



ROSATOM

STATE ATOMIC ENERGY CORPORATION ROSATOM

Rosatom Energy Solution: Customer Perspective

Rosatom Seminar on Russian Nuclear Energy Technologies & Solutions

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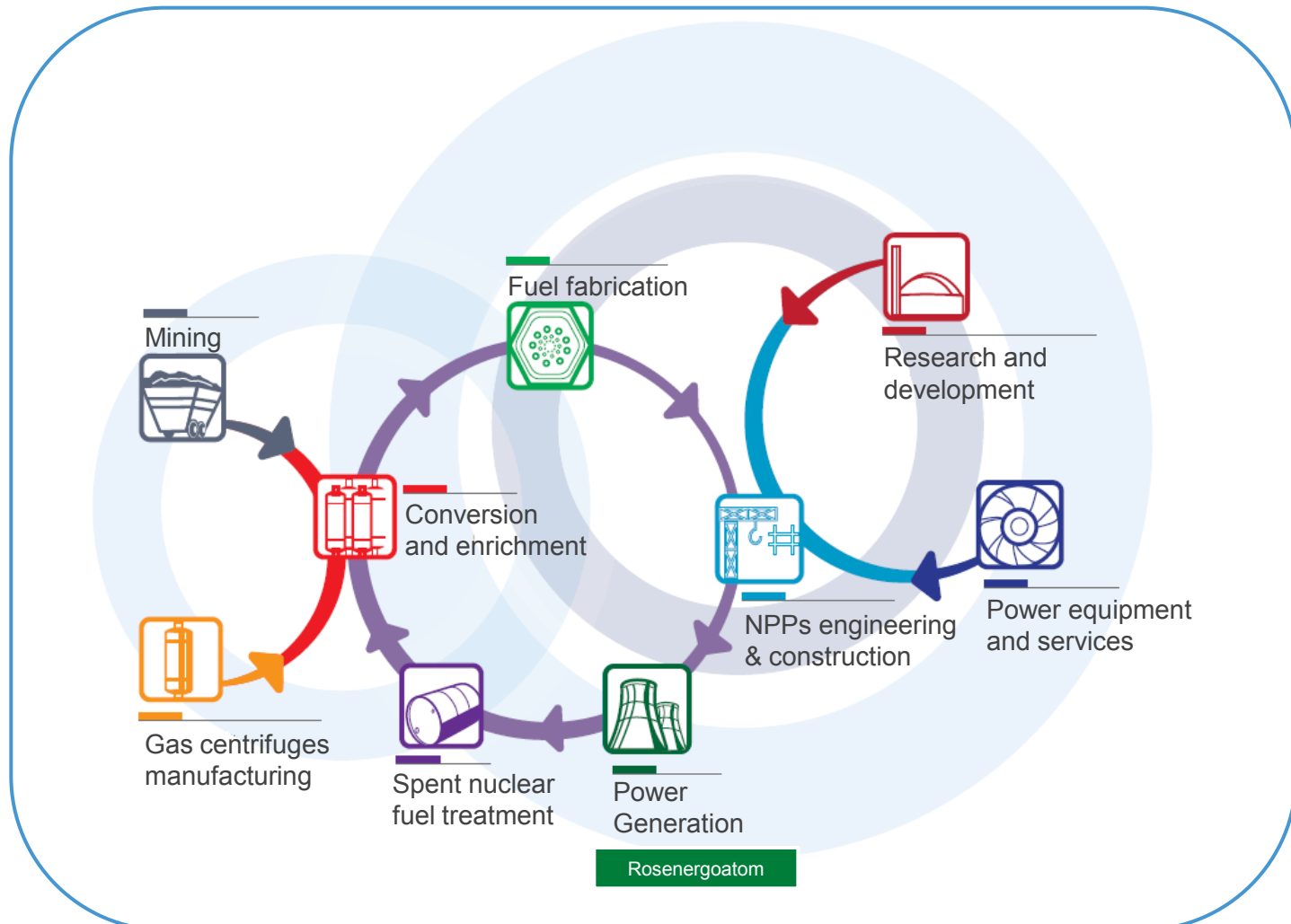
***Deputy Head of Department,
JSC “Concern Rosenergoatom”***

April 2-3, 2012

Johannesburg, Sandton Convention Center

Rosenergoatom is an operating utility for all nuclear power plants in Russia

Role of Rosenergoatom in Rosatom's Key Activities

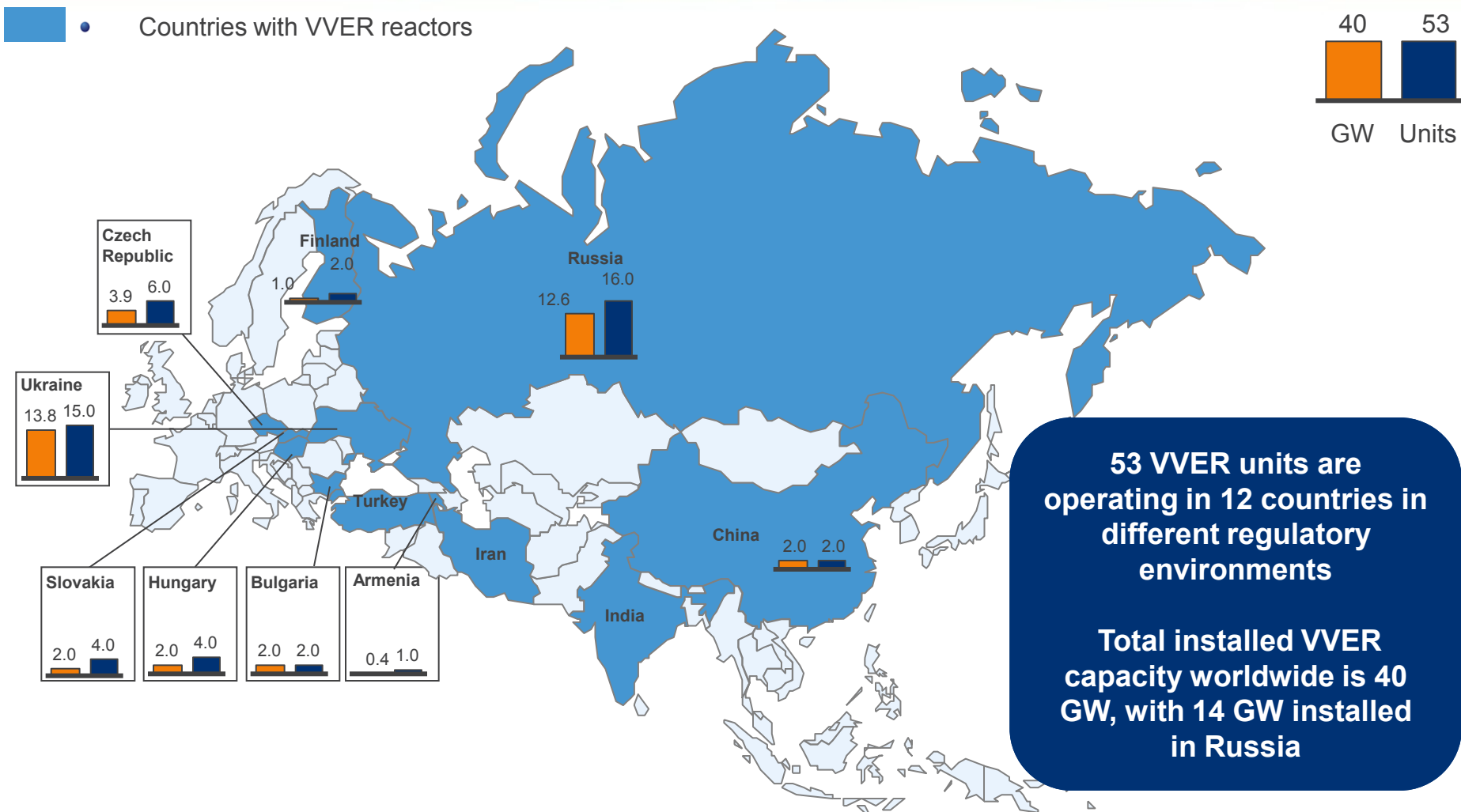


The VVER – a proven stalwart of the global nuclear fleet, adapted to the increasing demands of new times

- **Globally referenced technology.** With over 70 reactors in eleven countries spanning the EU, post-Soviet, Middle East and Asian regulatory spheres, the VVER is among the most proven and replicated nuclear power plant technologies in the world
- **High availability and low cost.** VVER units continue to show top quartile (90%+) capacity factors in countries where the market stimulates them to do so. At 78 USD/kW-year¹, VVER operating costs are among the lowest in the world.
- **Dynamic improvements.** The past 10 years have seen marked improvement in the performance of Rosatom's VVER fleet, as market demands return these units to a "flat out baseload" operating paradigm. Rosatom has spent the past years improving the VVER's key performance indicators through modernizations, uprates, license extensions and safety improvements
- **Rosatom has utility and O&M capabilities for the VVER in-house.** Not only does Rosatom offer the full panoply of fuel and equipment offerings, but also in the utility sphere we are full service, with technological design, training centers and institutional support. We know the full range of issues utilities face. We are not just a vendor, we are an owner.

¹ Actual costs in Russia, excluding fuel

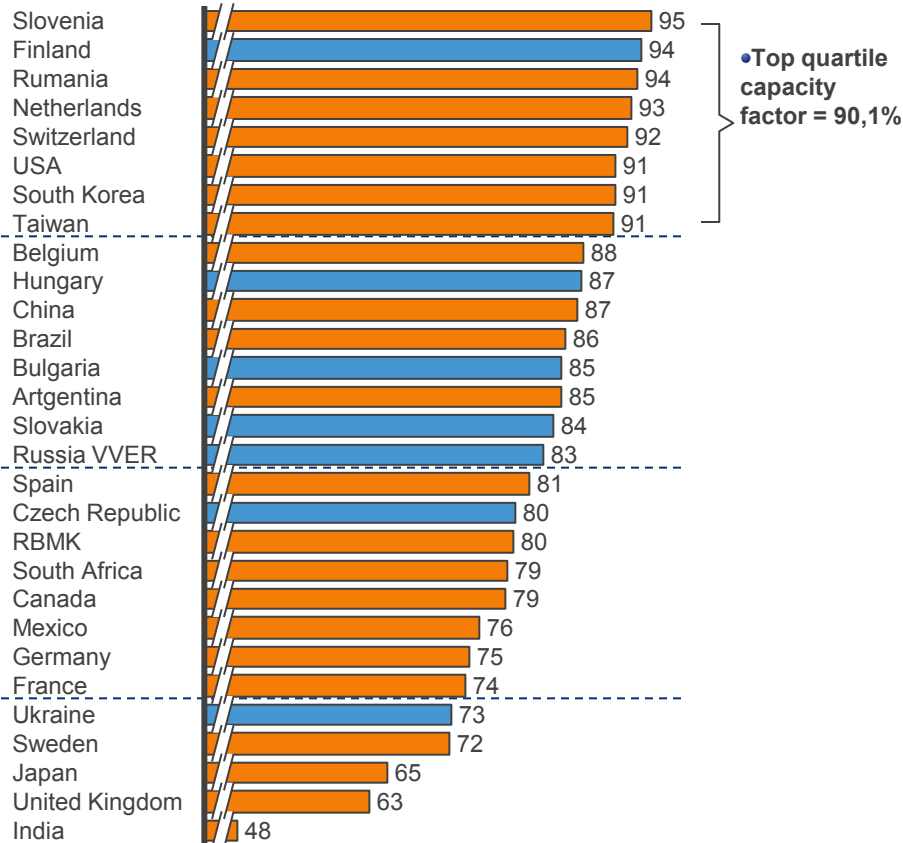
VVER is among the proven stalwarts of the nuclear industry over the past decades, with over 1400 reactor-years of operation worldwide



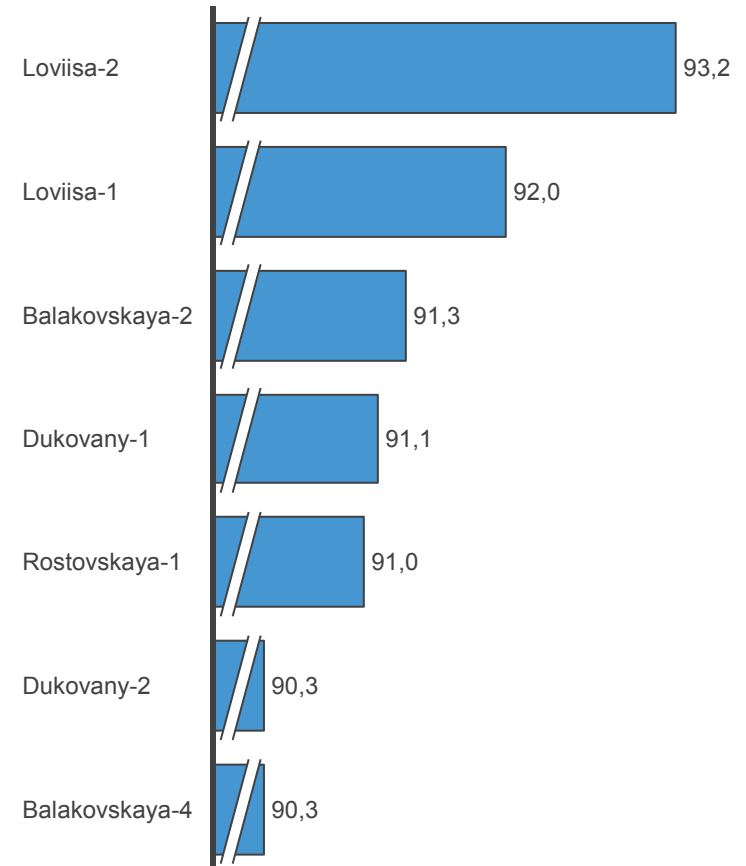
VVER units figure prominently among the top quartile

Percent

NPP capacity factors across countries, 2007-10



VVER units figure prominently in the top quartile



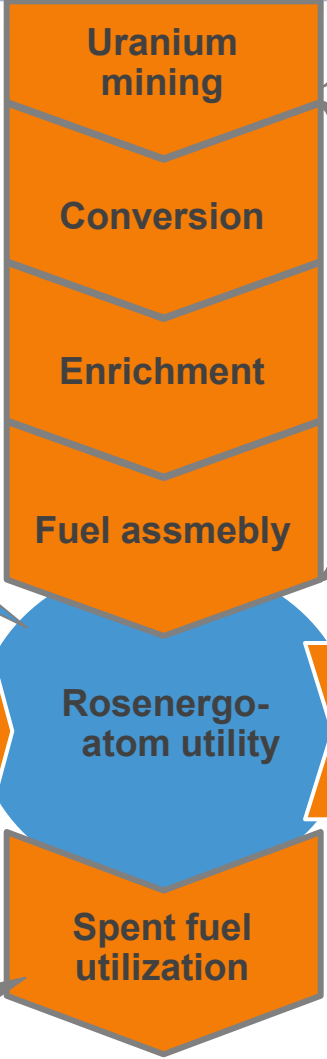
Rosatom is the only nuclear vendor to have an in-house utility, which means we share best practices in O&M of VVER plants throughout its lifetime

When you buy VVER NPP , you are also buying our 40 years of experience operating VVER plants

Investing 10 bn USD annually next 10 years

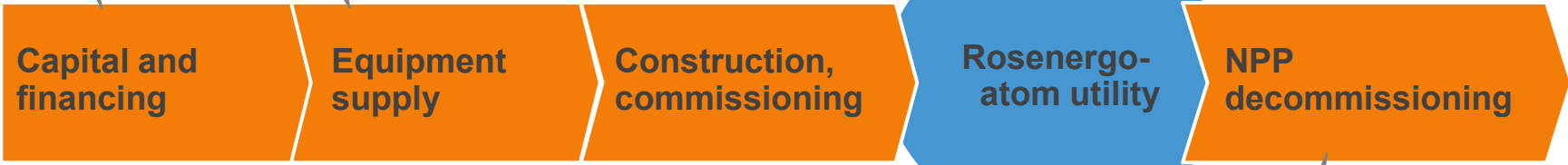
Proven combination of own and third party suppliers; track record of localization

24 GW in operation in Russia, close ties to operators of 27 GW of VVER in the world.



Stable supply from inside Russia and abroad

TVEL/Tenex delivers enriched fuel and assemblies



Rosatom offers spent fuel solution

Rosatom to decommission min 12 GW and incorporate experience into further design optimization

Rosatom operating NPP fleet in Russia



Balakovo NPP	Kola NPP	Kursk NPP	Leningrad NPP	Beloyarsk NPP
Units in operation: 4	Units in operation: 4	Units in operation: 4	Units in operation: 4	Units in operation: 1
Capacity: 4000 MW	Capacity: 1760 MW	Capacity: 4000 MW	Capacity: 4000 MW	Capacity: 600 MW
Kalinin NPP	Novovoronezh NPP	Rostov NPP	Smolensk NPP	Bilibino NPP
Units in operation: 4	Units in operation: 3	Units in operation: 2	Units in operation: 3	Units in operation: 4
Capacity: 4000 MW	Capacity: 1880 MW	Capacity: 2000 MW	Capacity: 3000 MW	Capacity: 48 MW

Inside our utility is more than just plant operations, but also research, trainings, services and an international regulatory interface

Rosatom Service

- Rosatom Service is 100%-owned Rosatom subsidiary that provides maintenance and other services for VVER units globally

Training Centers

- Trainings for power plant operations and maintenance personnel
- Multiple training centers located at power plants

**We face the same issues;
We speak the same language**

VNIIAES – NPP Research Institute

- VNIIAES is Rosatom Research Institute that conducts research on nuclear power plants operations. Its aim is to increase safety, reliability and efficiency of nuclear power plants

The World Association of Nuclear Operators (WANO)

- The current president of WANO is Vladimir Asmolov, the First Deputy Director General, Concern Rosenergoatom OJSC



Thank You for Attention!

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