



EURATOM NATIONAL CONTACT POINT in UKRAINE

EURATOM programme:
integration of Ukrainian research and education
community to the European research area of
fission and fusion research and training

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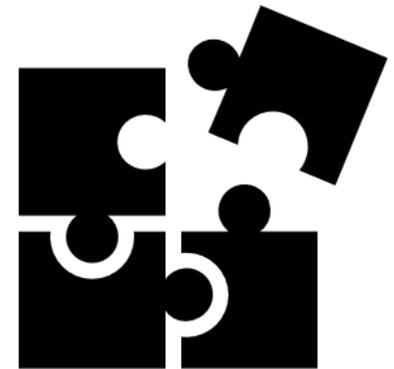
National Science Center Kharkov Institute of Physics and Technology

International Scientific and Practical Conference MicroCAD-2023
17-20 May 2023

ABOUT EURATOM PROGRAMME

UKRAINE IN EURATOM H2020 AND HORIZON EUROPE

EURATOM WORK PROGRAMME 2023 – 2025



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The Euratom Research and Training Programme



**ABOUT
EURATOM
PROGRAMME**

Global challenges

Increasing population

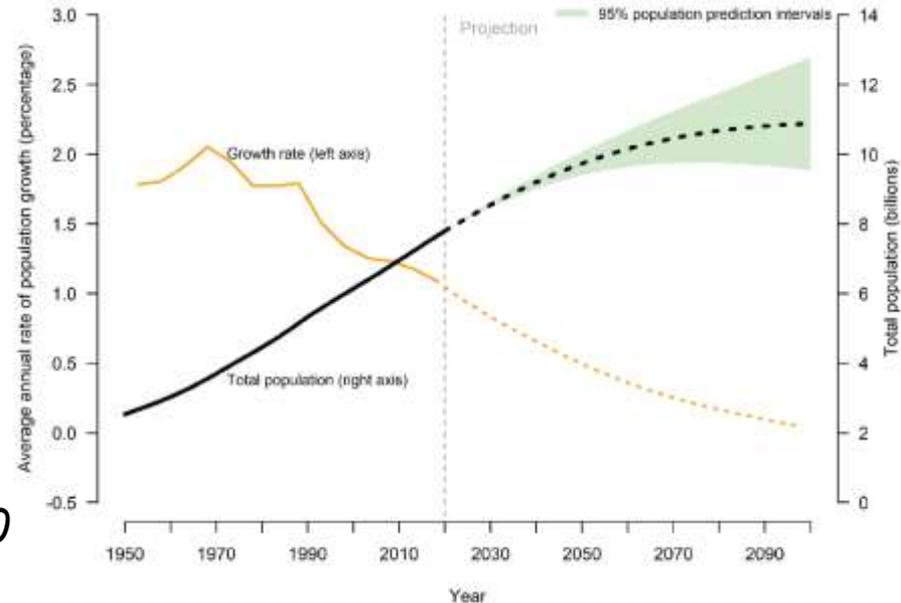
Increasing energy use

Environmental harmful energy sources

The EU strategic objective

“Fit for 55” by 2030 and “Net Zero” to 2050

The EU aims to fully decarbonize its economy by 2050



Source: United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019: Highlights. ST/ESA/SER.A/423.

26% of the electricity produced in the EU comes from nuclear energy

It remains the largest source of low-carbon electricity

(SNETP report, Strategic research and innovation agenda, June 2021)

Nuclear has a natural place in the future energy system

The EU's electricity system will be more than double by 2050. It will grow to 6,800 TWh up from 3,000 TWh today

(ETIP report, Getting fit for 55 and set for 2050 Electrifying Europe with wind energy, June 2021)

Future energy mix

Hydro

Wind

Solar



Nuclear

Hydrogen

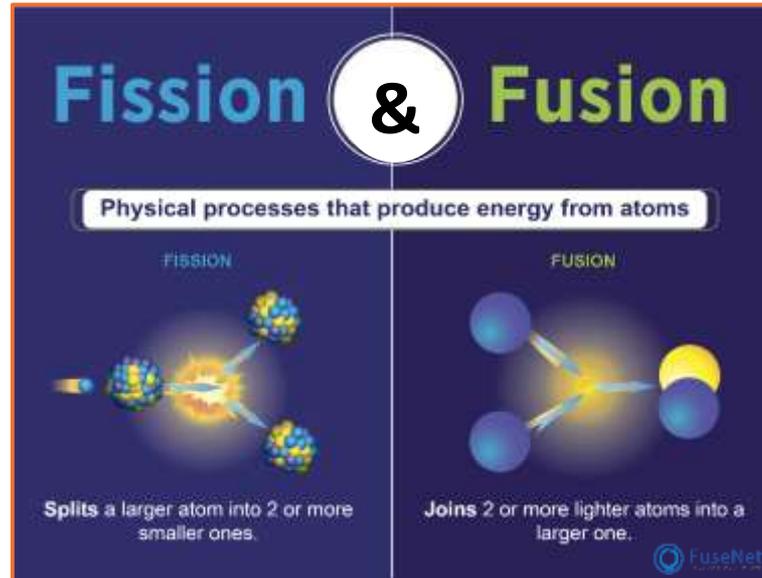
Biomass

etc

SOURCES OF ENERGY

Fission

One heavy nucleus splits into two (or more) parts and releases energy



Fusion

Two light nuclei fuse together to form one heavier nucleus and release energy

Hybrid system

co-generation from nuclear power

hydrogen

heating for our infrastructure

water desalination

Non – energy applications

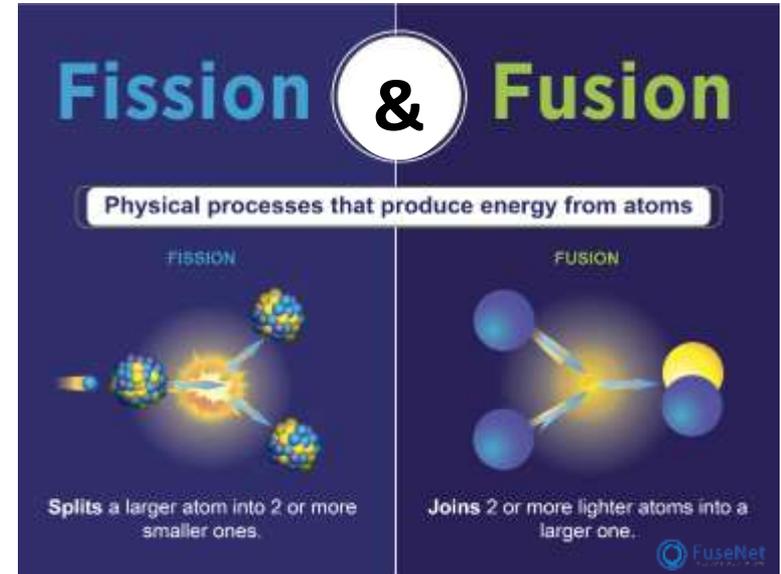
nuclear medicine and industrial applications

isotopes for nuclear therapy and diagnostics

radiation protection

AI in nuclear medicine

new materials, detectors, ... for industry from fission and fusion research



EURATOM research and training programme is complementary programme to the EU HORIZON EUROPE research and innovation programme

The Euratom general objective is to pursue nuclear research and training activities

*with an emphasis on the continuous improvement of **nuclear safety, security and radiation protection**, as well as to complement the achievement of **Horizon Europe's objectives** inter alia in the context of the energy transition*



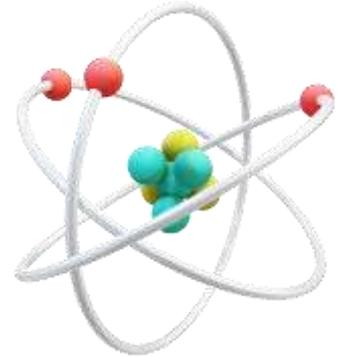
The Euratom specific objectives

Improve and support nuclear safety, security, safeguards, radiation protection, safe spent fuel and radioactive waste management and decommissioning, including the safe and secure use of nuclear power and of non-power applications of ionizing radiation;

Maintain and further develop expertise and competence in the nuclear field within the Community;

Foster the development of fusion energy as a potential future energy source for electricity production and contribute to the implementation of the European fusion roadmap;

Support the policy of the Union and its Member States on continuous improvement of nuclear safety, safeguards and security.



Euratom Programme 2021-2025



The financial envelope for the implementation of the new Euratom Programme 2021-2025 shall be **€1.382 billion in current prices.**

€583 million for indirect actions in fusion research and development

€266 million for indirect actions in nuclear fission, safety and radiation protection

€532 million for direct actions undertaken by the Joint Research Centre

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**UKRAINE in
EURATOM
PROGRAMME**



Nuclear energy sector is a strategic sector of Ukraine

UKRAINE has 4 NPPs (13 + 2 reactors)

50-60% of electricity generation before the russian invasion of Ukraine

Ukrainian Universities, scientific centers, private and state companies are involved in nuclear education, research, training and exploitation activities



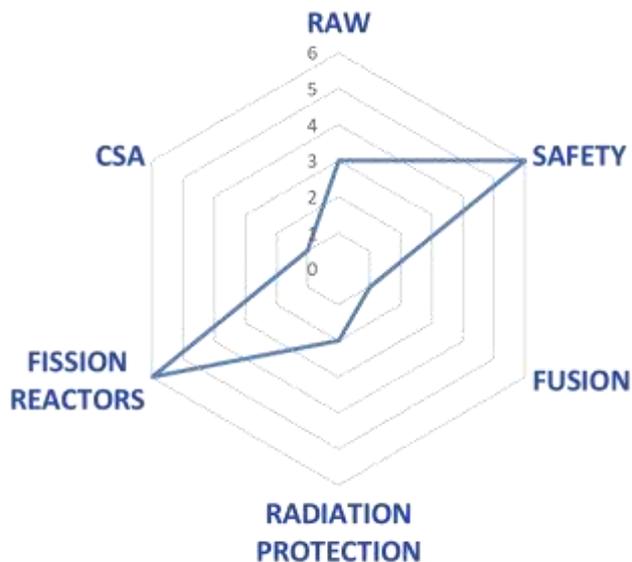
www.energoatom.com.ua

Association agreement of Ukraine to Euratom H2020 programme was signed in June 2016

19
projects

14
entities

4,89
million EUR
the EC contribution



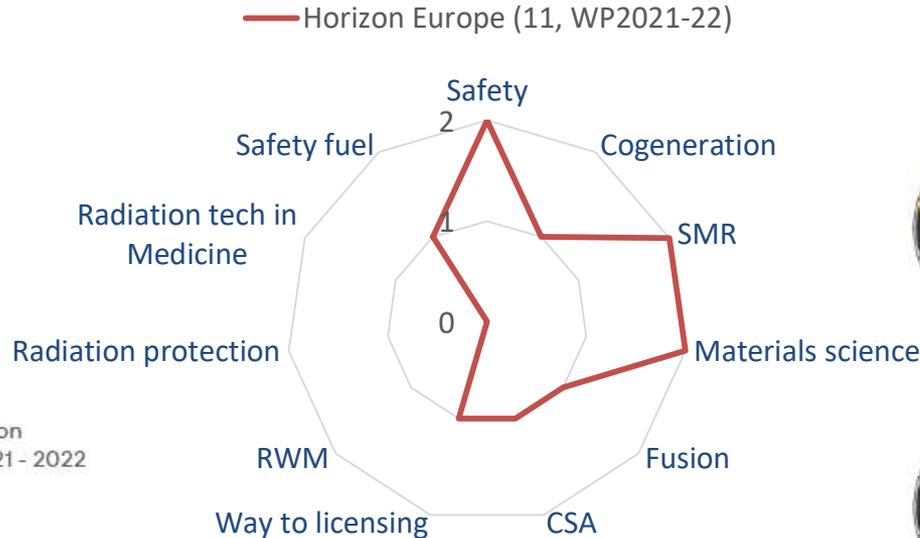
Association agreement of Ukraine to Euratom HORIZON EUROPE programme was signed in October 2021

11
projects

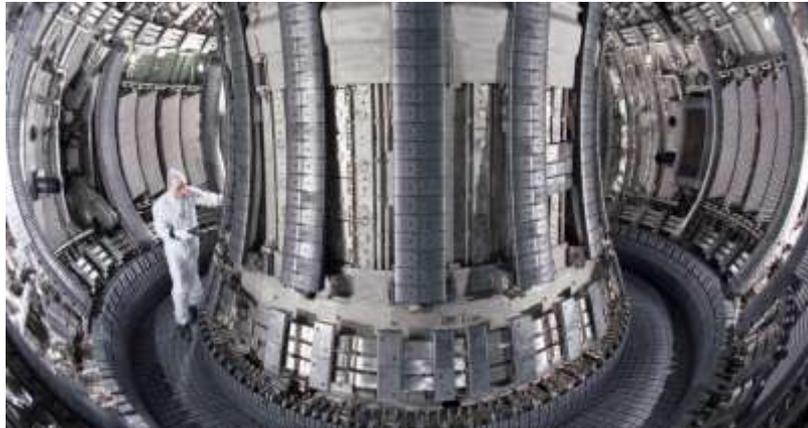
11
entities

1,816
million EUR, the EC contribution
fission projects under WP 2021 - 2022

0,843 + 2,5
million EUR, the EC contribution
EUROfusion project WP2021-2025



Two main pillars of EUROfusion:
 Preparing for [ITER](#) experiments
 Developing a concept for the future demonstration fusion power plant [DEMO](#)



4800 researchers
28 member institutes
3 associated partners
162 affiliated entities
 from across Europe

110 Ukrainian researchers from 6 organizations





51
Participating Organisations

61
Linked Third Parties

3
International Partners

23
Countries
20 EU Member-States
3 Associated Countries

4 Ukrainian participants



A step change in European collaboration towards safe RWM, including disposal, through the development of a robust and sustained science, technology and knowledge management programme that supports timely implementation of RWM activities and serves to foster mutual understanding and trust between Joint Programme participants.

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**EURATOM
WORK PROGRAMME
2023 - 2025**

Euratom WP 2023-2025 **has been published** and call **is open for the submission**

Deadline for the project proposals submission is expected to be **November 8, 2023**

Respective **Grant Agreements** are expected to be signed **in summer 2024**

The European Commission (DG RTD) adopted the Euratom Work Programme 2023-2025, implementing the Euratom Research and Training Programme and supporting **nuclear researchers with EUR 132 million in funding**

Safety of operating nuclear power plants and research reactors

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-01

Safety of advanced and innovative nuclear designs

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-03

Partitioning and transmutation of minor actinides towards industrial applications

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-05

Improved nuclear data for the safety of energy and non-energy applications of ionising radiation

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-06

Nuclear and radiation techniques for EU strategic autonomy, circular economy and climate change policies

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-09



EU contribution: ~ 56 000 000 €
Indicative number of grants: 13

Safety of light water small modular reactors (LW-SMRs)

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-02

Innovative technologies for safety and excellence in decommissioning, including robotics and artificial intelligence

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-07

Safety of low enriched fuel for research reactors - securing the supply of medical radioisotopes

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-08

Harnessing innovation in nuclear science, technology and radiation protection

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-10

Preparatory phase for a European production capability to secure a supply of high-assay low-enriched uranium (HALEU) fuel

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-11

EU contribution: ~ 34 000 000 €
Indicative number of grants: 7



Co-funded European partnership for research in nuclear materials

TOPIC ID: HORIZON-EURATOM-2023-NRT-01-04



EU contribution per grant: ~ 20 000 000 €
 Indicative number of grants: 1

FISA-EURADWASTE 2025

Education, training, capacity building and networking actions to strengthen Ukrainian and EU nuclear research

SOFT (Fusion Prizes) 2024, 2026

Nuclear Innovation Prize 2025

(Safety of reactor systems, Radioactive waste management, Radiation protection)

Support to MSCA in nuclear research and training – EUR 1 M/year

Education, training, capacity building and networking actions to strengthen Ukrainian and EU nuclear research

- further cooperation with Ukrainian research entities and academia to **improve the participation** of their researchers in co-funded **Euratom** research and training **activities**
- **nuclear education and training** programmes to ensure that adequate nuclear knowledge and capabilities are maintained so that nuclear installations can be operated safely in Ukraine;
- realisation of the **full potential of Ukrainian research entities and infrastructures**, and research programmes in a European framework that covers specific areas of the Euratom Research and Training Programme.





Despite on full-scale armed russian aggression in Ukraine, Ukrainian research centers and Universities continue their research and education process and looking for different opportunities for integration into European and Global research area

Euratom programme is one of many areas for international research cooperation of Ukraine

**Thank you very much
for your attention!**



Sergii Pugach,
Coordinator of the Euratom NCP in Ukraine
National Science Center Kharkov Institute of Physics and
Technology


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