



Achievements of the Islamic Republic of Iran in the Area of Science and Technology

Iranian Scientists among the Top Scientists in the World

Compiled by: Hossein Hojjati, Media Expert

Before the Islamic Revolution, Iran did not have any top scientists in the world, but, according to the authoritative international “Web of Science” database, 208 Iranian scientists were among the top 1 percent of the world’s scientists. This ranking is based on the number of scientific research documents in 22 fields. This is despite the fact that the professors of the field of Islamic sciences are not considered among these scientists.



■ Regional and Global Scientific Ranking According to Scientific Papers and Documents

Based on the "Scopus" citation database, the number of indexed documents produced by Iranians has increased from 3071 documents before the revolution to 397,212 documents indicating a 129-fold increase in the number of indexed documents from Iran in the post-Islamic Revolution. While based on the same database Iran ranked 5th in the region and 52nd in the world and in the year 1996, its status went up to being first in the region and 16th in the world in 2018.

The percentage of Iran's share in the production of scientific papers in the world has increased by 656 times compared to before the Islamic Revolution. That means while its share was 0.0001 percent before the Islamic Revolution, it went up to 1.95 percent according to ISI and 1.97 percent according to Scopus in the year 2017. According to the ISI report, the number of published papers by Iranians has increased 69 times (75 times according to the Scopus report) since the beginning of the revolution until 2016 making Iran rank first among all Islamic countries in terms of the number of scientific papers. By the same token, the fastest scientific growth rate in the world is related to Iran, which is 11 times the global average growth rate.

■ World Ranking of Iranian Universities

Based on the "Times Ranking System" Iran's ranking in terms of the number of top universities in the world has increased from 32nd in 2012 to 17th in 2017. Similarly, the number of Iran's top universities in the world - according to the Times Ranking System - has gone up from zero before the revolution to 18 in 2018. There are other statistics in the "Leiden Ranking System" according to which 18 Iranian universities were among the top universities of the world in the year 2018.

98% of the scientific achievements of Tehran University are related to the period after the Islamic Revolution and only 2% of it is related to the period before the revolution. The same figure for the Sharif University of Technology stands at 99% as compared to 1% before the revolution. Similarly, these figures stand at 95% and 5%, respectively, for Shiraz University. In fact, it can be said that before the revolution, Iranian universities were engaged in translating foreign papers and did not have any scientific production or output.

■ Faculty Members

Since the beginning of the revolution, the number of

women faculty members has increased from 100 in 1979 to 2,100 in 1996 and indicating a 21-fold increase. In general, the number of faculty members of Iranian universities has increased by 33 times.

■ Ranking in Science Olympiads

Before the revolution, Iran did not participate in any science Olympiad. However, after the revolution, Iran began to participate in science Olympiads in 1987 and by 2017 won 669 medals making it rank among the first 10 countries of the world in this field.

■ World Rankings in the Fields of Technology, Applied Sciences, and Engineering

After the Islamic revolution, the world has witnessed Iran's numerous scientific and technological achievements in such fields of sciences as nuclear, nanotechnology, biotechnology, rocketry, stem cells, aerospace, recombinant drugs, and medicine, which have proved that by relying on internal capacities and their proper management, access to the peaks of science and technology are possible. The advancement in the field of medical sciences has increased 75 times as compared to the pre-revolution era (Scopus). This progress in medical science has increased life expectancy from 54 years before the revolution to 76 years in 2017, making Iran rank seventh in the world.

Some other achievements of Iran in the field of technology are as follows.

Iran ranks eighth in the world in launching satellites.

Iran is the fifth country in the world in the field of nanotechnology.

Iran is the fourteenth country in nuclear science and physics.

According to the paper production index of Scopus Iran ranked fifth in the world in chemical engineering and energy engineering in the year 2015.

According to the paper production index of Scopus Iran ranked the ninth country in civil engineering and ocean engineering in the year 2015.

According to the same source, Iran ranked 11th in aerospace engineering in 2015.

Also, Iran ranked twelfth in the world in industrial engineering in 2015.

Iran is among the 11 countries of the world in satellite launching technology.

Iran is among the 13 countries that have a complete nuclear fuel cycle, where uranium exploration, extraction, production of yellow cake, and its conversion into UF gas



are carried out in the field of fuel production and fuel complexes.

Iran is one of the 14 countries that have the ability to enrich uranium.

Iran ranks second among the most advanced countries in the field of stem cells.

Iran ranked 13th in the world and first in the region in terms of biotechnology production in 2017.

Knowledge-based Companies

Knowledge-based companies came into being in post-revolution Iran, and presently the number of knowledge-based companies is more than 1150.

Science and Technology Parks

Science and technology parks, too, and the number of these parks in the country had increased from zero before the revolution to 36 in 2015.

National and International Patents

The number of internationally registered patents of Iranians which stood at 64 in 1978 had increased to 13,683, i.e. 213 times, by 2015.

Export of Advanced Scientific and Technological Goods

The export of high-tech goods, which indicates the improvement of the country's technology level, reached 620 million dollars in 2009, from zero before the revolution, which shows a growth of 219 percent. These exports take place in such industries as electronics, telecommuni-

cation, computers and office machines, aerospace, pharmacology, electrical and chemical machinery, and railway and transportation.

Technological and Engineering Capabilities in the Post-Islamic Revolution

Some of the local achievements and experiences in the field of technology and engineering that have been gained independently after the Islamic Revolution include:

Defense

Air defense (designing and manufacturing short, medium, and long-range defense systems)

Air (designing and manufacturing fighter planes, different types of drones (UAVs), helicopters, and aeronautical electronics)

Marine (designing and manufacturing various types of cruisers and destroyers, submarines, flying boats, fast and ultra-fast attack crafts, and hovercrafts)

Ground (designing and manufacturing various types of tanks, personnel carriers, military vehicles, individual equipment and weapons, and different types of light and heavy ammunition)

Missiles (designing and manufacturing various types of surface-to-surface missiles, and cruise missiles)

Electronics and radar (designing and manufacturing various types of search and detector radars, special electronic systems, and microelectronic components)

Cyberspace (management of cyberspace, cyber security, and cyber defense)

Aeronautics

Designing and manufacturing various types of satellites in different dimensions and accuracies, spaceships, Satellite carriers (Safir, Simorgh, Dhul-Janah), launch stations, operating stations (fixed and mobile), satellite guidance and control station, space laboratory (exploratory rockets)

Airplanes

Designing and manufacturing passenger aircraft (Iran 140, Fajr, Faez)

Nuclear Technology

Achieving a complete fuel cycle and fuel production with 20% richness

Designing and manufacturing advanced centrifuges

Designing and manufacturing nuclear reactors and power plants

Production of all kinds of radiopharmaceuticals.