

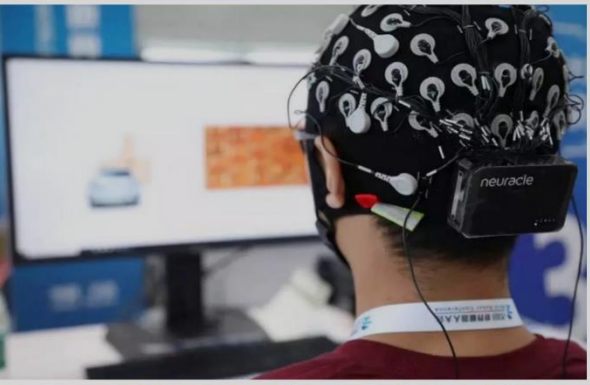




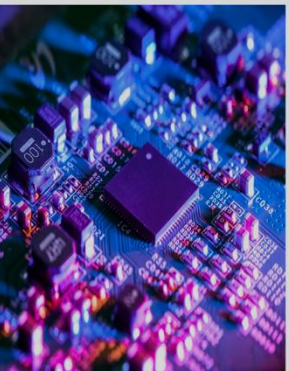
IRAN

STI Profile of the OIC Member State

Science, Technology and Innovation Indicators







COMSTECH

Editor:

Prof. Dr. S. Khurshid Hasanain
Adviser COMSTECH

Data Collection & Layout:

Mr. Umer Farooq
Programme Officer COMSTECH

Mr. Muhammad Jamil
PS COMSTECH

Dr. Waseem Hassan
Associate Professor, University of Peshawar

FOREWORD

It gives me great pleasure to share the *Science, Technology and Innovation Profiles of OIC Member States,* as prepared by COMSTECH. These profiles of member states are being printed, as well as shared on the COMSTECH website. A few words are therefore presented to explain the wider aims and purposes of this exercise.

The member countries of the OIC are vigorously engaged with science, technology and innovation, both as a pursuit of knowledge and in harnessing the forces of nature for human betterment. Depending on their circumstances they have advanced to different levels, but much needs to be done, in general, to catch up with the attainments of the more advanced countries. However, there exists a well-defined need to catalogue national efforts in this direction. In particular, to identify respective strengths, achievements and shortcomings, as well as the institutions and policies that are shaping the scientific research and development profiles of OIC member states.

It is with the above goals and purposes that COMSTECH has ventured on this ambitious task viz. preparing a summarized version of the science, technology and innovation landscape of each member state. We have initiated this effort starting with the profiles of countries leading in this area, and will be continuing and sharing as we proceed onwards.

Undoubtedly much more could be said about each country than the summary that we have presented, but our emphasis is on the essentials and on maintaining brevity. COMSTECH welcomes feedback from member states on this effort and will be happy to update the website profiles on the basis of information received officially.

I hope that the scientific community as well as the planners and administrators of member states will find these profiles both useful and inspiring.

Prof. Dr. M. Iqbal Choudhary
Coordinator General COMSTECH
UNESCO Chair

CONTENT DISCLAIMER

The views mentioned in the document are those of authors and may not necessarily represent or reflect the views of everyone reading it. We have tried our best to mention source of every information or data we have shared in this document.
The sole purpose of the content is for knowledge and awareness of readers/consumers.

Copyright Disclaimer, Under Pakistan's COPYRIGHT ORDINANCE 1962, allowance is made for 'fair use' for purposes such as criticism, comment, news reporting, teaching, and research.

Fair use is a use permitted by copyright statute that might otherwise be infringing. Non-profit, educational, or personal use tips the balance in favor of fair use.
If you have a complaint about something or find our content to be inaccurate or incomplete. Please contact COMSTECH prior to making any complaint. Any infringement if found was not done on purpose.

www.comstech.org

CONTENTS

Following is the list of topics covered in the STI profiles of OIC Member States. All sub-sections/topics may not appear for every country due to unavailability of some data.

CONTENTS

CONTENTS

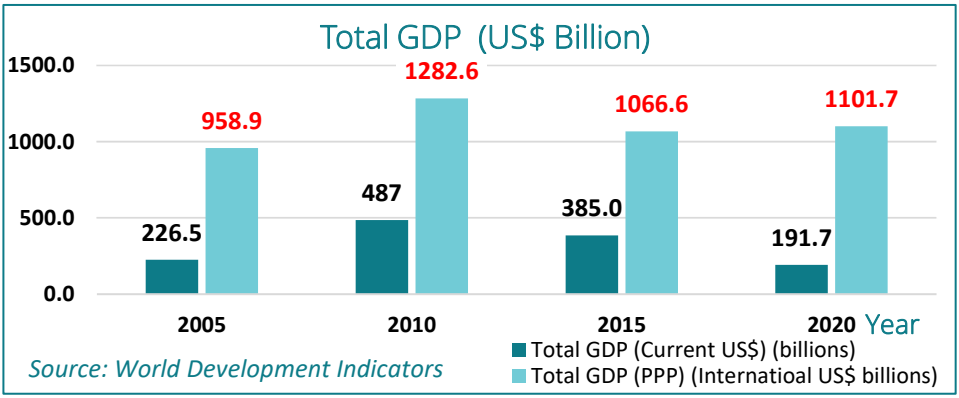
IRAN

The heart of the Persian empire of antiquity, Iran has long played an important role in the region as an an imperial power. The country's roots as a distinctive culture and society date to the Achaemenian period, which began in 550 BCE. It has large reserves of fossil fuels including the world's second-largest natural gas supply and the fourth-largest proven oil reserves. The country's rich cultural legacy is reflected in part by its 22 UNESCO World Heritage Sites. Historically a multinational state, Iran remains a pluralistic society comprising numerous ethnic, linguistic, and religious groups, the largest being Persians, Azeris, Kurds, Mazandaranis and Lurs. After the Iranian Revolution, the current Islamic Republic was established in 1979.

Iran a country of South-western Asia, is bounded by the Caspian Sea in the North and the Persian Gulf in the South. The country has borders with Afghanistan, Armenia, Azerbaijan, Iraq, Pakistan, Turkey and Turkmenistan. It is the eighteenth largest country in the world with the total area of 1.648 million km^2. The coast line of Iran is 2815 km long which lies along the Caspian Sea, Oman Sea and Persian Gulf. The country comprises 14% arable land, 8% forest, 55% natural pastures and 23% desert.

The population of Iran is 85.46 million of which more than 90% are Muslims. Minorities include Parsee, Christians and Jews.

A. ECONOMIC OVERVIEW

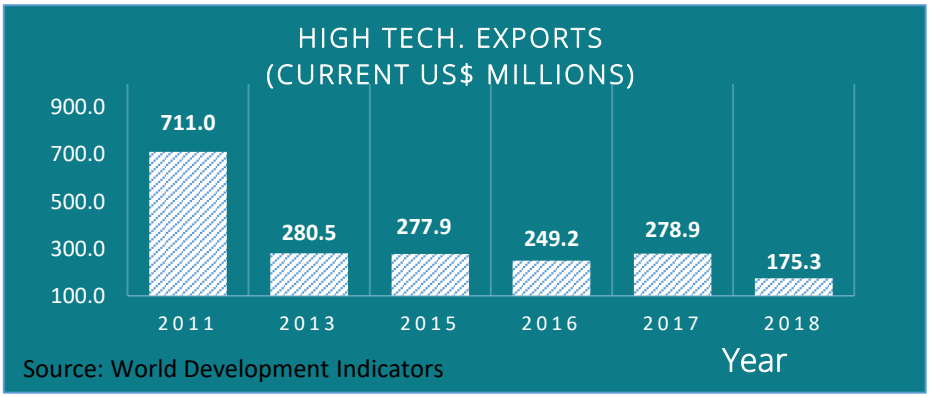


Source: World Development Indicators

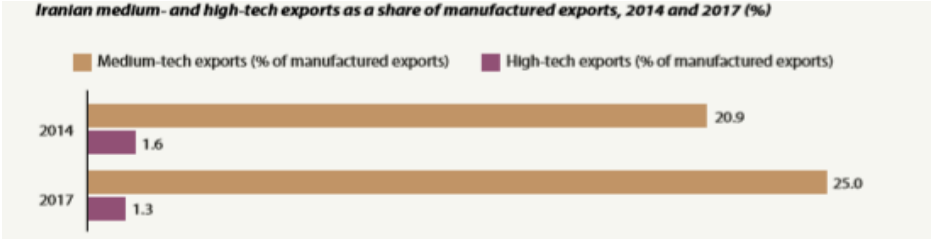
- Iran has a centrally controlled economy with state ownership besides a small private sector in agriculture, private trading and service companies. The country is rich in mineral resources particularly, petroleum and natural gas. Other mineral resources are, coal, chromium, copper, iron ore, lead, manganese, zinc, and sulphur. The major industries are petroleum, petrochemicals, textiles, cement and other construction materials, metal fabrication, etc.

- Being characterized as an oil exporting country, the economy of Iran has often been volatile. The economy since 1994 has grown at a steady pace with a steep decline in 2002 due to the decline in oil prices in the international market. The GDP value of Iran represents 0.17 percent of the world economy. Iran's economy has faced many

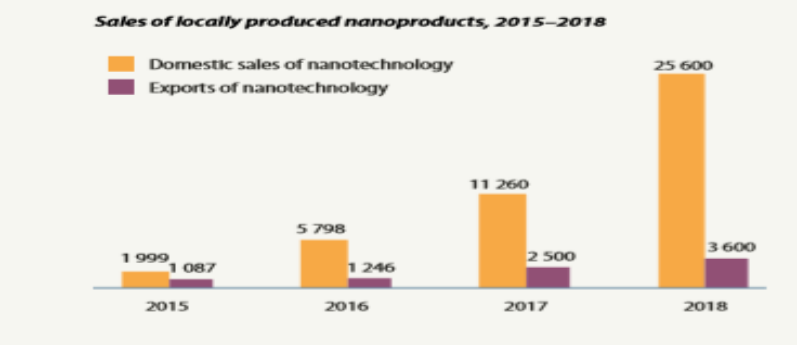
challenges in the past decade due to sanctions imposed by United States. In 2015 the signing of the Joint Comprehensive Plan of Action (2015), led to strong growth in GDP, increasing in 2016 by over 13% before again slowing down in 2017.



- The High Technology Exports of Iran have fluctuated considerably in recent years. It is evident that the amount of exports in term of US$ have decreased strongly from a highest value of US$711 million in 2011, to an average of US$325.96 million between 2011-2018.



- Biotechnology and nanotechnology contribute strongly to Iran's high tech exports and local products. By 2018, there were 524 active biotech companies in Iran and sales of locally produced nanoproducts had increased twelve-fold in just three years. Local pharmaceutical production has climbed rapidly since 2015. The domestic market was worth US$ 4.5 billion in 2018, with 70% of



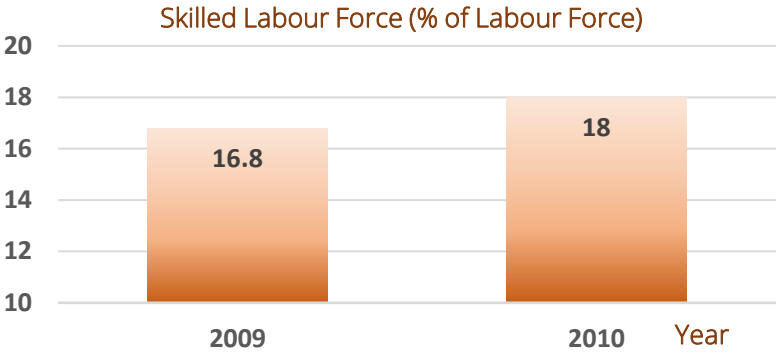
pharmaceutical companies being locally owned. By 2019, Iran was able to produce 95% of medicines destined for the domestic market, including two-thirds of their active ingredients. Iran exported pharmaceuticals to 17 countries in 2019, a considerable portion of which went to the EU. EU imports from Iran peaked in the first half of 2019 at € 18 million. The volume of Iran's pharmaceutical exports had reached US$ 80 million by March 2018 before dropping back to US$ 50 million over the next 12 months.
(Source: UNESCO Science Report, 2021)

AREA OF FOCUS

Iran is focusing more on knowledge-based companies and tech firms. Knowledge based goods are basically those products which contribute to the knowledge-intensive activities that contribute to advancement in technical and scientific innovations. Exports of knowledge-based goods grew by a factor of five between 2014 and 2017. Though sanctions had negative impact on Iran's economy but one major long-term benefit happened to Iran is that they started producing most of their own products and started relying less on imports. Many companies started using knowledge based goods and services of local suppliers.

Source: https://www.unesco.org/reports/science/2021/en/iran

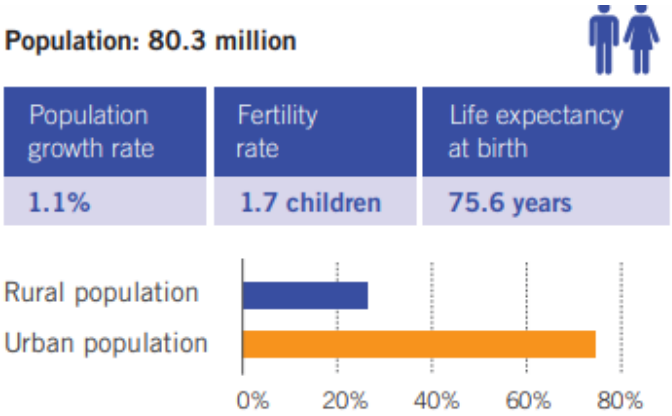
B. SOCIAL AND HUMAN DEVELOPMENT



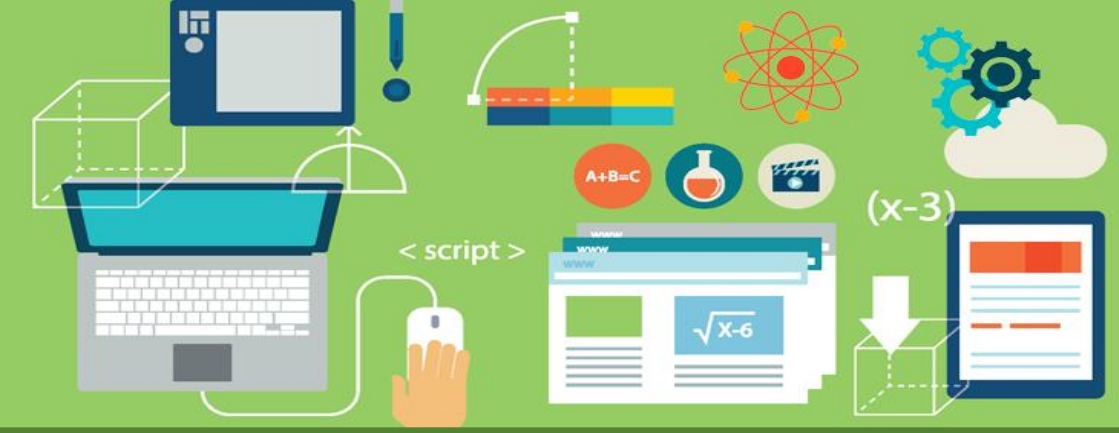
Source: Human Development Report

- Manpower development is one of the major focusses of Iran. Between 2007 and 2013 students in higher education increased from 2.8 to 4.4 million. According to ILO's 2017 report based on employment sector, the ratio of highly skilled workers in the total number of workers is about 19%, while medium level skilled workers comprise about 62% of labor force.

- Iran has made significant strides in ensuring better health of its population and the increase in average life expectancy age gives credence to this statement. In 1990, the life expectancy age was 63.8 years which increased upto 75.6 years in 2019.



- Iran improved the internet using proportion of people from 45% in 2015 to 70% in 2018. The basic necessities such as access to electricity are available to 100% of the people. Iran has one of the highest literacy rate (85.5%) in the region. As of 2016 male literacy stood at 90.4% and female literacy at 80.08%. Higher levels of literacy are also reflected in a slower population growth rate of 1.1%.



C. KEY GOVERNMENT ORGANIZATIONS RELATED TO SCIENCE, TECHNOLOGY AND HIGHER EDUCATION

- **The Ministry of Research, Science and Technology (MSRT):**
  A key state ministry which is involved in higher education, science, research and technology. MSRT is paying particular attention to implementing diplomacy of science and technology, traffic of academic collaborations, developing, strengthening, and improving the national and international science and technology cooperation with its international partners like overseas universities, science and technology institutions/organizations.
  https://www.msrt.ir/en/page/14/about-ministry

- **Iranian Research Organization for Science and Technology (IROST):**
  A leading government organization for science and technology affiliated to the Iranian Ministry of Science, Research and Technology. This organization aims to attain autonomy in scientific and technological pursuit of the country by supporting the potential offered by the Iranian inventors, innovators, researchers and industrialists and to facilitate and fund the scientific and technological development programs.

  https://www.asiaresearchnews.com/content/iranian-research-organization-science-and-technology-irost

❖ **National Research Institute for Science Policy (NRISP):** NRISP plays the role of think tank along with Iranian Ministry of Science, Research and Technology in the field of research policy and policy making of science, research and technology at national level. Currently, six (6) departments are working under this institute namely:

1. Science & Technology Futures Studies
2. Science & Research Policy
3. Technology & Innovation Policy
4. STI Financing & Economics
5. Policy Evaluation & STI Monitoring
6. Theory-Oriented STI Studies

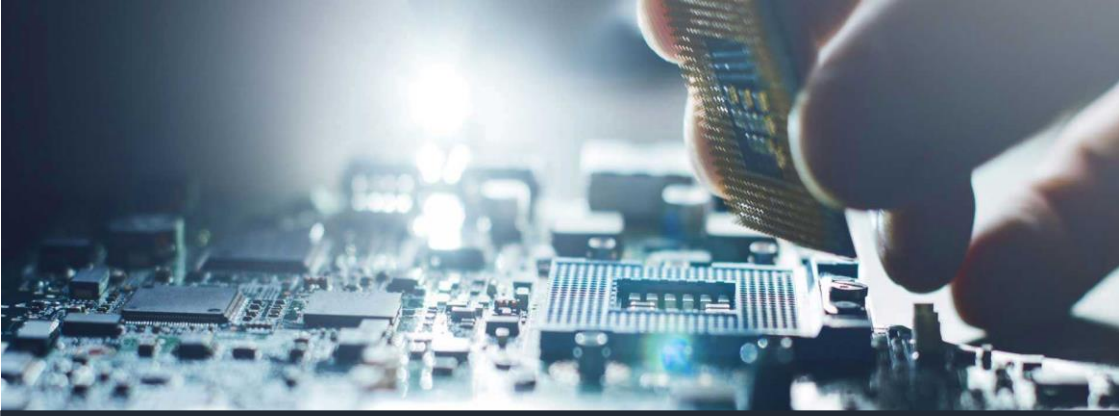
❖ **Ministry of Health and Medical Education (MOHME):** Holds the executive responsibility for health and medical education within the Iranian Government. It has authority to oversee, regulate and license the activities of health sector. https://en.wikipedia.org/wiki/Ministry_of_Health_and_Medical_Education

❖ Following are the names of few major research centres/institutes of Iran contributing to different research areas of S&T:

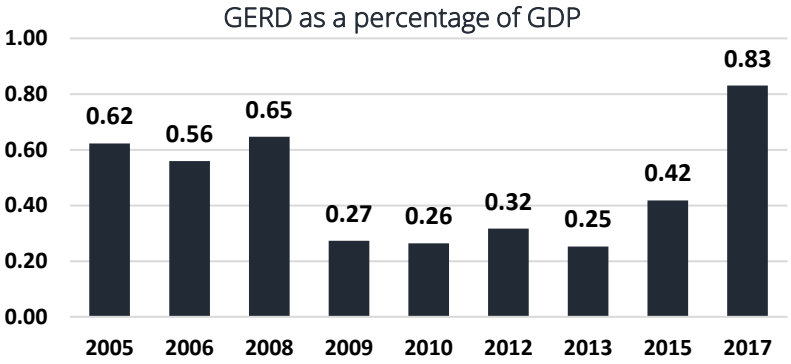
- National Research Institute of Oceanography and Atmospheric Sciences (INIO)
- National Institute of Genetic Engineering and Biotechnology (NIGEB)
- The Materials and Energy Research Center (MERC)
- Chemistry and Chemical Engineering Research Center of Iran
- Iranian Research Institute for Information Science and Technology (IRANDOC)
- Atomic Energy Organization of Iran
- Institute for Transportation Studies & Research (ITSR)
- Green Research Center (GRC)
- National Climate Center

- Atmospheric Science and Meteorological Research Center (ASMERC)
- Research Institute of Food Science and Technology
- Iran Polymer and Petrochemical Institute (IPPI)
- Niroo Research Institute (NRI)
- Institute for Color Science and Technology (ICST)
- Subsea Research & Development Centre (SRDC)
- Institute for Cognitive Science Studies (ICSS)
- Information & Communication Technology Institute
- Atmospheric Science and Meteorological Research Center (ASMERC)
- Laser & Plasma Research Institute

https://www.msrt.ir/en/page/9/research-institutes



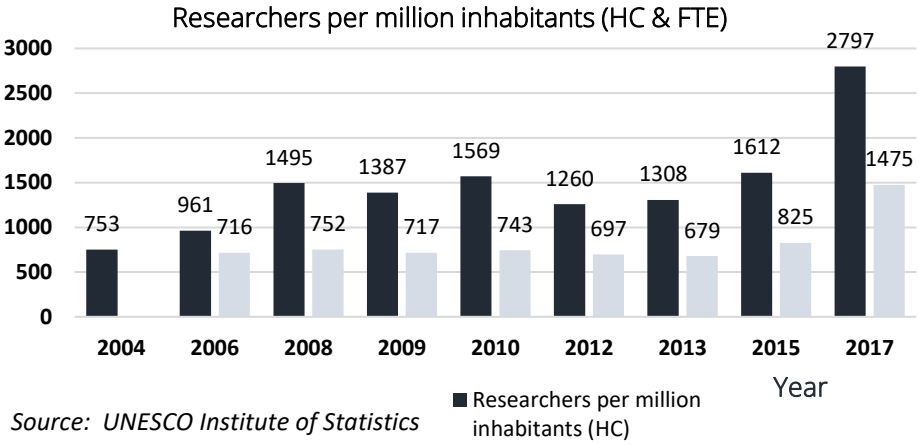
D. RESEARCH AND DEVELOPMENT



Source: *UNESCO Institute of Statistics*

- The trend of Iran's investment in R&D is depicted in the figure. There has been almost a doubling of Iran's GERD as a fraction of its GDP in recent years reflective of its seriousness in developing research and innovation to pursue economic well-being. In 2017 the GERD/GDP ratio was 0.83, placing Iran 11th amongst the OIC countries.

- Banks and credit institutions lent the equivalent of almost US$850 million to knowledge based companies in 2019, a 75% increase over 2018, illustrating strong increase in support for indigenous research and knowledge based economy.

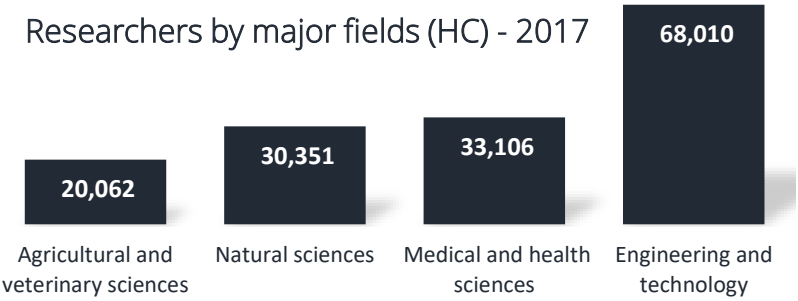


Source: UNESCO Institute of Statistics

❖ Researchers Intensity:

The number of researchers per million (full time equivalent) in 2010 was 743 while in 2017 it has increased strongly to about 1475 which includes 31.2% female researchers. About 19.2% of these researchers (FTE) are employed in business enterprises meanwhile 22.5% are employed in government sector. Maximum number of researchers (FTE) are employed in Higher education (57.2%).

As discussed, Iran's research strengths lie in biotechnology and nanotechnology. Research has successfully translated into commercialization and by 2018, there were 524 active biotech companies in Iran. Local pharmaceutical production has climbed rapidly and by 2019, Iran was able to produce 95% of medicines destined for the domestic market, including two-thirds of their active ingredients. An example is PersisGen, a biopharmaceutical company which designs, develops and produces biosimilars, vaccines and plasma derived products. It also specializes in regenerative medicine through the use of stem cells.



Source: UNESCO Institute *for Statistics (UIS)*

❖ **Researchers distribution by major fields:**

As evident from the graph there is a strong concentration of research workers in the fields of engineering and technology with smaller numbers in medical and health sciences, natural sciences and agricultural and veterinary sciences respectively. The large numbers in engineering and technology can be taken as a reflection of the increased emphasis on self-reliance and indigenization of technology.

DID YOU KNOW?

A major milestone in R&D in space sciences and technology was attained in 2009 when Iran launched its first satellite in space. Over the next decade it launched 4 research satellites and two space rockets. In 2021 it successfully tested its first satellite launch vehicle.

E. HIGHER EDUCATION

- The number of university students in Iran Number of tertiary students in Iran has actually dropped from 4.35 million in 2015 to 3.62 million in 2017, which has been attributed to a lowered fertility rate. The country has achieved gender parity in higher education with 46.6% of the higher education students being female in 2017. About 4% of all tertiary students were enrolled in PhD programs while about 18% were in Master's program in 2017.
- Iran's higher education system has a total of 142 public universities, and 42 state medical schools.

  (Ref. Ministry of Science, Research and Technology, Iran. https://www.msrt.ir/en/page/20/statistics-2019)

- The International Association of Universities however lists a total of 263 higher education institutions.

  https://www.whed.net/results_institutions.php.

  There are a large number of private universities operating as well.

- Following is the list of national and global ranking of leading Iranian universities:

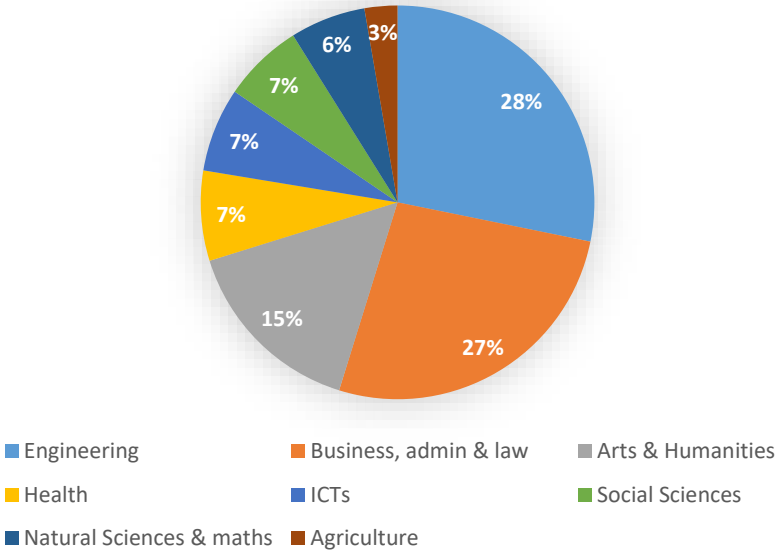
University Name	National Ranking	Global Ranking
Islamic Azad University, Tehran	1	372
University of Tehran	2	491
Sharif University of Technology, Tehran	3	584
Tehran University of Medical Sciences	4	610
Isfahan University of Technology	5	659
Amirkabir University of Technology (AUT), Tehran	6	711
Tarbiat Modares University, Tehran	7	753
Iran University of Science and Technology	8	834
Shiraz University	9	891
Ferdousi University of Mashad	10	927

Source: https://cwur.org/2021-22/country/iran.php

- **Top 10 Engineering universities in Iran:**

1. University of Tehran
2. Islamic Azad University
3. Amirkabir University of Technology (AUT)
4. Sharif University of Technology
5. University of Tabriz
6. Babol Noshirvani University of Technology
7. Iran University of Science and Technology
8. Tarbiat Modares University
9. Isfahan University of Technology
10. Ferdowsi University Mashad

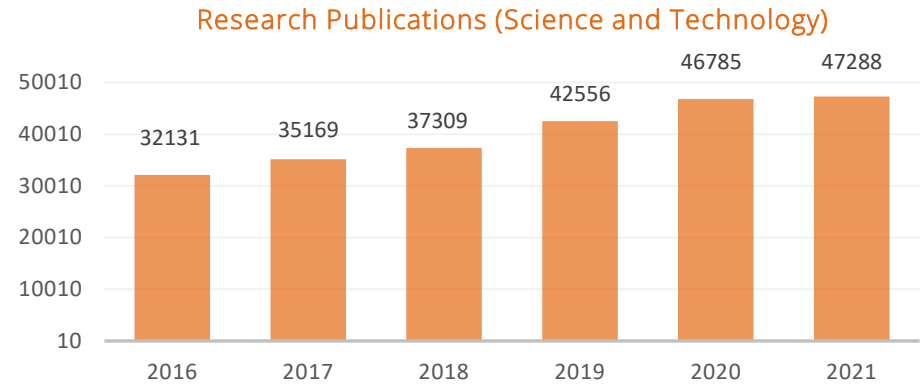
Areas of Concentration



- In terms of graduating programs, the higher concentration of Iran's tertiary graduates are in the field of Engineering (28.2%), Business, admin & law (26.6%), Arts and Humanities (15.4%). The smaller concentration is observed in the field of Health (7.4%), ICTs (6.9), Social Sciences (6.6%), Natural Sciences & maths (6.2%) and Agriculture (2.7%).

Source: UNESCO Science Report 2021

F. RESEARCH PUBLICATIONS

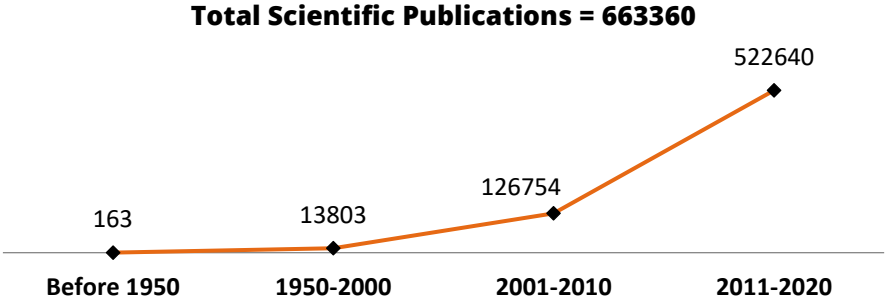


Source: Web of Science Core Collection | Document type: Articles

- Iran is the most prolific publisher of scientific papers in the OIC countries at present. The total number of research papers (articles only) published in Impact factor journals in recent years, according to the Web of Science, are depicted in accompanying figure. There is a remarkable increase in number of research publications from Iran in the field of science and technology. In 2016, the number of scientific research publications were 32,131 which increased by 47% to 47,288 in 2021.

- The number of highly cited papers by Iranian authors has risen from 78 in 2010, to 457 in 2018. In recent years, Iran has published much more than world average on the topics of smart-grid technology,

resistance to antibiotics, desalination and national integrated water resource management. The volume of output was also above average for hydropower, wind turbine technologies and sustainable chemical waste management. In the global ranking of scientific papers, Iran ranked 15th in 2020. In the field of Nanotechnology scientific publications, Iran is among the top 5 countries in the world. Between 2017 and 2019 about 25% of all scientific publications had foreign co-authors.



- Iran has published 6,63,360 research documents in twenty-seven (n=27) different areas of research. Only 163 documents are published before 1950. There is an increasing trend in the total number of publications. In fact 78.78 % documents (or 522601) are published from 2011 to 2020.

S #	Title	Over all	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Scholarly Output	522601	40035	41481	42293	45443	46295	53330	56645	60307	64981	71791
2	Citations	6977480	624794	674311	692557	736859	742708	799497	793164	751266	647232	515092
3	Citations per Publication	13.4	15.6	16.3	16.4	16.2	16	15	14	12.5	10	7.2
4	Field-Weighted Citation Impact	0.97	0.74	0.8	0.84	0.91	0.95	0.98	1.01	1.06	1.08	1.13

- The per year **scholarly output (SO)**, citations, citations per publications, and field-weighted citations impact of all (n=522601) documents for the last decade are also presented in the above table. Article **field weighted citation impact (FWCI)** "indicates how the number of citations received by an article compares to the average or expected number of citations received by other similar publications". As apparent from the data, the number of

publications showed an increasing trend. The highest documents are published in 2020 (n=71791), followed by 2019 (n=64981). The total publications received 6977480 citations or 13.4 **citations per publication (CPP)**. There is an increasing trend in research citations till 2016. However, fresh or latest publications need ample time to get citations. At the same time, the FWCI crossed the standard 1.0 mark. For example, 1.13 means the articles received 13% higher citations as compared with global average.

S#	Subject Area	SO	Citations	Authors*	CPP	FWCI
1	Engineering	128554	1935832	102174	15.1	1.18
2	Medicine	120780	1304446	129023	10.8	0.84
3	Physics and Astronomy	69639	1111233	56765	16	1.15
4	Chemistry	69206	1274427	58028	18.4	1.06
5	Materials Science	69096	1258323	58418	18.2	1.17
6	Computer Science	53877	646684	49431	12	1.05
7	Biochemistry, Genetics and Molecular Biology	52539	821401	72837	15.6	0.9
8	Agricultural and Biological Sciences	46782	541551	55816	11.6	0.85
9	Mathematics	46438	467470	36130	10.1	1.08
10	Chemical Engineering	40801	867555	45740	21.3	1.21
11	Environmental Science	37720	658102	49899	17.4	1.12
12	Energy	29474	602161	31714	20.4	1.37
13	Pharmacology, Toxicology and Pharmaceutics	25717	370646	42046	14.4	1
14	Earth and Planetary Sciences	22862	297248	24594	13	0.91
15	Social Sciences	20760	152312	30193	7.3	0.86
16	Immunology and Microbiology	17040	225122	30289	13.2	0.73
17	Multidisciplinary	9240	93104	18982	10.1	0.48
18	Business, Management and Accounting	9029	122204	12914	13.5	1.12
19	Neuroscience	7859	108916	14846	13.9	0.87
20	Decision Sciences	7836	92764	9732	11.8	1.01
21	Arts and Humanities	7505	30800	9943	4.1	0.78
22	Nursing	6901	84705	13168	12.3	1.19
23	Health Professions	5942	52472	12655	8.8	0.82
24	Veterinary	5502	39539	9231	7.2	0.76
25	Economics, Econometrics and Finance	4759	67152	8588	14.1	1.27
26	Psychology	4753	46051	9791	9.7	0.86
27	Dentistry	4553	43341	7321	9.5	0.88

* Total number of contributing authors.

- Details about the research publications in twenty-seven (n=27) subject areas are available on Scopus. For each area the number of **scholarly output (SO),** citations, number of authors, **citations per paper (CPP)** and **field weighted citation impact (FWCI**) is provided. The highest documents are published in Engineering (n=128556), followed by Medicine (n=120780) and Physics & Astronomy (n=69639). While, the lowest output was noted in Dentistry (n=4553), Psychology (n=4753) and Economics, Econometrics and Finance (n=4759).

S#	Title	Overall	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Pub in top 1% Sources (Q1)	3752	169	174	205	237	360	568	456	487	488	608
2	Pub in top 1% (Percent)	0.8	-	-	-	-	-	1.2	-	-	-	-
3	Pub in top 5% Sources (Q2)	31837	1670	1698	1999	2413	2536	3158	3769	4283	4712	5599
4	Pub in top 5% (Percent)	7	5.9	5.3	5.7	6.3	6.1	6.8	7.3	7.7	7.8	8.2
5	Pub in top 10% Sources (Q3)	69273	3363	3657	4502	4854	5527	6687	8175	9707	10422	12379
6	Pub in top 10% (Percent)	15.1	11.8	11.3	12.8	12.6	13.3	14.5	15.8	17.4	17.3	18.2
7	Pub in top 25% Sources (Q4)	164421	8636	10083	10971	12267	14116	16975	18730	20947	23288	28408
8	Pub in top 25% (Percent)	35.9	30.3	31.3	31.3	31.8	34.1	36.7	36.3	37.7	38.7	41.8
9	Pub in top 50% Sources (Q5)	298509	15605	18536	20495	23273	25748	31169	34746	38485	42456	47996
10	Pub in top 50% (Percent)	65.3	54.7	57.5	58.4	60.4	62.1	67.4	67.3	69.2	70.6	70.6
11	Pub in top 75% Sources (Q6)	400595	22569	26400	29056	32748	35548	41466	46393	50360	54478	61577
12	Pub in top 75% (Percent)	87.6	79.1	81.9	82.9	85	85.8	89.6	89.9	90.5	90.6	90.6
13	Pub in top 100% Sources (Q7)	457382	28517	32247	35065	38516	41439	46268	51615	55633	60104	67978
14	Pub in top 100% (Percent)	100	100	100	100	100	100	100	100	100	100	100

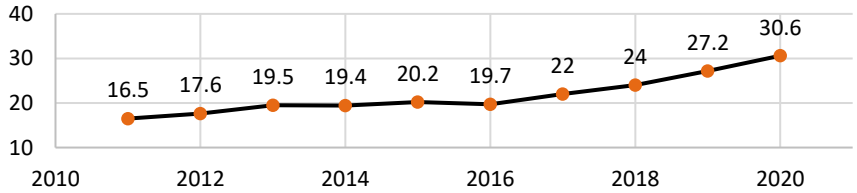
- It is worthy to note that the journals metrics can also be used to describe the publications ratings or quality. Therefore, the numerical details are provided about the publications in different quartile sets. A quartile is the ranking of a journal provided by Scopus database. For example, Q1 is occupied by the top 5%, and Q7 is occupied by journals in the 75-100% group. The details of per year publications sources in different quartile (Q) sets are provided in the accompanying table. 69% publications (or 457382) were arranged in all seven quartile sets. 205978 documents did not have Citescore data. Similarly, 3752 (or 0.82%), 28085 (or 6.14%), 37436 (or 8.18%), 95148 (or 20.80)%, 134088 (or 29.13%), 102086 (or

22.32) and 56787 (or 12.41%) documents are published in Q1, Q2, Q3, Q4, Q5, Q6 and Q7 categories. From data, it can be concluded that Iran has published 298509 or 65% publications in the world top 50% journals.

S#	Institution	SO	Citations	Authors	CPP	FWCI
1	*Islamic Azad University*	99070	1230810	67119	12.4	0.91
2	*Tehran University of Medical Sciences*	44097	707756	23201	16	1.17
3	*University of Tehran*	43709	660860	21111	15.1	1.08
4	*Shahid Beheshti University of Medical Sciences*	25760	353069	12942	13.7	1.11
5	*Tarbiat Modarres University*	23043	368042	10021	16	1.04
6	*Amirkabir University of Technology*	22673	352161	10089	15.5	1.12
7	*Sharif University of Technology*	19994	326772	9264	16.3	1.18
8	*Iran University of Science and Technology*	17136	269272	7967	15.7	1.11
9	*Iran University of Medical Sciences*	15899	227442	8252	14.3	1.24
10	*Ferdowsi University of Mashhad*	15825	213231	7813	13.5	0.9

- The table given above depicts the most productive universities in Iran. The ranking is based on number of scholarly output. The highest documents are published by Islamic Azad University (n=99070), followed by Tehran University of Medical Sciences (n=44097). However the highest CPP was recorded for Sharif University of Technology (n=16.3) and Iran University of Science and Technology (n=15.7)

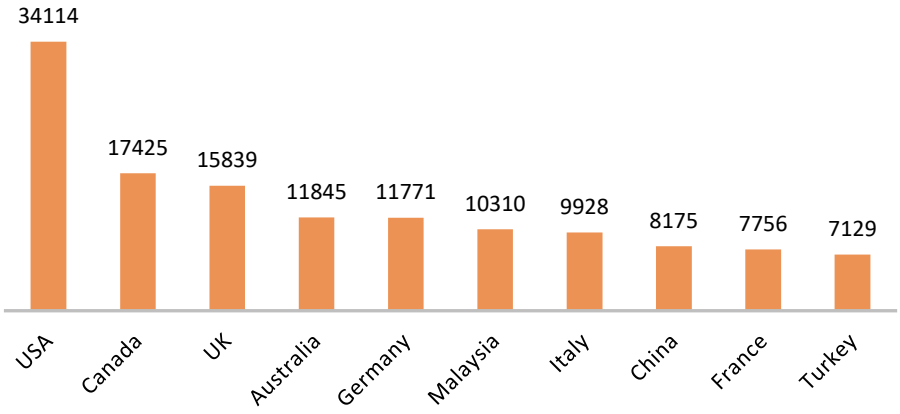
International Collaborations (%)*



* Percentage of scientific output involving foreign collaborators.

- From 2011 to 2020, the degree of international collaboration is depicted in the accompanying graph. There is a consistent and gradual increase in collaboration. The highest recorded collaboration percentage was for 30.6% in 2020, followed by 27.2% in 2019 and 24% in 2018.

The Top Ten Collaborating Countries for Iran



- Based on Scopus record, Iran has maintained a threshold of at least 500 research publications per country in collaboration with a total number of 67 countries. The highest collaboration was noted with USA (n=34114), Canada (n=17425) and UK (n=15839).

G. International Cooperation and Support Initiatives (selected)

❖ International Cooperation

The Ministry of Science, Research and Technology plays a collaborative role between the Iranian sides and their associated partners overseas. The main framework of the Ministry can be summarized as:

- Joint Venture Research cooperation
- Exchange of Students and Professors
- Joint Master and PhD Programmes
- Cooperation between Science and Technology Parks

❖ The current intensive international partners of Iran are:

- Regional and OIC Partners, Germany, Italy, China, Russia, Austria, Turkey, Iraq, Afghanistan, Indonesia, Pakistan, etc.

https://www.msrt.ir/en/page/23/international-cooperation

❖ MOUs

Iran has MoUs of scientific cooperation with large number of both OIC and non-OIC countries:

- **OIC Countries**
  Afghanistan, Algeria, Azerbaijan, Indonesia, Iraq, Kyrgyzstan,

Lebanon, Libya, Morocco, Oman, Pakistan, Saudi Arabia, Syria, Sudan, Tajikistan, Tunisia, Turkey, Uganda, Yemen

- **Non-OIC Countries**
  Austria, China, Czech Republic, France, India, Italy, Japan, Korea, Germany, Netherlands, Poland, Russia, Spain, South Africa, Ukraine, Vietnam and others
- The EU-Iranian research and innovation cooperation and science and technology, diplomacy, under EU Horizon 2020 programme.

❖ Cooperation with International Scientific Institutions:

- The European Organization for Nuclear Research (CERN)
- The International Comprehensive Ocean-Atmosphere Data Set (ICOADS)
- International Centre for Theoretical Physics (ICTP)
- Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME)
- EU Horizon 2020 programme
  https://www.msrt.ir/en/page/7/mous
- In 2008, Iran's Nanotechnology Initiative Council established an Econano network to promote the scientific and industrial development of nanotechnology among members of the Economic Cooperation Organization (ECD).
- Iran hosts several international research centres, including the following established under the auspices of the United Nations: the Regional Centre for Science Park and Technology Incubator Development (UNESCO, est. 2010), the International Centre on Nanotechnology (UNIDO, est. 2012) and the Regional Educational and Research Centre for Oceanography for Western Asia (UNESCO, est. 2014).
  https://en.unesco.org/sites/default/files/usr15_iran.pdf

H. INNOVATION, ENTREPRENEURSHIP & TECHNOLOGY PARKS

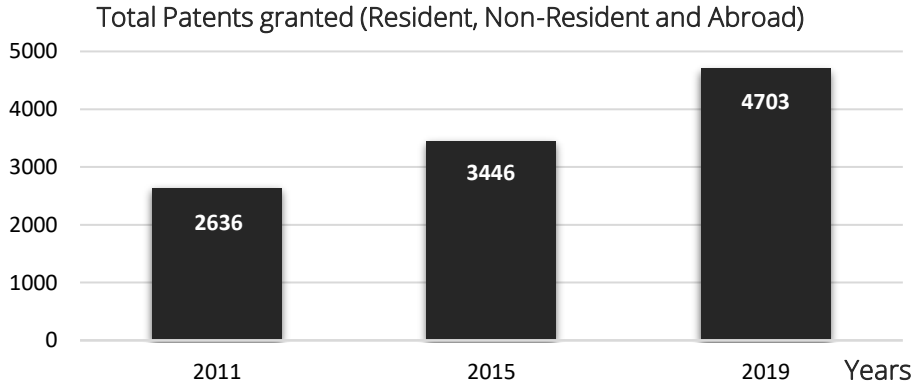
❖ **Science Governance: Key policy initiatives**

- Up until 2010 Iran's emphasis had been on developing higher education and increasing the number of academic publications, followed by support for emerging technologies (2000–2010). The main result of these policies was greater academic productivity, coupled with the creation of the first science and technology parks.

- The second generation of STI policies dates from 2010 when the Law on Support for Knowledge-based Institutions and Companies and Commercialization of Innovation and Inventions (2011) was adopted. The National Innovation Fund (2012) was established with the aim to support university spin-offs. The Fund has now gradually expanded to encompass techbased start-ups and some eligible large enterprises.

- The third generation of STI policies dates from 2015 when parliament gave another boost to entrepreneurship and innovation through the Law on Removing Barriers to Competitive Production and Enhancing the Financial System. It is this law which led to the first innovation centres and accelerators in 2015.

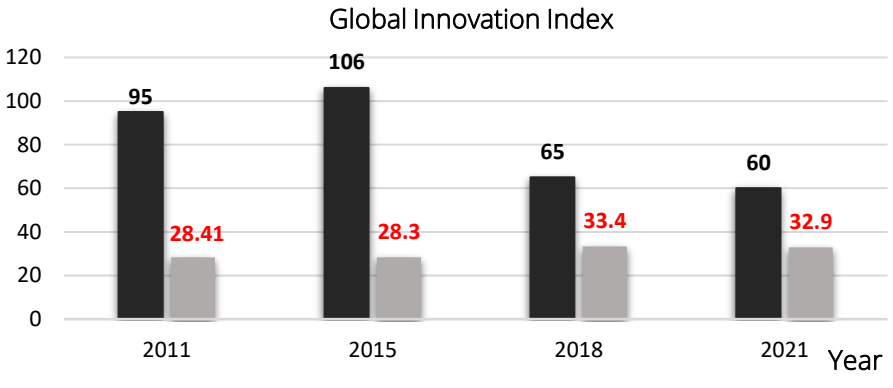
- This law was followed by the Local Content Requirement Policy (2016). It introduced a clause requiring international agreements and major national projects to 'include local technology and training.' This clause is now being implemented in national projects.
- The Law on the Expansion of Nanotech Utilization 2025 established a ten-year plan for transitioning from the stage of knowledge creation to that of market expansion through the diffusion of nanotechnology in local industry and society.



Source: WIPO: https://www.wipo.int/ipstats/en/statistics/country_profile/

❖ Iran's efforts to indigenize are reflected in their steady growth of acquired patents. Iran acquired 2636 patents in 2011 and the figure almost doubled to 4703 by 2019. Iran launched its first public innovation centre in 2015 which led the exponential growth of startup culture in the country. According to UNESCO's Science Report 2021, by 2020, 49 innovation accelerators had been set up with private equity and 113 innovation centres had been instituted in partnership with major universities and science parks. According to Iranian official figures (Ministry of Science Research and Technology) there are now about 6487 knowledge based companies located in 195 incubators and 43 science and technology parks.

- Iranian government's 20-year development plan, Vision 2025, envisaged progress in S&T and self-reliance in the face of sanctions. Success in this direction is reflected in some examples quoted here. Due to sanctions, several international internet companies exited Iran but local entrepreneurs have developed their home-grown versions. For instance, Digikala is an e-commerce marketplace which works exactly like Amazon, Local innovators have developed and established several other home-grown internet companies that worked on the same pattern as UBER, Youtube, Google play,



Source: Global Innovation Index _ WIPO

- Iran has improved its innovation ecosystem strongly in the past few years and currently it ranks 60th among the 132 economies featured in the GII 2021, as compared to its ranking of 106th in 2015. It ranks 2nd among the 10 economies of Central and Southern Asia and 6th amongst the OIC countries. Its performance is above average in Central and Southern Asian region in human capital and research, infrastructure, knowledge and technology, and creative outputs.

Source: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/ir.pdf

❖ TECHNOPARKS AND INCUBATION CENTRES

The Iranian government is strongly promoting the culture of innovation and R&D competitiveness. It is establishing Technology parks in various regions of the country.

There are a total of 42 Science and Technology Parks and 186 Incubators across the country.

Following is the list of some of the technology parks and incubation centres in Iran:

1. Arak Science & Technology Park, Arak
2. East Azarbaijan Science and Technology Park, Tabriz
3. Fars Science and Technology Park – FSTP, Shiraz
4. Golestan Science & Technology Park, Aq Tekeh Khan
5. Guilan Science and Technology Park (GSTP), Rasht
6. Isfahan Science & Technology Town, Isfahan
7. Kermanshah Science & Technology Park, Kermanshah
8. Khorasan Science and Technology Park – KSTP, Mashad
9. North Khorasan Science & Technology Park, Bojnurd
10. Khuzestan Science & Technology Park, Ahvaz
11. Persian Gulf Science & Technology Park, Bushehr
12. Pardis Technology Park, Tehran
13. Mazandaran STP, Sari
14. Rooyesh ICT Incubator, Tehran
15. University of Tehran Science and Technology Park, Tehran
16. Mostafa Karimian Eghbal, Tehran
17. Rahparda Kish, Tehran
18. Modares Science & Technology Park, Tehran
19. Sheikh Bahai Technology Park (SBTP), Isfahan

I. COMBATING THE COVID-19 PANDEMIC

Iran was among the first countries to be hit with an outbreak of COVID-19 in early 2020. The country took many measures to cope this pandemic.

❖ **Vaccine Development and administration:**

- Iran has a long history of vaccine production and is putting some serious efforts in vaccine development. Around ten vaccines are under development by Iranian research centers which include inactivated vaccines and recombinant-protein vaccines. One Irani developed vaccine named **'COVIran Barekat'** is being used in vaccination drive. This vaccine is developed by state-owned Shifa Pharmed Industrial Group located in Tehran. It is an inactivated vaccine which is undergoing phase III trials, but it received emergency use authorization in June 2021. It produced neutralizing antibodies in 93% vaccinated people.
- Another vaccine named **'Pasteurcovac'**, is developed in a collaboration between the Pasteur Institue of Iran and Cuba's Finlay Institue of Vaccines in Havana. It is known as Soberana 02 in Cuba. It is a recombinant-protein vaccine and received emergency usage approval in June but it is still in phase III trials. Pasteur institute of Iran was established in 1920 and it has also produced vaccines against many diseases which include tuberculosis and rabies.
- mRNA vaccines, adenovirus-vector vaccines and measles-virus-vector vaccines are also in the earlier stages of development.

❖ **Indigenous production to meet pandemic requirements:**

- **Ventilator production**
  The Iranian company named Ehya Darman Pishrafte produced ventilator amid the pandemic. They are the first manufacturer of ventilators and anesthetic machines in Iran. Initially, they started producing 30 ventilators per day.
- **Mobile application to support the country's efforts to curb the spread of the novel coronavirus.**
  Iran government did develop an app named "AC19" to provide relevant information, guidance to local community and keep track of COVID-19 (coronavirus) infections. This app was launched through a dedicated website and third-party app stores. One can download this app through www.ac19.ir
- **Online screening system**

  The Ministry of Health and Medical Education (MOHME) launched *an online patient screening system* that had screened more than 75 million people by mid-2020. The outbreak was thus controlled by strongly reducing referrals to health centers and drastically reducing the risk of infection in healthy people.
- **Tele-Mental Health Care System**
  The State Welfare Organization (SWO) of Iran has set up an intelligent electronic system for psychological self-assessment of the people in the community and it came out as the most effective measure. The aim of launching this system is to provide appropriate information related to the mental health of individuals, accurate and evidence-based screening, specialized and scientific psychological counselling and possible prevention of social-psychological trauma arising from the outbreak of COVID-19.

COMSTECH Secretariat
33 - Constitution Avenue
G-5/2, Islamabad - 44000
Islamic Republic of Pakistan

Tele: 92-51-9220681-3
Fax: 92-51-9211115, 9205264
www.comstech.org

Compiled in 2021