

**22nd INPRO Dialogue Forum on Successful Development and Sustainable
Deployment of Small Modular Reactors (SMRs)**

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**CONSIDERING THE ACCEPTABILITY OF INTRODUCING
SMALL MODULAR REACTORS INTO THE ELECTRICITY
POWER SYSTEM**

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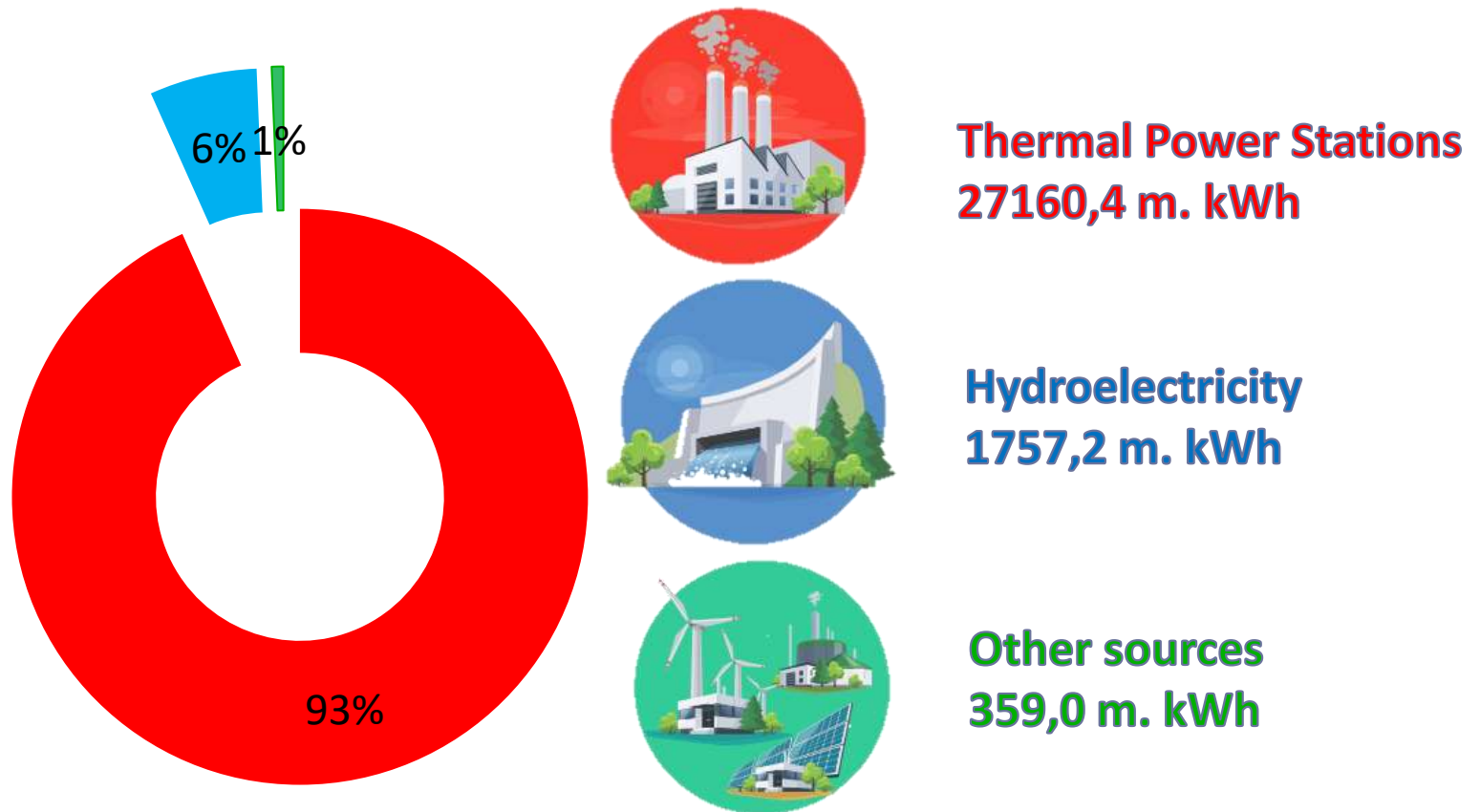
Introduction

- Azerbaijan has a special geographical location in terms of land and sea borders with countries having nuclear technologies, nuclear power plants and other nuclear installations.
- Today in the Republic of Azerbaijan there are no nuclear installations and waste management facilities of nuclear fuel cycle, as well as no extraction and processing of uranium ores are carried out. Radioactive sources, as well as nuclear materials available in the country are mainly used in oil and chemical industry, research institutes and medical facilities.
- At the same time, Azerbaijan's economic development is aimed at expanding all economically and technologically profitable economy fields, industry and energy, including the creation and implementation of technologies for long-term energy independence of the country, such as use of alternative energy sources, as well as the peaceful use of nuclear technologies.



Electricity Production

Distribution of Electricity Production in the Republic. (January - December 2023)



Statistical data on the production, export and import of electricity (January - December 2023).



29 276.6 m. kWh

Production of electricity



3 252.5 m. kWh

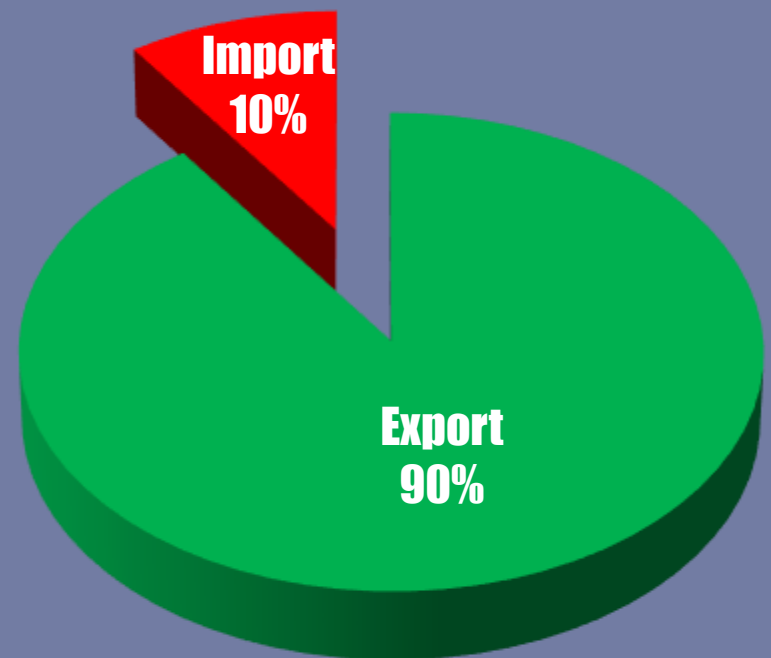
Export of electricity



211.8 m. kWh

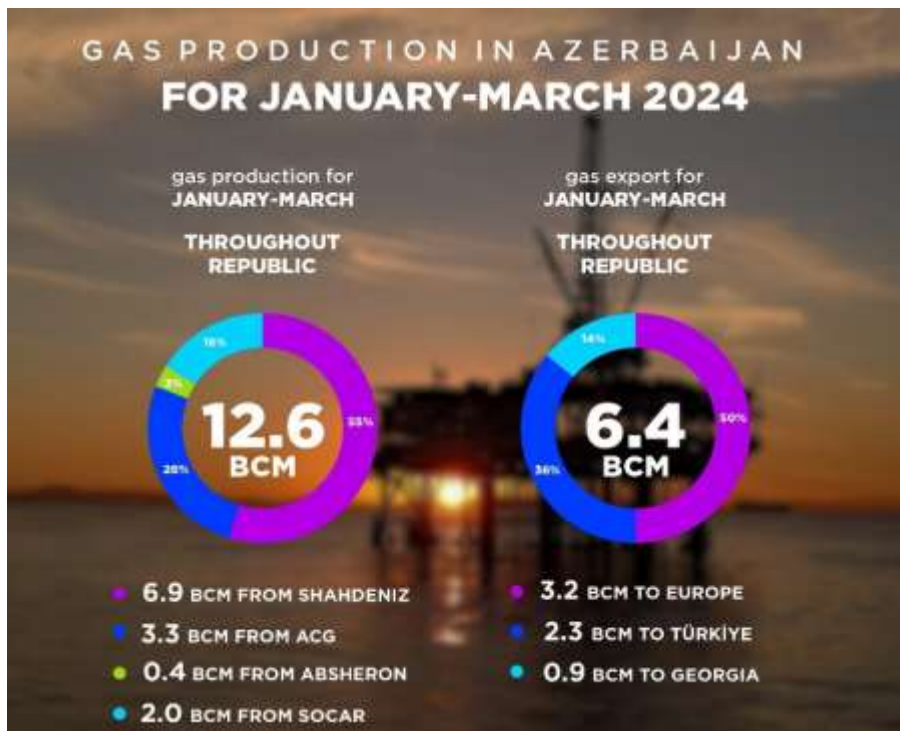
Import of electricity

Export-import operations



Oil and gas reserves

The evaluations set oil reserves of the “Azeri”, “Chirag” fields and the deep-water part of “Gunashli” field at 1,072,000,000 tons. Azerbaijan's proven gas reserves are 2.6 trillion cubic meters, and estimated reserves are about 3 trillion cubic meters. It will enable Azerbaijan to be regarded as a reliable supplier of hydrocarbon resources for the next 100 years.



Sustainable Development

Satisfying human needs and aspirations requires the implementation of sustainable development programs, which is achieved through a process of economic and social change in which natural resources, direction of investment, orientation of scientific and technological development, personal development and institutional changes are coordinated with each other and strengthen current and future potential.



Sustainable Development Goals

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The 17 SDGs are integrated—they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.



The IAEA contribution

The IAEA, in line with its 'Atoms for Peace and Development' mandate, supports countries in their efforts to reach the 17 Sustainable Development Goals (SDGs) set out in the United Nations (UN) 2030 Agenda for Sustainable Development. Many countries use nuclear science and technology to contribute to and meet their development objectives in areas including energy, human health, food production, water management and environmental protection. The use of these techniques contributes directly to nine of the 17 SDGs.



[Press centre](#) [Employment](#) [Contact](#)

A screenshot of the IAEA website's 'Sustainable Development Goals (SDGs)' page. The page features a navigation bar with dropdown menus for 'TOPICS', 'SERVICES', 'RESOURCES', 'NEWS & EVENTS', and 'ABOUT US', along with a search bar. Below the navigation, a blue breadcrumb trail reads 'Home / About Us / Overview / Sustainable Development Goals (SDGs)'. The main content area displays the IAEA logo on the left and a grid of 17 SDG icons on the right. The icons are arranged in two rows: the top row contains goals 2 (orange), 3 (green), 6 (blue), 7 (yellow), and 9 (red); the bottom row contains goals 13 (green), 14 (blue), 15 (green), and 17 (dark blue). A white text box at the bottom of the grid contains the text 'Sustainable Development Goals (SDGs)'. The page also includes links for 'Press centre', 'Employment', and 'Contact' in the top right corner.

Contribution of the scope of activities regulated by SANRAR (MES)



The State Agency for the Regulation of Nuclear and Radiological Activities of the Ministry of Emergency Situations performs the functions of a regulatory body in the relevant field in the country and contributes to achieving the Sustainable Development Goals, and these measures are directly aimed at ensuring human life and health, as well as safety, and serve an important role in achieving the following goals:



Potential opportunities in case of implementation of SMR-s projects



The 29th annual UN climate conference

The 2024 Baku Climate Change Conference, or COP 29, is an international conference organized by the United Nations that will take place from November 11 to 22, 2024 in Baku, the capital of Azerbaijan.

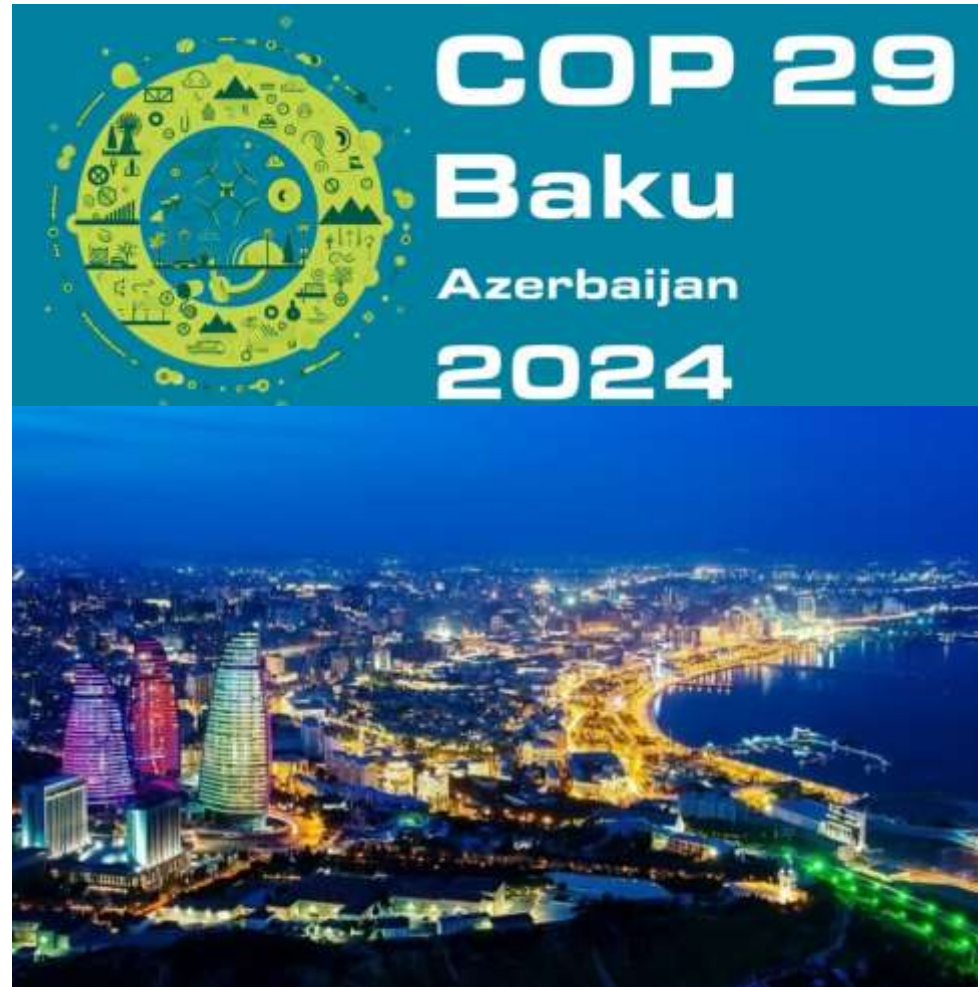


UN Climate Change Conference Baku - Novemb...



The 29th annual UN climate conference (cont.)

In accordance with Article 4 of the Paris Agreement, the Republic of Azerbaijan has introduced its Nationally Determined Contributions (NDC) to the UNFCCC Secretariat in October 2015 and as a contribution to initiatives for preventing global climate change (mitigation initiatives) compared to 1990 (base year) aims to reduce greenhouse gas emissions by 35% by 2030.



Long-term energy independence and building up export potential

The solid establishment of long-term energy independence, the increase in energy potential, the environmental impact of traditional methods and climate change require consideration of alternatives for power generation. Some of the main criteria for considering such alternatives may be:

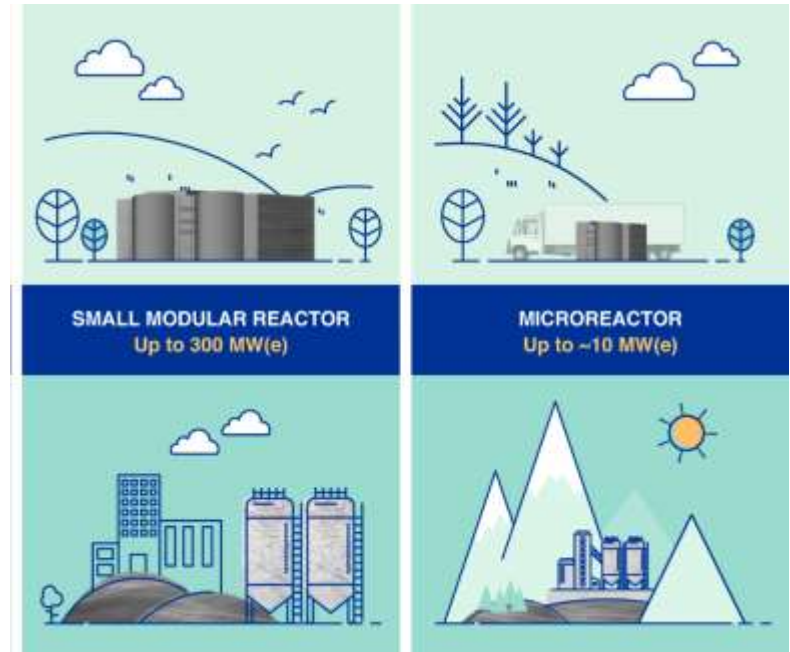
- Ease of operation;
- Safety of operation;
- High profitability;
- Performance efficiency;
- Minimizing the probability of accidents and guaranteeing the possibility of reliable mitigation of their consequences;
- Environmental acceptability;
- Fast and reliable design for commissioning and decommissioning, etc.



Small modular reactors (SMRs) as a one of proposed class of nuclear fission reactors.

Small Modular Reactors are a proposal for a new strategy to create smaller reactors that as expected can be built faster, safer and cheaper. Ideally, modular reactors would reduce the amount of on-site construction work, increase containment efficiency, and purportedly improve safety.

Based on these expectations, in Azerbaijan, as in other countries, there is a need to consider a set of issues related both to the acceptability of the possibility of design in our country, and to conduct a joint environmental impact assessment in the event of decision on construction of such reactors in neighboring countries located in close proximity to our borders.



Regulatory challenges

Difficulties in the consideration and approval of projects from the point of view of organizations of regulatory control and supervision:

- ▶ lack of confirmed data on the safety of operation;
- ▶ lack of statistics of identified problems during long-term operation;
- ▶ the presence of a large number of conceptual technologies with a lack of expert assessments on the advantages and disadvantages of each of them;
- ▶ the need to revise and improve the legislative and regulatory framework;
- ▶ the need to review and improve the regulatory infrastructure, as well as the allocation of additional resources and subject-specific training for personnel aimed to the regulatory functions.

Summary

For the introduction of nuclear technologies for the production of electricity with the installation of Small Modular Reactors, in addition to economic, environmental and political issues, there is a need to consider a number of issues related to the regulatory infrastructure, such as:

- ✓ establishment of an appropriate regulatory and legislative framework;
- ✓ introduction of a phased licensing system, taking into account the specifics of activities and ongoing milestones;
- ✓ development and establishment of conditions for the validity of permits, taking into account the specifics of individual components of the activity;
- ✓ review and addition of inspection procedures and checklists with an emphasis on the specifics of activities related to the design, installation, operation and decommissioning of SMRs;
- ✓ improvement of the structure of the regulatory body with the creation, if necessary, of additional units;

Summary

- ✓ staffing the regulatory body with specialists who have the appropriate knowledge and have undergone the necessary skills (education, instruction, training, practical exercises, familiarization with the practical performance of duties in the countries operating SMRs);
- ✓ improvement of the material and technical base of the regulatory body with an emphasis on the acquisition of the necessary tools and equipment for control;
- ✓ initiation and development of a simplified mechanism for applying, if necessary, for technical and expert support to the IAEA and to the relevant authorities of the producers and operators countries;
- ✓ participation in the review and assessment of acceptability from the point of view of regulatory control of a set of issues on fuel supplies, their temporary storage, logistics criteria, waste management, as well as advance planning of all measures and the financial component for decommissioning after the end of the operational period, etc.

Thank you for your attention!



Atoms For Peace

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