

## COVID-19 revealed the lack of investment on technology and knowledge in Mexico

The sanitary contingency caused by COVID-19 revealed the lack of investment on science and technology in Mexico, which means lack of health infrastructure, inability to make detection tests, and not having enough vaccines for people

Congregación Mariana Trinitaria in its Welfare Ecosystem Model, specifically in the network called Innovation and Management of Knowledge creates integral solutions to contribute to the development of public and social intervention supported by scientific and methodological backgrounds, as well as the creation of new knowledge that may contribute to development.

**T**he health contingency caused by COVID-19 appeared in Mexico in the midst of an evident crisis in matters like innovation in technology and investment in knowledge, whose evidence reflected on the lack of infrastructure to face the pandemic.

Each country has different government agencies with the purpose of promoting, financing, and supporting scientific work, in Mexico the agency in charge of that is the National Council for Science and Technology (CONACYT), whose work is explicitly detailed on the General Education Law.

More details about that may be found in the research “The Mexican crisis of investment on scientific knowledge”, developed by the Educational Innovation Observatory, part of Tecnológico de Monterrey.

According to the 25th article of that Law, the State must invest a minimum of 8 percent of its GDP on issues concerning education, and 1 percent must be addressed to scientific research and development of technology by public universities. “Technically, CONACYT manages and distributes the budget to produce scientific knowledge”, is mentioned in the analysis.

However, that goal has not been reached in more that a decade. The investment on knowledge deals with a national deficit that increases the disadvantages, if we compare it to the resources addressed to scientific communities in other countries; affirms the author of the analysis.

### Mexico invest the minimum in matters of technological innovation

The analysis made by Tecnológico de Monterrey details that the federal investment on science and technology is not consistent enough to reach the 1 percent that is mentioned in the General Education Law for more than a decade.

“The budget invested is between 0.2 and 0.3 percent of GDP before 2014. It increased in 2014 and 2015 to 1.5 percent, but after that the budget was reduced in 2019, and in the project presented by the government in 2020, they decided that only 0.8 percent of the federal budget (0.4 percent of the GDP) would be invested in academic and scientific production. This quantity means 49 thousand 390 million Mexican pesos”, as explained in the analysis.

Tecnológico de Monterrey also mentions that in order to have an idea about the way the investment on knowledge, research, and development works around the world, statistics provided by UNESCO must be analyzed. It is quantified on Purchasing Power Parity (PPP) dollars to guarantee duration and transparency. Data provided by UNESCO details the specific amount of GDP that each country invests on research and development, as well as the amount of money that each number stands for.

The previous information is important to know the meaning of that for each country in terms of managing resources and the scientific outcomes as a result of the assets they use. GDP is not enough to determine the amount of money that countries invest in their scientific community.

For example, Japan, which is ranked on the first position of GDP invested; spends 3.4 percent, that would be 169 thousand 554.1 million PPP dollars. Meanwhile, the USA invests only 2.7 percent, but it represents 476 thousand 459 million PPP dollars, as analyzed in the research.

As reported by UNESCO, Mexico invests 0.4 percent of its GDP, which represents 9 thousand 458.5 million PPP dollars.

Specific details of the ones in charge of this investment include universities, which contribute with 4 thousand 617.5 million PPP dollars, followed by the government with 3 thousand 058.3 millions, and after that, the private business sector with an investment of one thousand 688.1 millions; and finally, the non-profit industry provides 94 thousand 576.5 million dollars.

### Mexico, without medical technology

The article “When science is not enough to pay the price: Mexico in the face of COVID-19 pandemic” in the magazine “Sanitary Horizon”, mentions that even when Mexico shows having enough coordination to face the sanitary crisis, it does not have either infrastructure or technology to face it.

“In accordance with the basic components and fundamental capacities to react against a pandemic, our country has agencies to coordinate and communicate that contribute to a balanced decision-making process in case of a sanitary emergency, like the General Health Council and the Ministry of Health”.



They also add that “However, there are still sanitary deficiencies like the lack of technological infrastructure in the area in charge of diagnosis, the lack of specialized human resources; and also, the dismantling of the System of Universal Health Services (called Seguro Popular), that in 2020 was transitioning to become the Institute of Health and Welfare (INSABI).”

Even when it has a strong constitutional framework that allows the interaction of the three Powers of the Union in case of any emergency alert, the political and financial contexts pulverized the capacity of the ones who make decisions to implement a unanimous strategy to evenly combat the contingency all over the country.

### A Mexican vaccine

On April 13, during the press conference held every morning by the president Andrés Manuel López Obrador, the head of the National Council on Science and Technology, María Elena Álvarez-Buylla Rocas, gave details about the development of a Mexican vaccine to combat COVID-19, called “Patria”.

She explained that the development of this vaccine was coordinated by CONACYT, and presented by the Mexican laboratory Avimex. She also said that the previous stages were developed successfully so, the test on humans will start soon.

It is a strategy developed by CONACYT in the public-private modality. So far, the project has received an initial funding of 15 million pesos by AMEXCID-SRE, and 135 million pesos were provided by the national Council on Science and Technology for the stages 1 and 2.

### CMT and technological innovation

Congregación Mariana Trinitaria, A.C. (CMT) is aware that in the country and all around the world; public, private, and social institutions have limited resources to develop knowledge and research that contribute to identify and fight public and social problems.

This problem is related to at least four fundamental causes which are: low culture on science and innovation issues; limited mechanisms to develop research caused by the disconnection between public and social interventions; limited tools to develop new knowledge; and not enough resources addressed to research and development.

As a consequence, CMT and its Network of Innovation and Management of Knowledge, aims to contribute to the development of public and social interventions with a scientific and methodologic background, and also to encourage new knowledge for the development.

All that is possible by means of a set of integral solutions related to the creation of strategic-planning documents based on results and continuing education; and also on studies and research for global development in topics like: science and technology, housing, food, health, environment, energy, education, water, security, economy; among others.

### Solutions CMT

Subnetwork	Component	Integral Solutions
<b>1.</b> High-quality public and social interventions 	Strategic planning based on results	<ul style="list-style-type: none"> <li>Design of policies, plans, and social programs based on good practices or practices based on evidence</li> <li>Development of plans, programs, and projects based on the systematization of public problems and the solutions for them applying a methodology based on logical framework</li> </ul>
<b>2.</b> Continuous training 	Continuing education	<ul style="list-style-type: none"> <li>Courses and programmes</li> <li>Educational-Digital Platforms</li> </ul>
<b>3.</b> Investment for the development 	Research and studies	<ul style="list-style-type: none"> <li>Research and studies to encourage development</li> <li>Research and social studies</li> <li>Recovery of collective and ancestral knowledge</li> </ul>