

Hungary

IAEA Member State since August 1957

Key achievements in Hungary

- 2017: The operational license for all four units of the Paks nuclear power plant is extended by 20 years.
- 2016: The Aerosort Laboratory at the Institute of Nuclear Research in Debrecen is established to address the characterization of atmospheric particulate matter pollution sources.
- 2011: The analytical laboratory at the Centre for Energy Research of the Hungarian Academy of Sciences is upgraded, and a pilot plant for wastewater and effluent treatment is commissioned and installed.

Atoms for peace and development

Widely known as the world's 'Atoms for Peace and Development' organization within the United Nations family, the IAEA is the international centre for cooperation in the nuclear field. The Agency works with its Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies.

The IAEA's technical cooperation (TC) programme helps countries to use nuclear science and technology to address key development priorities in areas including health, agriculture, water, the environment and industry. The programme also helps countries to identify and meet future energy needs. It supports greater radiation safety and nuclear security, and provides legislative assistance.



To help reveal sources of pollution, aerosol samples were collected and analysed with specialised equipment procured by the IAEA during a period of high concentrations of smog in Debrecen in 2017. (Photo: Z Szoboszlai/Atomki)

Recent project successes

Water and the environment

The 2006 Hungarian Development Plan and the Operational Programme for Environment and Infrastructure for 2007–2013 noted that while almost the entire Hungarian population had access to drinking water, intensive industrial and agricultural activities had led to a fluctuation in quality. The outflows from the municipal wastewater treatment system, to which 60 per cent of all households were connected, contained toxic pollutants that could not be eliminated by methods used at the conventional sewage treatment plants. As a result, toxic compounds were appearing in drinking water. Therefore, the IAEA provided support to improve treatment techniques for drinking water, and the collection and treatment of sewage and sludge.

With IAEA assistance, the analytical capacities of Hungary's Institute for Energy Security and Environmental Safety, part of the Centre for Energy Research, were upgraded to enable the conduct of water treatment studies and support the removal of organic pollutants and microorganisms from drinking water. IAEA assistance included training of staff in the use of ionizing radiation in the treatment process through scientific visits and fellowships, as well as the development of the necessary laboratory infrastructure and the establishment of a pilot wastewater treatment plant. With this new expertise, the Centre now works in cooperation with the Budapest Sewage Works on developing treatment technology using ionizing radiation for the elimination of the toxic compounds and the breakdown of bacteria in the sewage discharge of the wastewater treatment plant.

Energy planning and nuclear power

Between 2010 and 2018, Hungary implemented a lifetime extension programme with IAEA support, to renew the operating licence for Units 1 to 4 at the Paks nuclear power plant. This included modifying some of the technical practices of the power plant in order to meet the nuclear regulatory and safety conditions for long-term operation. With IAEA assistance, the licence renewal documentation process was completed and approved by the Hungarian Atomic Energy Authority between 2012 and 2017, guaranteeing safe, low carbon electricity for Hungary for 20 more years.

Water and the environment

The IAEA supported Hungary to establish the AeroSort laboratory at the Institute of Nuclear Research in Debrecen, which assists in identifying Atmospheric Particulate Matter (APM) pollution sources in Hungary. The chemical composition, geographical origin and dependence on meteorological conditions of APM sources were studied using state-of-the-art sampling, analytical and statistical methods, including a MOUDI sampler and a laboratory elemental carbon/ organic carbon (EC/OC) analyser, procured by the IAEA. In addition, APM pollution was analysed to determine whether it originates from natural processes or human activities, with special emphasis placed on the characterization of smog concentrations. The resulting data enabled better mitigation strategies, actions and regulations to be developed against air and gas pollution, and will contribute to improved air quality management throughout the country.

Active national projects

- Implementing a Formal Quality Assurance Programme in Diagnostic Radiology at End User Level (HUN6004)

Hungary also participates in 35 regional and 2 interregional projects, mostly in the areas of water and the environment, industrial applications, and radiation protection and nuclear safety.

Previous IAEA support to Hungary

IAEA support to Hungary has mainly focused on human resource development, improving the use of nuclear technology and ensuring nuclear knowledge management and the sustainability of nuclear institutions.

The IAEA also supported Nuclear Safety Review Missions and technical assistance in the safety enhancement of the near-surface repository in Püspökszilág.



The Paks nuclear power plant renewed its operating licence for another 20 years, with IAEA assistance. (Photo: F Schmidt)

IAEA support to Hungary, 2009–2019

365 17 259

trained
(including 128 women) international experts provided attended specialist meetings
(including 76 women)

Priority areas of support

- Strengthening nuclear energy
- Improving the management of spent nuclear fuel and radioactive waste
- Enhancing human health and nutrition
- Increasing the sustainability of nuclear institutions and improving knowledge management
- Strengthening nuclear security and emergency preparedness and response
- Improving the application of nuclear techniques

Hungary's contribution to South-South and triangular cooperation, 2009–2019



676
expert and lecturer assignments provided by Hungary

24 437

training courses hosted fellows or scientific visitors hosted

Based on data available as of April 2020

Strategic documents supported

- Country Programme Framework 2017–2022, signed in September 2017
- Implementation Plan for the Integrated Nuclear Security Support Plan: 2018–2021
- Legislative Assistance Work Plan for Hungary 2020–2021

www.iaea.org/technicalcooperation

The IAEA collaborates with National Liaison Officers and Permanent Missions to deliver its TC programme.