



ROSATOM
WESTERN
EUROPE

Rosatom: Non-Energy applications

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Rosatom at a Glance

138.3 Bn USD
10-YEAR PORTFOLIO OF OVERSEAS ORDERS

16.7 Bn USD
REVENUE*

RUSSIAN DESIGNED NPPs AVOIDED
213 M tonnes of CO₂eq

35 UNITS
OVERSEAS NPP PORTFOLIO

R&D INVESTMENT
4.5% of revenue

0 INES
LEVEL-2 INCIDENTS

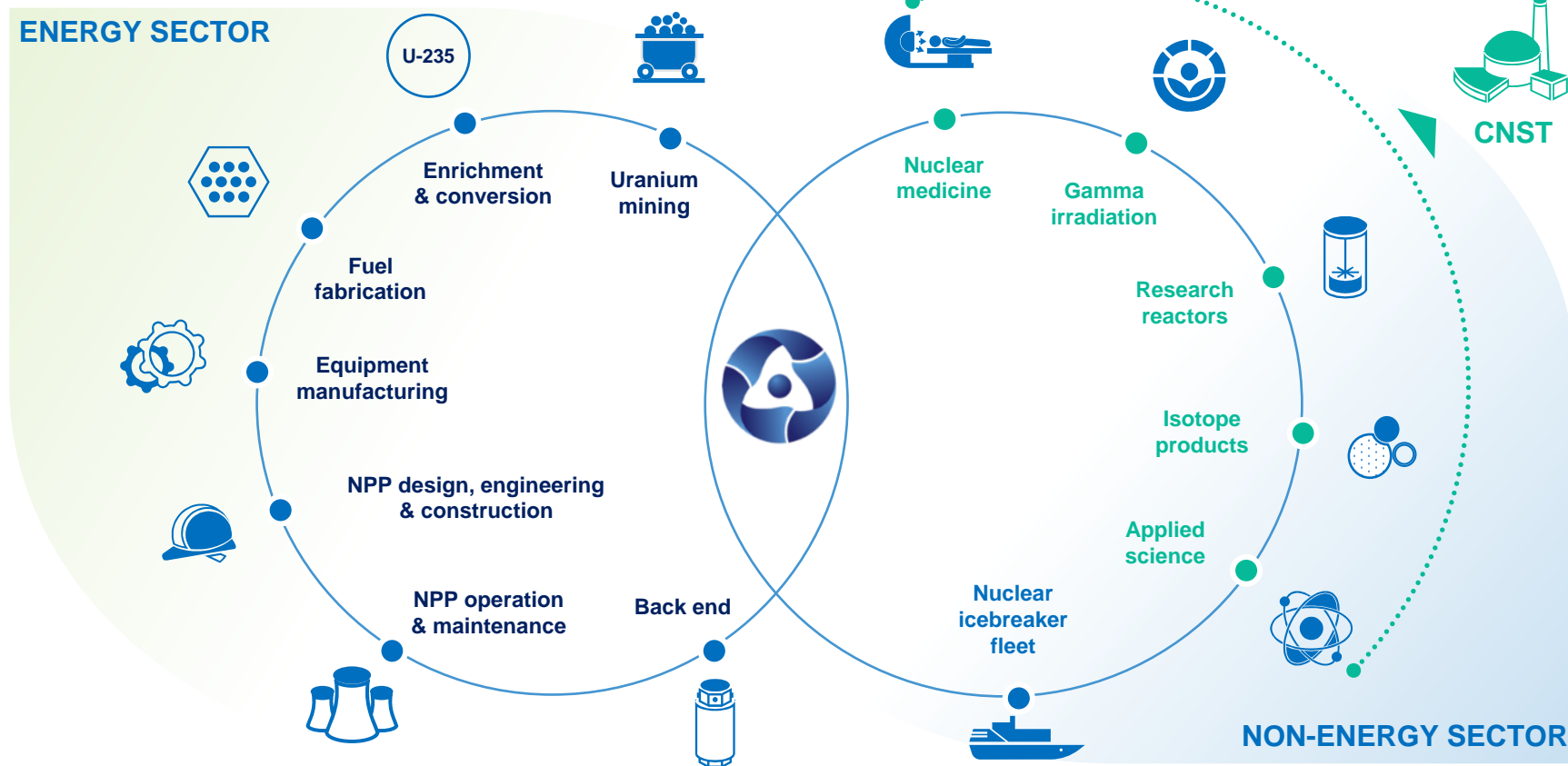
>250 000
EMPLOYEES

GLOBAL FOOTPRINT -
> 50 countries



* Source: Rosatom IFRS, annual report

ROSATOM: ALL THAT IS NUCLEAR



ROSATOM NEW PRODUCTS

Rosatom portfolio includes more than 80 various products

Green Energy



Wind Energy



Hydrogen



Energy Storage Solutions

Nuclear Medicine



Nuclear Medicine & Isotopes



Multifunctional Irradiation Centers



Research Reactors

International Logistics



Logistics Solutions



Arctic

New Materials



Composite Materials



Special Steels



Rare Earth Metals

Ecological Solutions



Waste Management & Ecological Solutions



Clean Water

Digital Products



Smart Cities

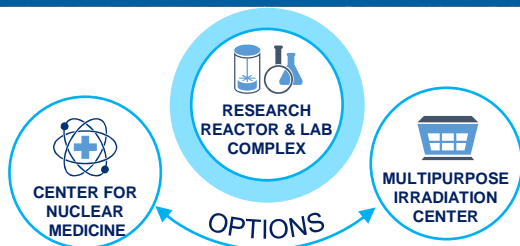
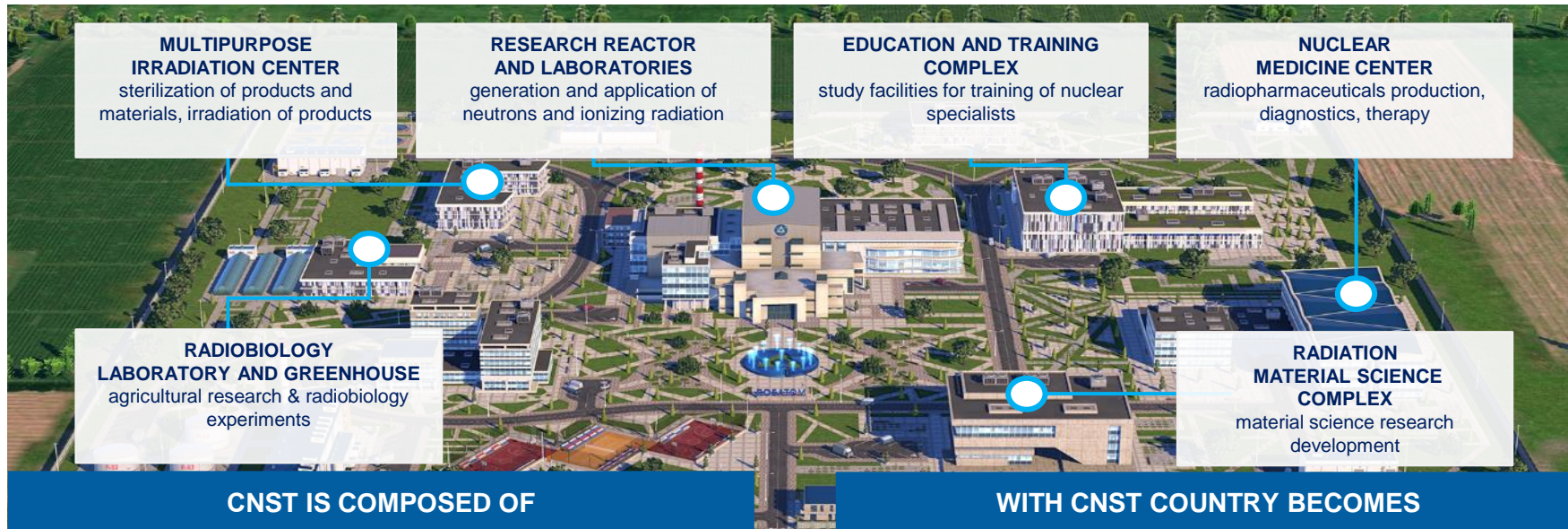





Software Solutions



Security Solutions

CENTER FOR NUCLEAR SCIENCE AND TECHNOLOGY (CNST)



-  A regional scientific and educational hub
-  A national center of isotope production
-  A center for nuclear medicine for domestic and regional operation

NUCLEAR MEDICINE & ISOTOPE PRODUCTS – GOOD HEALTH AND WELL-BEING

50+

COUNTRIES USE OUR
PRODUCTS

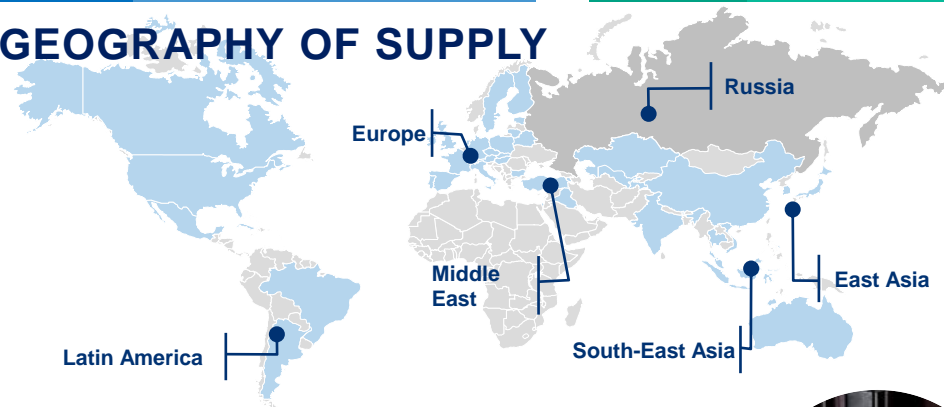
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NEW PROJECTS

10

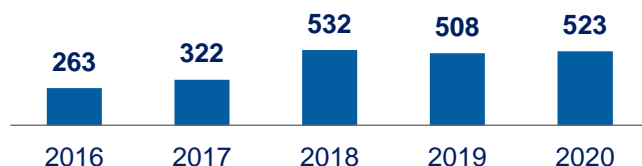
FIELDS FOR
COOPERATION

GEOGRAPHY OF SUPPLY



10-Year portfolio of overseas orders

M USD



KEY PRODUCTS



ISOTOPE PRODUCTS

- Starting materials (stable isotopes)
- Medical and industrial isotopes
- API & Radiopharmaceuticals



MEDICAL EQUIPMENT

- Equipment for therapy & diagnostics
- Equipment service



NUCLEAR MEDICINE

- Nuclear medicine centers
- Radionuclide diagnostic centers
- Radionuclide therapy centers



MULTIPURPOSE IRRADIATION and STRILIZATION CENTERS

- Treatment of medical equipment and agricultural goods (for manufacturers)
- Complex treatment of medical equipment for health facilities (incl. non-radiation treatment)

RELIABLE SUPPLIES OF MEDICAL ISOTOPES

Rusatom Healthcare provides a wide range of products for nuclear medicine. The offer includes: isotope-based products, e.g. active pharmaceutical substances, medical generators, as well as bulk material for production of radiopharmaceuticals used in molecular imaging, radionuclide therapy and diagnostics.



**ABOUT 2,5 MLN
PATIENTS PER YEAR**

PALLIATIVE CARE
Bone tumors and metastases
(Sm-153)

SOURCES
Tumors of prostate, gland,
lungs, brain (Cs-131)


RAW MATERIAL
Thyroid gland, kidney
diseases (I-131)

GENERATORS
For diagnostics of oncology,
cardiology and neurology diseases




PRECURSORS
Alpha-, Beta- emitters for
target therapy

Wide fleet of certified containers
100 models

> 50  **countries**
WORLDWIDE DISTRIBUTION

Isotope products for medical use
from **10**  ROSATOM plants

Located in Moscow, **Isotope JSC** is responsible for distribution and marketing of isotope products, produced by **ROSATOM State Atomic Energy Corporation** enterprises.

~ 9000
  
shipments annually

Isotope JSC delivers products **all over the world by air, sea and land**. The company is a leading supplier of medical isotopes to Latin America, Asia and Middle East.

Rosatom is working on export-oriented promising projects and on commercial production of hydrogen at points of consumption



West hydrogen cluster: Kola NPP

Hydrogen production through electrolysis for local supplies and export to Europe

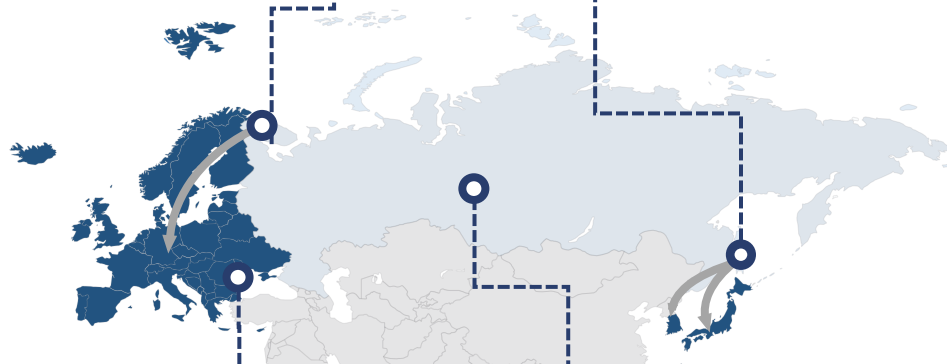
Partnership options: sales of H₂; technologies; investment



East hydrogen cluster: Sakhalin region

Hydrogen production through steam methane reforming with CCUS for local supplies and export to Asia-Pacific

Partnership options: sales of H₂; technologies; investment



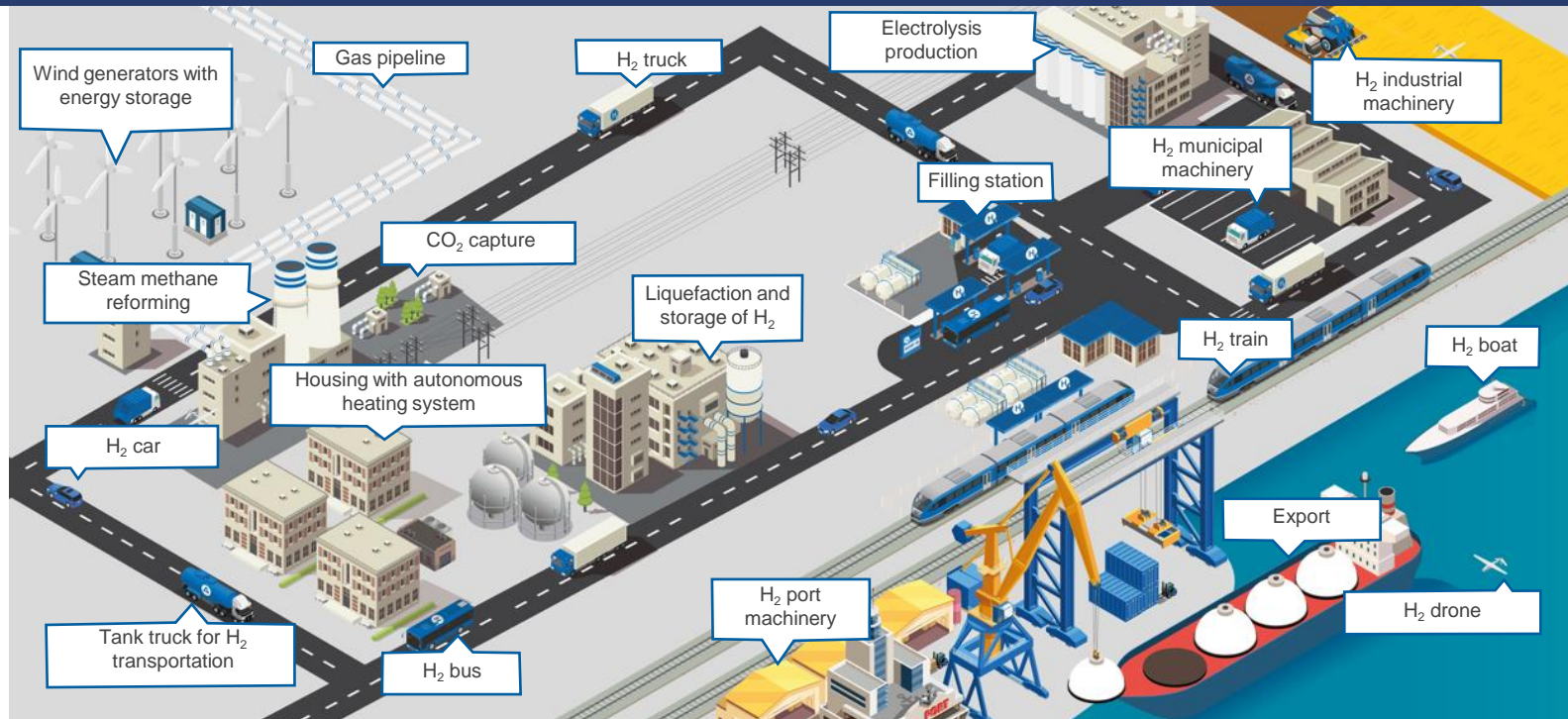
Local decarbonization (industry and transport) projects in Europe and Russia

Developer, investor, EPC, engineering, operation and low-carbon hydrogen production for industrial users

Partnership options: JV; projects developers; market access; technologies; investment

HYDROGEN CLUSTER ON THE SAKHALIN ISLAND

A large industrial hydrogen project is the basis for the development of the hydrogen cluster on the Sakhalin island



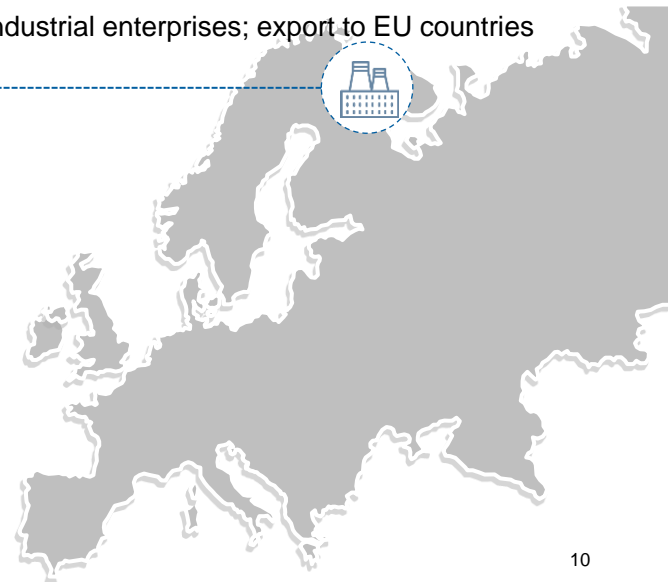
HYDROGEN PRODUCTION AT THE KOLA NPP

Key project parameters

- Complex for **hydrogen production and handling**, as well as a **compression or liquefaction and transportation system**, is planned
- **Complex capacity**: 1 MW (expandable up to 10 MW)
- **Free capacity** of the Kola NPP: 200 MW, hydrogen production potential - up to 30 thousand tons
- **Complex commissioning date**: 2023
- **Consumption**: local projects in the Russian Federation, including decarbonization of industrial enterprises; export to EU countries



- The Kola NPP has **four** VVER-440 reactors with a capacity of **440 MW** each
- Capacity factor – **60,9%** (2020)
- It is planned to use **electrolyzers** produced by **NPO «Centrotech»** at the **complex**
- Scaling phase – production of **liquefied hydrogen, ammonia and synthetic fuels**



NORTHER TRANSIT CORRIDOR – ADDITIONAL ROUTE FOR GLOBAL TRADE SUSTAINABILITY

2025 START OF NAVIGATION

ROTTERDAM

WESTERN
HUB

EASTERN
HUB

BUSAN

- HUB TECHNOLOGY AND LOCATIONS ARE SELECTED
- NTC ROUTE TECHNICAL-SIMULATION MODEL IS COMPLETED
- EXTRA-EARLY AND EXTRA-LONG CROSSING VIA THE NTC
- OPTIMAL VESSEL PARAMETERS IS IDENTIFIED
- TARGET MARKET IS IDENTIFIED

Closed Nuclear Fuel Cycle

Closed NFC enables multiple use of nuclear fuel through reprocessing providing for **limitless development of nuclear power**

- ✓ **Hundred times more efficient utilization of the raw uranium**
- ✓ **More fuel is produced every subsequent cycle**
- ✓ **Increased safety** (fast neutron reactors eliminate any threat of NPP's meltdown)
- ✓ **Zero CO₂ emissions**

In 2021, Rosatom has begun construction of BREST fast neutron reactor under **Proryv project** which creates an **on-site closed nuclear fuel cycle**

WORLD'S ONLY FLOATING NUCLEAR POWER PLANT



2 x KLT-40S

Electrical capacity	70 MW
Thermal capacity	300 MW
Fuel cycle	3 years
Design life	40 years

APRIL 2019

Comprehensive dockside tests of the floating power unit "Akademik Lomonosov" were completed

JUNE 2019

Operation license was issued

DECEMBER 2019

FNPP was connected to the grid

MAY 2020

FNPP was put into commercial operation

Land Based SMR Solutions

Flexible, tailor-made small NPP solution based on **RITM SMR** is designed for **remote and isolated regions**.

First onshore SMR will be constructed in 2028 in **Yakutiya**, the region with most extreme and severe climate.

- ✓ **Effective cost management**
- ✓ **Zero CO₂ emissions**
- ✓ **Short period of construction** works at the site compared to NPP
- ✓ **Modularity** available



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Thank you for attention!