	0.4
Engineering and technology	119,852	2.9	452,331	10.9	56,059	1.4
Health Sciences	7,540	0.2	365,797	8.8	42,368	1.0
Agricultural sciences	23,454	0.6	74,781	1.8	9,423	0.2
Social Sciences	307,663	7.4	1,524,989	36.7	132,258	3.2
Humanities and others	11,529	0.3	91,790	2.2	9,734	0.2
Not specified	7,486	0.2	8,749	0.2	7,174	0.2
Technical	**20,845**	**0.5**	**145,908**	**3.5**	**122,433**	**2.9**
Natural and exact sciences	1,377	0.0	253	0.0	10,376	0.2
Engineering and technology	3,196	0.1	7,241	0.2	34,182	0.8
Health Sciences	1,504	0.0	3,135	0.1	41,753	1.0
Agricultural sciences	121	0.0	1,459	0.0	2,751	0.1
Social Sciences	6,214	0.1	120,343	2.9	24,751	0.6
Humanities and others	1,049	0.0	3,226	0.1	1,483	0.0
Not specified	7,383	0.2	10,251	0.2	7,138	0.2

Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.15 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2013

		Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total		**602,353**	**14.2**	**3,214,986**	**75.8**	**425,746**	**10.0**
	Natural and exact sciences	32,565	0.8	159,056	3.7	30,985	0.7
	Engineering and technology	138,540	3.3	499,254	11.8	94,869	2.2
	Health Sciences	3,329	0.1	485,981	11.5	87,878	2.1
	Agricultural sciences	17,940	0.4	84,642	2.0	12,467	0.3
	Social Sciences	402,750	9.5	1,855,437	43.7	165,061	3.9
	Humanities and others	6,751	0.2	125,720	3.0	12,251	0.3
	Not specified	478	0.0	4,894	0.1	22,235	0.5
Postgraduate		**54,674**	**1.3**	**351,296**	**8.3**	**24,702**	**0.6**
	Natural and exact sciences	1,920	0.0	33,064	0.8	4,950	0.1
	Engineering and technology	8,157	0.2	24,932	0.6	2,970	0.1
	Health Sciences	236	0.0	105,401	2.5	2,450	0.1
	Agricultural sciences	704	0.0	6,509	0.2	1,504	0.0
	Social Sciences	43,163	1.0	153,141	3.6	4,129	0.1
	Humanities and others	336	0.0	27,800	0.7	2,279	0.1
	Not specified	158	0.0	449	0.0	6,420	0.2
Bachelor's degree		**528,549**	**12.5**	**2,711,583**	**63.9**	**278,367**	**6.6**
	Natural and exact sciences	30,595	0.7	123,703	2.9	16,077	0.4
	Engineering and technology	129,986	3.1	467,271	11.0	57,281	1.3
	Health Sciences	2,369	0.1	377,687	8.9	43,033	1.0
	Agricultural sciences	14,252	0.3	76,548	1.8	8,641	0.2
	Social Sciences	345,496	8.1	1,569,907	37.0	136,149	3.2
	Humanities and others	5,751	0.1	95,051	2.2	8,963	0.2
	Not specified	100	0.0	1,417	0.0	8,223	0.2
Technical		**19,130**	**0.5**	**152,107**	**3.6**	**122,676**	**2.9**
	Natural and exact sciences	50	0.0	2,289	0.1	9,957	0.2
	Engineering and technology	397	0.0	7,052	0.2	34,619	0.8
	Health Sciences	725	0.0	2,893	0.1	42,395	1.0
	Agricultural sciences	2,984	0.1	1,586	0.0	2,322	0.1
	Social Sciences	14,090	0.3	132,389	3.1	24,783	0.6
	Humanities and others	664	0.0	2,870	0.1	1,009	0.0
	Not specified	220	0.0	3,028	0.1	7,592	0.2

Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.16 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2014[e/]

	Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total	**615,888**	**14.2**	**3,287,225**	**75.8**	**435,312**	**10.0**
Natural and exact sciences	33,503	0.8	162,836	3.8	31,887	0.7
Engineering and technology	139,783	3.2	508,602	11.7	95,131	2.2
Health Sciences	6,371	0.1	499,868	11.5	92,819	2.1
Agricultural sciences	20,381	0.5	88,582	2.0	14,785	0.3
Social Sciences	391,301	9.0	1,876,630	43.3	148,272	3.4
Humanities and others	9,910	0.2	131,553	3.0	15,533	0.4
Not specified	14,639	0.3	19,155	0.4	36,885	0.9
Postgraduate	**60,498**	**1.4**	**385,565**	**8.9**	**26,058**	**0.6**
Natural and exact sciences	3,291	0.1	19,099	0.4	1,909	0.0
Engineering and technology	13,731	0.3	59,655	1.4	5,695	0.1
Health Sciences	626	0.0	58,630	1.4	5,556	0.1
Agricultural sciences	2,002	0.0	10,390	0.2	885	0.0
Social Sciences	38,437	0.9	220,113	5.1	8,876	0.2
Humanities and others	973	0.0	15,430	0.4	930	0.0
Not specified	1,438	0.0	2,247	0.1	2,208	0.1
Bachelor's degree	**534,546**	**12.3**	**2,739,928**	**63.2**	**280,208**	**6.5**
Natural and exact sciences	29,078	0.7	135,725	3.1	20,525	0.5
Engineering and technology	121,322	2.8	423,924	9.8	61,235	1.4
Health Sciences	5,530	0.1	416,644	9.6	59,747	1.4
Agricultural sciences	17,689	0.4	73,834	1.7	9,517	0.2
Social Sciences	339,621	7.8	1,564,185	36.1	95,442	2.2
Humanities and others	8,601	0.2	109,650	2.5	9,999	0.2
Not specified	12,706	0.3	15,966	0.4	23,742	0.5
Technical	**20,844**	**0.5**	**161,733**	**3.7**	**129,046**	**3.0**
Natural and exact sciences	1,134	0.0	8,012	0.2	9,453	0.2
Engineering and technology	4,731	0.1	25,023	0.6	28,201	0.7
Health Sciences	216	0.0	24,594	0.6	27,516	0.6
Agricultural sciences	690	0.0	4,358	0.1	4,383	0.1
Social Sciences	13,243	0.3	92,331	2.1	43,955	1.0
Humanities and others	335	0.0	6,472	0.1	4,605	0.1
Not specified	495	0.0	942	0.0	10,934	0.3

[e/] Estimated figures.
Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.17 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2015[e/]

	Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total	**628,396**	**14.3**	**3,391,997**	**76.0**	**452,649**	**10.2**
Natural and exact sciences	34,301	0.8	167,528	3.8	33,561	0.8
Engineering and technology	143,004	3.2	527,204	11.9	98,654	2.2
Health Sciences	4,353	0.1	514,441	11.5	96,251	2.1
Agricultural sciences	19,292	0.5	90,707	2.0	14,843	0.3
Social Sciences	409,754	9.2	1,942,306	43.8	161,531	3.9
Humanities and others	8,804	0.2	136,902	3.0	15,712	0.3
Not specified	8,890	0.2	12,910	0.1	32,098	0.5
Postgraduate	**59,596**	**1.4**	**389,687**	**8.3**	**28,197**	**0.7**
Natural and exact sciences	2,908	0.1	25,603	0.8	3,555	0.1
Engineering and technology	12,196	0.2	49,146	0.6	5,185	0.1
Health Sciences	149	0.0	76,770	2.4	4,848	0.1
Agricultural sciences	1,624	0.0	9,503	0.2	1,449	0.1
Social Sciences	41,429	1.0	206,148	3.7	7,905	0.1
Humanities and others	700	0.0	21,529	0.7	1,761	0.1
Not specified	589	0.0	988	0.0	3,495	0.1
Bachelor's degree	**548,618**	**17.4**	**2,833,272**	**64.0**	**293,512**	**6.6**
Natural and exact sciences	30,002	1.0	135,871	2.9	19,927	0.4
Engineering and technology	127,752	-0.9	458,785	11.1	62,467	1.4
Health Sciences	3,158	-0.1	420,072	9.0	57,290	1.0
Agricultural sciences	14,699	-0.6	77,660	1.8	9,504	0.2
Social Sciences	357,625	10.9	1,620,390	36.9	115,387	3.2
Humanities and others	6,744	0.1	109,854	2.3	10,316	0.2
Not specified	8,639	-3.0	10,639	0.0	18,622	0.2
Technical	**14,950**	**0.7**	**169,038**	**3.7**	**130,940**	**2.9**
Natural and exact sciences	431	0.0	6,054	0.1	10,080	0.2
Engineering and technology	2,919	-0.1	19,272	0.2	31,002	0.8
Health Sciences	131	0.0	17,598	0.1	34,113	1.0
Agricultural sciences	1,485	0.0	3,544	0.0	3,890	0.1
Social Sciences	12,357	0.4	115,767	3.3	38,239	0.6
Humanities and others	138	0.0	5,519	0.1	3,635	0.0
Not specified	-2,509	0.1	1,283	0.1	9,981	0.2

[e/] Estimated figures.
Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.18 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2016

	Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total	**574,286**	**9.2**	**4,136,642**	**66.5**	**1,510,508**	**24.3**
Natural and exact sciences	15,773	0.3	220,100	3.5	72,392	1.2
Engineering and technology	100,078	1.6	684,416	11.0	414,298	6.7
Health Sciences	9,875	0.2	582,809	9.4	96,047	1.5
Agricultural sciences	11,853	0.2	78,089	1.3	33,503	0.5
Social Sciences	418,298	6.7	2,374,864	38.2	803,503	12.9
Humanities and others	15,904	0.3	191,257	3.1	83,447	1.3
Not specified	2,505	0.0	5,107	0.1	7,318	0.1
Postgraduate	**95,068**	**1.5**	**553,282**	**8.9**	**72,453**	**1.2**
Natural and exact sciences	1,333	0.0	48,512	0.8	6,118	0.1
Engineering and technology	5,061	0.1	38,421	0.6	11,490	0.2
Health Sciences	607	0.0	83,104	1.3	2,737	0.0
Agricultural sciences	977	0.0	6,195	0.1	613	0.0
Social Sciences	85,770	1.4	349,100	5.6	47,541	0.8
Humanities and others	1,231	0.0	24,773	0.4	3,160	0.1
Not specified	89	0.0	3,177	0.1	794	0.0
Bachelor's degree	**475,214**	**7.6**	**3,570,514**	**57.4**	**1,340,106**	**21.5**
Natural and exact sciences	14,256	0.2	166,991	2.7	60,830	1.0
Engineering and technology	94,727	1.5	645,096	10.4	384,529	6.2
Health Sciences	8,463	0.1	496,746	8.0	55,500	0.9
Agricultural sciences	10,876	0.2	71,894	1.2	31,168	0.5
Social Sciences	329,924	5.3	2,023,793	32.5	733,770	11.8
Humanities and others	14,552	0.2	164,064	2.6	67,785	1.1
Not specified	2,416	0.0	1,930	0.0	6,524	0.1
Technical	**4,004**	**0.1**	**12,846**	**0.2**	**97,949**	**1.6**
Natural and exact sciences	184	0.0	4,597	0.1	5,444	0.1
Engineering and technology	290	0.0	899	0.0	18,279	0.3
Health Sciences	805	0.0	2,959	0.0	37,810	0.6
Agricultural sciences	0	0.0	0	0.0	1,722	0.0
Social Sciences	2,604	0.0	1,971	0.0	22,192	0.4
Humanities and others	121	0.0	2,420	0.0	12,502	0.2
Not specified	0	0.0	0	0.0	0	0.0

Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.19 DISTRIBUTION OF THE POPULATION THAT COMPLETED THE EDUCATION LEVEL ISCED 5 OR HIGHER AND IS OCCUPIED IN SCIENCE AND TECHNOLOGY ACTIVITIES ACCORDING TO LEVEL OF EDUCATION, FIELD OF SCIENCE AND OCCUPATION, 2017

	Management positions	Participation in the RHCyTC Stock	Professionals	Participation in the RHCyTC Stock	Technician	Participation in the RHCyTC Stock
Total	**573,903**	**9.0**	**4,322,317**	**67.5**	**1,510,172**	**23.6**
Natural and exact sciences	22,816	0.4	258,164	4.0	99,772	1.6
Engineering and technology	79,737	1.2	744,613	11.6	403,720	6.3
Health Sciences	10,107	0.2	603,315	9.4	81,732	1.3
Agricultural sciences	11,462	0.2	81,205	1.3	33,498	0.5
Social Sciences	425,940	6.6	2,482,029	38.7	814,023	12.7
Humanities and others	21,811	0.3	145,107	2.3	72,871	1.1
Not specified	2,030	0.0	7,884	0.1	4,556	0.1
Postgraduate	**98,431**	**1.5**	**562,514**	**8.8**	**68,949**	**1.1**
Natural and exact sciences	2,191	0.0	50,260	0.8	9,458	0.1
Engineering and technology	6,124	0.1	47,536	0.7	5,928	0.1
Health Sciences	1,699	0.0	88,992	1.4	477	0.0
Agricultural sciences	921	0.0	4,394	0.1	618	0.0
Social Sciences	86,006	1.3	340,555	5.3	46,773	0.7
Humanities and others	1,490	0.0	26,234	0.4	2,970	0.0
Not specified	0	0.0	4,543	0.1	2,725	0.0
Bachelor's degree	**471,178**	**7.4**	**3,749,473**	**58.5**	**1,368,086**	**21.4**
Natural and exact sciences	19,704	0.3	205,217	3.2	84,009	1.3
Engineering and technology	72,851	1.1	695,215	10.9	382,095	6.0
Health Sciences	8,142	0.1	514,213	8.0	49,867	0.8
Agricultural sciences	10,541	0.2	76,180	1.2	32,491	0.5
Social Sciences	338,206	5.3	2,137,301	33.4	754,970	11.8
Humanities and others	19,704	0.3	118,006	1.8	62,823	1.0
Not specified	2,030	0.0	3,341	0.1	1,831	0.0
Technical	**4,294**	**0.1**	**10,330**	**0.2**	**73,137**	**1.1**
Natural and exact sciences	921	0.0	2,687	0.0	6,305	0.1
Engineering and technology	762	0.0	1,862	0.0	15,697	0.2
Health Sciences	266	0.0	110	0.0	31,388	0.5
Agricultural sciences	0	0.0	631	0.0	389	0.0
Social Sciences	1,728	0.0	4,173	0.1	12,280	0.2
Humanities and others	617	0.0	867	0.0	7,078	0.1
Not specified	0	0.0	0	0.0	0	0.0

Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.20 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2010

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**147,482**	**100.0**	**10.1**	**1.5**
Natural and exact sciences	8,686	5.9	0.5	0.1
Engineering and technology	29,884	20.3	1.6	0.3
Health Sciences	5,728	3.9	0.4	0.1
Agricultural sciences	4,137	2.8	0.3	0.0
Social Sciences	89,848	60.9	6.6	0.9
Humanities and others	8,292	5.6	0.8	0.1
Not specified	906	0.6	0.0	0.0
Postgraduate		**4,416**	**3.0**	**0.6 0.0**
Natural and exact sciences	485	0.3	0.1	0.0
Engineering and technology	99	0.1	0.0	0.0
Health Sciences	12	0.0	0.0	0.0
Agricultural sciences	424	0.3	0.0	0.0
Social Sciences	3,302	2.2	0.5	0.0
Humanities and others	95	0.1	0.0	0.0
Not specified	0	0.0	0.0	0.0
Bachelor's degree	**140,875**	**95.5**	**8.5**	**1.4**
Natural and exact sciences	8,085	5.5	0.4	0.1
Engineering and technology	29,031	19.7	1.3	0.3
Health Sciences	5,291	3.6	0.3	0.1
Agricultural sciences	3,711	2.5	0.2	0.0
Social Sciences	85,715	58.1	5.5	0.8
Humanities and others	8,194	5.6	0.7	0.1
Not specified	847	0.6	0.0	0.0
Technical	**2,190**	**1.5**	**1.0**	**0.0**
Natural and exact sciences	116	0.1	0.0	0.0
Engineering and technology	754	0.5	0.2	0.0
Health Sciences	425	0.3	0.1	0.0
Agricultural sciences	2	0.0	0.1	0.0
Social Sciences	831	0.6	0.6	0.0
Humanities and others	3	0.0	0.1	0.0
Not specified	60	0.0	0.0	0.0

[1/] Involves Human Resources in Science and Technology that are unemployed or inactive.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.21 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2011

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**160,758**	**100.0**	**10.2**	**1.6**
Natural and exact sciences	9,616	6.0	0.5	0.1
Engineering and technology	33,850	23.0	1.5	0.3
Health Sciences	6,475	4.4	0.4	0.1
Agricultural sciences	4,361	3.0	0.3	0.0
Social Sciences	97,319	66.0	6.7	0.9
Humanities and others	8,152	5.5	0.8	0.1
Not specified	985	0.7	0.0	0.0
Postgraduate	**7,960**	**5.4**	**0.7**	**0.1**
Natural and exact sciences	577	0.4	0.1	0.0
Engineering and technology	227	0.2	0.0	0.0
Health Sciences	162	0.1	0.0	0.0
Agricultural sciences	530	0.4	0.0	0.0
Social Sciences	6,141	4.2	0.5	0.1
Humanities and others	323	0.2	0.0	0.0
Not specified		0.0	0.0	0.0
Bachelor's degree	**149,897**	**101.6**	**8.3**	**1.4**
Natural and exact sciences	8,829	6.0	0.4	0.1
Engineering and technology	32,040	21.7	1.1	0.3
Health Sciences	5,631	3.8	0.3	0.1
Agricultural sciences	4,071	2.8	0.2	0.0
Social Sciences	90,148	61.1	5.5	0.9
Humanities and others	8,266	5.6	0.7	0.1
Not specified	913	0.6	0.0	0.0
Technical	**3,580**	**2.4**	**1.3**	**0.0**
Natural and exact sciences	210	0.1	0.0	0.0
Engineering and technology	1,583	1.1	0.3	0.0
Health Sciences	682	0.5	0.1	0.0
Agricultural sciences	1	0.0	0.1	0.0
Social Sciences	1,030	0.7	0.7	0.0
Humanities and others	1	0.0	0.1	0.0
Not specified	73	0.0	0.0	0.0

[1/] Involves Human Resources in Science and Technology that are unemployed or inactive.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.22 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2012

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**168,373**	**100.0**	**10.3**	**1.6**
Natural and exact sciences	10,072	6.0	0.4	0.1
Engineering and technology	35,453	21.1	1.4	0.3
Health Sciences	6,781	4.0	0.5	0.1
Agricultural sciences	4,567	2.7	0.3	0.0
Social Sciences	101,929	60.5	6.8	1.0
Humanities and others	8,538	5.1	0.9	0.1
Not specified	1,032	0.6	0.0	0.0
Postgraduate	**8,338**	**5.0**	**0.7**	**0.1**
Natural and exact sciences	605	0.4	0.1	0.0
Engineering and technology	237	0.1	0.0	0.0
Health Sciences	170	0.1	0.0	0.0
Agricultural sciences	556	0.3	0.0	0.0
Social Sciences	6,432	3.8	0.5	0.1
Humanities and others	338	0.2	0.0	0.0
Not specified		0.0	0.0	0.0
Bachelor's degree	**156,998**	**93.2**	**8.0**	**1.5**
Natural and exact sciences	9,247	5.5	0.4	0.1
Engineering and technology	33,558	19.9	0.9	0.3
Health Sciences	5,898	3.5	0.3	0.1
Agricultural sciences	4,264	2.5	0.2	0.0
Social Sciences	94,417	56.1	5.4	0.9
Humanities and others	8,658	5.1	0.8	0.1
Not specified	956	0.6	0.0	0.0
Technical	**3,750**	**2.2**	**1.5**	**0.0**
Natural and exact sciences	220	0.1	0.0	0.0
Engineering and technology	1,658	1.0	0.4	0.0
Health Sciences	714	0.4	0.1	0.0
Agricultural sciences	1	0.0	0.1	0.0
Social Sciences	1,079	0.6	0.8	0.0
Humanities and others	1	0.0	0.1	0.0
Not specified	76	0.0	0.0	0.0

[1/] Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

III.23 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2013

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**176,981**	**100.0**	**10.4**	**1.6**
Natural and exact sciences	10,587	6.0	0.4	0.1
Engineering and technology	37,266	21.1	1.3	0.3
Health Sciences	7,128	4.0	0.5	0.1
Agricultural sciences	5,067	2.7	0.3	0.0
Social Sciences	107,140	60.5	7.0	1.0
Humanities and others	9,457	5.1	0.9	0.1
Not specified	1,085	0.6	0.0	0.0
Postgraduate	**8,764**	**5.0**	**0.8**	**0.1**
Natural and exact sciences	636	0.4	0.1	0.0
Engineering and technology	250	0.1	0.0	0.0
Health Sciences	178	0.1	0.1	0.0
Agricultural sciences	584	0.3	0.0	0.0
Social Sciences	6,761	3.8	0.6	0.1
Humanities and others	355	0.2	0.0	0.0
Not specified	0	0.0	0.0	0.0
Bachelor's degree	**165,024**	**93.2**	**7.8**	**1.5**
Natural and exact sciences	9,720	5.5	0.3	0.1
Engineering and technology	35,274	19.9	0.7	0.3
Health Sciences	6,199	3.5	0.3	0.1
Agricultural sciences	4,482	2.5	0.2	0.0
Social Sciences	99,245	56.1	5.4	0.9
Humanities and others	9,100	5.1	0.8	0.1
Not specified	1,005	0.6	0.0	0.0
Technical	**3,941**	**2.2**	**1.8**	**0.0**
Natural and exact sciences	232	0.1	0.0	0.0
Engineering and technology	1,742	1.0	0.5	0.0
Health Sciences	750	0.4	0.1	0.0
Agricultural sciences	1	0.0	0.1	0.0
Social Sciences	1,134	0.6	1.0	0.0
Humanities and others	1	0.0	0.1	0.0
Not specified	80	0.0	0.0	0.0

[1/] Involves Human Resources in Science and Technology that are unemployed or inactive.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

III.24 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2014[e/]

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**145,104**	**100.0**	**8.4**	**1.6**
Natural and exact sciences	8,592	5.9	0.5	0.1
Engineering and technology	30,466	21.0	1.8	0.3
Health Sciences	5,756	4.0	0.3	0.1
Agricultural sciences	4,067	2.8	0.2	0.1
Social Sciences	87,755	60.5	5.1	0.8
Humanities and others	7,666	5.3	0.4	0.1
Not specified	802	0.6	0.0	0.1
Postgraduate	**7,185**	**5.0**	**0.4**	**0.2**
Natural and exact sciences	521	0.4	0.0	0.0
Engineering and technology	205	0.1	0.0	0.0
Health Sciences	146	0.1	0.0	0.0
Agricultural sciences	479	0.3	0.0	0.0
Social Sciences	5,543	3.8	0.3	0.1
Humanities and others	291	0.2	0.0	0.0
Not specified	0	0.0	0.0	0.0
Bachelor's degree	**135,301**	**93.2**	**7.8**	**1.3**
Natural and exact sciences	7,969	5.5	0.5	0.1
Engineering and technology	28,921	19.9	1.7	0.3
Health Sciences	5,083	3.5	0.3	0.1
Agricultural sciences	3,675	2.5	0.2	0.0
Social Sciences	81,369	56.1	4.7	0.7
Humanities and others	7,461	5.1	0.4	0.1
Not specified	824	0.6	0.0	0.0
Technical	**3,231**	**2.2**	**0.2**	**0.1**
Natural and exact sciences	190	0.1	0.0	0.0
Engineering and technology	1,429	1.0	0.1	0.0
Health Sciences	615	0.4	0.0	0.0
Agricultural sciences	1	0.0	0.0	0.0
Social Sciences	930	0.6	0.1	0.0
Humanities and others	1	0.0	0.0	0.0
Not specified	66	0.0	0.0	0.0

[e/] Estimated figures.
Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.25 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2015[e/]

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**165,175**	**100.0**	**10.8**	**1.6**
Natural and exact sciences	9,853	6.0	0.4	0.1
Engineering and technology	34,922	21.6	1.3	0.3
Health Sciences	6,631	4.1	0.6	0.1
Agricultural sciences	4,604	2.7	0.3	0.0
Social Sciences	99,987	61.7	7.2	1.0
Humanities and others	8,573	5.0	1.0	0.1
Not specified	955	0.6	0.0	0.0
Postgraduate	**8,575**	**5.2**	**0.9**	**0.1**
Natural and exact sciences	600	0.4	0.1	0.0
Engineering and technology	248	0.2	0.1	0.0
Health Sciences	185	0.1	0.1	0.0
Agricultural sciences	554	0.3	0.0	0.0
Social Sciences	6,629	4.1	0.6	0.1
Humanities and others	359	0.2	0.0	0.0
Not specified	0	0.0	0.0	0.0
Bachelor's degree	**153,765**	**94.9**	**7.6**	**1.5**
Natural and exact sciences	9,085	5.6	0.3	0.1
Engineering and technology	33,011	20.3	0.6	0.3
Health Sciences	5,776	3.6	0.3	0.1
Agricultural sciences	4,191	2.6	0.1	0.0
Social Sciences	92,341	57.0	5.4	0.9
Humanities and others	8,423	5.2	0.8	0.1
Not specified	938	0.6	0.0	0.0
Technical	**3,829**	**2.3**	**2.4**	**0.0**
Natural and exact sciences	227	0.1	0.0	0.0
Engineering and technology	1,721	1.1	0.6	0.0
Health Sciences	728	0.4	0.2	0.0
Agricultural sciences	1	0.0	0.1	0.0
Social Sciences	1,075	0.7	1.3	0.0
Humanities and others	0	0.0	0.1	0.0
Not specified	76	0.0	0.0	0.0

[e/] Estimated figures
Due to rounding, totals may not correspond to the sum of all figures shown.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.26 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2016

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**439,714**	**100.0**	**17.1**	**2.8**
Natural and exact sciences	30,559	6.9	1.2	0.2
Engineering and technology	115,775	26.3	4.5	0.7
Health Sciences	29,497	6.7	1.1	0.2
Agricultural sciences	6,519	1.5	0.3	0.0
Social Sciences	227,419	51.7	8.8	1.4
Humanities and others	28,025	6.4	1.1	0.2
Not specified	1,920	0.4	0.1	0.0
Postgraduate	**12,534**	**2.9**	**0.5**	**0.1**
Natural and exact sciences	1,016	0.2	0.0	0.0
Engineering and technology	3,212	0.7	0.1	0.0
Health Sciences	264	0.1	0.0	0.0
Agricultural sciences	590	0.1	0.0	0.0
Social Sciences	6,006	1.4	0.2	0.0
Humanities and others	1,446	0.3	0.1	0.0
Not specified	0	0.0	0.0	0.0
Bachelor's degree	**416,858**	**94.8**	**16.2**	**2.6**
Natural and exact sciences	29,123	6.6	1.1	0.2
Engineering and technology	109,408	24.9	4.2	0.7
Health Sciences	28,205	6.4	1.1	0.2
Agricultural sciences	5,929	1.3	0.2	0.0
Social Sciences	216,267	49.2	8.4	1.4
Humanities and others	26,006	5.9	1.0	0.2
Not specified	1,920	0.4	0.1	0.0
Technical	**10,322**	**2.3**	**0.4**	**0.1**
Natural and exact sciences	420	0.1	0.0	0.0
Engineering and technology	3,155	0.7	0.1	0.0
Health Sciences	1,028	0.2	0.0	0.0
Agricultural sciences	0	0.0	0.0	0.0
Social Sciences	5,146	1.2	0.2	0.0
Humanities and others	573	0.1	0.0	0.0
Not specified	0	0.0	0.0	0.0

[1/] Involves Human Resources in Science and Technology that are unemployed or inactive.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.27 DISTRIBUTION OF THE POPULATION COMPLETED EDUCATION LEVEL ISCED 5 OR HIGHER AND IS UNEMPLOYED, 2017

	Unemployed	Participation in the stock of human resources in science and technology unemployed	Participation within the potential stock of human resources in science and technology[1/]	Participation within the human resources stock of science and technology
Total	**374,581**	**100.0**	**13.6**	**2.3**
Natural and exact sciences	17,296	4.6	0.6	0.1
Engineering and technology	83,931	22.4	3.0	0.5
Health Sciences	20,893	5.6	0.8	0.1
Agricultural sciences	6,814	1.8	0.2	0.0
Social Sciences	220,578	58.9	8.0	1.3
Humanities and others	23,857	6.4	0.9	0.1
Not specified	1,212	0.3	0.0	0.0
Postgraduate	**16,532**	**4.4**	**0.6**	**0.1**
Natural and exact sciences	995	0.3	0.0	0.0
Engineering and technology	3,032	0.8	0.1	0.0
Health Sciences	137	0.0	0.0	0.0
Agricultural sciences	133	0.0	0.0	0.0
Social Sciences	10,619	2.8	0.4	0.1
Humanities and others	1,442	0.4	0.1	0.0
Not specified	174	0.0	0.0	0.0
Bachelor's degree	**349,612**	**93.3**	**12.7**	**2.1**
Natural and exact sciences	16,095	4.3	0.6	0.1
Engineering and technology	77,087	20.6	2.8	0.5
Health Sciences	19,886	5.3	0.7	0.1
Agricultural sciences	6,681	1.8	0.2	0.0
Social Sciences	208,008	55.5	7.5	1.3
Humanities and others	20,817	5.6	0.8	0.1
Not specified	1,038	0.3	0.0	0.0
Technical	**8,437**	**2.3**	**0.3**	**0.1**
Natural and exact sciences	206	0.1	0.0	0.0
Engineering and technology	3,812	1.0	0.1	0.0
Health Sciences	870	0.2	0.0	0.0
Agricultural sciences	0	0.0	0.0	0.0
Social Sciences	1,951	0.5	0.1	0.0
Humanities and others	1,598	0.4	0.1	0.0
Not specified	0	0.0	0.0	0.0

[1/] Involves Human Resources in Science and Technology that are unemployed or inactive.
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.28 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2010

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**1,417,797**	**100.0**	**36.3**
Natural and exact sciences	89,985	6.3	2.3
Engineering and technology	242,678	17.1	6.2
Health Sciences	158,019	11.1	4.0
Agricultural sciences	22,706	1.6	0.6
Social Sciences	858,626	60.6	22.0
Humanities and others	41,406	2.9	1.1
Not specified	4,378	0.3	0.1
Postgraduate	**55,760**	**3.9**	**1.4**
Natural and exact sciences	7,169	0.5	0.2
Engineering and technology	2,065	0.1	0.1
Health Sciences	11,916	0.8	0.3
Agricultural sciences	1,416	0.1	0.0
Social Sciences	32,129	2.3	0.8
Humanities and others	1,063	0.1	0.0
Bachelor's degree	**1,040,860**	**73.4**	**26.6**
Natural and exact sciences	66,280	4.7	1.7
Engineering and technology	146,671	10.3	3.8
Health Sciences	114,066	8.0	2.9
Agricultural sciences	19,972	1.4	0.5
Social Sciences	653,489	46.1	16.7
Humanities and others	36,004	2.5	0.9
Not specified	4,378	0.3	0.1
Technical	**321,177**	**22.7**	**8.2**
Natural and exact sciences	16,536	1.2	0.4
Engineering and technology	93,941	6.6	2.4
Health Sciences	32,037	2.3	0.8
Agricultural sciences	1,318	0.1	0.0
Social Sciences	173,008	12.2	4.4
Humanities and others	4,338	0.3	0.1

Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.29 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2011

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**1,453,315**	**100.0**	**36.1**
Natural and exact sciences	92,239	6.3	2.3
Engineering and technology	248,758	17.1	6.2
Health Sciences	161,978	11.1	4.0
Agricultural sciences	23,275	1.6	0.6
Social Sciences	880,136	60.6	21.8
Humanities and others	42,443	2.9	1.1
Not specified	4,487	0.3	0.1
Postgraduate	**57,157**	**3.9**	**1.4**
Natural and exact sciences	7,349	0.5	0.2
Engineering and technology	2,117	0.1	0.1
Health Sciences	12,215	0.8	0.3
Agricultural sciences	1,452	0.1	0.0
Social Sciences	32,934	2.3	0.8
Humanities and others	1,090	0.1	0.0
Bachelor's degree	**1,066,936**	**73.4**	**26.5**
Natural and exact sciences	67,940	4.7	1.7
Engineering and technology	150,346	10.3	3.7
Health Sciences	116,924	8.0	2.9
Agricultural sciences	20,472	1.4	0.5
Social Sciences	669,860	46.1	16.6
Humanities and others	36,906	2.5	0.9
Not specified	4,487	0.3	0.1
Technical	**329,223**	**22.7**	**8.2**
Natural and exact sciences	16,950	1.2	0.4
Engineering and technology	96,295	6.6	2.4
Health Sciences	32,839	2.3	0.8
Agricultural sciences	1,351	0.1	0.0
Social Sciences	177,342	12.2	4.4
Humanities and others	4,446	0.3	0.1

Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.30 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2012

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**1,496,869**	**100.0**	**14.1**
Natural and exact sciences	95,003	6.3	0.9
Engineering and technology	256,213	17.1	2.4
Health Sciences	166,832	11.1	1.6
Agricultural sciences	23,972	1.6	0.2
Social Sciences	906,513	60.6	8.5
Humanities and others	43,715	2.9	0.4
Not specified	4,622	0.3	0.0
Postgraduate	**58,869**	**3.9**	**0.6**
Natural and exact sciences	7,569	0.5	0.1
Engineering and technology	2,181	0.1	0.0
Health Sciences	12,581	0.8	0.1
Agricultural sciences	1,495	0.1	0.0
Social Sciences	33,921	2.3	0.3
Humanities and others	1,123	0.1	0.0
Bachelor's degree	**1,098,911**	**73.4**	**10.3**
Natural and exact sciences	69,976	4.7	0.7
Engineering and technology	154,852	10.3	1.5
Health Sciences	120,428	8.0	1.1
Agricultural sciences	21,086	1.4	0.2
Social Sciences	689,935	46.1	6.5
Humanities and others	38,012	2.5	0.4
Not specified	4,622	0.3	0.0
Technical	**339,089**	**22.7**	**3.2**
Natural and exact sciences	17,458	1.2	0.2
Engineering and technology	99,181	6.6	0.9
Health Sciences	33,824	2.3	0.3
Agricultural sciences	1,391	0.1	0.0
Social Sciences	182,657	12.2	1.7
Humanities and others	4,580	0.3	0.0

Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.31 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2013

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**1,608,716**	**100.0**	**14.7**
Natural and exact sciences	102,102	6.3	0.9
Engineering and technology	275,357	17.1	2.5
Health Sciences	179,298	11.1	1.6
Agricultural sciences	25,763	1.6	0.2
Social Sciences	974,248	60.6	8.9
Humanities and others	46,981	2.9	0.4
Not specified	4,967	0.3	0.0
Postgraduate	**63,268**	**3.9**	**0.6**
Natural and exact sciences	8,134	0.5	0.1
Engineering and technology	2,344	0.1	0.0
Health Sciences	13,521	0.8	0.1
Agricultural sciences	1,607	0.1	0.0
Social Sciences	36,456	2.3	0.3
Humanities and others	1,207	0.1	0.0
Bachelor's degree	**1,181,021**	**73.4**	**10.8**
Natural and exact sciences	75,205	4.7	0.7
Engineering and technology	166,422	10.3	1.5
Health Sciences	129,426	8.0	1.2
Agricultural sciences	22,661	1.4	0.2
Social Sciences	741,487	46.1	6.8
Humanities and others	40,853	2.5	0.4
Not specified	4,967	0.3	0.0
Technical	**364,426**	**22.7**	**3.3**
Natural and exact sciences	18,762	1.2	0.2
Engineering and technology	106,591	6.6	1.0
Health Sciences	36,351	2.3	0.3
Agricultural sciences	1,495	0.1	0.0
Social Sciences	196,305	12.2	1.8
Humanities and others	4,922	0.3	0.0

Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.32 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2014[e/]

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**1,661,791**	**100.0**	**8.0**
Natural and exact sciences	105,470	6.3	0.5
Engineering and technology	284,442	17.1	1.4
Health Sciences	185,213	11.1	0.9
Agricultural sciences	26,613	1.6	0.1
Social Sciences	1,006,390	60.6	4.9
Humanities and others	48,531	2.9	0.2
Not specified	5,131	0.3	0.0
Postgraduate	**65,355**	**3.9**	**0.3**
Natural and exact sciences	8,403	0.5	0.0
Engineering and technology	2,421	0.1	0.0
Health Sciences	13,967	0.8	0.1
Agricultural sciences	1,660	0.1	0.0
Social Sciences	37,659	2.3	0.2
Humanities and others	1,247	0.1	0.0
Bachelor's degree	**1,219,986**	**73.4**	**5.9**
Natural and exact sciences	77,686	4.7	0.4
Engineering and technology	171,913	10.3	0.8
Health Sciences	133,696	8.0	0.6
Agricultural sciences	23,409	1.4	0.1
Social Sciences	765,950	46.1	3.7
Humanities and others	42,201	2.5	0.2
Not specified	5,131	0.3	0.0
Technical	**376,449**	**22.7**	**1.8**
Natural and exact sciences	19,381	1.2	0.1
Engineering and technology	110,108	6.6	0.5
Health Sciences	37,550	2.3	0.2
Agricultural sciences	1,544	0.1	0.0
Social Sciences	202,781	12.2	1.0
Humanities and others	5,084	0.3	0.0

[e/] Estimated figures
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.33 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2015[e/]

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**1,661,791**	**100.0**	**8.0**
Natural and exact sciences	105,470	6.3	0.5
Engineering and technology	284,442	17.1	1.4
Health Sciences	185,213	11.1	0.9
Agricultural sciences	26,613	1.6	0.1
Social Sciences	1,006,390	60.6	4.9
Humanities and others	48,531	2.9	0.2
Not specified	5,131	0.3	0.0
Postgraduate	**65,355**	**3.9**	**0.3**
Natural and exact sciences	8,403	0.5	0.0
Engineering and technology	2,421	0.1	0.0
Health Sciences	13,967	0.8	0.1
Agricultural sciences	1,660	0.1	0.0
Social Sciences	37,659	2.3	0.2
Humanities and others	1,247	0.1	0.0
Bachelor's degree	**1,219,986**	**73.4**	**5.9**
Natural and exact sciences	77,686	4.7	0.4
Engineering and technology	171,913	10.3	0.8
Health Sciences	133,696	8.0	0.6
Agricultural sciences	23,409	1.4	0.1
Social Sciences	765,950	46.1	3.7
Humanities and others	42,201	2.5	0.2
Not specified	5,131	0.3	0.0
Technical	**376,449**	**22.7**	**1.8**
Natural and exact sciences	19,381	1.2	0.1
Engineering and technology	110,108	6.6	0.5
Health Sciences	37,550	2.3	0.2
Agricultural sciences	1,544	0.1	0.0
Social Sciences	202,781	12.2	1.0
Humanities and others	5,084	0.3	0.0

[e/] Estimated figures
Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.34 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2016

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**2,139,152**	**100.0**	**13.5**
Natural and exact sciences	126,559	5.9	0.8
Engineering and technology	277,485	13.0	1.8
Health Sciences	201,192	9.4	1.3
Agricultural sciences	43,417	2.0	0.3
Social Sciences	1,328,565	62.1	8.4
Humanities and others	153,865	7.2	1.0
Not specified	8,069	0.4	0.1
Postgraduate	**148,405**	**6.9**	**0.9**
Natural and exact sciences	13,432	0.6	0.1
Engineering and technology	7,675	0.4	0.0
Health Sciences	15,778	0.7	0.1
Agricultural sciences	4,480	0.2	0.0
Social Sciences	86,367	4.0	0.5
Humanities and others	17,435	0.8	0.1
Not specified	3,238	0.2	0.0
Bachelor's degree	**1,900,592**	**88.8**	**12.0**
Natural and exact sciences	101,416	4.7	0.6
Engineering and technology	256,931	12.0	1.6
Health Sciences	175,034	8.2	1.1
Agricultural sciences	38,382	1.8	0.2
Social Sciences	1,214,018	56.8	7.7
Humanities and others	110,088	5.1	0.7
Not specified	4,723	0.2	0.0
Technical	**90,155**	**4.2**	**0.6**
Natural and exact sciences	11,711	0.5	0.1
Engineering and technology	12,879	0.6	0.1
Health Sciences	10,380	0.5	0.1
Agricultural sciences	555	0.0	0.0
Social Sciences	28,180	1.3	0.2
Humanities and others	26,342	1.2	0.2
Not specified	108	0.0	0.0

Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.35 DISTRIBUTION OF THE POPULATION THAT COMPLETED ISCED 5 EDUCATION LEVEL OR HIGHER AND IS INACTIVE, 2017

	Unemployed	Participation within the potential stock of human resources in science and technology inactive	Participation within the human resources stock of science and technology
Total	**2,387,595**	**100.0**	**14.6**
Natural and exact sciences	151,869	6.4	0.9
Engineering and technology	345,470	14.5	2.1
Health Sciences	271,122	11.4	1.7
Agricultural sciences	55,956	2.3	0.3
Social Sciences	1,419,732	59.5	8.7
Humanities and others	137,748	5.8	0.8
Not specified	5,698	0.2	0.0
Postgraduate	**178,487**	**7.5**	**1.1**
Natural and exact sciences	22,197	0.9	0.1
Engineering and technology	10,794	0.5	0.1
Health Sciences	24,154	1.0	0.1
Agricultural sciences	3,967	0.2	0.0
Social Sciences	107,696	4.5	0.7
Humanities and others	8,607	0.4	0.1
Not specified	1,072	0.0	0.0
Bachelor's degree	**2,106,229**	**88.2**	**12.9**
Natural and exact sciences	123,893	5.2	0.8
Engineering and technology	321,827	13.5	2.0
Health Sciences	224,684	9.4	1.4
Agricultural sciences	50,895	2.1	0.3
Social Sciences	1,279,420	53.6	7.8
Humanities and others	101,284	4.2	0.6
Not specified	4,226	0.2	0.0
Technical	**102,879**	**4.3**	**0.6**
Natural and exact sciences	5,779	0.2	0.0
Engineering and technology	12,849	0.5	0.1
Health Sciences	22,284	0.9	0.1
Agricultural sciences	1,094	0.0	0.0
Social Sciences	32,616	1.4	0.2
Humanities and others	27,857	1.2	0.2
Not specified	400	0.0	0.0

Source: Author's calculations based on information from INEGI, database of the National Occupation and Employment Survey, 2010-2.

II.36 SNI MEMBERS BY GENDER, 2010-2017

Number

Year	Number of members			Annual variation %
	Total	Men	Women	
2010	16,600	10,973	5,627	6.65
2011	17,639	11,629	6,010	6.26
2012	18,555	12,224	6,331	5.19
2013	19,747	12,878	6,869	6.42
2014	21,358	13,782	7,576	8.16
2015	23,316	14,970	8,346	9.16
2016	25,072	15,991	9,081	7.53
2017	27,186	17,204	9,982	8.43

Source: SNI database.

II.37 SNI BUDGET, 2010-2017

Millions of pesos

Year	Amount
2010	2,514
2011	2,612
2012	2,803
2013	3,148
2014	3,722
2015	3,992
2016	4,448
2017	4,600

Source: SNI database.

II.38 MEMBERS OF THE SNI BY GENDER, 2017

Gender	Number of members	Percentage
Female	9,982	37
Male	17,204	63
Total	**27,186**	**100**

Source: SNI database.

II.39 SNI BY ORIGIN, 2017

Origin	SNI number	Percentage
Mexican	25,038	92
Foreign	2,148	8
Total	**27,186**	**100**

Source: SNI database

II.40 SNI MEMBERS BY FEDERAL ENTITY, 2010-2017

Number

Federal entity	2010	2011	2012	2013	2014	2015	2016	2017
Aguascalientes	83	101	106	114	133	173	201	230
Baja California	506	525	566	612	658	715	779	841
Baja California Sur	185	205	217	218	230	250	252	259
Campeche	76	89	101	101	111	131	137	143
Coahuila	216	250	273	283	299	340	365	421
Colima	130	143	156	152	175	192	200	218
Chiapas	177	184	189	206	240	278	314	351
Chihuahua	223	241	278	308	342	381	423	475
Ciudad de México	6,331	6,645	6,853	7,152	7,525	7,831	8,129	8,603
Durango	73	96	112	118	140	155	184	196
Guanajuato	46	559	609	685	719	801	865	940
Guerrero	188	48	61	77	91	102	113	138
Hidalgo	883	199	222	239	281	323	362	386
Jalisco	995	919	959	1,001	1,084	1,197	1,286	1,466
México	513	1,016	1,012	1,110	1,203	1,361	1,456	1,557
Michoacán	489	517	524	574	624	687	710	748
Morelos	820	853	864	901	941	1,008	1,034	1,105
Nayarit	39	50	66	88	107	116	119	128
Nuevo León	617	663	699	770	856	962	1,043	1,216
Oaxaca	182	198	227	236	241	270	297	312
Puebla	596	630	683	740	799	881	936	1,017
Querétaro	386	422	453	487	548	617	657	719
Quintana Roo	75	87	94	110	126	129	134	151
San Luis Potosí	343	368	419	445	509	573	628	693
Sinaloa	218	232	249	283	340	401	389	420
Sonora	341	386	401	421	454	475	559	597
Tabasco	86	90	100	112	131	158	165	192
Tamaulipas	154	166	171	162	177	196	231	261
Tlaxcala	89	103	109	115	128	145	151	170
Veracruz	463	503	530	586	629	701	738	771
Yucatán	377	410	427	466	511	552	591	648
Zacatecas	142	150	153	168	185	201	199	228
Not specified	558	591	672	707	821	1,014	1,425	1,586
Total	**16,600**	**17,639**	**18,555**	**19,747**	**21,358**	**23,316**	**25,072**	**27,186**

Source: SNI database

II.41 SNI DECENTRALIZATION, 2010-2017

Millions of pesos

Year	Mexico City	Rest of the country
2010	38.1	61.9
2011	37.7	62.3
2012	36.9	63.1
2013	36.2	63.8
2014	35.2	64.8
2015	33.6	66.4
2016	32.4	67.6
2017	31.6	68.4

Source: SNI database

II.42 SNI RESEARCHES IN EVERY THOUSAND INHABITANTS, 2017

Federal Entity	SNR Number in every thousand inhabitants
Ciudad de México	0.965
Morelos	0.580
Baja California Sur	0.364
Querétaro	0.353
Yucatán	0.309
Colima	0.307
San Luis Potosí	0.255
Baja California	0.254
Nuevo León	0.238
Sonora	0.209
Jalisco	0.187
Aguascalientes	0.175
Puebla	0.165
Michoacán	0.163
Guanajuato	0.161
Campeche	0.159
Zacatecas	0.144
Coahuila	0.142
Sinaloa	0.142
Hidalgo	0.135
Tlaxcala	0.134
Chihuahua	0.134
Durango	0.112
Nayarit	0.108
Quintana Roo	0.101
México	0.096
Veracruz	0.095
Tabasco	0.080
Oaxaca	0.079
Tamaulipas	0.076
Chiapas	0.067
Guerrero	0.039
Total nacional	**0.227**

Sources: INEGI and SNI Data Base

II.43 SNI MEMBERS BY CATEGORY AND LEVEL, 2010-2017

Number of researches

Year	Amount	National Researcher			Total
		Level I	Level II	Level III	
2010	3,052	8,970	3,172	1,406	16,600
2011	3,390	9,577	3,135	1,537	17,639
2012	3,604	10,059	3,311	1,581	18,555
2013	3,712	10,758	3,576	1,701	19,747
2014	3,991	11,673	3,852	1,842	21,358
2015	4,575	12,775	3,964	2,002	23,316
2016	5,044	13,078	4,222	2,098	25,072
2017	5,817	14,662	4,452	2,255	27,186

Source: SNI database.

II.44 SNI MEMBERS BY FIELD OF SCIENCE, 2010-2017

Number

Year	Mathematics and Earth Science	Biology and Chemistry	Medicine and Health Sciences	Humanities and Behavioral Sciences	Social Sciences	Biotechnology and Agricultural	Engineering	Total
2010	2,707	2,904	1,596	2,466	2,615	1,864	2,448	16,600
2011	2,853	3,086	1,758	2,622	2,686	1,993	2,641	17,639
2012	3,004	3,162	1,914	2,773	2,747	2,177	2,778	18,555
2013	3,203	3,360	2,035	2,918	2,996	2,326	2,909	19,747
2014	3,458	3,696	2,233	3,121	3,336	2,442	3,072	21,358
2015	3,782	3,993	2,511	3,380	3,672	2,612	3,366	23,316
2016	3,994	4,084	2,847	3,735	3,983	2,842	3,587	25,072
2017	4,244	4,266	3,247	4,032	4,302	3,163	3,932	27,186

Source: SNI database.

II.45 MEMBERS OF THE SNI BY AREA OF KNOWLEDGE, 2017

Area of knowledge	Number of Members	Percentage
Mathematical and earth physical sciences	4,244	16
Biology and chemistry	4,266	16
Medicine and health sciences	3,247	12
Humanities and behavioral sciences	4,032	15
Social Sciences	4,302	16
Biotechnology and agricultural sciences	3,163	11
Engineering	3,932	14
Total	**27,186**	**100**

Source: SNI database.

II.46 SNI EMERITUS BY AREA OF KNOWLEDGE, 2017

Area of knowledge	Number of Members	Percentage
Mathematical and earth physical sciences	41	23
Biology and chemistry	42	24
Medicine and health sciences	20	11
Humanities and behavioral sciences	40	22
Social Sciences	19	11
Biotechnology and agricultural sciences	11	6
Engineering	5	3
Total	**178**	**100**

Source: SNI database.

II.47 SNI BY EDUCATIONAL LEVEL, 2017

Educational Level	Number of members	Percentage
Bachelor's degree	351	1
Master's degree	635	3
Doctorate	26,200	96
Total	**27,186**	**100**

Source: SNI database.

II.48 MAIN TEN INSTITUTIONS WITH MORE SNI MEMBERS, 2017

Institution	Number of members
National Autonomous University of Mexico	4,598
National Polytechnical Institute	1,200
Metropolitan Autonomous University	1,170
University of Guadalajara	1,060
IPN's Center for Research and Advanced Studies	809
Autonomous University of Nuevo Leon	762
Eminent Autonomous University of Puebla	639
State of Mexico Autonomous University	519
University of Guanajuato	506
Universidad Autónoma de San Luis Potosí	497
Total	**11,760**

Source: SNI database.

II.49 MAIN 10 COUNTRIES OF ORIGIN OF RESEARCHERS SNI, 2017

Country	Number of researchers
Spain	301
Colombia	160
United States of America	154
Argentina	135
Cuba	133
Germany	115
France	112
Italy	90
Russia	88
India	83
Total	**1,371**

Source: SNI database.

II.50 MAIN 10 COUNTRIES OF RESIDENCE OF SNI RESEARCHERS, 2017

Country	Number of researchers
United States of America	309
Spain	62
UK	51
Canada	46
France	42
Germany	36
Brazil	21
Australia	16
Italy	15
Sweden	14
Total	**612**

Source: SNI database.

II.51 SNI BY ENTITY, AREA, CATEGORY AND LEVEL, 2017

Number

Área, categoría y nivel \ Federal Entity	Aguascalientes	Baja California	Baja California Sur	Campeche	Chiapas	Chihuahua	Ciudad de México	Coahuila	Colima	Durango	Guanajuato	Guerrero	Hidalgo	Jalisco	México	Michoacán	Morelos	Nayarit	Nuevo León	Oaxaca	Puebla	Querétaro	Quintana Roo	San Luis Potosí	Sinaloa	Sonora	Tabasco	Tamaulipas	Tlaxcala	Veracruz	Yucatán	Zacatecas	Not specified	Total general
Area 1 Physical Sciences Mathematics and Earth	**26**	**241**	**53**	**26**	**36**	**47**	**19**	**28**	**1,389**	**4**	**138**	**262**	**14**	**45**	**125**	**163**	**148**	**7**	**99**	**54**	**260**	**129**	**22**	**142**	**53**	**117**	**25**	**24**	**12**	**63**	**82**	**38**	**353**	**4,244**
Level 1	11	93	25	14	24	25	9	15	564	2	68	97	9	27	65	63	52	5	57	25	117	52	5	61	21	54	16	11	6	36	38	19	178	1,864
Level 2	3	77	12	2		4	2	6	349		26	71	2	5	17	37	39		14	3	53	26	4	21	9	33	1	3		4	13	5	26	867
Level 3	32	4				2	1	286		7	40			3	28	37		6	1	39	23	2	26	6	6					11	1	22	583	
Candidate	12	39	12	10	12	18	6	6	190	2	37	54	3	13	40	35	20	2	22	25	51	28	11	34	17	24	8	10	6	23	20	13	127	930
Area 2 Biology and chemistry	**24**	**109**	**68**	**22**	**47**	**31**	**30**	**36**	**1,424**	**25**	**184**	**142**	**11**	**57**	**156**	**112**	**288**	**12**	**126**	**53**	**103**	**101**	**50**	**104**	**49**	**73**	**24**	**12**	**50**	**181**	**145**	**12**	**405**	**4,266**
Level 1	9	55	32	14	29	24	14	19	729	12	111	69	5	32	96	58	139	9	77	34	59	45	25	57	26	42	12	5	31	94	83	7	206	2,259
Level 2	4	16	16	3	11	2	4	6	270	2	24	29		13	21	23	60		16	2	15	24	15	16	6	11		2	6	45	16		37	715
Level 3	10	4		1	1	3	1	217		13	12		1	2	8	44		5		6	10	3	4	1	3			2	10	9		24	394	
Candidato	11	28	16	5	6	4	9	10	208	11	36	32	6	11	37	23	45	3	28	17	23	22	7	27	16	17	12	5	11	32	37	5	138	898
Area 3 Medicine and health sciences	**17**	**24**	**1**	**10**	**16**	**23**	**13**	**39**	**1,577**	**43**	**71**	**59**	**39**	**21**	**289**	**14**	**191**	**10**	**207**	**20**	**60**	**45**	**2**	**75**	**26**	**28**	**15**	**17**	**4**	**39**	**36**	**16**	**200**	**3,247**
Level 1	7	13	1	7	12	14	7	23	913	30	45	37	16	17	160	8	115	5	133	7	36	22		44	17	19	11	13	1	21	17	9	85	1,865
Level 2	3	2		2	1	2	1	6	300	4	7	7	2	1	38	2	43	2	28	1	10	8		14	2	5	1	1		8	10	3	35	549
Level 3	2			1			4	169	2	3	2	1	1	23		16		13		5	7		5		1		2		3		2	17	279	
Candidate	7	7		1	2	7	5	6	195	7	16	13	20	2	68	4	17	3	33	12	9	8	2	12	7	3	3	1	3	7	9	2	63	554
Area 4 Humanities and behavioral sciences	**42**	**74**	**9**	**18**	**77**	**92**	**17**	**45**	**1,532**	**17**	**246**	**93**	**20**	**35**	**299**	**156**	**88**	**10**	**130**	**34**	**168**	**64**	**17**	**77**	**62**	**83**	**14**	**34**	**28**	**153**	**106**	**53**	**139**	**4,032**
Level 1	24	41	7	12	51	60	12	25	765	9	151	58	11	27	186	100	56	6	79	19	104	37	13	57	38	53	9	25	23	101	67	30	67	2,323
Level 2	5	6	1	1	8	2	1	6	360	1	32	4		1	40	29	16		14	6	27	8	2	4	3	7		1	1	15	14	8	20	643
Level 3	1	1		1					206		1				14	6	5		2	3	7	4				3				9	4		20	287
Candidate	12	26	1	4	18	30	4	14	201	7	62	31	9	7	59	21	11	4	35	6	30	15	2	16	21	20	5	8	4	28	21	15	32	779
Area 5 Social Sciences	**51**	**173**	**23**	**9**	**92**	**91**	**42**	**42**	**1,512**	**14**	**335**	**92**	**21**	**63**	**307**	**113**	**82**	**25**	**204**	**46**	**179**	**74**	**39**	**57**	**77**	**75**	**24**	**47**	**39**	**110**	**44**	**41**	**159**	**4,302**
Level 1	24	81	15	5	58	59	28	28	687	12	204	52	14	32	172	60	43	17	110	20	99	37	31	28	46	38	16	28	27	64	29	25	59	2,248
Level 2	6	37	1	1	9	13	3	2	343		39	4	3	2	41	15	24	2	38	2	26	8	2	7	5	11	1	1	4	13	6	7	31	707
Level 3	1	20	1		5	2		1	250		10	1			19	5	5		6	1	7	2	1	2	3	1	2	2		5		4	11	367
Candidate	20	35	6	3	20	17	11	11	232	2	82	35	4	29	75	33	10	6	50	23	47	27	5	20	23	25	5	16	8	28	9	5	58	980
Area 6 Biotechnology and agricultural sciences	**21**	**58**	**99**	**33**	**62**	**78**	**109**	**14**	**310**	**80**	**403**	**107**	**28**	**81**	**106**	**70**	**117**	**53**	**169**	**67**	**73**	**96**	**4**	**92**	**117**	**139**	**55**	**71**	**20**	**137**	**140**	**25**	**129**	**3,163**
Level 1	14	29	50	22	33	50	73	9	146	50	226	39	16	34	59	36	60	37	83	40	42	46	2	47	62	65	35	42	14	80	74	19	54	1,688
Level 2	3	11	18	1	7	7	9	1	60	6	85	16	2	6	16	16	18	4	23	1	4	19		11	13	26	3	7	1	19	21	2	11	447
Level 3	4	12	1	3	1	3		39	2	29	13				1	13	2	8		2	9		6	3	10		4		3	12	1	8	189	
Candidate	4	14	19	9	19	20	24	4	65	22	63	39	10	41	31	17	26	10	55	26	25	22	2	28	39	38	17	18	5	35	33	3	56	839
Area 7 Engineering	**49**	**162**	**6**	**25**	**21**	**113**	**191**	**14**	**859**	**13**	**180**	**185**	**5**	**84**	**184**	**120**	**191**	**11**	**281**	**38**	**173**	**210**	**17**	**146**	**36**	**82**	**35**	**56**	**17**	**88**	**95**	**43**	**203**	**3,933**
Level 1	27	89	4	16	12	73	109	9	505	8	106	111	2	54	111	76	121	5	182	30	111	139	12	92	22	52	23	42	13	57	57	25	120	2,415
Level 2	1	19	1	4	1	14	43		176	2	19	24		7	21	20	30		32		31	21		16		6		3	1	3	11	5	13	524
Level 3	7				5	3		69			5			5	2	10		4		7	14	1	10						1	8		5	156	
Candidate	21	47	1	5	8	21	36	5	109	3	55	45	3	23	47	22	30	6	63	8	24	36	4	28	14	24	12	11	3	27	19	13	65	838
Total	**230**	**841**	**259**	**143**	**351**	**475**	**421**	**218**	**8,603**	**196**	**1,557**	**940**	**138**	**386**	**1,466**	**748**	**1,105**	**128**	**1,216**	**312**	**1,016**	**719**	**151**	**693**	**420**	**597**	**192**	**261**	**170**	**771**	**648**	**228**	**1,587**	**27,186**

Source: SNI database.

CHAPTER III
SCIENTIFIC PRODUCTION AND TECHNOLOGY AND ITS ECONOMIC IMPACT

III.1 PUBLISHED PAPERS BY MEXICAN SCIENTISTS, BY DISCIPLINE, 2007-2017

Discipline	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture	457	435	438	509	568	573	644	694	776	745	855
Space science	251	215	256	267	256	265	292	315	375	402	409
Biology and biochemistry	338	395	354	415	432	454	585	591	595	588	693
Molecular biology and genetics	131	160	168	157	178	215	229	266	275	309	319
Social Sciences	304	381	432	404	450	547	542	541	596	653	608
Computer's science	94	90	115	112	138	132	186	205	229	263	256
Ecology / Environment	493	506	499	614	628	749	764	835	845	950	1,062
Economy and business	64	96	86	109	97	114	111	94	136	158	161
Pharmacology and toxicology	181	182	191	211	215	239	227	268	262	262	335
Physical	993	1,022	999	909	1,086	1,127	1,245	1,146	1,141	1,310	1,291
Geosciences	254	277	331	322	330	378	382	393	405	481	464
Engineering	504	579	653	647	797	893	1,062	1,050	1,151	1,264	1,321
Immunology	130	141	135	155	187	162	193	215	237	252	270
Maths	269	272	267	301	288	348	364	365	375	366	431
Materials science	385	409	437	478	416	472	462	589	647	712	761
Clinical medicine	775	866	848	909	924	1,062	1,066	1,145	1,171	1,320	1,296
Microbiology	160	179	179	173	231	249	212	229	260	283	282
Multidisciplinary	4	12	3	5	3	9	16	21	19	24	12
Behavior and neurosciences	219	252	225	220	236	270	265	281	300	294	309
Plants and animals	992	1,147	1,116	1,191	1,305	1,392	1,450	1,558	1,716	1,745	1,745
Psychology / Psychiatry	131	124	130	172	166	151	170	179	185	178	205
Chemistry	880	896	896	983	1,080	1,106	1,148	1,167	1,329	1,324	1,395
Total	**8,009**	**8,636**	**8,758**	**9,263**	**10,011**	**10,907**	**11,615**	**12,147**	**13,025**	**13,883**	**14,480**

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted May 15th, 2018.

III.2 QUOTES RECEIVED BY PAPER PUBLICATION YEAR , IN MEXICO, 2007-2017

Discipline	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture	6,627	6,619	6,412	6,244	5,888	5,368	4,626	3,748	2,663	1,356	336
Space science	5,970	5,607	6,511	6,710	6,052	4,470	4,702	4,154	4,085	2,655	708
Biology and biochemistry	6,819	8,118	6,409	7,236	6,777	5,788	5,592	3,515	2,536	1,491	364
Molecular biology and genetics	4,621	4,488	4,970	3,763	5,181	4,285	4,666	3,646	3,192	2,051	309
Social Sciences	2,920	4,301	4,056	3,356	3,391	3,361	2,717	2,057	1,351	708	168
Computer's science	1,778	1,132	1,828	1,154	1,537	1,139	1,213	1,424	914	500	81
Ecology / Environment	8,865	9,493	9,060	9,304	8,088	7,489	7,141	5,339	4,262	2,282	514
Economy and business	812	835	740	837	532	573	342	225	340	182	41
Pharmacology and toxicology	2,753	3,317	2,529	2,808	2,409	2,235	1,801	1,651	1,051	643	148
Physical	12,628	14,485	13,477	14,470	16,661	24,210	15,667	10,085	7,481	5,280	933
Geosciences	5,404	5,540	6,837	4,782	4,490	4,061	2,946	2,345	1,735	906	226
Engineering	6,253	6,610	8,128	6,744	8,166	8,424	7,507	5,761	4,092	2,191	590
Immunology	3,064	3,762	3,620	3,767	3,480	2,422	2,280	2,016	1,715	975	206
Maths	1,271	1,592	1,088	1,529	2,069	1,430	1,156	890	593	298	70
Materials science	5,160	5,735	5,210	5,604	4,374	3,939	3,208	3,478	2,539	1,481	411
Clinical medicine	16,343	18,354	18,753	17,697	19,850	25,996	16,497	13,176	12,942	4,956	1,218
Microbiology	3,136	3,286	4,466	2,524	2,880	2,350	2,464	1,551	1,207	683	155
Multidisciplinary	225	335	1,063	97	109	171	648	152	140	64	4
Behavior and neurosciences	4,337	5,944	3,891	3,451	4,002	3,430	2,795	1,972	1,487	788	163
Plants and animals	12,412	14,048	12,761	11,224	12,401	9,931	8,216	7,538	4,788	2,427	568
Psychology / Psychiatry	2,632	1,944	1,910	2,764	2,050	849	982	1,041	584	432	119
Chemistry	12,811	14,321	13,167	13,084	12,929	11,182	9,577	7,914	6,385	3,131	872
Total	**126,841**	**139,866**	**136,886**	**129,149**	**133,316**	**133,103**	**106,743**	**83,678**	**66,082**	**35,480**	**8,204**

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.3 IMPACT FACTOR OF ANNUAL QUOTES OF MEXICAN PAPERS BY DISCIPLINE, 2007-2017

Discipline	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture	14.50	15.22	14.64	12.27	10.37	9.37	7.18	5.40	3.43	1.82	0.39
Space science	23.78	26.08	25.43	25.13	23.64	16.87	16.10	13.19	10.89	6.60	1.73
Biology and biochemistry	20.17	20.55	18.10	17.44	15.69	12.75	9.56	5.95	4.26	2.54	0.53
Molecular biology and genetics	35.27	28.05	29.58	23.97	29.11	19.93	20.38	13.71	11.61	6.64	0.97
Social Sciences	9.61	11.29	9.39	8.31	7.54	6.14	5.01	3.80	2.27	1.08	0.28
Computer's science	18.91	12.58	15.90	10.30	11.14	8.63	6.52	6.95	3.99	1.90	0.32
Ecology / Environment	17.98	18.76	18.16	15.15	12.88	10.00	9.35	6.39	5.04	2.40	0.48
Economy and business	12.69	8.70	8.60	7.68	5.48	5.03	3.08	2.39	2.50	1.15	0.25
Pharmacology and toxicology	15.21	18.23	13.24	13.31	11.20	9.35	7.93	6.16	4.01	2.45	0.44
Physical	12.72	14.17	13.49	15.92	15.34	21.48	12.58	8.80	6.56	4.03	0.72
Geosciences	21.28	20.00	20.66	14.85	13.61	10.74	7.71	5.97	4.28	1.88	0.49
Engineering	12.41	11.42	12.45	10.42	10.25	9.43	7.07	5.49	3.56	1.73	0.45
Immunology	23.57	26.68	26.81	24.30	18.61	14.95	11.81	9.38	7.24	3.87	0.76
Maths	4.72	5.85	4.07	5.08	7.18	4.11	3.18	2.44	1.58	0.81	0.16
Materials science	13.40	14.02	11.92	11.72	10.51	8.35	6.94	5.90	3.92	2.08	0.54
Clinical medicine	21.09	21.19	22.11	19.47	21.48	24.48	15.48	11.51	11.05	3.75	0.94
Microbiology	19.60	18.36	24.95	14.59	12.47	9.44	11.62	6.77	4.64	2.41	0.55
Multidisciplinary	56.25	27.92	354.33	19.40	36.33	19.00	40.50	7.24	7.37	2.67	0.33
Behavior and neurosciences	19.80	23.59	17.29	15.69	16.96	12.70	10.55	7.02	4.96	2.68	0.53
Plants and animals	12.51	12.25	11.43	9.42	9.50	7.13	5.67	4.84	2.79	1.39	0.33
Psychology / Psychiatry	20.09	15.68	14.69	16.07	12.35	5.62	5.78	5.82	3.16	2.43	0.58
Chemistry	14.56	15.98	14.70	13.31	11.97	10.11	8.34	6.78	4.80	2.36	0.63
Total	**420.13**	**386.56**	**701.97**	**323.80**	**323.61**	**255.62**	**232.34**	**151.88**	**113.92**	**58.70**	**12.39**

Annual Impact Factor: number of citations / number of articles published.
Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted May 15th, 2018.

III.4 PAPERS UNDER FIVE-YEAR ANALYSIS BY DISCIPLINE, 2007-2017

Discipline	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Agriculture	2,407	2,523	2,732	2,988	3,255	3,432	3,714
Space science	1,245	1,259	1,336	1,395	1,503	1,649	1,793
Biology and biochemistry	1,934	2,050	2,240	2,477	2,657	2,813	3,052
Molecular biology and genetics	794	878	947	1,045	1,163	1,294	1,398
Social Sciences	1,971	2,214	2,375	2,484	2,676	2,879	2,940
Computer's science	549	587	683	773	890	1,015	1,139
Ecology / Environment	2,740	2,996	3,254	3,590	3,821	4,143	4,456
Economy and business	452	502	517	525	552	613	660
Pharmacology and toxicology	980	1,038	1,083	1,160	1,211	1,258	1,354
Physical	5,009	5,143	5,366	5,513	5,745	5,969	6,133
Geosciences	1,514	1,638	1,743	1,805	1,888	2,039	2,125
Engineering	3,180	3,569	4,052	4,449	4,953	5,420	5,848
Immunology	748	780	832	912	994	1,059	1,167
Maths	1,397	1,476	1,568	1,666	1,740	1,818	1,901
Materials science	2,125	2,212	2,265	2,417	2,586	2,882	3,171
Clinical medicine	4,322	4,609	4,809	5,106	5,368	5,764	5,998
Microbiology	922	1,011	1,044	1,094	1,181	1,233	1,266
Multidisciplinary	27	32	36	54	68	89	92
Behavior and neurosciences	1,152	1,203	1,216	1,272	1,352	1,410	1,449
Plants and animals	5,751	6,151	6,454	6,896	7,421	7,861	8,214
Psychology / Psychiatry	723	743	789	838	851	863	917
Chemistry	4,735	4,961	5,213	5,484	5,830	6,074	6,363
Total	**44,677**	**47,575**	**50,554**	**53,943**	**57,705**	**61,577**	**65,150**

The sum of quotes from all disciplines does not coincide with the total because there are articles classified in more than one discipline.
Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters. Available at: http://about.incites.thomson reuters.com/ Consulted May 15th, 2018.

III.5 QUOTES IN FIVE-YEAR ANALYSIS RECEIVED BY MEXICAN PAPERS, BY DISCIPLINE, 2007-2017

Discipline	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Agriculture	6,653	7,198	7,983	8,839	10,096	11,222	12,345
Space science	9,925	10,865	11,700	11,944	11,962	13,309	16,033
Biology and biochemistry	8,965	9,763	10,160	11,420	12,019	12,537	13,235
Molecular biology and genetics	5,886	6,448	7,182	7,927	9,811	10,866	13,636
Social Sciences	3,941	4,685	5,008	5,406	6,110	6,823	6,967
Computer's science	1,907	1,847	2,291	2,347	3,086	3,532	4,057
Ecology / Environment	9,404	10,293	11,572	13,021	14,323	16,632	19,127
Economy and business	687	705	794	849	831	1,000	1,109
Pharmacology and toxicology	3,499	3,671	3,825	4,212	4,426	4,779	5,186
Physical	21,945	26,805	32,529	38,728	43,655	46,650	39,020
Geosciences	6,671	6,962	7,497	7,057	7,472	7,901	8,006
Engineering	7,357	8,587	10,793	12,887	16,018	18,609	19,639
Immunology	4,814	5,502	5,851	6,103	6,102	6,142	7,075
Maths	1,652	1,987	2,188	2,760	3,128	2,967	2,940
Materials science	6,236	6,456	7,166	7,720	7,949	9,074	10,742
Clinical medicine	23,770	26,700	30,669	34,916	41,731	48,577	48,216
Microbiology	4,690	5,158	5,485	4,674	5,174	5,381	5,935
Multidisciplinary	728	847	925	349	599	799	1,001
Behavior and neurosciences	5,879	6,290	5,830	6,332	6,994	7,040	7,089
Plants and animals	14,085	15,619	16,673	17,993	20,271	21,251	23,157
Psychology / Psychiatry	2,121	2,255	2,609	2,924	2,701	2,445	3,091
Chemistry	17,580	19,016	20,368	22,175	23,601	25,225	27,178
Total	**168,395**	**187,659**	**209,098**	**230,583**	**258,059**	**282,761**	**294,784**

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.6 IMPACT FACTOR OF QUOTES UNDER FIVE-YEAR ANALYSIS IN MEXICAN PAPERS, BY DISCIPLINE, 2007-2017

Discipline	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Agriculture	2.76	2.85	2.92	2.96	3.10	3.27	3.32
Space science	7.97	8.63	8.76	8.56	7.96	8.07	8.94
Biology and biochemistry	4.64	4.76	4.54	4.61	4.52	4.46	4.34
Molecular biology and genetics	7.41	7.34	7.58	7.59	8.44	8.40	9.75
Social Sciences	2.00	2.12	2.11	2.18	2.28	2.37	2.37
Computer's science	3.47	3.15	3.35	3.04	3.47	3.48	3.56
Ecology / Environment	3.43	3.44	3.56	3.63	3.75	4.01	4.29
Economy and business	1.52	1.40	1.54	1.62	1.51	1.63	1.68
Pharmacology and toxicology	3.57	3.54	3.53	3.63	3.65	3.80	3.83
Physical	4.38	5.21	6.06	7.02	7.60	7.82	6.36
Geosciences	4.41	4.25	4.30	3.91	3.96	3.87	3.77
Engineering	2.31	2.41	2.66	2.90	3.23	3.43	3.36
Immunology	6.44	7.05	7.03	6.69	6.14	5.80	6.06
Maths	1.18	1.35	1.40	1.66	1.80	1.63	1.55
Materials science	2.93	2.92	3.16	3.19	3.07	3.15	3.39
Clinical medicine	5.50	5.79	6.38	6.84	7.77	8.43	8.04
Microbiology	5.09	5.10	5.25	4.27	4.38	4.36	4.69
Multidisciplinary	26.96	26.47	25.69	6.46	8.81	8.98	10.88
Behavior and neurosciences	5.10	5.23	4.79	4.98	5.17	4.99	4.89
Plants and animals	2.45	2.54	2.58	2.61	2.73	2.70	2.82
Psychology / Psychiatry	2.93	3.03	3.31	3.49	3.17	2.83	3.37
Chemistry	3.71	3.83	3.91	4.04	4.05	4.15	4.27

Annual Impact Factor: number of citations / number of articles published.
Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted May 15th, 2018.

III.7 PAPERS PUBLISHED ANNUALLY BY COUNTRY, 2007-2017

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Germany	75,549	78,001	80,642	84,772	89,626	93,172	97,220	98,227	101,451	104,357	104,182
Argentina	5,703	6,422	6,718	7,287	7,754	8,101	8,366	8,336	8,677	8,773	8,620
Australia	29,611	32,578	35,049	37,847	41,679	45,189	50,156	53,353	56,889	59,265	59,123
Austria	9,269	9,856	10,259	11,094	12,012	12,528	13,298	13,886	14,550	15,380	15,312
Belgium	13,552	14,456	14,979	16,245	17,290	18,127	19,315	19,871	20,784	20,864	20,723
Brazil	23,249	28,142	29,974	31,681	34,319	36,578	38,174	39,462	41,131	43,927	44,304
Glen	45,121	48,210	50,285	52,404	54,400	56,858	59,594	60,714	62,391	63,787	63,489
Chile	3,527	3,893	4,377	4,745	5,396	5,936	6,154	6,969	7,634	8,384	8,250
China	88,251	101,503	117,400	129,793	151,730	176,926	209,231	242,453	271,856	297,945	324,041
Colombia	1,379	2,011	2,254	2,628	2,950	3,267	3,388	3,398	3,867	4,345	4,661
South Korea	28,716	33,686	36,884	40,496	44,541	48,566	50,800	53,528	56,415	57,462	56,583
Denmark	9,367	9,826	10,329	11,442	12,713	13,883	14,890	16,046	17,152	18,110	18,173
Slovakia	2,499	2,749	2,641	2,769	2,887	3,076	3,094	3,345	3,406	3,441	3,540
Slovenia	2,569	3,011	3,025	3,128	3,488	3,663	3,776	3,684	3,852	3,782	3,627
Spain	34,802	37,916	40,406	43,199	47,275	50,470	52,772	53,527	54,427	55,504	54,835
U.S	290,791	302,561	307,950	320,935	335,996	346,306	360,269	366,331	371,656	378,555	373,757
Estonia	976	1,031	1,152	1,319	1,391	1,489	1,677	1,778	1,739	1,903	1,833
Finland	8,655	9,062	9,339	9,707	10,257	10,679	11,334	12,172	12,589	12,948	12,644
France	53,697	57,737	59,025	60,561	62,859	64,758	67,433	67,487	69,413	71,306	69,609
Greece	9,012	9,314	9,611	9,754	9,930	10,168	10,063	9,872	9,834	9,982	9,526
Hungary	4,975	5,443	5,275	5,016	5,607	6,046	6,268	6,634	6,744	6,963	6,794
India	31,841	36,351	37,991	41,246	45,016	47,543	52,231	56,850	59,017	62,158	63,095
Indonesia	655	733	907	1,021	1,124	1,346	1,569	1,688	1,870	2,179	2,373
Ireland	4,648	5,287	5,628	6,361	6,818	6,870	7,197	7,309	7,273	7,834	7,869
Iceland	500	604	665	806	791	903	938	955	1,022	1,169	1,093
Israel	10,691	11,089	10,921	11,294	11,586	11,943	12,239	12,723	13,335	13,943	13,615
Italy	43,224	45,218	47,024	48,482	50,950	53,719	58,184	59,322	61,351	63,006	62,043
Japan	73,953	74,285	73,609	72,677	74,650	75,206	76,804	75,308	74,716	76,327	75,509
Luxembourg	245	344	419	506	638	693	879	1,032	1,052	1,125	1,077
Mexico	**8,006**	**8,636**	**8,758**	**9,263**	**10,011**	**10,907**	**11,615**	**12,147**	**13,023**	**13,883**	**14,480**
Norway	7,374	7,997	8,699	9,311	10,219	10,872	11,329	11,850	12,188	13,111	13,456
New Zealand	5,684	6,069	6,264	7,072	7,608	7,961	8,322	8,443	8,873	9,101	9,149
Netherlands	24,105	25,509	27,365	29,578	31,110	33,451	35,203	35,585	36,739	37,931	37,293
Poland	15,606	17,850	18,068	18,891	20,019	21,792	22,850	24,064	26,125	27,182	26,135
Portugal	6,305	7,389	8,252	8,990	10,183	11,384	12,625	12,834	13,382	13,916	13,757
UK	78,330	79,853	82,053	86,449	90,118	93,974	99,867	100,501	105,490	110,460	110,143
Czech Republic	7,110	7,775	8,120	8,900	9,324	9,938	10,382	11,415	12,148	12,520	12,581
Russia	24,927	26,801	27,350	26,622	28,158	27,416	28,782	29,838	33,750	35,002	34,388
Sweden	5,548	17,637	18,356	19,326	20,387	22,057	23,649	24,567	25,588	26,946	27,017
South Africa	17,284	6,185	6,778	7,311	8,363	9,373	10,098	11,191	11,882	13,094	12,866
Switzerland	17,585	18,643	19,740	21,291	22,981	24,461	25,937	26,817	27,843	29,480	29,845
Turkey	17,436	18,801	20,894	21,708	22,530	24,664	25,979	26,639	28,073	30,019	27,274
Total	**1,142,327**	**1,220,464**	**1,275,435**	**1,343,927**	**1,436,684**	**1,522,259**	**1,623,951**	**1,692,151**	**1,771,197**	**1,847,369**	**1,858,684**

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.8 QUOTES RECEIVED ANNUALLY BY COUNTRY, 2007-2017

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Germany	2,098,442	2,302,382	2,143,495	2,158,149	1,988,456	1,799,213	1,541,521	1,206,661	859,625	454,534	104,590
Argentina	105,807	127,026	122,858	119,853	112,492	108,125	85,918	64,804	48,960	25,908	5,330
Australia	821,894	945,820	924,828	953,061	906,013	860,797	775,325	630,870	460,420	244,363	56,530
Austria	259,583	275,224	280,117	304,513	277,450	261,893	216,343	178,260	124,387	69,916	15,679
Belgium	411,970	456,257	443,495	453,336	414,527	373,711	332,906	260,291	188,386	97,980	23,068
Brazil	360,883	425,422	416,886	404,195	383,075	362,455	315,484	255,417	195,956	113,664	24,450
Glen	1,299,734	1,426,829	1,381,867	1,337,600	1,222,971	1,074,034	901,502	708,377	504,154	258,177	59,415
Chile	68,429	77,094	82,244	85,968	86,965	86,771	77,903	74,871	51,347	32,622	6,823
China	1,592,903	2,007,735	2,219,074	2,350,117	2,491,762	2,592,460	2,535,983	2,330,887	1,835,101	1,036,443	253,736
Colombia	24,420	31,442	33,456	39,498	40,957	55,709	35,508	31,362	29,451	15,598	3,539
South Korea	542,254	624,761	651,817	684,037	662,388	643,087	547,086	460,244	339,291	175,313	39,023
Denmark	329,982	353,081	349,205	356,249	351,483	338,334	281,902	247,427	173,515	92,050	19,783
Slovakia	34,808	41,849	36,807	39,633	33,707	39,801	29,888	26,173	21,275	10,895	2,289
Slovenia	44,699	51,470	55,337	48,947	48,784	52,018	40,251	32,823	24,645	14,352	2,834
Spain	835,490	934,001	922,094	950,289	918,047	865,521	725,659	590,702	408,807	219,159	48,307
U.S	9,349,732	9,886,044	9,204,850	8,779,986	7,887,664	6,876,857	5,723,248	4,395,556	2,979,866	1,507,714	340,618
Estonia	21,969	24,825	23,266	31,658	29,745	35,653	30,399	30,157	21,829	9,820	2,183
Finland	244,099	257,789	248,350	257,197	231,910	209,713	182,091	161,460	107,688	57,901	11,382
France	1,440,039	1,553,206	1,487,394	1,475,882	1,350,361	1,183,326	1,020,788	789,711	563,054	297,051	65,329
Greece	185,262	199,533	197,146	194,029	165,629	171,102	137,563	109,318	79,702	38,454	8,292
Hungary	109,180	107,950	102,091	98,707	95,862	100,297	76,452	64,550	47,583	28,569	6,319
India	470,877	540,204	557,855	550,180	551,152	523,447	479,401	426,415	306,689	175,626	41,088
Indonesia	13,671	17,422	20,439	18,917	16,862	18,861	16,873	16,619	14,090	7,067	1,506
Ireland	141,292	153,952	156,385	164,201	163,124	136,734	116,452	97,419	64,255	39,211	7,884
Iceland	22,321	23,893	24,797	32,751	27,658	27,592	22,612	18,323	15,204	6,829	1,287
Israel	274,289	292,135	265,743	264,568	249,940	221,292	173,685	146,324	108,332	56,523	12,647
Italy	1,109,958	1,190,199	1,157,429	1,139,845	1,041,899	969,046	859,575	686,074	494,969	263,048	60,862
Japan	1,520,848	1,542,566	1,416,264	1,291,208	1,205,585	1,036,082	876,468	650,730	447,298	243,502	53,897
Luxembourg	5,521	9,125	10,219	12,895	12,928	11,317	14,081	13,031	9,029	5,726	1,176
Mexico	**126,823**	**139,866**	**136,886**	**129,149**	**133,316**	**133,103**	**106,743**	**83,678**	**66,081**	**35,480**	**8,204**
Norway	206,868	234,961	228,463	233,584	233,578	216,875	182,601	148,217	102,337	55,563	12,367
New Zealand	139,792	155,623	152,964	166,680	145,353	148,722	118,195	88,023	67,595	33,245	7,903
Netherlands	844,653	903,138	906,579	943,164	840,588	776,544	646,655	492,578	351,744	188,066	42,198
Poland	238,539	252,092	249,117	249,591	241,694	242,528	217,133	192,880	140,997	82,315	18,226
Portugal	156,487	182,524	186,936	183,575	184,675	189,451	168,368	134,847	92,405	49,441	11,870
UK	2,404,490	2,520,978	2,404,461	2,380,213	2,138,091	1,906,659	1,643,366	1,298,661	920,984	489,408	113,143
Czech Republic	132,754	151,768	145,444	165,779	148,849	148,907	128,928	105,803	78,615	42,745	9,823
Russia	253,647	267,929	247,066	245,303	234,740	235,787	202,941	185,716	140,933	83,059	19,092
Sweden	106,560	560,129	549,086	541,673	483,827	466,930	402,580	322,165	227,593	124,820	26,892
South Africa	526,048	129,105	129,522	141,790	133,568	137,760	119,545	112,408	77,325	45,506	10,419
Switzerland	633,830	705,582	679,853	709,606	662,516	622,774	514,354	420,239	304,820	162,327	36,163
Turkey	247,214	264,182	266,650	237,663	217,483	213,846	180,801	149,387	113,651	58,968	12,932
Total	**29,758,061**	**32,347,113**	**31,218,835**	**30,925,239**	**28,767,674**	**26,475,134**	**22,805,077**	**18,439,458**	**13,209,988**	**7,048,958**	**1,609,098**

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.9 ANNUAL IMPACT FACTOR OF QUOTES BY COUNTRY, 2007-2017

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Germany	27.78	29.52	26.58	25.46	22.19	19.31	15.86	12.28	8.47	4.36	1.00
Argentina	18.55	19.78	18.29	16.45	14.51	13.35	10.27	7.77	5.64	2.95	0.62
Australia	27.76	29.03	26.39	25.18	21.74	19.05	15.46	11.82	8.09	4.12	0.96
Austria	28.01	27.92	27.30	27.45	23.10	20.90	16.27	12.84	8.55	4.55	1.02
Belgium	30.40	31.56	29.61	27.91	23.97	20.62	17.24	13.10	9.06	4.70	1.11
Brazil	15.52	15.12	13.91	12.76	11.16	9.91	8.26	6.47	4.76	2.59	0.55
Glen	28.81	29.60	27.48	25.52	22.48	18.89	15.13	11.67	8.08	4.05	0.94
Chile	19.40	19.80	18.79	18.12	16.12	14.62	12.66	10.74	6.73	3.89	0.83
China	18.05	19.78	18.90	18.11	16.42	14.65	12.12	9.61	6.75	3.48	0.78
Colombia	17.71	15.64	14.84	15.03	13.88	17.05	10.48	9.23	7.62	3.59	0.76
South Korea	18.88	18.55	17.67	16.89	14.87	13.24	10.77	8.60	6.01	3.05	0.69
Denmark	35.23	35.93	33.81	31.14	27.65	24.37	18.93	15.42	10.12	5.08	1.09
Slovakia	13.93	15.22	13.94	14.31	11.68	12.94	9.66	7.82	6.25	3.17	0.65
Slovenia	17.40	17.09	18.29	15.65	13.99	14.20	10.66	8.91	6.40	3.79	0.78
Spain	24.01	24.63	22.82	22.00	19.42	17.15	13.75	11.04	7.51	3.95	0.88
U.S	32.15	32.67	29.89	27.36	23.48	19.86	15.89	12.00	8.02	3.98	0.91
Estonia	22.51	24.08	20.20	24.00	21.38	23.94	18.13	16.96	12.55	5.16	1.19
Finland	28.20	28.45	26.59	26.50	22.61	19.64	16.07	13.26	8.55	4.47	0.90
France	26.82	26.90	25.20	24.37	21.48	18.27	15.14	11.70	8.11	4.17	0.94
Greece	20.56	21.42	20.51	19.89	16.68	16.83	13.67	11.07	8.10	3.85	0.87
Hungary	21.95	19.83	19.35	19.68	17.10	16.59	12.20	9.73	7.06	4.10	0.93
India	14.79	14.86	14.68	13.34	12.24	11.01	9.18	7.50	5.20	2.83	0.65
Indonesia	20.87	23.77	22.53	18.53	15.00	14.01	10.75	9.85	7.53	3.24	0.63
Ireland	30.40	29.12	27.79	25.81	23.93	19.90	16.18	13.33	8.83	5.01	1.00
Iceland	44.64	39.56	37.29	40.63	34.97	30.56	24.11	19.19	14.88	5.84	1.18
Israel	25.66	26.34	24.33	23.43	21.57	18.53	14.19	11.50	8.12	4.05	0.93
Italy	25.68	26.32	24.61	23.51	20.45	18.04	14.77	11.57	8.07	4.17	0.98
Japan	20.57	20.77	19.24	17.77	16.15	13.78	11.41	8.64	5.99	3.19	0.71
Luxembourg	22.53	26.53	24.39	25.48	20.26	16.33	16.02	12.63	8.58	5.09	1.09
Mexico	**15.84**	**16.20**	**15.63**	**13.94**	**13.32**	**12.20**	**9.19**	**6.89**	**5.07**	**2.56**	**0.57**
Norway	28.05	29.38	26.26	25.09	22.86	19.95	16.12	12.51	8.40	4.24	0.92
New Zealand	24.59	25.64	24.42	23.57	19.11	18.68	14.20	10.43	7.62	3.65	0.86
Netherlands	35.04	35.40	33.13	31.89	27.02	23.21	18.37	13.84	9.57	4.96	1.13
Poland	15.29	14.12	13.79	13.21	12.07	11.13	9.50	8.02	5.40	3.03	0.70
Portugal	24.82	24.70	22.65	20.42	18.14	16.64	13.34	10.51	6.91	3.55	0.86
UK	30.70	31.57	29.30	27.53	23.73	20.29	16.46	12.92	8.73	4.43	1.03
Czech Republic	18.67	19.52	17.91	18.63	15.96	14.98	12.42	9.27	6.47	3.41	0.78
Russia	10.18	10.00	9.03	9.21	8.34	8.60	7.05	6.22	4.18	2.37	0.56
Sweden	19.21	31.76	29.91	28.03	23.73	21.17	17.02	13.11	8.89	4.63	1.00
South Africa	30.44	20.87	19.11	19.39	15.97	14.70	11.84	10.04	6.51	3.48	0.81
Switzerland	36.04	37.85	34.44	33.33	28.83	25.46	19.83	15.67	10.95	5.51	1.21
Turkey	14.18	14.05	12.76	10.95	9.65	8.67	6.96	5.61	4.05	1.96	0.47

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.10 PARTICIPATION IN THE WORLD PRODUCTION OF PAPERS PUBLISHED, BY COUNTRY, 2007-2017

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Germany	5.70	5.49	5.41	5.37	5.29	5.18	5.07	4.91	4.84	4.76	4.72
Argentina	0.43	0.45	0.45	0.46	0.46	0.45	0.44	0.42	0.41	0.40	0.39
Australia	2.24	2.29	2.35	2.40	2.46	2.51	2.61	2.67	2.72	2.70	2.68
Austria	0.70	0.69	0.69	0.70	0.71	0.70	0.69	0.69	0.69	0.70	0.69
Belgium	1.02	1.02	1.00	1.03	1.02	1.01	1.01	0.99	0.99	0.95	0.94
Brazil	1.75	1.98	2.01	2.01	2.03	2.03	1.99	1.97	1.96	2.00	2.01
Glen	3.41	3.39	3.37	3.32	3.21	3.16	3.11	3.04	2.98	2.91	2.87
Chile	0.27	0.27	0.29	0.30	0.32	0.33	0.32	0.35	0.36	0.38	0.37
China	6.66	7.15	7.87	8.23	8.96	9.84	10.90	12.13	12.98	13.58	14.67
Colombia	0.10	0.14	0.15	0.17	0.17	0.18	0.18	0.17	0.18	0.20	0.21
South Korea	2.17	2.37	2.47	2.57	2.63	2.70	2.65	2.68	2.69	2.62	2.56
Denmark	0.71	0.69	0.69	0.73	0.75	0.77	0.78	0.80	0.82	0.83	0.82
Slovakia	0.19	0.19	0.18	0.18	0.17	0.17	0.16	0.17	0.16	0.16	0.16
Slovenia	0.19	0.21	0.20	0.20	0.21	0.20	0.20	0.18	0.18	0.17	0.16
Spain	2.63	2.67	2.71	2.74	2.79	2.81	2.75	2.68	2.60	2.53	2.48
U.S	21.95	21.30	20.65	20.34	19.84	19.26	18.78	18.32	17.74	17.26	16.92
Estonia	0.07	0.07	0.08	0.08	0.08	0.08	0.09	0.09	0.08	0.09	0.08
Finland	0.65	0.64	0.63	0.62	0.61	0.59	0.59	0.61	0.60	0.59	0.57
France	4.05	4.06	3.96	3.84	3.71	3.60	3.51	3.38	3.31	3.25	3.15
Greece	0.68	0.66	0.64	0.62	0.59	0.57	0.52	0.49	0.47	0.46	0.43
Hungary	0.38	0.38	0.35	0.32	0.33	0.34	0.33	0.33	0.32	0.32	0.31
India	2.40	2.56	2.55	2.61	2.66	2.64	2.72	2.84	2.82	2.83	2.86
Indonesia	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.10	0.11
Ireland	0.35	0.37	0.38	0.40	0.40	0.38	0.38	0.37	0.35	0.36	0.36
Iceland	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Israel	0.81	0.78	0.73	0.72	0.68	0.66	0.64	0.64	0.64	0.64	0.62
Italy	3.26	3.18	3.15	3.07	3.01	2.99	3.03	2.97	2.93	2.87	2.81
Japan	5.58	5.23	4.94	4.61	4.41	4.18	4.00	3.77	3.57	3.48	3.42
Luxembourg	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.05	0.05
Mexico	**0.60**	**0.61**	**0.59**	**0.59**	**0.59**	**0.61**	**0.61**	**0.61**	**0.62**	**0.63**	**0.66**
Norway	0.56	0.56	0.58	0.59	0.60	0.60	0.59	0.59	0.58	0.60	0.61
New Zealand	0.43	0.43	0.42	0.45	0.45	0.44	0.43	0.42	0.42	0.41	0.41
Netherlands	1.82	1.80	1.84	1.87	1.84	1.86	1.83	1.78	1.75	1.73	1.69
Poland	1.18	1.26	1.21	1.20	1.18	1.21	1.19	1.20	1.25	1.24	1.18
Portugal	0.48	0.52	0.55	0.57	0.60	0.63	0.66	0.64	0.64	0.63	0.62
UK	5.91	5.62	5.50	5.48	5.32	5.23	5.20	5.03	5.04	5.04	4.98
Czech Republic	0.54	0.55	0.54	0.56	0.55	0.55	0.54	0.57	0.58	0.57	0.57
Russia	1.88	1.89	1.83	1.69	1.66	1.52	1.50	1.49	1.61	1.60	1.56
Sweden	0.42	1.24	1.23	1.22	1.20	1.23	1.23	1.23	1.22	1.23	1.22
South Africa	1.30	0.44	0.45	0.46	0.49	0.52	0.53	0.56	0.57	0.60	0.58
Switzerland	1.33	1.31	1.32	1.35	1.36	1.36	1.35	1.34	1.33	1.34	1.35
Turkey	1.32	1.32	1.40	1.38	1.33	1.37	1.35	1.33	1.34	1.37	1.23

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.11 PUBLISHED PAPERS BY COUNTRY, UNDER FIVE-YEAR ANALYSIS 2007-2017

Country	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Germany	430,672	426,213	445,432	463,017	479,696	494,427	505,437
Argentina	34,944	36,282	38,226	39,844	41,234	42,253	42,772
Australia	188,393	192,342	209,920	228,224	247,266	264,852	278,786
Austria	55,370	55,749	59,191	62,818	66,274	69,642	72,426
Belgium	81,651	81,097	85,956	90,848	95,387	98,961	101,557
Brazil	151,980	160,694	170,726	180,214	189,664	199,272	206,998
Glen	265,100	262,157	273,541	283,970	293,957	303,344	309,975
Chile	22,693	24,347	26,608	29,200	32,089	35,077	37,391
China	598,160	677,352	785,080	910,133	1,052,196	1,198,411	1,345,526
Colombia	11,583	13,110	14,487	15,631	16,870	18,265	19,659
South Korea	186,616	204,173	221,287	237,931	253,850	266,771	274,788
Denmark	56,632	58,193	63,257	68,974	74,684	80,081	84,371
Slovakia	14,018	14,122	14,467	15,171	15,808	16,362	16,826
Slovenia	15,794	16,315	17,080	17,739	18,463	18,757	18,721
Spain	213,654	219,266	234,122	247,243	258,471	266,700	271,065
U.S	1,662,646	1,613,748	1,671,456	1,729,837	1,780,558	1,823,117	1,850,568
Estonia	6,037	6,382	7,028	7,654	8,074	8,586	8,930
Finland	48,880	49,044	51,316	54,149	57,031	59,722	61,687
France	308,780	304,940	314,636	323,098	331,950	340,397	345,248
Greece	51,205	48,777	49,526	49,787	49,867	49,919	49,277
Hungary	27,496	27,387	28,212	29,571	31,299	32,655	33,403
India	197,959	208,147	224,027	242,886	260,657	277,799	293,351
Indonesia	4,537	5,131	5,967	6,748	7,597	8,652	9,679
Ireland	30,485	30,964	32,874	34,555	35,467	36,483	37,482
Iceland	3,446	3,769	4,103	4,393	4,609	4,987	5,177
Israel	58,447	56,833	57,983	59,785	61,826	64,183	65,855
Italy	251,120	245,393	258,359	270,657	283,526	295,582	303,906
Japan	380,838	370,427	372,946	374,645	376,684	378,361	378,664
Luxembourg	2,245	2,600	3,135	3,748	4,294	4,781	5,165
Mexico	**46,051**	**47,575**	**50,554**	**53,943**	**57,703**	**61,575**	**65,148**
Norway	45,258	47,098	50,430	53,581	56,458	59,350	61,934
New Zealand	34,391	34,974	37,227	39,406	41,207	42,700	43,888
Netherlands	147,700	147,013	156,707	164,927	172,088	178,909	182,751
Poland	93,689	96,620	101,620	107,616	114,850	122,013	126,356
Portugal	42,885	46,198	51,434	56,016	60,408	64,141	66,514
UK	478,111	432,447	452,461	470,909	489,950	510,292	526,461
Czech Republic	42,890	44,057	46,664	49,959	53,207	56,403	59,046
Russia	137,553	136,347	138,328	140,816	147,944	154,788	161,760
Sweden	35,741	97,763	103,775	109,986	116,248	122,807	127,767
South Africa	97,134	38,010	41,923	46,336	50,907	55,638	59,131
Switzerland	105,949	107,116	114,410	121,487	128,039	134,538	139,922
Turkey	102,993	108,597	115,775	121,520	127,885	135,374	137,984

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.12 QUOTES RECEIVED BY COUNTRY, UNDER FIVE YEAR ANALYSIS 2007-2017

Country	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Germany	2,862,292	3,091,465	3,297,145	3,570,068	3,766,382	3,973,970	4,091,976
Argentina	148,581	169,464	185,342	200,026	212,683	225,124	226,792
Australia	1,072,118	1,212,120	1,368,997	1,560,314	1,749,574	1,962,771	2,127,248
Austria	355,016	395,825	448,118	503,376	534,117	574,046	593,921
Belgium	552,883	608,862	669,703	738,371	786,703	843,335	886,612
Brazil	483,242	547,675	602,221	660,967	724,740	811,771	886,789
Glen	1,656,852	1,799,248	1,937,078	2,083,011	2,196,327	2,311,570	2,387,392
Chile	97,845	115,756	135,509	162,299	187,864	216,483	239,365
China	2,341,732	2,887,579	3,547,609	4,381,417	5,398,736	6,580,462	7,763,783
Colombia	38,540	51,059	65,199	80,403	95,384	112,908	113,779
South Korea	756,242	877,354	1,011,754	1,160,282	1,296,463	1,436,185	1,525,934
Denmark	438,045	485,289	542,686	620,085	688,878	760,595	799,774
Slovakia	52,333	59,761	65,132	72,645	77,770	88,264	89,393
Slovenia	62,984	72,741	82,564	91,187	101,830	112,454	112,868
Spain	1,147,221	1,291,023	1,446,890	1,624,108	1,766,210	1,903,645	1,955,080
U.S	11,508,481	12,114,030	12,736,568	13,470,217	13,983,373	14,483,510	14,680,188
Estonia	31,536	38,853	47,953	60,144	70,384	85,119	92,822
Finland	324,191	350,934	382,112	422,185	447,363	484,802	511,847
France	1,909,698	2,054,035	2,209,533	2,377,681	2,492,766	2,615,038	2,688,359
Greece	240,641	264,252	290,271	316,093	334,944	367,239	366,811
Hungary	142,160	151,150	165,676	182,612	198,801	217,060	219,547
India	624,782	718,756	828,722	959,829	1,103,739	1,261,127	1,393,936
Indonesia	19,926	23,680	27,504	30,510	35,909	45,942	55,244
Ireland	187,724	214,648	241,224	272,910	293,034	304,946	318,984
Iceland	31,928	37,539	44,012	51,271	54,040	60,137	63,261
Israel	346,554	369,278	390,308	424,552	450,634	474,018	488,779
Italy	1,408,802	1,595,831	1,740,076	1,902,661	2,040,860	2,215,926	2,323,275
Japan	1,933,853	1,978,307	2,031,493	2,107,611	2,176,987	2,218,002	2,228,840
Luxembourg	10,469	14,155	17,452	22,089	27,150	33,671	42,327
Mexico	**168,395**	**187,659**	**209,098**	**230,583**	**258,059**	**282,761**	**294,784**
Norway	269,136	304,588	343,201	393,359	434,516	471,838	492,774
New Zealand	179,389	201,804	228,118	256,806	276,497	304,589	310,182
Netherlands	1,099,829	1,213,759	1,350,571	1,484,712	1,559,380	1,655,587	1,691,484
Poland	329,984	363,266	407,295	463,261	523,005	593,597	639,361
Portugal	213,884	249,377	287,502	331,711	380,391	428,050	448,064
UK	3,028,956	3,242,260	3,473,520	3,745,581	3,946,118	4,201,992	4,388,932
Czech Republic	197,430	224,941	252,717	288,043	311,159	344,066	359,498
Russia	351,016	373,625	400,504	447,751	502,540	573,093	623,849
Sweden	680,663	737,703	802,941	873,893	937,891	1,031,440	1,084,119
South Africa	155,333	183,722	211,715	251,562	284,306	328,917	359,258
Switzerland	863,706	962,352	1,062,914	1,182,255	1,267,056	1,362,628	1,413,385
Turkey	297,662	330,092	362,699	389,759	427,085	478,101	505,603

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.13 FIVE-YEAR ANALYSIS OF IMPACT FACTOR BY COUNTRY, 2007-2017

Country	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Germany	6.65	7.25	7.40	7.71	7.85	8.04	8.10
Argentina	4.25	4.67	4.85	5.02	5.16	5.33	5.30
Australia	5.69	6.30	6.52	6.84	7.08	7.41	7.63
Austria	6.41	7.10	7.57	8.01	8.06	8.24	8.20
Belgium	6.77	7.51	7.79	8.13	8.25	8.52	8.73
Brazil	3.18	3.41	3.53	3.67	3.82	4.07	4.28
Glen	6.25	6.86	7.08	7.34	7.47	7.62	7.70
Chile	4.31	4.75	5.09	5.56	5.85	6.17	6.40
China	3.91	4.26	4.52	4.81	5.13	5.49	5.77
Colombia	3.33	3.89	4.50	5.14	5.65	6.18	5.79
South Korea	4.05	4.30	4.57	4.88	5.11	5.38	5.55
Denmark	7.73	8.34	8.58	8.99	9.22	9.50	9.48
Slovakia	3.73	4.23	4.50	4.79	4.92	5.39	5.31
Slovenia	3.99	4.46	4.83	5.14	5.52	6.00	6.03
Spain	5.37	5.89	6.18	6.57	6.83	7.14	7.21
U.S	6.92	7.51	7.62	7.79	7.85	7.94	7.93
Estonia	5.22	6.09	6.82	7.86	8.72	9.91	10.39
Finland	6.63	7.16	7.45	7.80	7.84	8.12	8.30
France	6.18	6.74	7.02	7.36	7.51	7.68	7.79
Greece	4.70	5.42	5.86	6.35	6.72	7.36	7.44
Hungary	5.17	5.52	5.87	6.18	6.35	6.65	6.57
India	3.16	3.45	3.70	3.95	4.23	4.54	4.75
Indonesia	4.39	4.62	4.61	4.52	4.73	5.31	5.71
Ireland	6.16	6.93	7.34	7.90	8.26	8.36	8.51
Iceland	9.27	9.96	10.73	11.67	11.72	12.06	12.22
Israel	5.93	6.50	6.73	7.10	7.29	7.39	7.42
Italy	5.61	6.50	6.74	7.03	7.20	7.50	7.64
Japan	5.08	5.34	5.45	5.63	5.78	5.86	5.89
Luxembourg	4.66	5.44	5.57	5.89	6.32	7.04	8.19
Mexico	**3.66**	**3.94**	**4.14**	**4.27**	**4.47**	**4.59**	**4.52**
Norway	5.95	6.47	6.81	7.34	7.70	7.95	7.96
New Zealand	5.22	5.77	6.13	6.52	6.71	7.13	7.07
Netherlands	7.45	8.26	8.62	9.00	9.06	9.25	9.26
Poland	3.52	3.76	4.01	4.30	4.55	4.87	5.06
Portugal	4.99	5.40	5.59	5.92	6.30	6.67	6.74
UK	6.34	7.50	7.68	7.95	8.05	8.23	8.34
Czech Republic	4.60	5.11	5.42	5.77	5.85	6.10	6.09
Russia	2.55	2.74	2.90	3.18	3.40	3.70	3.86
Sweden	19.04	7.55	7.74	7.95	8.07	8.40	8.49
South Africa	1.60	4.83	5.05	5.43	5.58	5.91	6.08
Switzerland	8.15	8.98	9.29	9.73	9.90	10.13	10.10
Turkey	2.89	3.04	3.13	3.21	3.34	3.53	3.66

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.14 WORLDWIDE IMPACT FACTOR IN FIVE-YEAR ANALYSIS BY COUNTRY, 2007-2017

Country	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Germany	1.29	1.31	1.31	1.34	1.35	1.35	1.35
Argentina	0.86	0.91	0.92	0.94	0.95	0.96	0.94
Australia	1.22	1.25	1.27	1.30	1.32	1.35	1.38
Austria	1.26	1.31	1.37	1.43	1.42	1.43	1.41
Belgium	1.40	1.42	1.45	1.48	1.48	1.50	1.53
Brazil	0.67	0.68	0.69	0.70	0.72	0.75	0.78
Glen	1.30	1.32	1.34	1.35	1.36	1.36	1.36
Chile	0.84	0.87	0.90	0.95	0.98	1.02	1.05
China	0.83	0.86	0.88	0.90	0.92	0.95	0.98
Colombia	0.71	0.78	0.88	0.97	1.04	1.09	1.03
South Korea	0.82	0.84	0.87	0.90	0.91	0.93	0.94
Denmark	1.53	1.54	1.56	1.60	1.63	1.64	1.62
Slovakia	0.77	0.82	0.86	0.90	0.90	0.96	0.93
Slovenia	0.86	0.90	0.95	0.98	1.03	1.09	1.08
Spain	1.12	1.14	1.18	1.21	1.24	1.26	1.26
U.S	1.39	1.39	1.39	1.40	1.39	1.38	1.37
Estonia	1.06	1.15	1.24	1.38	1.51	1.67	1.74
Finland	1.32	1.35	1.38	1.41	1.41	1.43	1.45
France	1.23	1.25	1.28	1.31	1.32	1.32	1.32
Greece	1.05	1.09	1.15	1.21	1.25	1.33	1.34
Hungary	1.02	1.02	1.07	1.11	1.13	1.14	1.12
India	0.67	0.68	0.71	0.73	0.75	0.77	0.79
Indonesia	0.95	0.96	0.97	0.93	0.95	1.03	1.08
Ireland	1.26	1.30	1.35	1.41	1.45	1.45	1.46
Iceland	1.57	1.61	1.69	1.84	1.86	1.92	1.94
Israel	1.18	1.21	1.23	1.26	1.27	1.26	1.26
Italy	1.19	1.21	1.23	1.26	1.28	1.31	1.33
Japan	0.96	0.96	0.96	0.96	0.97	0.96	0.96
Luxembourg	1.01	1.11	1.13	1.17	1.22	1.33	1.53
Mexico	**0.76**	**0.78**	**0.80**	**0.81**	**0.84**	**0.83**	**0.81**
Norway	1.26	1.30	1.34	1.40	1.45	1.45	1.44
New Zealand	1.15	1.19	1.24	1.29	1.31	1.35	1.33
Netherlands	1.51	1.53	1.58	1.61	1.61	1.61	1.61
Poland	0.71	0.72	0.76	0.79	0.82	0.86	0.88
Portugal	1.05	1.06	1.08	1.11	1.16	1.19	1.19
UK	1.39	1.41	1.43	1.44	1.45	1.45	1.46
Czech Republic	0.95	0.99	1.03	1.07	1.06	1.08	1.06
Russia	0.50	0.51	0.53	0.56	0.59	0.62	0.64
Sweden	1.37	1.39	1.41	1.42	1.44	1.46	1.46
South Africa	0.94	0.98	1.00	1.04	1.04	1.07	1.09
Switzerland	1.59	1.62	1.65	1.69	1.71	1.70	1.69
Turkey	0.66	0.67	0.67	0.66	0.66	0.66	0.67

Source: Thomson-Reuters. Database Incites Global Comparisons, Regions, 2018. InCites, Thomson Reuters.
Available at: http://about.incites.thomsonreuters.com/ Consulted on May 15th, 2018.

III.15 PATENTS REQUESTED IN MEXICO BY NATIONALITY OF THE HOLDERS, 2006-2017

Year	National applicants	National applicants growth rate (percentage)	Germany	U.S.A	France	Italy	Japan	United Kingdom	Spain	Switzerland	Others	Total foreign applicants	Foreign applicants growth rate (percentage)	Total
2006	574	-1.71	1,325	8,159	732	234	551	421	171	797	2,536	14,926	7.75	15,500
2007	641	11.67	1,345	8,681	667	282	499	407	208	940	2,929	15,958	6.91	16,599
2008	685	6.86	1,405	8,210	694	272	630	449	197	1,014	3,025	15,896	-0.39	16,581
2009	822	20.00	1,232	6,714	661	234	632	399	157	923	2,507	13,459	-15.33	14,281
2010	951	15.69	1,235	6,805	623	213	743	392	191	843	2,580	13,625	1.23	14,576
2011	1,065	11.99	1,252	6,182	546	241	759	403	180	820	2,607	12,990	-4.66	14,055
2012	1,292	21.31	1,293	6,609	582	282	992	428	251	939	2,646	14,022	7.94	15,314
2013	1,211	-6.27	1,316	6,638	636	246	1,058	370	210	1,042	2,717	14,233	1.50	15,444
2014	1,244	2.73	1,346	7,269	600	268	946	323	218	1,002	2,919	14,891	4.62	16,135
2015	1,364	9.65	1,265	8,704	676	285	1,031	380	215	904	3,247	16,707	12.20	18,071
2016	1,310	-3.96	1,153	8,262	594	301	1,181	319	204	968	3,121	16,103	-3.62	17,413
2017	1,334	1.83	1,106	8,370	585	287	1,274	379	186	897	2,766	15,850	-1.57	17,184

Source: Mexican Institute of Industrial Property (IMPI). “IMPI in figures 2017”. Figures from January 1993 to December 2017.
Retrieved on April 8, 2018 in https://www.gob.mx/impi/documentos/instituto-mexicano-de-la-propiedad-industrial-en-cifras-impi-en-cifras

III.16 PATENTS IN MEXICO BY NATIONALITY OF HOLDERS, 2006-2017

Year	National applicants	National applicants growth rate (percentage)	Germany	U.S.A	France	Italy	Japan	United Kingdom	Spain	Switzerland	Others	Total foreign applicants	Foreign applicants growth rate (percentage)	Total
2006	132	0.76	877	5,180	711	177	378	265	101	506	1,305	9,500	19.24	9,632
2007	199	50.76	885	5,094	745	160	418	272	128	506	1,550	9,758	2.72	9,957
2008	197	-1.01	899	5,483	682	154	407	252	90	538	1,738	10,243	4.97	10,440
2009	213	8.12	786	4,831	592	156	399	266	99	553	1,734	9,416	-8.07	9,629
2010	229	7.51	712	4,769	439	153	401	206	106	585	1,799	9,170	-2.61	9,399
2011	245	6.99	960	5,612	551	221	579	302	141	775	2,099	11,240	22.57	11,485
2012	281	14.69	1,027	5,924	568	203	794	305	142	753	2,333	12,049	7.20	12,330
2013	302	7.47	939	4,792	500	207	665	257	107	630	1,944	10,041	-16.67	10,343
2014	305	0.99	886	4,514	398	195	709	243	116	570	1,883	9,514	-5.25	9,819
2015	410	34.43	805	4,270	432	193	601	237	123	532	1,735	8,928	-6.16	9,338
2016	426	3.90	653	4,032	380	137	566	196	110	497	1,660	8,231	-7.81	8,657
2017	407	-4.46	625	3,950	359	189	570	179	105	492	1,634	8,103	-1.56	8,510

Source: Mexican Institute of Industrial Property (IMPI). “IMPI in figures 2017”. Figures from January 1993 to December 2017.
Retrieved on April 8, 2018 in https://www.gob.mx/impi/documentos/instituto-mexicano-de-la-propiedad-industrial-en-cifras-impi-en-cifras

III.17 PATENTS REQUESTED BY STATE, 2006-2017

Federal Entity	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Guerrero	3	0	0	1	3	4	0	1	2	3	2	1
Campeche	1	2	7	4	5	3	3	1	2	1	10	3
Nayarit	0	1	1	0	1	2	1	0	1	3	1	3
Tlaxcala	2	1	2	4	5	7	6	7	5	2	3	3
Chiapas	6	8	5	1	6	2	10	8	14	8	23	4
Colima	2	3	4	1	2	4	7	7	9	11	11	5
Zacatecas	0	1	2	1	2	1	5	4	4	5	3	5
Baja California Sur	1	2	6	1	4	2	0	0	4	5	2	6
Durango	7	0	5	4	3	3	6	2	5	8	9	6
Not classified*	4	0	5	4	11	5	9	5	9	5	3	7
Aguascalientes	5	3	10	4	7	4	9	10	11	15	21	8
San Luis Potosí	9	4	8	8	6	4	9	6	8	8	21	9
Michoacán	5	7	6	10	6	5	12	14	13	21	12	11
Quintana Roo	5	1	1	3	3	1	4	8	7	11	5	11
Oaxaca	1	0	0	2	7	8	2	7	6	10	15	15
Tabasco	1	3	5	2	7	3	13	5	8	18	16	16
Veracruz	6	11	12	22	15	26	27	14	15	22	34	20
Yucatán	3	7	6	12	15	23	23	27	20	26	27	24
Baja California	3	2	3	11	19	18	22	20	18	12	20	25
Sinaloa	2	4	15	11	14	20	21	23	17	28	27	26
Tamaulipas	6	10	15	15	11	19	11	32	25	23	23	26
Hidalgo	3	5	1	7	12	10	9	19	30	37	14	29
Chihuahua	24	22	21	28	15	24	21	28	25	42	42	32
Morelos	17	16	15	29	22	34	36	45	34	41	36	32
Sonora	10	17	11	17	12	28	40	22	52	32	28	41
Coahuila	17	17	15	20	31	42	52	33	41	38	49	51
Querétaro	11	25	20	24	47	44	31	48	46	55	57	62
Guanajuato	14	27	32	40	36	37	43	42	55	55	71	78
Nuevo León	81	73	97	114	110	157	146	136	141	124	87	78
México	61	54	51	76	80	85	95	70	90	130	94	80
Puebla	11	12	22	48	43	69	98	70	75	80	84	90
Jalisco	72	85	63	65	70	63	94	107	115	118	152	194
Mexico City	181	219	219	233	321	308	427	390	337	367	308	333

*Until December 2017, IMPI in figures 2017.
Retrieved on April 16, 2018 at https://www.gob.mx/impi/documentos/instituto-mexicano-de-la-propiedad-industrial-en-cifras-impi-en-cifras
“0” could mean zero or “not available”.
Source: Mexican Institute of Industrial Property (IMPI). “IMPI in figures 2017”. Figures from January 1993 to December 2017.
Retrieved on April 8, 2018 in https://www.gob.mx/impi/documentos/instituto-mexicano-de-la-propiedad-industrial-en-cifras-impi-en-cifras

III.18 MAIN TECHNOLOGICAL AREAS * OF PATENTS APPLICATIONS, BY FOREIGN APPLICANTS, 2006-2016

Year	16. Pharmaceutical	32. Transportation	35. Civil engineering	13. Medical technology	19. Chemistry of basic materials	14. Fine organic chemistry	15. Biotechnology	6. Computer technology	25. Handling equipment	10. Measuring equipment
2006	621	111	138	370	199	421	172	266	219	95
2007	880	153	189	528	341	606	279	256	329	155
2008	649	137	172	450	294	422	225	262	265	121
2009	834	176	294	516	369	500	291	206	346	137
2010	629	111	256	415	329	412	305	186	251	128
2011	565	85	209	395	366	353	298	163	232	93
2012	592	105	215	316	431	374	323	133	268	135
2013	535	138	255	356	391	355	239	201	267	161
2014	534	129	314	412	387	309	252	247	227	163
2015	624	338	430	455	461	373	328	200	294	232
2016	816	641	579	570	565	463	406	379	375	315

*The technological areas are based on the International Patent Classification (CIP) Agreement Table.
Information consulted in April 2018 in: https://www.oepm.es/export/sites/oepm/comun/documentos_relacionados/Memorias_de_Actividades_y_Estadisticas/estadisticas/Tabla_Concordancia_Sectores_Tecnicos_Con_CIP.pdf
Source: OMPI statistical database. Last update March 2018. Report type: Account by the registration office and origin of the applicant. Indicator: Patent publications by technology. Accessed in April 2018 in: https://www3.wipo.int/ipstats/index.htm?tab=patent

III.19 MAIN TECHNOLOGICAL AREAS * OF PATENTS APPLICATIONS, BY NATIONAL APPLICANTS, 2006-2016

Year	16. Pharmaceutical	19. Chemistry of basic materials	13. Medical technology	35. Civil engineering	10. Measuring equipment	29. Other special machines	18. Food chemistry	15. Biotechnology	23. Chemical engineering	20. Material, metallurgy
2006	37	25	44	55	13	21	27	10	13	24
2007	69	32	42	67	15	41	31	5	8	36
2008	47	30	40	31	15	24	24	13	15	19
2009	75	48	29	66	13	30	71	27	27	32
2010	47	38	45	73	30	41	48	27	28	28
2011	40	41	58	85	31	37	50	26	33	24
2012	70	76	58	93	44	55	57	32	29	36
2013	105	69	71	79	50	52	61	49	32	56
2014	130	59	85	74	52	58	76	39	53	48
2015	105	82	69	102	50	82	90	46	37	52
2016	102	87	76	72	68	67	66	59	54	52

*The technological areas are based on the International Patent Classification (CIP) Agreement Table. Information consulted on April 2018 in

Source: OMPI statistical database. Indicator: Patent publications by technology. Type of report: Account by the registration office and the origin of the applicant. Last update March 2018. Accessed in April 2018 at: https://www3.wipo.int/ipstats/index.htm?tab=patent

III.20 MAIN FOREIGN COUNTRIES WHERE MEXICANS REQUEST PATENTS, 2006-2016

Patent office	U.S.A	Canada	Patent Office of the European Union	Brazil	Japan	China	Republic of Korea	United Kingdom	Colombia	India	Peru	Australia
Year / Office Code (English)	US	CA	EP	BR	JP	CN	KR	GB	CO	IN	PE	AU
2006	213	31	47	28	24	20	11	n.d.	n.d.	16	4	13
2007	212	35	30	31	20	23	14	1	18	17	6	10
2008	248	44	63	38	21	27	4	1	n.d.	21	5	13
2009	220	39	51	36	21	18	12	2	n.d.	8	10	11
2010	295	57	49	64	19	30	11	5	17	26	8	15
2011	306	51	70	55	34	42	26	12	25	28	10	13
2012	355	51	64	64	30	45	26	9	18	37	7	22
2013	357	53	58	54	32	40	25	8	27	18	20	14
2014	481	51	55	53	19	31	23	6	20	33	8	16
2015	593	59	68	49	33	52	12	25	31	31	15	14
2016	618	54	51	31	31	27	27	22	19	17	17	16

n.a.: Not available.
Source: OMPI statistical database. Indicator: Patent publications by technology. Type of report: Account by the registration office and the origin of the applicant.
Last update March 2018. Accessed in April 2018 at: https://www3.wipo.int/ipstats/index.htm?tab=patent

III.21 COUNTRIES WHERE MEXICANS ARE GRANTED PATENTS, 2006-2016

Patent office	U.S.A	Patent Office of the European Union	Canada	India	China	Russian Federation	Brazil	Colombia	Japan	Republic of Korea	Australia	Spain	Malaysia
Year / Office Code (English)	US	EP	CA	IN	CN	RU	BR	CO	JP	KR	AU	ES	MY
2006	3	10	5	n.d.	n.d.	n.d.	2	n.d.	n.d.	2	n.d.	n.d.	n.d.
2007	4	8	5	n.d.	n.d.	2	n.d.	n.d.	2	2	2	1	n.d.
2008	5	6	3	n.d.	n.d.	5	3	n.d.	4	2	1	2	n.d.
2009	10	11	7	n.d.	n.d.	1	3	n.d.	1	1	2	3	n.d.
2010	21	7	7	2	n.d.	5	1	2	3	5	4	2	n.d.
2011	19	22	12	1	4	4	2	2	8	8	11	1	n.d.
2012	24	19	30	5	7	19	n.d.	18	16	23	7	2	4
2013	41	28	26	6	34	11	2	18	27	31	9	3	4
2014	42	34	26	16	38	9	4	6	10	32	20	4	2
2015	33	39	17	22	28	13	8	9	21	17	13	6	3
2016	43	34	29	27	18	18	13	12	12	11	8	7	5

n.a.: Not available.
Source: OMPI statistical database. Indicator: Patent publications by technology. Type of report: Account by the registration office and the origin of the applicant.
Last update March 2018. Accessed in April 2018 at: https://www3.wipo.int/ipstats/index.htm?tab=patent

III.22 NUMBER OF PATENTS REQUESTED IN MEXICO, VIA PCT AND NORMAL, 2006-2017

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
PCT	12,926	13,902	14,160	12,055	11,926	11,000	11,534	11,774	12,409	13,787	12,884	12,663
Normal	2,574	2,697	2,421	2,226	2,650	3,055	3,780	3,670	3,726	4,284	4,529	4,521
Total	**15,500**	**16,599**	**16,581**	**14,281**	**14,576**	**14,055**	**15,314**	**15,444**	**16,135**	**18,071**	**17,413**	**17,184**

*Until December 2017, IMPI in figures 2017. Retrieved on April 16, 2018 en https://www.gob.mx/impi/documentos/instituto-mexicano-de-la-propiedad-industrial-en-cifras-impi-en-cifras

III.23 DEPENDENCE AND SELF-SUFFICIENCY RELATIONS, INVENTIVENESS COEFFICIENT AND DIFFUSION RATE FOR MEXICO, 2005-2017

Year	Dependence ratio	Self-sufficiency ratio	Inventiveness coefficient	Diffusion rate
2005	26.00	0.08	0.06	0.55
2006	26.00	0.04	0.06	0.71
2007	24.90	0.04	0.06	0.77
2008	23.21	0.04	0.07	0.67
2009	16.37	0.06	0.08	0.53
2010	14.33	0.07	0.10	0.65
2011	12.20	0.08	0.11	0.65
2012	10.85	0.08	0.13	0.74
2013	11.75	0.08	0.12	0.70
2014	11.97	0.08	0.12	0.67
2015	12.25	0.08	0.14	0.87
2016	12.29	0.08	0.13	0.81
2017	11.88	0.08	0.13	n.d.

Dependency Ratio: Foreigners Applications / National Applications.
Self-Sufficiency Ratio: National patent applications / Total applications for the year studied.
Inventive Coefficient: Patent applications by nationals / 10,000 inhabitants.
Diffusion Rate: Requests from Mexicans abroad / Requests from nationals.
When working with OMPI data it should be noted that an invention can result in many patents as countries in which this invention is recorded.
n.a .: Not available.
Sources: OMPI, IMPI. Date of consultation: April 2018.

III.24 MEXICO´S TBP, 2008-2017

Year	Income	Disbursements	Balance	Total transactions	Coverage ratio[1/]
2008	96.90	925.76	-828.90	1,022.70	0.10
2009	94.30	1,822.50	-1,728.20	1,916.80	0.05
2010	87.80	656.40	-568.60	744.20	0.13
2011	96.40	772.60	-676.20	869.00	0.12
2012	79.70	556.50	-476.70	636.20	0.14
2013	199.10	523.90	-324.80	722.90	0.38
2014[e/]	194.00	459.20	-265.20	653.20	0.42
2015[e/]	192.20	326.50	-134.20	518.70	0.59
2016[e/]	199.76	375.48	-175.72	575.23	0.53
2017[e/]	213.24	384.12	-170.88	597.36	0.56

[1/] Coverage Rate = Income /Disbursements
[e/] Estimated data.
Source: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010; 2012; 2014, created in collaboration between INEGI and Conacyt.

III.25 TECHNOLOGY BALANCE OF PAYMENTS, INCOME, 2008-2015

Million dolars

Country	2008	2009	2010	2011	2012	2013	2014	2015
Germany	49,613.67	48,566.12	58,245.54	69,604.00	71,205.78	68,357.40	75,809.57	71,836.47
Australia	4,147.87	3,674.97	4,577.31	5,049.19	4,907.84	4,843.40	4,979.43	4,427.95
Austria	9,421.76	8,508.80	8,244.54	10,553.90	10,902.06	11,997.46	13,219.57	11,315.81
Belgium	9,329.48	11,853.97	11,771.48	12,979.68	14,727.09	17,080.05	19,184.57	17,820.48
Glen	2,754.35	2,306.88	3,000.50	2,652.77	2,637.14	2,620.91	n.a.	n.a.
Korea	2,529.61	3,581.90	3,344.90	4,032.07	5,310.80	6,845.63	9,764.55	10,407.90
Denmark	7,623.58	7,262.26	6,352.16	7,455.05	8,305.95	8,424.92	8,708.65	7,686.34
Slovenia	424.21	295.20	265.55	301.10	316.72	n.a.	n.a.	n.a.
Spain	17,920.98	15,807.67	15,064.21	17,702.87	16,125.70	16,171.11	19,187.56	17,099.76
U.S	94,453.00	93,949.00	100,569.00	119,936.00	122,658.00	125,519.00	134,325.00	130,834.00
Estonia	273.17	271.79	294.70	361.22	387.22	458.21	491.78	444.81
Finland	10,677.47	9,502.44	9,472.28	10,795.78	10,093.88	11,224.89	11,670.16	10,781.44
France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Greece	856.63	721.27	715.19	797.10	674.30	774.60	1,017.07	812.61
Hungary	3,598.72	3,631.60	4,185.54	4,549.91	4,395.99	4,779.98	4,924.10	4,178.56
Ireland	37,780.80	37,087.24	40,878.36	49,683.38	55,080.76	63,569.56	75,485.84	73,337.04
Iceland	n.a.	337.48	283.09	302.21	254.29	323.44	443.60	543.08
Israel	9,359.28	9,268.05	10,117.28	12,182.82	13,141.19	14,558.71	14,779.42	15,371.54
Italy	11,178.91	8,848.28	10,276.99	12,177.74	13,841.84	14,383.64	15,144.27	13,239.92
Japan	21,531.36	21,538.18	27,758.50	29,887.20	34,102.40	34,788.19	34,549.37	32,631.38
Latvia	190.02	162.65	188.13	255.19	240.32	297.38	317.09	316.08
Luxembourg	1,471.71	1,635.63	2,363.57	2,939.72	4,448.58	4,943.44	5,702.57	4,968.84
Mexico	**96.90**	**94.30**	**87.76**	**96.35**	**79.74**	**199.06**	**194.00** e/	**192.20** e/
Norway	3,588.48	3,194.96	4,198.92	4,154.80	4,391.58	4,515.06	n.a.	n.a.
New Zealand	839.23	1,288.04	885.55	1,184.22	837.73	830.73	n.a.	n.a.
Countryes Bajos	30,508.66	29,473.08	n. d.	39,985.67	40,171.22	44,424.87	52,122.28	56,278.37
Poland	2,960.04	2,269.99	3,317.59	3,724.20	4,120.66	4,926.58	6,020.79	4,853.07
Portugal	1,323.18	1,489.64	1,276.22	1,540.03	1,576.68	1,805.14	2,000.21	1,771.22
UK	33,796.21	29,527.08	31,119.66	35,653.81	39,559.46	41,547.03	45,790.10	41,060.55
Czech Republic	2,453.23	2,260.55	2,223.98	3,251.79	3,412.64	3,742.04	3,994.18	3,663.31
Slovak Republic	424.21	444.82	504.47	770.00	948.10	n.a.	n.a.	n.a.
Sweden	17,857.87	16,726.11	17,751.78	23,177.57	23,617.12	26,483.27	28,034.38	27,970.43
Switzerland	15,289.40	18,612.95	20,820.35	25,203.79	28,311.26	29,959.95	32,765.29	30,336.41
Countryes not members of the OECD								
Argentina	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Chinese Taipei	626.94	754.95	822.07	n.a.	903.87	1,013.74	1,114.10	n.a.
Romania	29.26	22.96	19.86	31.16	92.27	191.24	n. d.	n.a.
Russia	872.08	606.93	627.84	592.64	688.84	773.73	1,279.21	1,654.73
Singapore	5,970.55	5,924.04	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
South Africa	53.20	47.53	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

e/ Estimated data.

n.d.: Not available.

Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010; 2012; 2014, jointly created by INEGI and Conacyt.

OECD, Main Science and Technology Indicators full database. Last update MSTI (2017) / 20, March 2018.

III.26 TECHNOLOGY BALANCE OF PAYMENTS: DISBURSEMENTS, 2008-2015

Million dollars

Country	2008	2009	2010	2011	2012	2013	2014	2015
AGermany	41,529.30	40,078.16	45,207.90	53,846.83	55,606.26	55,232.68	57,025.67	53,734.29
Australia	6,195.38	5,514.79	7,299.85	8,812.09	9,041.20	9,516.89	9,205.28	7,799.62
Austria	5,794.85	5,062.21	4,656.68	5,967.84	6,728.82	7,902.71	8,472.52	7,133.52
Belgium	9,837.77	10,720.39	9,968.94	11,248.96	12,631.48	14,335.61	18,237.28	17,499.96
Glen	1,042.14	823.20	565.93	764.00	892.72	1,227.43	n.a.	n.a.
Korea	5,669.92	8,438.10	10,234.29	9,900.48	11,051.99	12,038.37	15,540.00	n.a.
Denmark	5,748.38	4,849.78	5,070.52	6,981.75	6,540.38	6,363.07	6,645.38	6,045.57
Slovenia	591.06	616.25	632.02	690.34	666.59	n.a.	n.a.	n.a.
Spain	14,278.18	11,422.74	10,764.77	11,989.84	10,592.06	9,542.28	10,729.57	10,097.29
U.S	57,509.00	61,884.00	69,577.00	81,826.00	84,168.00	87,920.00	90,459.00	88,891.00
Estonia	173.48	172.82	191.38	341.88	309.10	294.76	365.25	277.92
Finland	9,366.16	9,061.90	7,769.07	8,146.18	8,847.56	7,695.41	6,560.74	5,022.45
France	n. d.	n. d.	n. d.	n. d.	n. d.	n.a.	n.a.	n.a.
Greece	1,432.01	1,327.23	1,383.89	1,267.11	813.96	951.72	1,144.57	950.69
Hungary	4,686.96	3,985.21	3,812.17	4,340.27	4,057.88	5,210.32	4,821.08	3,817.11
Ireland	42,545.89	42,143.89	44,576.15	48,897.95	53,167.60	57,334.49	76,593.67	98,091.41
Iceland	n. d.	140.60	179.05	215.19	239.12	201.05	294.83	243.82
Israel	2,529.26	2,134.06	2,493.96	2,634.49	2,722.90	3,231.14	3,792.10	3,512.25
Italy	15,611.43	13,328.49	13,865.51	15,201.49	12,807.20	14,274.46	14,238.33	12,015.72
Japan	5,805.41	5,716.58	6,038.63	5,197.04	5,622.69	5,919.82	4,842.57	4,978.73
Latvia	172.48	119.56	135.14	182.28	165.78	189.84	169.82	156.38
Luxembourg	1,683.67	1,735.10	2,180.40	3,193.55	4,744.48	6,738.81	7,211.20	6,004.38
Mexico	**925.76**	**1,822.50**	**656.40**	**772.60**	**556.50**	**523.90**	**459.20**e/	**326.50**e/
Norway	3,336.17	1,785.21	2,268.96	2,530.95	2,974.47	2,902.98	n.a.	n.a.
New Zealand	1,220.89	1,080.66	1,312.12	1,860.47	1,311.69	1,209.60	n.a.	n.a.
Countryes Bajos	23,413.02	25,969.68	n. d.	29,427.74	30,877.81	33,375.41	48,838.69	50,215.89
Poland	4,790.49	3,780.35	5,459.17	3,639.18	3,918.05	5,284.06	5,709.52	3,112.98
Portugal	1,426.36	1,608.96	1,459.50	1,658.64	1,292.93	1,456.27	1,936.30	1,726.52
UK	18,205.17	17,207.77	18,435.38	17,826.10	19,281.35	21,788.12	22,995.42	21,280.42
Czech Republic	2,453.23	2,260.55	2,223.98	3,251.79	3,412.64	3,742.04	3,994.18	3,663.31
Slovak Republic	856.62	839.90	763.00	635.57	550.31	n.a.	n.a.	n.a.
Sweden	12,382.35	10,222.71	9,845.20	11,554.58	12,834.47	13,424.67	16,632.50	15,751.59
Switzerland	17,227.76	19,291.15	21,172.14	26,435.99	28,802.96	30,114.87	36,019.39	33,998.81
Countryes not members of the OECD								
Argentina	n. d.	n. d.	n. d.	n. d.	n. d.	n.a.	n.a.	n.a.
Chinese Taipei	2,400.50	3,071.78	4,479.71	n. d.	5,079.10	5,082.37	5,373.87	n.a.
Romania	111.87	80.02	101.01	119.40	121.10	157.73	n.a.	n.a.
Russia	2,217.49	1,572.48	1,410.13	1,915.41	2,053.09	2,468.74	2,455.83	2,205.43
Singapore	17,472.88	17,075.04	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.
South Africa	1,662.08	1,642.49	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.

e/ Estimated data.
n.d.: Not available.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010; 2012; 2014, jointly created INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017) / 20, March 2018.

III.27 TECHNOLOGY BALANCE OF PAYMENTS: TOTAL TRANSACTIONS, 2008-2015

Million dollars

Country	2008	2009	2010	2011	2012	2013	2014	2015
Germany	91,142.97	88,644.29	103,453.44	123,450.83	126,812.04	123,590.08	132,835.24	125,570.76
Australia	10,343.25	9,189.75	11,877.16	13,861.28	13,949.04	14,360.28	14,184.71	12,227.57
Austria	15,216.62	13,571.01	12,901.22	16,521.74	17,630.88	19,900.18	21,692.10	18,449.33
Belgium	19,167.25	22,574.36	21,740.43	24,228.64	27,358.57	31,415.67	37,421.85	35,320.45
Glen	3,796.48	3,130.08	3,566.43	3,416.77	3,529.87	3,848.33	n.a.	n.a.
Korea	8,199.52	12,020.00	13,579.19	13,932.55	16,362.79	18,884.00	25,304.55	n.a.
Denmark	13,371.96	12,112.04	11,422.68	14,436.80	14,846.33	14,788.00	15,354.03	13,731.91
Slovenia	1,015.27	911.45	897.56	991.44	983.31	n.a.	n.a.	n.a.
Spain	32,199.16	27,230.41	25,828.98	29,692.70	26,717.76	25,713.39	29,917.13	27,197.05
U.S	151,962.00	155,833.00	170,146.00	201,762.00	206,826.00	213,439.00	224,784.00	219,725.00
Estonia	446.65	444.60	486.08	703.10	696.32	752.97	857.03	722.73
Finland	20,043.63	18,564.34	17,241.36	18,941.96	18,941.44	18,920.31	18,230.90	15,803.88
France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Greece	2,288.64	2,048.50	2,099.08	2,064.21	1,488.26	1,726.33	2,161.65	1,763.31
Hungary	8,285.68	7,616.81	7,997.71	8,890.18	8,453.87	9,990.30	9,745.19	7,995.67
Ireland	80,326.69	79,231.13	85,454.51	98,581.33	108,248.36	120,904.06	152,079.51	171,428.45
Iceland	n.a.	478.08	462.14	517.40	493.41	524.49	738.43	786.89
Israel	11,888.54	11,402.10	12,611.24	14,817.31	15,864.09	17,789.85	18,571.52	18,883.80
Italy	26,790.34	22,176.78	24,142.50	27,379.23	26,649.04	28,658.10	29,382.59	25,255.64
Japan	27,336.76	27,254.76	33,797.13	35,084.23	39,725.09	40,708.01	39,391.94	37,610.11
Latvia	362.50	282.21	323.27	437.47	406.10	487.22	486.91	472.46
Luxembourg	3,155.38	3,370.73	4,543.97	6,133.27	9,193.06	11,682.26	12,913.76	10,973.22
Mexico	**1,022.66**	**1,916.80**	**744.16**	**868.95**	**636.24**	**722.96**	**653.20**[e/]	**518.70**[e/]
Norway	6,924.65	4,980.17	6,467.89	6,685.75	7,366.05	7,418.04	n.a.	n.a.
New Zealand	2,060.13	2,368.70	2,197.67	3,044.69	2,149.42	2,040.33	n.a.	n.a.
Countryes Bajos	53,921.68	55,442.76	n.a.	69,413.41	71,049.02	77,800.29	100,960.97	106,494.27
Poland	7,750.53	6,050.34	8,776.76	7,363.38	8,038.71	10,210.64	11,730.32	7,966.04
Portugal	2,749.54	3,098.60	2,735.72	3,198.67	2,869.61	3,261.41	3,936.51	3,497.74
UK	52,001.39	46,734.85	49,555.04	53,479.92	58,840.81	63,335.15	68,785.52	62,340.97
Czech Republic	4,906.46	4,521.10	4,447.96	6,503.58	6,825.28	7,484.08	7,988.36	7,326.62
Slovak Republic	1,280.83	1,284.72	1,267.47	1,405.56	1,498.41	n.a.	n.a.	n.a.
Sweden	30,240.22	26,948.82	27,596.98	34,732.15	36,451.59	39,907.94	44,666.88	43,722.01
Switzerland	32,517.16	37,904.10	41,992.49	51,639.78	57,114.22	60,074.82	68,784.68	64,335.21
Countryes not members of the OECD								
Argentina	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Chinese Taipei	3,027.45	3,826.73	5,301.78	n.a.	5,982.97	6,096.11	6,487.97	n.a.
Romania	141.13	102.98	120.87	150.56	213.37	348.97	n.a.	n.a.
Russia	3,089.57	2,179.41	2,037.97	2,508.05	2,741.93	3,242.47	3,735.04	3,860.16
Singapore	23,443.44	22,999.08	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
South Africa	1,715.28	1,690.01	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[e/] Estimated data.
n.d.: Not available.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010; 2012; 2014, jointly created by INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017) / 20, March 2018.

III.28 TECHNOLOGY BALANCE OF PAYMENTS: BALANCE, 2008-2015

Million dolars

Country	2008	2009	2010	2011	2012	2013	2014	2015
Germany	8,084.38	8,487.96	13,037.63	15,757.17	15,599.52	13,124.72	18,783.90	18,102.19
Australia	-2,047.51	-1,839.82	-2,722.54	-3,762.91	-4,133.36	-4,673.49	-4,225.85	-3,371.67
Austria	3,626.91	3,446.58	3,587.87	4,586.05	4,173.23	4,094.75	4,747.05	4,182.29
Belgium	-508.29	1,133.58	1,802.54	1,730.72	2,095.61	2,744.44	947.29	320.52
Glen	1,712.21	1,483.68	2,434.57	1,888.77	1,744.42	1,393.48	n.a.	n.a.
Korea	-3,140.31	-4,856.20	-6,889.39	-5,868.41	-5,741.20	-5,192.74	-5,775.45	n.a.
Denmark	1,875.20	2,412.48	1,281.64	473.30	1,765.57	2,061.85	2,063.26	1,640.78
Slovenia	-166.84	-321.04	-366.47	-389.24	-349.87	n.a.	n.a.	n.a.
Spain	3,642.80	4,384.93	4,299.43	5,713.03	5,533.64	6,628.83	8,457.98	7,002.46
U.S	36,944.00	32,065.00	30,992.00	38,110.00	38,490.00	37,599.00	43,866.00	41,943.00
Estonia	99.69	98.97	103.33	19.34	78.12	163.45	126.53	166.89
Finland	1,311.31	440.54	1,703.21	2,649.59	1,246.32	3,529.48	5,109.43	5,758.99
France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Greece	-575.38	-605.97	-668.70	-470.01	-139.66	-177.12	-127.50	-138.08
Hungary	-1,088.24	-353.61	373.37	209.64	338.11	-430.34	103.02	361.45
Ireland	-4,765.08	-5,056.66	-3,697.79	785.43	1,913.16	6,235.07	-1,107.82	-24,754.37
Iceland	n.a.	196.89	104.03	87.02	15.18	122.39	148.78	299.26
Israel	6,830.02	7,133.99	7,623.32	9,548.34	10,418.29	11,327.57	10,987.31	11,859.29
Italy	-4,432.52	-4,480.21	-3,588.53	-3,023.74	1,034.64	109.18	905.94	1,224.20
Japan	15,725.95	15,821.59	21,719.88	24,690.16	28,479.71	28,868.36	29,706.80	27,652.65
Latvia	17.54	43.09	52.99	72.91	74.54	107.54	147.27	159.70
Luxembourg	-211.96	-99.47	183.17	-253.84	-295.90	-1,795.37	-1,508.63	-1,035.54
Mexico	**-828.86**	**-1,728.20**	**-568.64**	**-676.25**	**-476.76**	**-324.84**	**-265.20**[e/]	**-134.20**[e/]
Norway	252.30	1,409.75	1,929.96	1,623.84	1,417.10	1,612.09	n.a.	n.a.
New Zealand	-381.66	207.39	-426.56	-676.25	-473.96	-378.87	n.a.	n.a.
Countryes Bajos	7,095.63	3,503.40	n.a.	10,557.93	9,293.41	11,049.46	3,283.59	6,062.48
Poland	-1,830.45	-1,510.36	-2,141.58	85.02	202.61	-357.48	311.27	1,740.09
Portugal	-103.18	-119.31	-183.28	-118.61	283.74	348.88	63.91	44.70
UK	15,591.04	12,319.31	12,684.27	17,827.71	20,278.11	19,758.92	22,794.68	19,780.14
Czech Republic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Slovak Republic	-432.41	-395.09	-258.53	134.43	397.79	n.a.	n.a.	n.a.
Sweden	5,475.52	6,503.40	7,906.58	11,622.99	10,782.65	13,058.60	11,401.88	12,218.84
Switzerland	-1,938.35	-678.19	-351.78	-1,232.20	-491.70	-154.91	-3,254.11	-3,662.40
Countries not members of the OECD								
Argentina	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Chinese Taipei	-1,773.56	-2,316.83	-3,657.63	n.a.	-4,175.23	-4,068.63	-4,259.77	n.a.
Romania	-82.61	-57.06	-81.15	-88.24	-28.83	33.51	n.a.	n.a.
Russia	-1,345.41	-965.54	-782.30	-1,322.77	-1,364.25	-1,695.01	-1,176.62	-550.70
Singapore	-11,502.33	-11,151.00	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
South Africa	-1,608.88	-1,594.96	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[e/] Estimated data.
n.d.: Not available.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010; 2012; 2014, jointly created INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017) / 20, March 2018.

III.29 TECHNOLOGY BALANCE OF PAYMENTS: COVERAGE RATIO, 2008-2015

Country	2008	2009	2010	2011	2012	2013	2014	2015
Germany	1.19	1.21	1.29	1.29	1.28	1.24	1.33	1.34
Australia	0.67	0.67	0.63	0.57	0.54	0.51	0.54	0.57
Austria	1.63	1.68	1.77	1.77	1.62	1.52	1.56	1.59
Belgium	0.95	1.11	1.18	1.15	1.17	1.19	1.05	1.02
Glen	2.64	2.80	5.30	3.47	2.95	2.14	n.a.	n.a.
Korea	0.45	0.42	0.33	0.41	0.48	0.57	0.63	n.a.
Denmark	1.33	1.50	1.25	1.07	1.27	1.32	1.31	1.27
Slovenia	0.72	0.48	0.42	0.44	0.48	n.a.	n.a.	n.a.
Spain	1.26	1.38	1.40	1.48	1.52	1.69	1.79	1.69
U.S	1.64	1.52	1.45	1.47	1.46	1.43	1.48	1.47
Estonia	1.57	1.57	1.54	1.06	1.25	1.55	1.35	1.60
Finland	1.14	1.05	1.22	1.33	1.14	1.46	1.78	2.15
France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Greece	0.60	0.54	0.52	0.63	0.83	0.81	0.89	0.85
Hungary	0.77	0.91	1.10	1.05	1.08	0.92	1.02	1.09
Ireland	0.89	0.88	0.92	1.02	1.04	1.11	0.99	0.75
Iceland	n.a.	2.40	1.58	1.40	1.06	1.61	1.50	2.23
Israel	3.70	4.34	4.06	4.62	4.83	4.51	3.90	4.38
Italy	0.72	0.66	0.74	0.80	1.08	1.01	1.06	1.10
Japan	3.71	3.77	4.60	5.75	6.07	5.88	7.13	6.55
Latvia	1.10	1.36	1.39	1.40	1.45	1.57	1.87	2.02
Luxembourg	0.87	0.94	1.08	0.92	0.94	0.73	0.79	0.83
Mexico	**0.10**	**0.05**	**0.13**	**0.12**	**0.14**	**0.38**	**0.42**[e/]	**0.59**[e/]
Norway	1.08	1.79	1.85	1.64	1.48	1.56	n.a.	n.a.
New Zealand	0.69	1.19	0.67	0.64	0.64	0.69	n.a.	n.a.
Countryes Bajos	1.30	1.13	n.a.	1.36	1.30	1.33	1.07	1.12
Poland	0.62	0.60	0.61	1.02	1.05	0.93	1.05	1.56
Portugal	0.93	0.93	0.87	0.93	1.22	1.24	1.03	1.03
UK	1.86	1.72	1.69	2.00	2.05	1.91	1.99	1.93
Czech Republic	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Slovak Republic	0.50	0.53	0.66	1.21	1.72	n.a.	n.a.	n.a.
Sweden	1.44	1.64	1.80	2.01	1.84	1.97	1.69	1.78
Switzerland	0.89	1.64	0.98	0.95	0.98	0.99	0.91	0.89
Countryes not members of the OECD								
Argentina	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Chinese Taipei	0.26	0.25	0.18	n.a.	0.18	0.20	0.21	n.a.
Romania	0.26	0.29	0.20	0.26	0.76	1.21	n.a.	n.a.
Russia	0.39	0.39	0.45	0.31	0.34	0.31	0.52	0.75
Singapore	0.34	0.35	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
South Africa	0.03	0.03	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[e/] Estimated data.
n.d.: Not available.
Sources: Data calculated by the Conacyt based on information from the Survey on Research and Technological Development (ESIDET) 2010; 2012; 2014, created in collaboration between INEGI and Conacyt.
OECD, Main Science and Technology Indicators full database. Last update MSTI (2017) / 20, March 2018.

III.30 BAT EXPORTS BY GROUPS OF GOODS, 2005-2017

Million dollars

Type of goods	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aeronautics	1,254.18	1,516.60	2,065.58	2,248.98	1,732.84	2,192.51	2,616.87	2,688.30	2,748.84	3,334.47	3,085.79	3,402.88	3,901.59
Armament	15.84	16.40	16.02	19.69	22.35	27.16	30.10	27.39	22.70	27.20	28.84	39.64	26.15
Computers-Office Machines	11,471.46	12,094.92	12,045.13	10,062.27	10,241.52	15,452.61	18,324.71	20,721.79	19,525.80	22,900.60	20,816.07	22,575.01	24,978.93
Electronics-Telecommunications	14,991.35	17,099.94	19,736.21	24,932.86	22,787.76	25,991.96	24,966.27	27,161.19	29,062.42	27,771.14	28,143.95	28,821.34	31,346.92
Pharmacists	1,236.38	1,156.89	1,272.91	1,221.54	1,215.74	1,379.29	1,722.33	1,792.84	1,657.26	1,728.51	1,828.29	1,455.37	1,214.06
Scientific instruments	3,402.32	4,159.17	3,466.24	3,614.58	2,837.45	3,503.17	4,043.29	4,580.07	4,964.55	5,429.73	5,644.68	6,034.98	6,809.96
Electric machinery	3,068.00	3,475.97	3,839.85	3,548.93	2,321.78	2,571.91	2,585.49	2,668.32	2,865.37	4,460.43	4,462.16	3,259.58	3,169.57
Non-electrical machinery	103.27	157.47	154.45	126.14	118.37	124.19	215.11	202.89	226.51	196.17	197.70	184.21	231.62
Chemicals	641.06	718.88	750.76	761.64	688.05	880.12	1,229.96	1,033.07	902.12	1,037.29	897.11	791.07	794.93
Total	**36,183.85**	**40,396.22**	**43,347.13**	**46,536.62**	**41,965.86**	**52,122.93**	**55,734.13**	**60,875.87**	**61,975.57**	**66,885.54**	**65,104.61**	**66,564.09**	**72,473.73**

Totals may not equal the sum due to rounding.
Source: Prepared by the author with information from the Ministry of Economy, 2017.

III.31 BAT IMPORTS BY GROUPS OF GOODS, 2005-2017

Million dolars

Type of goods	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aeronautics	809.45	1,045.94	1,734.52	1,189.54	1,693.77	373.28	351.04	2,179.78	1,918.30	2,400.12	2,344.99	2,666.60	2,838.32
Armament	24.61	25.03	21.23	15.42	27.11	27.26	79.20	63.09	26.07	31.93	35.92	24.98	26.79
Computers-Office Machines	11,069.23	11,372.06	10,971.87	9,775.81	14,498.33	4,392.46	4,540.74	15,885.56	16,542.89	16,535.89	16,838.92	17,560.03	16,405.47
Electronics-Telecommunications	18,952.20	22,041.43	24,360.00	31,891.92	45,669.94	30,828.27	34,201.39	33,750.62	37,037.60	36,887.69	38,841.48	38,761.18	37,059.10
Pharmacists	2,389.61	2,988.97	3,349.92	3,124.76	4,592.37	3,979.25	4,058.81	4,713.46	4,506.01	4,555.69	4,386.95	3,791.74	3,871.55
Scientific instruments	3,570.04	6,300.10	8,910.34	7,191.22	7,029.49	5,957.25	6,473.34	6,751.76	6,952.89	7,302.90	8,709.83	8,006.57	7,409.90
Electric machinery	3,491.42	3,583.10	5,052.75	5,578.30	7,103.23	3,926.15	4,235.58	5,245.63	5,493.63	5,798.07	5,893.02	5,279.48	5,744.59
Non-electrical machinery	1,211.78	1,405.89	1,785.12	1,324.80	1,415.16	6,928.65	8,402.55	1,929.51	1,954.77	2,090.86	2,527.93	2,406.51	2,635.53
Chemicals	707.80	785.22	693.77	538.26	777.76	6,565.08	6,437.73	783.60	809.24	896.63	905.98	892.74	905.32
Total	**42,226.14**	**49,547.74**	**56,879.52**	**60,630.03**	**82,807.16**	**62,977.65**	**68,780.38**	**71,303.01**	**75,241.39**	**76,499.79**	**80,485.02**	**79,389.82**	**76,896.57**

Totals may not equal the sum due to rounding.
Source: Prepared by the author with information from the Ministry of Economy, 2017.

III.32 TOTAL BAT TRADE BY GROUPS OF GOODS, 2005-2017

Million dolars

Type of goods	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aeronautics	2,063.63	2,562.54	3,800.10	3,438.52	3,426.61	2,565.79	2,967.91	4,868.08	4,667.14	5,734.59	5,430.78	6,069.48	6,739.91
Armament	40.45	41.43	37.25	35.11	49.46	54.42	109.30	90.48	48.77	59.14	64.76	64.62	52.94
Computers-Office Machines	22,540.68	23,466.97	23,016.99	19,838.07	24,739.85	19,845.07	22,865.46	36,607.35	36,068.69	39,436.49	37,654.99	40,135.04	41,384.40
Electronics-Telecommunications	33,943.55	39,141.37	44,096.21	56,824.78	68,457.70	56,820.23	59,167.65	60,911.81	66,100.02	64,658.83	66,985.43	67,582.52	68,406.02
Pharmacists	3,626.00	4,145.86	4,622.82	4,346.30	5,808.11	5,358.54	5,781.14	6,506.29	6,163.28	6,284.20	6,215.25	5,247.11	5,085.61
Scientific instruments	6,972.37	10,459.27	12,376.58	10,805.80	9,866.94	9,460.41	10,516.63	11,331.83	11,917.45	12,732.63	14,354.51	14,041.56	14,219.86
Electric machinery	6,559.42	7,059.07	8,892.60	9,127.23	9,425.02	6,498.06	6,821.08	7,913.95	8,359.00	10,258.50	10,355.19	8,539.06	8,914.16
Non-electrical machinery	1,315.05	1,563.36	1,939.57	1,450.94	1,533.53	7,052.85	8,617.66	2,132.40	2,181.28	2,287.03	2,725.63	2,590.72	2,867.15
Chemicals	1,348.86	1,504.10	1,444.53	1,299.90	1,465.81	7,445.20	7,667.69	1,816.67	1,711.36	1,933.91	1,803.09	1,683.81	1,700.25
Total	**78,409.99**	**89,943.95**	**100,226.64**	**107,166.65**	**124,773.02**	**115,100.58**	**124,514.52**	**132,178.88**	**137,216.97**	**143,385.33**	**145,589.63**	**145,953.91**	**149,370.30**

Totals may not equal the sum due to rounding.
Source: Prepared by the author with information from the Ministry of Economy, 2017.

III.33 BAT BALANCE FOR GROUPS OF GOODS, 2005-2017

Million dolars

Type of goods	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aeronautics	444.73	470.67	331.06	1,059.45	39.07	1,819.23	2,265.84	508.52	830.54	934.35	740.80	736.29	1,063.27
Armament	-8.76	-8.63	-5.21	4.26	-4.76	-0.09	-49.10	-35.70	-3.37	-4.73	-7.07	14.67	-0.64
Computers-Office Machines	402.23	722.86	1,073.26	286.46	-4,256.81	11,060.15	13,783.97	4,836.23	2,982.91	6,364.71	3,977.15	5,014.97	8,573.46
Electronics-Telecommunications	-3,960.85	-4,941.50	-4,623.80	-6,959.06	-22,882.18	-4,836.31	-9,235.12	-6,589.42	-7,975.18	-9,116.56	-10,697.52	-9,939.83	-5,712.18
Pharmacists	-1,153.23	-1,832.08	-2,077.01	-1,903.22	-3,376.63	-2,599.97	-2,336.47	-2,920.62	-2,848.75	-2,827.18	-2,558.66	-2,336.37	-2,657.49
Scientific instruments	-167.72	-2,140.94	-5,444.11	-3,576.64	-4,192.04	-2,454.08	-2,430.05	-2,171.69	-1,988.34	-1,873.17	-3,065.15	-1,971.59	-599.94
Electric machinery	-423.42	-107.14	-1,212.90	-2,029.37	-4,781.45	-1,354.23	-1,650.09	-2,577.31	-2,628.26	-1,337.64	-1,430.86	-2,019.89	-2,575.02
Non-electrical machinery	-1,108.51	-1,248.42	-1,630.67	-1,198.66	-1,296.79	-6,804.46	-8,187.45	-1,726.62	-1,728.26	-1,894.70	-2,330.23	-2,222.30	-2,403.91
Chemicals	-66.75	-66.34	56.99	223.38	-89.71	-5,684.96	-5,207.77	249.47	92.89	140.66	-8.86	-101.67	-110.39
Total	**-6,042.28**	**-9,151.52**	**-13,532.39**	**-14,093.41**	**-40,841.31**	**-10,854.72**	**-13,046.25**	**-10,427.14**	**-13,265.82**	**-9,614.25**	**-15,380.40**	**-12,825.72**	**-4,422.84**

Totals may not equal the sum due to rounding.
Source: Prepared by the author with information from the Ministry of Economy, 2017.

III.34 BAT COVERAGE RATE BY GROUPS OF GOODS, 2005-2017

Type of goods	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aeronautics	1.55	1.45	1.19	1.89	1.02	5.87	7.45	1.23	1.43	1.39	1.32	1.28	1.37
Armament	0.64	0.66	0.75	1.28	0.82	1.00	0.38	0.43	0.87	0.85	0.80	1.59	0.98
Computers-Office Machines	1.04	1.06	1.10	1.03	0.71	3.52	4.04	1.30	1.18	1.38	1.24	1.29	1.52
Electronics-Telecommunications	0.79	0.78	0.81	0.78	0.50	0.84	0.73	0.80	0.78	0.75	0.72	0.74	0.85
Pharmacists	0.52	0.39	0.38	0.39	0.26	0.35	0.42	0.38	0.37	0.38	0.42	0.38	0.31
Scientific instruments	0.95	0.66	0.39	0.50	0.40	0.59	0.62	0.68	0.71	0.74	0.65	0.75	0.92
Electric machinery	0.88	0.97	0.76	0.64	0.33	0.66	0.61	0.51	0.52	0.77	0.76	0.62	0.55
Non-electrical machinery	0.09	0.11	0.09	0.10	0.08	0.02	0.03	0.11	0.12	0.09	0.08	0.08	0.09
Chemicals	0.91	0.92	1.08	1.42	0.88	0.13	0.19	1.32	1.11	1.16	0.99	0.89	0.88
Total	**0.86**	**0.82**	**0.76**	**0.77**	**0.51**	**0.83**	**0.81**	**0.85**	**0.82**	**0.87**	**0.81**	**0.84**	**0.94**

Totals may not equal the sum due to rounding.
Source: Prepared by the author with information from the Ministry of Economy, 2017.

III.35 EXPENDITURE ON INNOVATION BY SECTOR OF EXECUTION AND SOURCE OF THE FUNDS, 2009-2017

Thousand of current pesos

Sector of execution / Financing sector	2009	2010	2011	2012	2013	2014	2015	2016	2017
Productive									
Productive[1/ 2/]	2,632,402	n.a.	7,960,892	n.a.	10,074,588	n.a.	n.a.	n.a.	n.a.
Total productive sector	**2,632,402**	**n.a.**	**7,960,892**	**n.a.**	**10,074,588**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Government									
Federal investment									
Sector 38 National Council of Science and Technology[2/]	943,058	626,460	432,000	448,300	587,000	819,000	503,000	666,477	205,555
Sector 10 Economy	0	334,257	305,074	317,000	279,200	350,000	110,000	0	0
Sector 8 Agriculture, Livestock, Rural Development, Fishing and Food	0	0	0	0	0	2,987,000	3,432,035	1,306,813	2,451,218
Total government sector	**943,058**	**960,717**	**737,074**	**765,300**	**866,200**	**4,156,000**	**4,045,035**	**1,973,290**	**2,656**
Total									
Productive[1/]	2,632,402	n.a.	7,960,892	n.a.	10,074,588	n.a.	n.a.	n.a.	n.a.
Government	943,058	960,717	737,074	765,300	866,200	4,156,000	4,045,035	1,973,290	2,656,773
Total innovation	**3,575,460**	**n.a.**	**8,697,967**	**n.a.**	**10,940,788**	**n.a.**	**n.a.**	**n.a.**	**n.a.**

Totals may not equal the sum of the columns due to rounding.
n.a .: Not available.
[1/] INEGI-Conacyt, Survey on Research and Technological Development (ESIDET); 2012, 2014
[2/] Figures revised for the years 2009 to 2014.
Sources: SHCP, Federal Public Treasury Account, 2009-2017.
INEGI-Conacyt, Survey on Research and Technological Development (ESIDET); 2012, 2014.

III.36 EXPENDITURE ON INNOVATION BY SECTOR OF EXECUTION AND SOURCE OF THE FUNDS, 2009-2017

Thousand pesos, 2017

Sector of execution / Financing sector	2009	2010	2011	2012	2013	2014	2015	2016	2017
Productive									
Productive[1/ 2/]	3,690,505	n.a.	10,088,859	n.a.	12,078,356	n.a.	n.a.	n.a.	n.a.
Total productive sector	**3,690,505**	**n.a.**	**10,088,859**	**n.a..**	**12,078,356**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Government									
Federal investment									
Sector 38 National Council of Science and Technology[2/]	1,322,124	840,058	547,475	545,670	703,750	940,892	562,490	707,541	205,555
Sector 10 Economy	0	448,225	386,622	385,852	334,731	402,091	123,010	0	0
Sector 8 Agriculture, Livestock, Rural Development, Fishing and Food	0	0	0	0	0	3,431,556	3,837,944	1,387,328	2,451,218
Total government sector	**1,322,124**	**1,288,283**	**934,096**	**931,521**	**1,038,481**	**4,774,538**	**4,523,444**	**2,094,869**	**2,656,773**
Total									
Productive[1/]	3,690,505	n.a.	10,088,859	n.a.	12,078,356	n.a.	n.a.	n.a.	n.a.
Government	1,322,124	1,288,283	934,096	931,521	1,038,481	4,774,538	4,523,444	2,094,869	2,656,773
Total innovation	**5,012,629**	**n.a.**	**11,022,955**	**n.a.**	**13,116,838**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Deflator	71	75	79	82	83	87	89	94	100

Totals may not equal the sum of the columns due to rounding.
n.a .: Not available.
[1/] INEGI-Conacyt, Survey on Research and Technological Development (ESIDET); 2012, 2014
[2/] Figures revised for the years 2009 to 2014.
Sources: SHCP, Federal Public Treasury Account, 2009-2017.
INEGI-Conacyt, Survey on Research and Technological Development (ESIDET); 2012, 2014.

III.37 EXPENDITURE ON INNOVATION BY SECTOR OF EXECUTION AND SOURCE OF FUNDS, 2009-2017

Thousand pesos, 2008

Sector of execution / Financing sector	2009	2010	2011	2012	2013	2014	2015	2016	2017
Productive									
Productive[1/ 2/]	2,542,476	n.a.	6,989,297	n.a.	8,418,343	n.a.	n.a.	n.a.	n.a.
Total productive sector	**2,542,476**	**n.a.**	**6,989,297**	**n.a.**	**8,418,343**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Government									
Federal investment									
Sector 38 National Council of Science and Technology 2 /	910,842	579,087	379,276	381,189	490,498	653,580	391,533	502,217	149,925
Sector 10 Economy	0	308,980	267,841	269,545	233,300	279,308	85,623	0	0
Sector 8 Agriculture, Livestock, Rural Development, Fishing and Food	0	0	0	0	0	2,383,690	2,671,478	984,735	1,787,838
Total government sector	**910,842**	**888,067**	**647,117**	**650,733**	**723,798**	**3,316,577**	**3,148,634**	**1,486,952**	**1,937,763**
Total									
Productive[1/]	2,542,476	n.a.	6,989,297	n.a.	8,418,343	n.a.	n.a.	n.a.	n.a.
Government	910,842	888,067	647,117	650,733	723,798	3,316,577	3,148,634	1,486,952	1,937,763
Total innovation	**3,453,318**	**n.a.**	**7,636,415**	**n.a.**	**9,142,141**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Deflator	104	108	114	118	120	125	128	133	137

Totals may not equal the sum of the columns due to rounding.
n.a .: Not available.
1/ INEGI-Conacyt, Survey on Research and Technological Development (ESIDET); 2012, 2014
2/ Figures revised for the years 2009 to 2014.
Sources: SHCP, Federal Public Treasury Account, 2009-2017.
INEGI-Conacyt, Survey on Research and Technological Development (ESIDET); 2012, 2014.

CHAPTER IV
ACTIONS IN SCIENCE TECHNOLOGY AND INNOVATION IN THE FEDERAL PUBLIC ADMINISTRATION

2017 Basis

IV.1 BUDGET MANAGED BY THE CONACYT, 2009-2017
Thousand pesos

Year	Current prices	2017 Price	Real Annual Percentage Variation
2009	10,554,356	14,796,716	23.2
2010	11,922,233	15,987,235	8.0
2011	13,170,269	16,690,716	4.4
2012	14,114,064	17,179,604	2.9
2013	18,421,322	22,085,200	28.6
2014	23,903,461	27,461,017	24.3
2015	25,109,257	28,078,949	2.3
2016	25,006,090	26,546,773	-5.5
2017	21,833,061	21,833,061	-17.8

2008 Basis

IV.1 BUDGET MANAGED BY THE CONACYT, 2009-2017
Thousand pesos

Year	Current prices	2008 Price	Real Annual Percentage Variation
2009	10,554,356	10,193,807	1.8
2010	11,922,233	11,020,663	8.1
2011	13,170,269	11,562,890	4.9
2012	14,114,064	12,001,166	3.8
2013	18,421,322	15,392,889	28.3
2014	23,903,461	19,075,475	23.9
2015	25,109,257	19,544,913	2.5
2016	25,006,090	18,843,071	-3.6
2017	21,833,061	15,924,315	-15.5

Sources: Conacyt.
SHCP, Public Federal Account, 2009-2017.
INEGI, Mexico's National Accounts System

IV.2 BUDGET MANAGEMENT BY THE CONACYT BY ACTIVITY, 2009-2017[1/]
Thousand pesos

Year	Research and Experimental Development	Education and Scientific and Technical Education	Scientific and Technological Services	Technological innovation	Total
2009	4,877,937.9	3,730,664.5	529,941.1	1,415,812.1	10,554,355.6
2010	5,919,142.6	4,173,924.5	526,375.3	1,302,791.1	11,922,233.5
2011	6,817,737.1	4,780,217.7	493,030.9	1,079,283.6	13,170,269.3
2012	7,190,911.4	5,577,512.0	539,630.1	806,010.6	14,114,064.1
2013	9,884,643.5	6,820,573.9	573,848.8	1,142,256.5	18,421,322.8
2014	13,730,905.2	7,834,489.5	801,778.5	1,536,288.4	23,903,461.6
2015	14,305,380.2	8,369,044.9	1,222,451.6	1,212,381.0	25,109,257.7
2016	12,982,014.7	9,014,861.8	1,643,190.8	1,366,022.9	25,006,090.3
2017	9,472,548.4	9,835,754.9	1,655,886.9	434,435.2	21,398,625.5

The method for classifying the different activities was modified for 2015, so the figures for each classification can vary compared to previous years.
Due to rounding, totals may not correspond to the sum of all figures shown.
[1/] Classification according to the Frascati Manual of the OECD.
Sources: Conacyt.
SHCP, Federal Public Account, 2009-2017.

2017 Basis

IV.3 BUDGET MANAGED BY THE CONACYT BY ACTIVITY, 2009-2017[1/]

Thousand pesos, 2017

Year	Research and Experimental Development	Education and Scientific and Technical Education	Scientific and Technological Services	Technological innovation	Total
2009	6,838,642.3	5,230,218.2	742,952.8	1,984,902.8	14,796,716.1
2010	7,937,331.7	5,597,064.7	705,848.0	1,746,990.4	15,987,234.8
2011	8,640,135.5	6,057,982.0	624,819.4	1,367,778.9	16,690,715.7
2012	8,752,759.7	6,788,933.9	656,836.4	981,074.1	17,179,604.1
2013	11,850,633.4	8,177,140.7	687,983.6	1,369,443.7	22,085,201.3
2014	15,774,477.9	9,000,497.8	921,107.3	1,764,934.4	27,461,017.4
2015	15,997,289.2	9,358,858.7	1,367,031.9	1,355,770.3	28,078,950.0
2016	13,781,866.3	9,570,288.0	1,744,431.6	1,450,186.7	26,546,772.6
2017	9,472,548.4	9,835,754.9	1,655,886.9	434,435.2	21,398,625.5

2008 Basis

IV.3 BUDGET MANAGED BY THE CONACYT BY ACTIVITY, 2009-2017[1/]

Thousand pesos, 2008

Year	Research and Experimental Development	Education and Scientific and Technical Education	Scientific and Technological Services	Technological innovation	Total
2009	4,711,302	3,603,221	511,838	1,367,446	10,193,807
2010	5,471,531	3,858,288	486,570	1,204,273	11,020,663
2011	5,985,659	4,196,811	432,858	947,561	11,562,890
2012	6,114,421	4,742,550	458,847	685,350	12,001,166
2013	8,259,625	5,699,284	479,509	954,472	15,392,890
2014	10,957,557	6,252,091	639,836	1,225,991	19,075,475
2015	11,135,232	6,514,420	951,550	943,711	19,544,914
2016	9,782,458	6,793,052	1,238,209	1,029,352	18,843,071
2017	6,908,965	7,173,876	1,207,749	316,863	15,607,453

The method for classifying the different activities was modified for 2015, so the figures for each classification can vary in comparison to previous years.
Due to rounding, totals may not correspond to the sum of all figures shown.
[1/] Classification according to the OECD Frascati Manual.
Sources: Conacyt
SHCP, Federal Public Account, 2009-2017.
INEGI, Mexico's National Accouns System

IV.4 CONACYT CURRENT SCHOLARSHIPS, 2009-2017

Costs and numbers

Year	Cost (Thousand pesos)	Number		Total
		Nationals	Foreigners	
2009	3,770,260	28,210	2,424	30,634
2010	4,173,924	33,982	3,414	37,396
2011	4,780,218	36,514	4,082	40,596
2012	5,869,500	41,755	4,559	46,314
2013	6,820,574	45,638	5,181	50,819
2014	7,834,489	49,640	5,991	55,631
2015	8,370,650	52,372	6,463	58,835
2016	9,419,990	54,170	6,420	60,590
2017	9,835,754	54,402	6,982	61,384

* Does not include specific current scholarships for national or foreign.
Sources: Conacyt
SHCP, Federal Public Account, 2009-2017.
Note: The number of scholarships, both national and foreign, does not include specific scholarships.

2017 Basis

IV.5 EXPENDITURE ON CONACYT SCHOLARSHIP HOLDERS, 2009-2017

Thousand pesos, 2017

Year	National Scholarship Holders		Foreign Scholarship Holders		Total	
	Current price	2017 price	Current price	2017 price	Current price	2017 price
2009	2,854,563	4,001,965	915,697	1,283,765	3,770,260	5,285,729
2010	3,385,602	4,539,956	788,322	1,057,108	4,173,924	5,597,064
2011	3,906,511	4,950,732	873,707	1,107,251	4,780,218	6,057,982
2012	4,797,795	5,839,864	1,071,705	1,304,477	5,869,500	7,144,341
2013	5,629,789	6,749,517	1,190,785	1,427,624	6,820,574	8,177,141
2014	6,422,055	7,377,850	1,412,484	1,622,704	7,834,539	9,000,555
2015	6,465,390	7,230,057	1,905,260	2,130,597	8,370,650	9,360,654
2016	7,274,364	7,722,554	2,145,627	2,277,824	9,419,991	10,000,378
2017	7,462,187	7,462,187	2,359,588	2,359,588	9,821,775	9,821,775

2008 Basis

IV.5 EXPENDITURE ON CONACYT SCHOLARSHIP HOLDERS, 2009-2017

Thousand pesos, 2008

Year	National Scholarship Holders		Foreign Scholarship Holders		Total	
	Current price	2017 price	Current price	2017 price	Current price	2017 price
2009	2,854,563	2,757,048	915,697	884,416	3,770,260	3,641,464
2010	3,385,602	3,129,580	788,322	728,708	4,173,924	3,858,288
2011	3,906,511	3,429,737	873,707	767,074	4,780,218	4,196,811
2012	4,797,795	4,079,558	1,071,705	911,269	5,869,500	4,990,827
2013	5,629,789	4,704,262	1,190,785	995,022	6,820,574	5,699,284
2014	6,422,055	5,124,938	1,412,484	1,127,193	7,834,539	6,252,130
2015	6,465,390	5,032,625	1,905,260	1,483,044	8,370,650	6,515,670
2016	7,274,364	5,481,519	2,145,627	1,616,814	9,419,991	7,098,333
2017	7,462,187	5,442,673	2,359,588	1,721,006	9,821,775	7,163,679

Due to rounding, totals may not correspond to the sum of all figures shown.
Sources: Conacyt
SHCP, Federal Public Account, 2009-2017.
INEGI, Mexico's National Accounts System

IV.6 CURRENT CONACYT SCHOLARSHIPS BY EDUCATION LEVEL, 2009-2017

Number

Year	Master Degree	Doctorate	Others[1/]	Total*
2009	17,628	12,426	580	30,634
2010	22,547	14,054	795	37,396
2011	24,385	15,405	806	40,596
2012	27,535	17,157	1,622	46,314
2013	30,442	18,491	1,886	50,819
2014	33,078	20,149	2,404	55,631
2015	34,746	21,274	2,815	58,835
2016	34,981	22,166	3,443	60,590
2017	35,118	22,996	3,270	61,384

[1/] Includes postdoctoral scholarships, specialization, exchange and sabbatical stays.
* Does not include specific existing national and foreign scholarships.
Source: Conacyt

IV.7 CONACYT CURRENT NATIONAL SCHOLARSHIPS BY STATE, 2009-2017

Number

Entity	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aguascalientes	126	122	172	300	348	387	505	456	441
Baja California	1,009	1,305	1,549	2,102	2,318	2,412	2,530	2,277	2,066
Baja California Sur	142	250	274	335	360	407	439	464	510
Campeche		11	36	46	58	66	85	128	143
Chiapas	218	292	297	442	484	512	639	669	719
Chihuahua	753	1,141	1,223	1,203	1,260	1,203	1,122	1,066	1,087
Coahuila	500	828	890	999	1,030	1,178	1,220	1,190	1,147
Colima	148	164	173	206	188	188	242	273	256
Mexico City	12,614	11,879	13,336	14,645	15,033	16,043	16,534	17,053	16,795
Durango	102	167	178	239	332	382	395	407	394
Guanajuato	877	1,100	1,189	1,243	1,329	1,434	1,569	1,766	1,809
Guerrero	56	49	62	85	96	164	283	433	571
Hidalgo	225	320	360	396	411	468	523	586	615
Jalisco	1,496	1,975	2,151	2,314	2,521	2,619	2,884	3,111	3,439
México	1,699	3,341	2,650	2,948	3,487	3,549	3,168	3,252	3,233
Michoacán	683	806	1,079	1,363	1,543	1,642	1,592	1,575	1,628
Morelos	588	893	1,117	1,585	1,697	1,789	1,952	2,019	1,942
Nayarit	25	57	86	154	221	316	286	260	258
Nuevo León	1,649	1,770	1,797	2,080	2,355	2,634	2,739	2,896	2,912
Oaxaca	80	229	229	217	274	361	424	480	576
Puebla	1,347	1,795	1,921	2,060	2,235	2,321	2,590	2,685	2,728
Querétaro	333	689	707	893	1,102	1,360	1,627	1,753	1,797
Quintana Roo	17	46	71	116	137	253	278	252	246
San Luis Potosí	695	842	858	1,031	1,221	1,411	1,401	1,470	1,476
Sinaloa	193	332	397	466	633	804	976	1,045	1,053
Sonora	638	717	717	865	940	1,107	1,206	1,332	1,337
Tabasco	51	95	116	131	166	241	295	395	487
Tamaulipas	239	584	575	576	615	603	783	744	617
Tlaxcala	146	203	206	231	252	272	343	375	376
Veracruz	847	1,081	1,094	1,362	1,703	2,091	2,184	2,139	2,103
Yucatán	611	817	869	985	1,056	1,100	1,189	1,230	1,259
Zacatecas	103	82	85	137	233	323	369	389	382
Not specified	0	0	50	0	0	0	0	0	0
Total*	**28,210**	**33,982**	**36,514**	**41,755**	**45,638**	**49,640**	**52,372**	**54,170**	**54,402**

* Does not include specific existing national scholarships.
Source: Conacyt.

IV.8 CONACYT CURRENT SCHOLARSHIPS TO FOREIGN COUNTRIES, 2009-2017

Number

Country	2009	2010	2011	2012	2013	2014	2015	2016	2017
Germany	202	262	342	326	466	558	578	545	479
Saudi Arabia								1	0
Argentina	8	37	50	21	52	53	48	56	141
Australia	55	71	119	113	105	132	138	161	138
Austria	1	2	4	7	15	15	18	19	21
Belgium	7	13	26	29	35	39	36	43	48
Bulgaria								2	2
Brazil	1	24	29	1	44	74	68	110	157
Bolivia					4	4	4	8	14
Bosnia Herzegovina						1	1	0	0
Canada	141	215	258	232	273	289	347	372	386
Czech Republic				3	0	0		0	0
Chile	5	14	22	4	43	45	61	61	122
China	3	7	7	8	16	10	7	18	25
Colombia		12	30	1	32	2	50	33	137
Korea		1	4	1	2	4	6	11	12
Costa Rica	8	13	9	8	8	14	10	10	35
Cuba		7	2	1	3	0	2	6	29
Croatia					2			3	2
Denmark	7	10	15	21	27	28	29	30	26
U.S.A.	607	891	1,093	1,101	1,396	1391	1,523	1,550	1,388
Ecuador		2	2	0	14	3	1	6	20
Egypt							1	1	0
El Salvador					2			1	5
Slovakia					1	1	1	3	3
Slovenia									2
Scotland								0	0
Spain	519	595	568	435	686	955	999	994	1,563
Ethiopia									1
Estonia					2			4	4
Philippines					1			1	2
Finland	6	8	8	12	16	11	12	14	23
France	165	215	239	199	323	340	389	400	451
Ghana									1
Guatemala					2			7	22
Greece									1
Haiti									1
Holland	53	77	115	142	206	237	286	316	275
Honduras					1			1	2
Hungary	1	1	3	2	5	7	7	7	7
Ireland	6	6	11	9	8	12	12	17	12
India					5		2	6	8
Iceland							2	4	1
Israel		4	5	2	7	2	3	6	6
Italy	14	30	42	32	54	42	40	65	118
Japan	2	15	31	15	42	26	28	38	39
Luxembourg					2			1	3
Lebanon								1	0
Morocco								3	2
Namibia									1
Nicaragua					1				3
Nigeria								1	1
Norway	1	7	6	10	15	4	9	12	9
New Zealand	7	10	11	13	13	17	16	19	21
Panama					2			1	0
Paraguay					1			1	3
Peru					9		1	6	17
Poland		2		1	8	2	4	14	15
Portugal	4	13	14	7	10	6	7	19	38
Puerto Rico							1	2	3
UK	575	772	911	980	1,101	1291	1,382	1,245	976
Czech Republic					6	4	5	8	16
South Korea					0				0
Dominican Republic									3
Romania					2			1	2
Russia	6	7	9	5	4	3	5	29	22
Senegal					1				1
Singapore				2	4	3	5	5	7
South Africa				1	1			1	2
Sweden	9	18	27	18	34	46	46	56	42
Switzerland	8	20	31	25	52	63	49	52	45
Thailand					1	1	1		0
Taiwan							2		0
Turkey					2				0
Ukraine	2	3	2	2	4	4	2	2	2
Uruguay					2	1	1	9	18
Venezuela					8			2	1
Others	1	30	37	770		251	218		
Total*	**2,424**	**3,414**	**4,082**	**4,559**	**5,181**	**5,991**	**6,463**	**6,420**	**6,982**

* Does not include specific foreign valid scholarships.
Source: Conacyt.

IV.9 CONACYT CURRENT NATIONAL SCHOLARSHIPS BY INSTITUTION, 2009-2017

Number

Institution	2009	2010	2011	2012	2013	2014	2015	2016	2017
National Autonomous University of Mexico	6,571	7,230	7,574	8,081	8,517	8,936	8,771	9,251	9,546
Metropolitan Autonomous University	1,465	1,517	1,521	1,685	1,741	2,012	2,060	2,135	2,096
Conacyt Public Research Centers	2,520	2,762	3,086	3,326	3,461	3,757	3,947	4,542	4,424
Private universities	1,365	1,629	2,506	2,929	1,837	1,768	1,994	2,343	2,340
State public universities	9,957	14,566	14,881	15,567	17,468	24,353	20,284	24,022	23,553
Technological institutes	1,027	1,403	1,415	1,593	1,625	1,927	2,276	2,405	2,568
National Polytechnical Institute	1,660	2,224	2,513	2,839	3,132	3,451	3,701	3,799	3,875
Center of Research and Advanced Studies	1,769	1,977	2,135	2,256	2,314	2,363	2,306	2,291	2,216
Other	1,876	674	883	3,479	5,543	1,073	7,033	3,382	3,784
Total*	**28,210**	**33,982**	**36,514**	**41,755**	**45,638**	**49,640**	**52,372**	**54,170**	**54,402**

* Does not include specific national scholarships.
Source: Conacyt.

IV. 10 CONACYT NEW NATIONAL SCHOLARSHIPS BY STATE, 2009-2017

Number

State	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aguascalientes	70	48	75	93	206	157	281	239	227	174
Baja California	550	517	772	750	1,250	1,058	1,411	1,198	1,099	936
Baja California Sur	102	98	94	110	166	194	214	218	227	221
Campeche			13	17	27	40	38	64	81	74
Coahuila	257	357	541	437	522	555	653	601	596	534
Colima	54	84	84	113	111	119	115	182	140	104
Chiapas	133	74	188	139	296	256	353	381	362	346
Chihuahua	387	444	703	590	640	714	600	583	558	517
Mexico City	5,275	5,423	6,000	6,005	7,184	7,069	7,811	7,478	8,385	7,086
Durango	49	65	105	83	115	181	208	208	201	166
Guanajuato	474	516	602	556	625	719	685	871	896	972
Guerrero	21	38	20	43	45	59	116	185	285	276
Hidalgo	138	119	207	167	232	232	304	316	342	277
Jalisco	825	905	1,010	1,018	1,169	1,249	1,268	1,494	1,476	1,675
México	891	871	1,618	1,249	1,518	1,777	1,627	1,406	1,698	1,430
Michoacán	409	299	440	574	647	832	801	717	705	714
Morelos	402	351	491	568	819	709	830	888	986	793
Nayarit	16	9	48	42	115	174	200	150	143	119
Nuevo León	532	841	981	821	973	1,247	1,264	1,491	1,408	1,381
Oaxaca	107	122	139	120	116	200	212	248	266	313
Puebla	747	653	981	820	1,016	1,033	1,138	1,266	1,258	1,204
Querétaro	228	241	357	369	490	624	763	915	893	850
Quintana Roo	18	3	47	22	99	72	191	125	156	100
San Luis Potosí	282	404	425	377	522	677	755	691	754	686
Sinaloa	78	117	247	182	275	376	514	544	414	505
Sonora	372	308	431	315	461	483	632	555	688	523
Tabasco	50	48	50	54	75	89	188	145	226	247
Tamaulipas	164	175	458	278	301	365	363	488	362	285
Tlaxcala	90	59	140	104	130	131	168	201	192	182
Veracruz	455	489	535	513	751	1,078	1,276	1,183	1,101	1,037
Yucatán	425	350	466	386	574	517	687	592	709	546
Zacatecas	45	75	24	42	97	199	149	260	159	219
Undefined	0	0	0	0	613	2	0	0	10	1
Total*	**13,646**	**14,103**	**18,292**	**16,957**	**22,180**	**23,187**	**25,815**	**25,883**	**27,003**	**24,493**

* Does not include new specific national scholarships
Source: Conacyt

IV.11 CONACYT NEW FOREIGN SCHOLARSHIPS BY COUNTRY, 2009-2017
Number

Country	2009	2010	2011	2012	2013	2014	2015	2016	2017
Germany	128	215	252	300	358	410	350	349	259
Saudi Arabia								5	0
Argentina	40	55	75	83	121	185	147	194	143
Australia	33	39	63	75	70	92	81	102	54
Austria	3	5	3	11	12	18	12	21	11
Barbados	0	0	0	1	0	0	0	2	0
Belgium	12	15	34	25	40	38	30	42	29
Belize	0	1	0	2	3	6	2	0	0
Bahamas						1	0	1	0
Bolivia	9	11	7	7	11	18	18	29	14
Bosnia Herzegovina						1	1	0	0
Brazil	30	54	53	83	111	147	122	155	120
Bulgaria	0	2	1	0	0	3	0	3	2
Cambodia	0	1	1	0	0	0	0	0	0
Canada	104	162	146	202	208	217	212	274	222
Colombia	13	28	43	39	94	153	164	203	136
Korea	1	0	7	5	5	7	6	10	6
South Korea	0	4	0	0	0	0	0	0	0
Costa Rica	8	15	14	25	26	47	45	45	32
Cuba	7	18	17	20	26	76	65	52	34
Czech Republic	1	4	0	0	0	0	0	0	0
Chile	23	31	34	79	126	126	123	162	113
China	0	0	0	0	12	40	19	26	19
Croatia					2	4	3	3	2
Denmark	7	13	11	25	25	21	22	29	13
U.S.A.	492	653	758	1,000	1,028	1,371	1,174	1,279	785
United Arab Emirates							1	1	0
Scotland	3	1	0	5	3	0	0	0	0
Ethiopia						1	0	1	1
Estonia					2	2	4	5	3
Ecuador	5	4	10	7	24	34	23	28	17
Egypt	0	1	0	0	0	0	1	0	0
El Salvador	0	4	3	2	3	4	11	2	5
Slovenia								3	4
Slovakia	0	0	0	0	2	0	0	2	1
Spain	325	526	672	832	1,060	1,490	1,300	1,484	1,285
Philippines	0	0	0	1	1	1	1	1	2
Finland	4	7	8	11	13	13	10	13	16
France	111	168	193	247	349	325	379	333	254
Ghana	0	0	0	0	0	0	0	0	1
Britain	264	394	452	532	631	790	0	0	0
Greece	0	1	0	1	1	0	2	1	1
Haiti	1	0	0	0	0	0	1	0	1
Guatemala	3	4	4	5	10	11	13	20	22
Guyana					1	0	0	0	0
Holland	30	61	73	95	127	143	173	149	102
Honduras	0	0	0	5	1	1	3	2	2
Hong Kong				1	0	0	0	0	0
Hungary	0	2	0	9	6	11	10	8	6
India	1	7	9	5	8	13	8	6	8
Indonesia	0	1	0	0	1	0	0	1	0
Iran						3	0	0	0
Ireland	8	3	6	11	9	14	12	13	3
Israel	2	5	2	3	8	12	12	7	22
Iceland							2	2	1
Italy	23	51	57	64	77	103	94	112	112
Jamaica						1	0	0	0
Japan	20	56	56	68	73	60	64	83	29
Kenya	0	0	0	1	0	0	0	0	0
Lebanon	0	0	0	0	0	1	0	2	0
Lithuania						1	0	0	0
Latvia							1	0	0
Luxembourg	0	0	0	4	2	0	0	1	3
Malaysia	0	0	1	0	0	3	0	0	0
Morocco	3	1	0	0	0	2	1	3	2

Continue

IV.11 CONACYT NEW FOREIGN SCHOLARSHIPS BY COUNTRY, 2009-2017

Number

Country	2009	2010	2011	2012	2013	2014	2015	2016	2017
Namibia									1
Nicaragua	0	2	1	2	5	2	1	2	3
Nigeria	0	0	0	1	0	0	0	1	1
Norway	4	6	3	9	11	9	12	13	7
New Zealand	4	5	8	8	12	12	7	9	7
Palestine						1	0	0	0
Panama	1	3	3	3	2	6	4	6	0
Paraguay	1	2	1	0	2	1	1	1	3
Peru	3	6	7	10	22	17	18	21	17
Poland	5	5	9	1	9	14	22	23	10
Portugal	5	18	15	13	12	23	14	29	28
Puerto Rico	0	3	2	0	3	3	8	9	2
UK							841	645	372
Czech Republic	1	0	0	7	6	10	9	11	11
South Korea					4	0	0	0	0
Democratic Republic of Congo	0	0	0	1	0	0	0	0	0
Dominican Republic	1	1	0	1	5	3	3	2	3
China	1	11	12	11	0	0	0	0	0
Romania	0	0	0	0	3	0	0	1	2
Russia	2	6	3	0	3	6	16	36	20
Senegal	0	2	1	0	1	0	0	1	1
Serbia	0	0	0	0	0	0	0	0	0
Singapore	1	3	3	4	5	6	4	5	5
Sri Lanka							1	0	0
South Africa	2	1	1	2	0	1	3	1	2
Sweden	6	17	16	17	33	41	34	41	18
Switzerland	7	17	20	28	49	55	35	33	22
Thailand					2	1	3	3	0
Tanzania	0	1	0	0	0	0	0	0	0
Turkey	1	0	0	3	2	1	1	2	0
Uganda						1	0	0	0
Ukraine	0	1	2	1	2	1	0	4	1
Uruguay	7	8	6	9	12	19	10	31	18
Venezuela	8	5	6	7	11	5	6	4	1
Yemen	0	0	0	0	0	0	0	0	0
Yugoslavia	0	0	0	0	0	0	0	0	0
Total*	**1,774**	**2,746**	**3,184**	**4,029**	**4,906**	**6,258**	**5,775**	**6,203**	**4,452**

* Does not include new specific foraign scholarships.
Source: Conacyt

IV.12 CONACYT CURRENT SPECIFIC SCHOLARSHIPS, 2012-2017

Number

Specific scholarships	2012	2013	2014	2015	2016	2017
Conacyt-Ministry of Energy, National Hydrocarbons and Energy Sustainability				112	166	530
Conacyt-Ministry of Energy, National Hydrocarbons and Energy Sustainability				164	557	615
Conacyt-Ministry of Energy, National Hydrocarbons and Energy Sustainability, National Postdoctoral Stays						39
Mexican Mothers Family Heads to Strengthen their Professional Development	409	861	1,214	1,628	1,599	1,741
Scholarships for Indigenous Peoples	158	257	385	562	459	591
Masters and PhD's stays in the industry		117	196	271	103	90
IMSS Scholarships						4
Total	**567**	**1,235**	**1,795**	**2,737**	**2,884**	**3,610**

Source: Conacyt.

IV.12 CONACYT CURRENT SPECIFIC SCHOLARSHIPS, 2012-2017

Number

Specific scholarships	2012	2013	2014	2015	2016	2017
Conacyt-Ministry of Energy, National Hydrocarbons and Energy Sustainability				112	197	814
Conacyt-Ministry of Energy, National Hydrocarbons and Energy Sustainability				164	468	300
Conacyt-Ministry of Energy, National Hydrocarbons and Energy Sustainability, National Postdoctoral Stays						45
Mexican Mothers Family Heads to Strengthen their Professional Development	325	587	792	993	923	852
Scholarships for Indigenous	207	380	415	544	425	572
Masters and PhD's stays in the industry		117	286	271	91	
IMSS Scholarships						4
Total	**532**	**1,084**	**1,493**	**2,084**	**2,104**	**2,587**

Source: Conacyt.

IV.13 RESEARCH, TECHNOLOGICAL DEVELOPMENT AND INNOVATION INCENTIVE PROGRAM 2009-2017

Year	Total Number of Projects	Total amount (Million pesos)	Linked projects	Amount for linked projects (Million pesos)
2009	503	1,663	345	447
2010	677	2,356	428	912
2011	543	2,325	458	973
2012	522	1,948	473	807
2013	706	2,941	649	2,765
2014	866	3,874	787	3,824
2015	821	3,545	759	3,381
2016	936	4,122	879	4,013
2017	421	1,741	374	1,626
Total	**5,995**	**24,515**	**5,152**	**18,748**

Source: Conacyt. Deputy Directorate of Technological Development and Innovation

IV.14 MIXED FUNDS TO SUPPORT SCIENTIFIC AND TECHNOLOGICAL RESEARCH, 2017

Constituted Funds	Projects requested	Approved projects	
	Number	Number	Amount (Millions pesos)
Aguascalientes			
Baja California	12	1	16.0
Baja California Sur	10	5	103.0
Campeche	8	2	7.1
Chiapas	3		
Chihuahua			
Ciudad Juárez		2	3.7
Coahuila	2	2	24.2
Colima			
Mexico City	2	1	210.0
Durango	1	1	16.8
México	9	6	174.4
Guanajuato	4	2	4.1
Guerrero			
Hidalgo			
Jalisco	29	5	146.9
La Paz (municipality)	2		
Michoacán	2	1	16.0
Morelos	2	2	3.2
Nayarit			
Nuevo León			
Oaxaca	1	1	11.0
Puebla			
Puebla (municipality)	2	1	2.0
Querétaro	8	8	138.0
Quintana Roo	1	1	11.7
San Luis Potosí	10	1	17.7
Sinaloa			
Sonora	3	1	12.8
Tabasco			
Tamaulipas	10	2	4.8
Tlaxcala			
Veracruz			
Yucatán	1	1	9.9
Zacatecas			
Total	**122**	**46**	**933.3**

Source: Conacyt

IV.15 STATE COUNCILS OF SCIENCE AND TECHNOLOGY, 2017

No.	State	Councils	Legal Model	Creation Date
I	Puebla	State Council for Science and Technology (COECYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	1 February 1, 1983
II	Querétaro	State Council for Science and Technology in the state of Querétaro (CONCYTEQ)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	December 9, 1986
III	Tamaulipas	Tamaulipas Council for Science and Technology (COTACYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	June 7, 1989
IV	Baja California	Baja California Council for Science and Technology (COBACYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	February 20, 1991
V	Zacatecas	Zacatecan Council for Science and Technology (COZCYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	April 13, 1991
VI	Guanajuato	Council for Science and Technology in the state of Guanajuato (CONCYTEG)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	February 21, 1996
VII	Campeche	State Council for Scientific Research and Technological Development	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	April 15, 1994
VIII	Coahuila	State Council for Science and Technology in the state of Coahuila (COECYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	January 16, 1996
IX	Durango	Council for Science and Technology in the state of Durango (COCYTED)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	April 18, 1996
X	Sinaloa	State Council for Science and Technology (CECYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	March 29, 1996
XI	San Luis Potosí	Council for Science and Technology in San Luis Potosí (CoPoCyT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	September 5, 1996
XII	Michoacán	State Council for Science and Technology in the state of Michoacán (COECYTM)	Decentralized agency in the state Executive Branch.	November 20, 1997
XIII	Colima	State Council for Science and Technology in the state of Colima (CECYTCOL)	Decentralized public agency, endowed with legal personality and patrimony of its own.	March 20, 1999
XIV	Tabasco	State Council for Science and Technology in the state of Tabasco (CCYTET)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	June 9, 1999
XV	Guerrero	State Council for Science and Technology in the state of Guerrero (CECYTEG)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	July 23, 2000
XVI	Quintana Roo	Council for Science and Technology in Quintana Roo (COQCYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H.State Congress.	December 20, 1999

Continúa

IV.15 STATE COUNCILS OF SCIENCE AND TECHNOLOGY, 2017

No.	State	Councils	Legal Model	Creation Date
XVII	Aguascalientes	Council for Science and Technology in the state of Aguascalientes (CONCYTEA)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	April 10, 2000
XVIII	México	Mexican Council for Science and Technology (COMECYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	April 6, 2000
XIX	Chiapas	State Council for Science and Technology of Chiapas (COCYTECH)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	March 8, 2000
XX	Jalisco	Council for Science and Technology in the state of Jalisco (COECYTJAL)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. Congress in the state.	May 6, 2000
XXI	Nayarit	Council for Science and Technology in the state of Nayarit (COCYTEN)	Decentralized public agency, endowed with legal personality and patrimony of its own, created as established by the Law for the Promotion of Science and Technology in the state of Nayarit.	November 24, 2001
XXII	Baja California Sur	South Californian Council for Science and Technology (COSCYT)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	January 31, 2002
XXIII	Hidalgo	State Council for the State of Hidalgo (COCYTEH)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	May 20, 2002
XXIV	Yucatán	Council for Science and Technology in the state of Yucatán (CONCYTEY)	Decentralized public agency in the state Government.	June 11, 2003
XXV	Nuevo León	Council for Science and Technology in the state of Nuevo León (COCYTENL)	Decentralized public agency, endowed with legal personality and patrimony of its own	March 2, 2004
XXVI	Veracruz	State Council for Science and Technology	Decentralized public agency, endowed with legal personality and patrimony of its own	March 14, 2005
XXVII	Morelos	Council for Science and Technology in the state of Morelos (CCYTEM)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	August 3, 2005
XXVIII	Chihuahua	State Council for Science and Technology and Innovation of Chihuahua (COECYTECH)	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	November 8, 2007
XXIX	Tlaxcala	State Council for Science and Technology of Tlaxcala	Decentralized public agency, endowed with legal personality and patrimony of its own, by Decree of the H. State Congress.	May 10, 2007
XXX	Mexico City	Institute of Science and Technology of the Federal District	Decentralized public agency, endowed with its own legal personality and assets, created by agreement of the Legislative Assembly of the Federal District.	February 15, 2007
XXXI	Sonora	State Council for Science and Technology in the state of Sonora	Public decentralized organization in the state Public Administration, sectorized to the Ministry of Economy.	May 17, 2007
XXXII	Oaxaca	Oaxaca’s Council for Science and Technology	Decentralized agency from the Ministry of Economy in the state Government, with technical and management autonomy.	May 26, 2009

Source: Conacyt.

DEFINITIONS

*** Records of Human Resources in Science and Technology (ARHCyT)**

The Records of Human Resources in Science and Technology includes all people who have successfully completed the third educational level, as well as those who are not formally qualified, but who hold a position in science and technology, in which one would usually require such training.

*** Records of Qualified Human Resources in Science and Technology (RHCyTC)**

The Records of Qualified Human Resources in Science and Technology includes all people who have successfully completed the third educational level in a science and technology field, and hold a position in science and technology.

*** Records of Human Resources Educated in Science and Technology (RHCyTE)**

The Records of Human Resources Educated in Science and Technology includes all people who have successfully finished third level education in a science and technology field.

*** Records of Human Resources Employed in Science and Technology (RHCyTO)**

The Records of Human Resources Employed in Science and Technology includes the population employed in any position of the sector.

*** Scientific and technological activities**

These are the systematic activities closely linked to the creation, improvement, dissemination and application of scientific and technological knowledge in all its fields.

Scientific and technological activities are divided into three basic categories:

a) Experimental research and development.

b) Scientific and technical education and training.

c) Scientific and technological services.

a) Research and Experimental Development (R&D)

Systematic and creative work oriented towards increasing the volume of knowledge –including knowledge about people, culture and society- and its use towards fashioning novel applications. This is divided, in turn, in basic and applied research, and in experimental development.

• Basic research

Experimental and theoretical work done mainly with the aim of generating new knowledge around the foundations of observable phenomena and facts, without foreseeing any immediate specific application.

• Applied research

Original research undertaken for the acquisition of new knowledge, mainly oriented towards a practical given and specific aim.

• Experimental development

Systematic work developed upon existing knowledge acquired from research and practical experience; directed to the production of new materials, products and services; to the implementation of new processes, systems and services, and for the substantial improvement of those already produced and installed.

b) Scientific and Technical Education and Teaching (STET)

All educational and literacy activities performed in higher non-specialized university level institutions (technical studies diplomas enrolled in after senior high school or another type of third level education); higher level education and literacy acquisition conducive to obtaining a university degree (BA level); graduate studies; training and updating studies followed after university, aimed at the permanent and systematic training of scientists and engineers.

c) Scientific and Technological Services (SCyT)

All activities linked to experimental research and development that contribute to the creation, dissemination and application of scientific and technological knowledge.

STSs may be classified as follows:

I. Science and technology services given by libraries, archives, information and documentation centers, consultation services, scientific conferences centers, data banks and information processing services.

II. Science and technology services provided by science and/or technology museums, botanical gardens and zoos, and other science and technology collections (anthropological, archeological, geologic, etc.).

III. Systematic translation and elaboration of science and technology books and periodic publications.

IV. Topographic, geologic and hydrologic surveys; astronomic, meteorological and seismic observations; soil, vegetables, fish and fauna inventories; constant testing of soils, air and waters, and constant control and surveillance of radioactive levels.

V. Prospecting and related activities with the aim of finding and defining mineral and oil resources.

VI. Collecting information about human, social, economic and cultural phenomena with the objective, in most cases, of gathering current statistics such as demographic censuses, production, distribution and consumption statistics; market studies, social and cultural statistics, etc.

VII. Tests, normalization, metrology and quality control: usual and common work related to the analysis, control and testing of materials, products, devices and procedures utilizing known methods, together with the establishment and up-keeping of measures' norms and patterns.

VIII. Usual and regular work aimed at advising clients, other sections of an organization or independent users, and helping them to use scientific, technological and administrative knowledge.

IX. Activities related to patents and licenses: systematic efforts of a scientific, juridical and administrative character in public institutions.

* **Central Public Administration (Central Administration)**

A series of administrative entities consisting of: the Presidency of the Republic, state ministries, administrative departments determined by the Federal Executive Power and the Republic's General Attorney's Office.

* **Federal Public Administration**

A series of administrative bodies through which the Federal Executive Power complies with or enforces politics and the will of a government, such as expressed in the fundamental legislation of the country.

* **Budgetary allocation**

Amount set aside to cover anticipated expenditures in programs, subprograms, projects and budgetary items needed to achieve programmed objectives and goals.

* **Bibliometric analysis**

Number of published articles and their citations.

* **Balance of Payments**

Systematic recording of all economic transactions among the residents of the compiling nation and those of the rest of the world. Its main components are: current account, capital account and official reserve account. Each transaction is incorporated into the balance of payments as credit or debit. The former is a transaction to receive payment from foreigners; debit is a transaction that implies paying foreigners.

The economic transactions included in the balance of payments are: goods and services and rent operations between a given economy and the rest of the world; the financial assets and liabilities of that economy vis-à-vis the rest of the world; transfers of ownership and other variations of monetary gold; special drawing rights (SDR), and unilateral transferences.

***Balance of Trade**
Total monetary quantification of commodities' purchases and sales of the country with nations abroad in a given period of time. It is part of the Balance of Payments. Trade Balance has a surplus trend when total exportations exceed the monetary worth of imports, and it is deficient when total imports exceed the monetary value of exports.

* **Technological Balance of Payments**
Subdivision of the Balance of Payments, used to quantify all transactions involving intangible elements (patents, licenses, franchises, etc.) and services provided by companies from different countries, that include some technological content (technical assistance).

* **High Technology Goods (BAT)**
Products highly intensive in research and development [Databank, World Bank Indicators]. These are the outcome of an intense process of Research and Technological Development (IDT) and are characterized by constant evolution; they demand heavy high risk capital investment; they are evidently strategically relevant and they create high levels of international cooperation and competition. As a set of high technology goods, these include end-consumer products, intermediate goods, and machinery and equipment used by industry (direct technology).

* **Administered Scholarships**
Amount of scholarships allotted during a given period, usually annually, including scholarships bestowed in prior years which are still current by the first day of the period or year under review, plus authorized scholarships or commitment scholarships, plus actions undertaken throughout that term. These scholarships do impact the year's budget and are the ones reported before the Federal Public Treasury Account of the Ministry of the Treasury and Public Credit. The heading "administered scholarships" refers to the total number of scholarships economically supported by Conacyt at least during one of the months of the given lapse, including exchange scholarships.

* **Bibliometric**
Method used to measure scientific and technologic production. Its goal is to strengthen the administrative and research decision making process using parameters such as: number of articles, reports, conference proceedings and patents, as well as their citations. Bibliometric indicators estimate the amount of quality investigations there are, and allow national and international comparisons.

* **Organizational Change**
The restructuring of technical, material, human and management resources available to companies, with the goal of increasing their flexibility to face growing international competition.

* **International Standard Industrial Classification**
In 1997, the publication Industrial Competitiveness-Benchmarking Business Environments in the Global Economy issued the latest international standard industrial classification (ISIC Rev.3), which catalogues industries according to their structure and intensity R&D level.

Level	Branch
High	• Aircrafts • Pharmaceuticals • Office, accounting and computing equipment • Electronic equipment (radio, TV and communications) • Medical, precision and optical instruments, clocks and chronometers
Medium-High	• Research and development • Machinery, equipment, instruments and transport equipment (except office, accounting and computing equipment) • Motor vehicles • Other transport equipment (except aircraft and ships) • Chemicals and chemical products (except pharmaceuticals) • Machinery not specified elsewhere • Computers and related activities
Medium-Low	• Non-metallic mineral products • Rubber and plastic products • Carbon, oil derivatives and nuclear energy • Communications • Base metals • Ships • Metal products (except machinery and equipment)
Low	• R• Recycling • Pulp, paper and paper products • Food, drinks and tobacco • Textile, garments, leather and hide • Wholesale and retail, motor vehicle repair, etc. • Electricity, gas and water supply (public services) • Real estate, leasing and entrepreneurial activities • Construction • Financial intermediation (including insurance companies) • Transport and storage • Hotels and restaurants • Community, social and personal services

* **Sectoral Classification**

Element of Budget planning that allows conventional grouping of public entities following administrative, economic and other type of criteria. It shows the trends of state's actions, as well as the volume of public expenditure vis-à-vis all sectors of the economy.

***Foreign trade**

Foreign trade is the total set of commodities and services purchasing and selling, performed by the residents of a nation with the rest of the world. Regarding the Mexican Commodities Balance of Payments, it only includes international transactions.

* **International cooperation treaties**

These are treaties under Public International Law, bound to in writing, celebrated between the Mexican United States and one or several subjects of Public International Law, with the purpose of undertaking specific actions of which our country assumes commitments.

* **Federal Public Treasury Account**

This is the public expenditures report the Executive Power and the Government of Mexico City must annually present before Congress and the Legislative Assembly respectively. It includes the accounting and financial status that shows records of operations stemming from application of the Income Law and the implementation of the Federation's Expenditure Budget, based on programs, sub-programs and goals. Likewise, it indicates the incidence of operations and other accounts on the Federal Public Treasury's total assets and liabilities, itemizing aspects such as: net patrimony, origin and use of resources, operations outcomes and the prevailing situation of the public debt.

* **Program structure**

Harmonious set of programs for the short, medium and long terms, structured in a coherent hierarchized manner vis-à-vis objectives and policies defined in the plan; it includes all program levels, and its formulation directly depends on the definition of the strategy. It is also known as Programmatic Expansion.

* **Graduate Studies**

Higher academic programs (specialization, MA, PhD) which require a prior BA.

• **Specialization**

Furthering BA studies aimed at performing in a specific professional field, without fully constituting an academic degree.

• Master's Degree
A post-BA academic degree. Its objective is to widen knowledge in a given field.

• Doctorate
Degree that usually requires an MA degree. It represents the higher professional and academic level in the national educational system.

* **Equivalent to Full Time (EFT)**
EFT is a method to quantify personnel dedicated to experimental research and development (R&D) as well as to other tasks during a normal 8 hour workday during a given period, generally a year.

***Exports**
Total commodities, whose amount may be expressed in terms of volume, weight or monetary worth, which leave the national territory either definitely or temporarily through a customs request, meeting dispositions of the current Customs Regulations and Law. It also includes the re-evaluation of the main agro-livestock and fishing products. To classify exports two pieces of information are available: country of destination and purchasing country, however, for purposes of the Mexican Commodities Balance of Payments, the "country of destination" is considered in the registration of exports.

* **Annual Impact Factor**
Ratio of number of quotations divided by the number of articles in a given lapse.

* Administered Expenditure (Spent budget)
Payment of the sums related to obligations of the Federal Government. It includes registering all supporting documents, as mandated by the Ministry of Finance and Public Credit.

* **Federal Expenditure in Science and Technology**
Outlays paid by State Ministries, Mexico City Government, the Republic's General Attorney's Office, decentralized agencies, state participation companies and escrows established by Mexico City, in science and technology, in order to perform their activities.

* **Programmable Expenditure**
Monetary allocations with direct effects over social and economic activities as well as over employment generation; it affects aggregate demand due to the disbursements of the Central Public Administration in collective services provision and public investment. It also includes public companies' allocations to budgets oriented to the strategic or essential goods and services production, which directly increases the availability of goods and services. It excludes servicing the debt linked to financial transactions, allocations to states and municipalities, and fiscal incentives, whose economic effects are materialized through the beneficiaries' outlays.

* **Impact**
This category is defined as the rate of the number of citations an author gets in the last two years, divided by the amount of published articles –by same author- in a similar period.

For example:
A= Total amount of citations in 2002.
B= Citations of articles published during 2000-2001.
C= Number of articles published in 2000-2001.
D= B/C = Impact factor in 2002.

This rate or quotient may refer to the average number of quotes each article obtains in a two-year lapse, or in a five year period. In the latter case, the total figure of citations obtained during five years divided by the total number of published articles during the same period is considered.

For example:
B= Quotations of articles published during 2000-2004.
C= Number of articles published during 2000-2004.
D= B/C = Five-year impact factor 2000-2004.

* **Relative Impact**
This is the rate of the impact a given academic field has in a country divided by the impact of that field in the world. This latter part is defined as the rate of the total quotations divided by the total of articles only on this field, in the entire world. A relative impact under one indicates a country is under the international average.

***Imports**
Total amount of commodities whose quantity may be expressed as volume, weight or monetary worth, which enter the national territory definitely or temporarily through a customs request and meeting dispositions of the current Customs Regulations and Law. All commodities used or consumed in the country as well as those destined to the territorial areas known as border zones and free zones are included. The Mexican Commodities' Balance of Payments adopt the "country of origin" criterion to register import trade transactions. The country of origin of a good (in the case of imports) is determined following established rules of origin, based on two criteria: a) Goods totally produced in a given country in the case of there being a single country to attribute origin to, and b) Substantial transformation, in the case of two or more countries behind the production of the goods in question.

*** Innovation**
Introduction of a new or significantly renewed product (good or service), process, commercialization method or organizational method in the internal practices of a company, the organization of a work place, or in its relations abroad (OECD, 2005, 56-64).

*** Product and process technological innovation**
New products and processes, and their meaningful technological transformations. A technological product and process innovation is introduced in the market (product innovation), or used within a production process (process innovation). Technological innovations of product and process involve a series of scientific, technological, organizational, financial and trade activities. The innovating company is the one that has introduced technologically novel products or products and/or processes that have improved considerably during the analyzed period.

• Technologically new product
This is a product whose technological characteristics or the use it has been designed for differ significantly from other previously produced. These innovations may involve radically new technologies, or may be based on a combination of new technologies and currently used ones.

• Technologically improved product
This is a piece whose performance has been relevantly enhanced or updated. A simple product may be renewed (in terms of better performance or lower cost) thanks to the use of highly superior materials and components. Or a complex product, consisting of a variety of integrated technical subsystems, may be perfected due to changes in one of its sub-systems.

***Organizational innovation**
Putting new organizational methods in practice. These may be changes in a company's practices, in the organization of work-place, or in the relations the company establishes abroad.

***Marketing innovation**
These imply the implementation of new marketing methods. These may include changes in the design and packaging of products, in promotion and product placement, or in the pricing methods of goods and services.

*** Higher Education Institutions (HEI)**
This category includes higher education institutions and also research centers and institutes.
*** Socio-economic objective**

About a goal a given entity or institution aims at.

*** Patent**
Set of exclusive rights conferred by law to petitioners presenting novel, non-evident inventions, susceptible to commercial use. A patent is valid during a set time (usually 20 years), during which only the patent holder(s) can commercially exploit their inventions. As a contribution, the requesting party must publically disclose their invention so others, experts in the field, may reproduce it. The patents system is thought of as fomenting innovation, by conferring exclusive legal rights to innovators during a given interval, so that they may enjoy the benefits of their innovating activities.

* **Patents classification**
Patents statistics provide information about a country's research areas, particularly regarding technological trends developed over time. Patent indicators are mainly supported in patent requests. In turn, these are classified considering the country of origin of the inventor or of the patent holder. They are divided in:

- **Residents' or nationals' requests.** These are processed by residents in the same country of residence. In our case, these are requests presented by Mexican citizens; it may be considered an indicator of invention production.

- **Non-residents' or foreigner's requests.** These are petitioned in a given country by a non-resident. In our case, by someone who is not a Mexican citizen. These provide information about the interest there may be in a country as a valuable market for the introduction of a foreign product, or about a potential technological activities competitor, inducing a foreign company to resort to a patent as a tool of their competitive strategy.

- **External requests. These are the patents reques**ted abroad by a country's resident; they may be considered an indicator of the interest of a given company to protect the returns of its inventive activity in foreign markets. In our case, interest lies in the patents Mexicans request in other nations.

***Countries party to the Organization of Economic Cooperation and Development (OECD).**
Germany, Australia, Austria, Belgium, Canada, Chile, Korea, Denmark, Spain, United States, Slovenia, Estonia, Finland, France, Greece, Hungary, Ireland, Island, Israel, Italy, Japan, Latvia, Luxemburg, Mexico, Norway, New Zealand, Netherlands, Poland, Portugal, United Kingdom, Czech Republic, Sweden, Switzerland, Turkey.

* **Open unemployed population or the openly unemployed**
Persons 12 years and above who, without being employed in the reference week, sought to find some economic activity in the month prior to the reference week, or between one and two months before, even when they had not sought it in the last month due to reasons linked to the labour market, but who are available to join a position right away.

* **Economically Active Population (PEA or active population)**
All persons 12 and above who performed some type of economic activity or were part of the open unemployed population in the reference week.

* **Economically Inactive Population (EIP or inactive population)**
All persons 12 and above who did not participate in economic activities nor were part of the openly unemployed population during the reference week.

* **Occupied Population**
All persons 12 years and above who, during the reference period:
a) Participated in economic activities at least an hour or one day, in exchange for monetary or in-kind income, or who worked for no pay.
b) Did not work, but are employed.
c) Will start work within a month.

* **Product**
Interchangeably, this category includes goods and services, while "process" includes method.

* **Program**
Analogous and coherent set of actions aimed at reaching specific objectives and goals for planning. It implies combining different kinds of resources, such as human, technological, material and financial. It specifies the time and space in which the program will be developed, and allocates responsibility to one or several implementing parties, duly coordinated.

*** Budgetary program (Administrative program)**
Specific action programs to which implementing resources, timing, person(s) in charge of and place of fulfillment are assigned in order to meet short-term objectives and goals of the National Plan, and that are part of the budgetary planning process.

*** Industrial sectors of High technology goods**
In its third review of the industrial classification of High Technology Goods, the OECD grouped industries as follows:
a) Aviation
b) Computer-Office machinery
c) Electronics-Telecommunications
d) Pharmaceutics
e) Scientific instruments
f) Electric machinery
g) Chemicals
h) Non-electric machinery
i) Weaponry

*** Human Resources in Science and Technology**
Proportion of the labor force with special abilities, including persons involved in all fields of science and technology activity and study[1], due to their educational level or present position.

***Regions. According to the WTO, regions are defined as follows:**

a) North America: Canada, United States and North American territories.

b) Latin America: Antigua and Barbuda, Netherland Antilles, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saint Lucia, Suriname, Trinidad and Tobago, Uruguay, Venezuela and other countries and territories of Latin America.

c) Africa, subdivided in North Africa: Algeria, Egypt, Libyan Arab Jamahiriya, Morocco and Tunisia; and Sub-Saharan Africa, comprised of: West Africa: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo; Central Africa: Burundi, Cameroon, Chad, Congo, Gabon, Equatorial Guinea, Central African Republic, Democratic Republic of the Congo, Rwanda and Saõ Tomé and Principe; East Africa: Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, United Republic of Tanzania, Seychelles, Somalia, Sudan and Uganda; and Southern Africa: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe and African territories.

d) Asia, subdivided in Western Asia: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, and Eastern Asia (including Oceania): Australia; Brunei Darussalam; Cambodia; China; Fiji; Philippines; Indonesia; Solomon Islands; Japan; Kiribati; Macao, China; Malaysia; Mongolia; Myanmar; New Zealand; Papua New Guinea; Hong Kong Special Administrative Region (Hong Kong, China); Republic of Korea; Lao People's Democratic Republic; Samoa; Singapore; Thailand; Separate Customs Territory of Taiwan, Penghu; Kinmen and Matsu (Chinese Taipei); Tonga; Tuvalu; Vanuatu; Vietnam and other countries and territories of Asia and the Pacific.

e) Western Europe: Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Island, Italy, Liechtenstein, Luxemburg, Malta, Norway, the Netherlands, Portugal, United Kingdom, Sweden, Switzerland, Turkey, Bosnia and Herzegovina, Croatia, Slovenia, Former Yugoslav Republic of Macedonia, Yugoslavia and Western European territories.

[1] By science, we mean physics, biology, humanities and social sciences.

f) Central and Eastern Europe, Baltic States and Commonwealth of Independent States (economies in transition): Albania, Bulgaria, Hungary, Poland, Czech Republic, Slovak Republic and Romania; Baltic States: Estonia, Latvia and Lithuania; and the Commonwealth of Independent States (CIS): Armenia, Azerbaijan, Belarus, Russian Federation, Georgia, Kazakhstan, Kyrgyz Republic, Republic of Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. The group former USSR includes CIS and the Baltic States.

g) Middle East: Saudi-Arabia, Bahrain, Cyprus, United Arab Emirates, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Syrian Arab Republic, Islamic Republic of Iran, Yemen and other countries and territories of the Middle East.

* **Balance in the High Technology Goods Balance of Trade**
Outcome of subtracting the monetary value of imports from that of exports of High Technology Goods. These commercial transactions are measured in US dollars.

* **Administrative sector**
Conventional grouping of public entities and bodies; there is a coordinating body, or head of sector, and other institutions whose activities hold a close relationship with the corresponding sector. These are aimed at achieving a sectoral organization that creates ideal instruments to implement government's programs.

* **Research and Experimental Development (ERD) implementing sectors**
The following economic sectors carry-out Experimental Research and Development activities:

• **Higher education**
All universities, technological colleges and educational institutions higher than second level education, regardless of their funding source or legal status, are part of this sector. It also includes research institutes and experimental stations and clinics directly controlled by, managed by and/or associated to the former.

• **Government**
It includes all federal, central or local government's bodies, departments and establishments (with the exception of those having to do with higher education), plus the private not for profits basically working for the government or mainly funded and/or controlled by it.

• **Non-profit private institutions**
These are organizations that provide philanthropic services to individuals. Professional associations, charitable or private institutions are considered under this category.

• **Productive sector**
All companies, organizations and institutions (excluding higher education ones) whose primary activity is the production of goods and services meant for public sale, generally at market prices. Parastatal companies are included. This sector also involves private not for profit institutes whose main goal is to provide services to private organizations.

* **Funding sectors for Research and Experimental Development (ERD) activities**
Towards enabling identification of funding sources for ERD, economy has been divided into five sectors:

• **Higher Education**
Please see section on sectors that implement scientific and technological activities.

• **Government**
Ibídem.

• **Non-profit private institutions**
Ibídem.

• **Productive**
Ibídem.

• **External**
All institutions and individuals outside a country's borders, except those vehicles, ships, airplanes and space satellites operated by internal organizations and their testing grounds –bought by said institutions.
All international entities (with the exception of private companies), including facilities and operations, within a country's borders.

* **International Standard Classification of Education System (ISCED)**

Elaborated by UNESCO, this classification standardizes educational systems so as to perform international statistical and indicators comparisons.

The first classification of educational systems was elaborated during the 1970s. It was formed by nine categories:

0 Pre-school education.
1 Basic education (first level).
2 Basic secondary education (second level, first stage).
3 Higher and middle education (second level, second stage).
4 Non-defined.
5 Higher education (or third level education) of the kind that leads to a degree non-equivalent to a university degree, but that provides training for specific activities or positions.
6 Higher education (or third level), first stage. Conducive to a BA degree or equivalent.
7 Higher education (or third level), second stage. Conducive to a graduate university degree or equivalent.
8 Non-defined.
9 Education not classified by level.

In 1997 UNESCO modified the ISCED with the purpose of providing more compatible criteria and definitions that allow educational systems' international comparisons. The concept of complementary dimensions that divide each level in subcategories was introduced. Subcategories are defined taking into account: 1) the type of subsequent education the program focuses on; 2) the program's orientation (general education, pre-vocational training or vocational education), and 3) its length.

Third level education of the ISCED 1997 only includes levels 5 and 6. In particular, level 5A includes studies oriented to theoretical development; it provides abilities for advanced research or for the development of careers that require highly skilled personnel. Level 5B corresponds to programs oriented to the practice or development of abilities geared to activities in the production sector.

Classification was reduced to seven categories:

0 Pre-elementary education.
1 Primary education or first level of basic education.
2 Secondary (middle-school) or second level of basic education.
3 Higher middle-school, high school, technical education, vocational training.
4 Post-middle higher education not considered third level education. These are the post-high school courses that provide a technical degree (informatics, laboratory technicians, technicians, etc., or courses that give access to third level education).
5 First stage of third level education geared towards obtaining a BA university degree or its equivalent.
6 Second stage third level education geared towards obtaining a graduate university degree or its equivalent.

* **Occupation Classification National System (SINCO) 2011**

It distinguishes nine main occupational groups:

1. Public officers; directors and heads. Information.
2. Professionals and technicians. Information.
3. Aid workers in administrative activities. Information.
4. Merchants, sales employees and sales agents. Information.
5. Personal services and security. Information.
6. Agricultural, live-stock, forestry, hunting and fishing workers. Information.
7. Handicraft workers. Information.
8. Industrial machinery operators, assemblers, motorists and road transport drivers. Information.
9. Elementary and support activities workers. Information.

* **Science and Technology National System (STNS)**

Organization in charge of producing knowledge and know-how in every country. Its aim is to meet the needs of society. The STNS is made up of all entities devoted to scientific and technological activities:

- **Government** (agencies, research centers and institutional service entities).
- **Universities and higher education institutes** (research centers, schools' and university departments' institutes and laboratories).

- **Companies** (productive facilities, research centers, service entities and laboratories).

- **Not for profit private organizations** (foundations, academies and civil society organizations).

* **Researchers National System (SNI)**
The Researchers National System is a federal program that fosters our nation's scientific and technological development via economic incentives for researchers, as an additional income to their salary.

* **Coverage rate**
It measures the relationship between a country's exports and imports, noting the former as a percentage of the latter (the proportion of imports that may be paid by exports). Thus, when exports are larger than imports, the coverage rate is over one (1) and there is a surplus in the balance of trade; when the opposite takes place, there is a deficit, and the coverage rate is under one (1).

* **BAT coverage rate**
Indicator that allows to evaluate the level of trade dependence of any country in this type of products. It is the rate of exports vis-à-vis imports.

* **Patents Cooperation Treaty (PCT).**
Treaty that allows protection by patent for a given invention in several countries at once, through submission of an "international" patent request. This request may be submitted by nationals or residents of a State Party to the PCT. Regularly, the request is presented before the national patents' office of the State Party to the PCT corresponding to the nationality or address of the person who submits or, by her/his choice, before the OMPI's International Office in Geneva.

* **Connection**
Exchange and cooperation relationship between higher education institutions or research centers and institutions and the productive sector. It is carried out through specific means and is formalized in agreements, contracts or programs. It can be managed through academic-administrative structures or direct contact. Its goals are, for Higher Education Institutions, advancement of scientific and academic development and, for the productive sector, technological development and solving specific problems.

WEB PAGES OF SCIENCE AND TECHNOLOGY ORGANIZATIONS IN THE WORLD

COUNTRY	ORGANIZATIONS	WEB PAGES
Germany	*Federal Ministry of Education and Research*	https://www.bmbf.de
Argentina	Ministry of Science, Technology and Productive Innovation	http://www.mincyt.gob.ar
Australia	*Australian Government, Department of Communications and the Arts*	https://www.communications.gov.au
Austria	*Bundesministerium Bildung, Wissenschaft und Forschung*	https://www.bmb.gv.at
Bangladesh	*Ministry of Science and Technology*	http://www.most.gov.bd
Belgium	*Belgian Science Policy Office*	https://www.belspo.be/belspo/index_en.stm
Brazil	*Ministry of Science, Technology, Innovation and Communications*	http://www.mctic.gov.br/portal
Bulgaria	*Ministry of Education and Science*	https://www.mon.bg/en/
Canada	*Ministry of Science*	https://www.canada.ca/en/services/science.html
Colombia	College of Sciences	http://www.colciencias.gov.co
Costa Rica	Costa Rica's Ministry of Science, Technology and Telecommunications	https://www.micit.go.cr
Croatia	*Ministry of Science and Education of the Republic of Croatia*	https://mzo.hr/hr
Cuba	Ministry of Science, Technology and Environment	http://www.citma.gob.cu
Czech Republic	*Research, Development and Innovation Council*	http://www.vyzkum.cz/
Chile	National Commission of Scientific and Technological Research	http://www.conicyt.cl
China	*Ministry of Science and Technology of the People's Republic of China*	http://www.most.gov.cn/eng

Denmark	*The Ministry of Higher Education and Science*	https://ufm.dk/en/the-ministry/organisation/the-ministry
Ecuador	National Ministry of Higher Education, Science, Technology and Innovation	http://www.educacionsuperior.gob.ec
	http://www.educacionsuperior.gob.ec	http://www.conacyt.gob.sv
El Salvador	*EL Salvador's New National Council of Science and Technology*	http://www.mizs.gov.si
Nuevo Consejo Nacional de Ciencia y Tecnología	http://www.conacyt.gob.sv	http://www.ciencia.gob.es/
Slovenia	*Ministry of Education, Science and Sport*	http://www.mizs.gov.si
Spain	*Ministry of Science, Innovation and Universities*	http://www.ciencia.gob.es/
United States	*National Science Foundation*	http://www.nsf.gov
Finland	*Ministry of Education and Culture*	http://minedu.fi/en
France	*Ministry of Higher Education,*	http://senacyt.concyt.gob.gt/portal
Research and Innovation	*http://www.enseignementsup-recherche.gouv.fr*	https://www.rijksoverheid.nl/ministeries/ministerie-van-onderwijs-cultuur-en-wetenschap
Greece	*Ministry of Development General Secretariat for Research & Technology*	http://www.gsrt.gr
Guatemala	*National Ministry of Science and Technology*	http://senacyt.concyt.gob.gt/portal
Netherland	*Ministry of Education, Culture and Science*	https://www.rijksoverheid.nl/ministeries/ministerie-van-onderwijs-cultuur-en-wetenschap
India	*Department of*	https://www.gov.il/en/Departments/ministry_of_science_and_technology
Science & Technology	*http://www.dst.gov.in*	http://www.miur.gov.it/web/guest/home
Iran	*Ministry of Science, Research and Technology*	https://www.msrt.ir/en
Ireland	*Department of Education & Skills*	https://www.education.ie/en
Israel	Ministry of Science and Technology	https://www.gov.il/en/Departments/ministry_of_science_and_technology
Italy	*Ministry of Education, University and Research*	http://www.miur.gov.it/web/guest/home

Japan	Ministry of Education, Culture, Sports, Science and Technology	http://www.mext.go.jp
Malaysia	Ministry of Energy, Science, Technology, Environment and Climate Change	https://www.mestecc.gov.my/web/
Mexico	*National Council for Science and Technology*	http://www.conacyt.gob.mx
New Zealand	*Ministry of Business, Innovation & Employment*	http://www.mbie.govt.nz
Panama	*National Ministry of Science, Technology and Innovation*	http://www.senacyt.gob.pa
Peru	*National Council for Science, Technology and Technological Innovation*	https://portal.concytec.gob.pe
Poland	*Ministry of Science and Higher Education*	https://www.nauka.gov.pl/en/
Portugal	*Ministry of Science, Technology and Superior Teaching*	https://www.portugal.gov.pt/pt/gc21/area-de-governo/ciencia-tecnologia-e-ensino-superior/ministro
United Kingdom	*Government Office for Science*	https://www.gov.uk/government/organisations/government-office-for-science
Rep. Korea	*Ministry of Science and TIC*	http://english.msip.go.kr/english/main/main.do
Russia	*Ministry of Education of the Russian Federation*	http://government.ru/en/department/33/events
South Africa	Department of Science and Technology	http://www.dst.gov.za
Sweden	*Ministry of Enterprise and Innovation*	http://www.government.se/government-of-sweden/ministry-of-enterprise-and-innovation
Switzerland	*State Secretariat for Education, Research and Innovation*	https://www.sbfi.admin.ch/sbfi/en/home.html
Turkey	*The Scientific and Technological Research Council of Turkey*	https://www.tubitak.gov.tr/en
Venezuela	*Popular Power's Ministry of University Education, Science and Technology*	https://www.mppeuct.gob.ve
Vietnam	*Ministry of Science and Technology of Vietnam*	https://www.most.gov.vn/en/Pages/home.aspx

INTERNATIONAL ORGANIZATIONS

Latin America and Caribbean	
Organization of Ibero-American States (OEI)	http://www.oei.es
	http://www.oecd.org/
Organization for Economic Cooperation and Development (OECD)	
http://www.oecd.org	http://uis.unesco.org/en/home
Ibero-American Network of Science and Technology Indicators (INSTI)	http://www.ricyt.org
United Nations Educational, Scientific and Cultural Organization (UNESCO)	http://uis.unesco.org/en/home

OTHER ORGANIZATIONS

Web page name	Link
Mexican Association of Online Sales	https://www.amvo.org.mx/
Bank of Mexico	http://www.banxico.org.mx
National Chamber of Radio and Television Networks	http://www.cirt.com.mx/portal
National Chamber of the Electronics, Telecommunications and Information Technology	http://www.canieti.org
Federal Telecommunications Institute	http://www.ift.org.mx
Advisory Council for Science	http://www.ccciencias.mx/es
European Commission	https://ec.europa.eu/commission/index_es
Manuel Buendía Foundation	http://www.fundacionbuendia.org.mx
National Institute of Statistics,Geography and Informatics	http://www.inegi.org.mx
International Telecommunication Union	http://www.itu.int/es/Pages/default.aspx
Network Information Center Mexico, S.C.	http://www.nic.mx
Ministry of Communications and Transport	http://www.gob.mx/sct
Ministry of Public Finance and Credit	http://www.gob.mx/hacienda
Select	http://www.select.com.mx
Tax Information System by Internet (TISI)	http://www.economia-snci.gob.mx/
Internet Systems Consortium, Inc.	https://www.isc.org

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