



POCATOM

# International communications and education based on the concept of the “Proryv” project.

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# UN Sustainable Development Goals (SDGs)



2015, 193 UN member states reached consensus on the document

“Transforming our world: the 2030 Agenda for Sustainable”, containing 17 SDGs.

## 9 SDGs are on the Agenda of the IAEA:



№2 – Zero hunger

№3 – Good health and well-being

№6 – Clean water and sanitation

**№7 – Affordable and clean energy**

№9 – Industry, innovation and infrastructure

**№13 – Climate action**

№14 – Life below water

№15 – Life on land

№17 – Partnerships for the goals

The evidence for the potential significant contribution of nuclear energy to the achievement of climate change mitigation goals is extensive and clear.

There is not yet any permanent disposal site for HLW from which long-term empirical and on-site data can be obtained for such an estimate of nuclear energy.

The Group of Technical Experts therefore did not recommend the inclusion of nuclear energy in the taxonomy at this stage.



The development of the concept of a "green square" of energy technologies with the participation of nuclear power plants is hindered by the problem of radioactive waste.

## PDEC

- Rosatom forms an international industrial and technological partnership based on PDEC\*
- World experience shows that market formation is initially organized through international cooperation
- Comprehensive solution to the problems of nuclear power for various member countries with confirmation of technological industrial feasibility
- There are no similar and comparable research facilities in the world

\*Pilot and demonstration energy complex

## Rosatom / Siberian Chemical Combine



- PDEC operation
- Distribution of technologies
- Innovative development through joint programs
- Science and education

## PDEC partners



- Mastering the technologies of the ONFC
- Reduction of own investments due to international cooperation
- Transparent intellectual property relations
- Guarantees on peaceful use and non-proliferation regime
- Solving the “pending problems” of nuclear power
- Formation of the world market of nuclear technologies and promotion of promising technologies of Generation 4 and CNFC

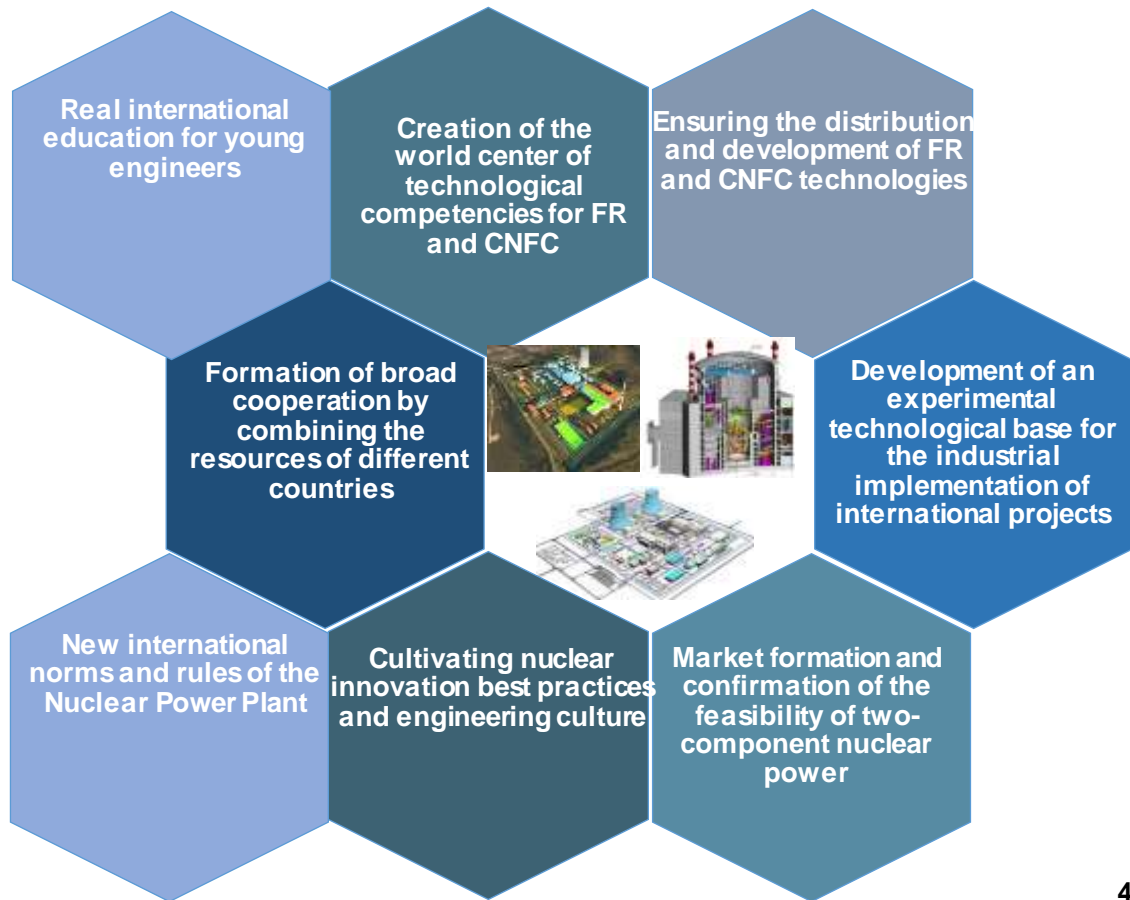


## MISSION of cooperation with China based on PDEC

- Creation of an international technological platform for the construction of a two-component nuclear power system based on innovative technologies FR and CNFC
- Formation of the energy generation market for environmentally friendly and radiation-safe nuclear energy
- Formation of the nuclear generation market based on innovative technologies

\*Industrial power complex

## The goals of international cooperation on the basis of PDEC and IPC\*



# Positioning the topic of CNFC at international platforms (current status)



- FR is the only reactor accepted and approved as meeting the requirements for Generation IV fast reactors (2017)
- Updated guidelines in thematic governing boards and working groups, taking into account the interests of the "Proryv" (2021)
- MSFR- access to the signing of a systemic agreement
- SCWR- a project agreement
- HTGR (for hydrogen production) - project agreement
- GFR – Russia does not participate



- Nuclear Science Committee (NSC):
- Participation in the Task Force on Waste Transmutation (2021)
  - Organization of a joint international conference on transmutation of minor actinides and long-lived fission products (2022)
  - Regular participation in working groups



- Regular participation in
- the fuel cycle working group;
  - Fast reactors (FR);
  - IAEA Conferences on Fast Reactors (FR)

# Formation of a human resource for an innovative breakthrough



Basic Department of NRNU MEPhI "Closed Nuclear Fuel Cycle Technologies" and a branch in Seversk

- Master's Program "New Generation Nuclear Energy Technologies"
- Interdisciplinarity
- academic mobility
- direct communication with industry



**Rosatom Technology Development Center at NRNU MEPhI** - focus on CNFC technology

- The goal is the development and implementation of educational programs and support for research activities on FR and CNFC
- The center unites 2 educational departments of 4 profiles, scientific and educational infrastructure, including SEC NRS

Graduates of NRNU MEPhI "CNFC Technologies" 2014-2021 - 76 masters

## Key principles:

- practice-oriented training
- internships at the facilities of "Proryv" Project
- lecturers - leaders of "Proryv" Project
- four profiles
- courses involving the competencies of partners - Mendeleev University of Chemical Technology, SEC NRS
- international level (English)

**The cycle of scientific seminars of the Center** - "Scientific issues of the "Proryv" Project"

- "A platform for interaction of masters, managers and leading experts of the "Proryv" Project"
- Lectures on "firsthand" topical issues of FR and CNFC
- Project scientific work of undergraduates and discussion with leading expert practitioners of "Proryv" Project"

# Personnel training infrastructure for PDEC and a new nuclear power platform

A project is being implemented to create a **Training and Information Center (TIC) – Seversk**

The planned completion date for the construction and installation work on the reconstruction of the building for the TIC is 2022.

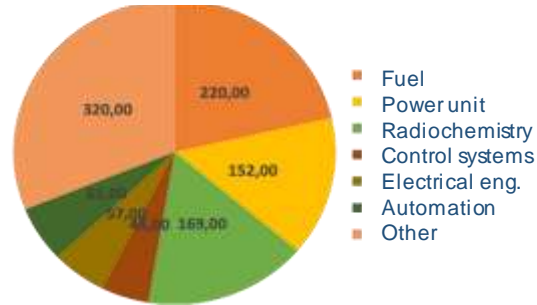
Immediate tasks:

- Staffing (trainers) and creation of educational programs
- Equipment with simulators and other teaching aids for MFR\*, BREST, \*PM

Main areas:

- production of dense fuel MFR
- power unit with RU BREST-OD 300
- SNF reprocessing facility (PM)

PDEC personnel requirements until 2030 (ppl)



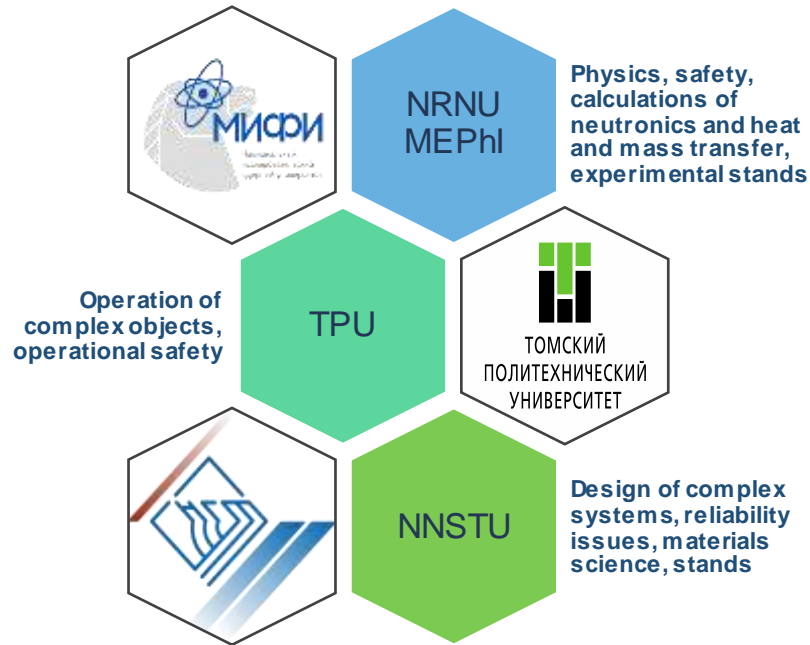
\*fabrication/ refabrication module

\*\*processing module

# Creation of a university cluster to support the export potential of the “Proryv” project



- Expansion of the program: Moscow, Nizhny Novgorod, Tomsk



**The goal** of international cooperation in education is the preservation and further development of knowledge and experience in the field of closed nuclear fuel cycle technologies, the creation of stable relations with foreign partners for cooperation in the field of science and business technologies

**Nearest directions for partnership:** Europe, China

## Immediate tasks:

- form competitive educational programs - export version (international level, English language)
- establishment of interaction with foreign educational partners, design and implementation of joint programs



# Thank You!

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