

Nuclear Safety Forum

12 November 2019

Türkiye Atom Enerjisi Kurumu Başkanlığı (TAEK), Ankara

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**EBRD in nuclear safety:
experience and prospective**



European Bank
for Reconstruction and Development

- EBRD - the only IFI with nuclear safety mandate
- Managing nuclear safety funds since 1993
 - Achievements
 - Lessons learned and added value of multilateral cooperation
 - Experience and expertise
- Conclusions
 - Proven delivery model
 - Future with focus on safety improvements

European Bank for Reconstruction and Development (EBRD)



European Bank
for Reconstruction and Development

An international financial institution supporting the development of sustainable well-functioning market economies

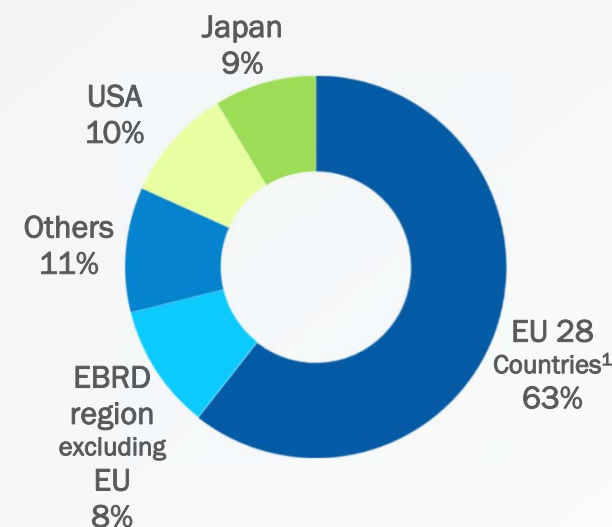
Highest credit rating
(AAA/Aaa)

Owned by
66 countries and
2 inter-governmental
institutions
(the EU and EIB)

€30billion
authorised capital
(Share: €6.2 bn paid-in
/23.5 callable)

- 1991** Established
- 1992** Russia and 11 other members of the former Soviet Union join
- 2007** The Czech Republic becomes the first country to “graduate” from the EBRD
- 2012** Starts investing in Egypt, Jordan, Morocco and Tunisia
- 2016** 25th anniversary; China becomes 67th member
- 2017** Lebanon became a country of operation and the Bank also commenced operations in West Bank and Gaza

Shareholding structure



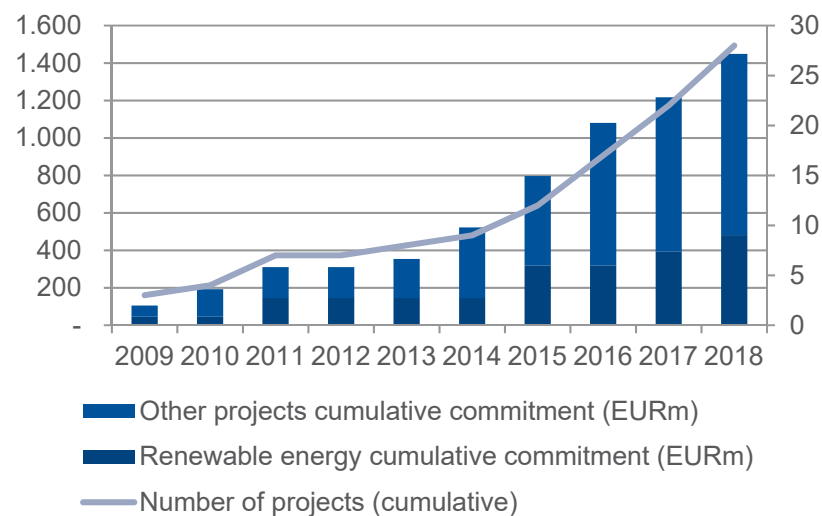
1. Includes European Community and European Investment Bank (EIB) each at 3%. Among other EU countries: France, Germany, Italy, and the UK each holds 8.6%

www.ebrd.com

EBRD in Turkey

- Turkey is a founding member and shareholder of EBRD
- operational since 2009
- largest country of operations
- €11.7 billion in 295 projects
- Invested EUR 1 bn in 2018

Annual Bank Investment and number of projects in PEU Turkey



Dec 2018

Number of projects	35
Net cumulative Bank investment	€ 824m
Private Share	87 %

- **Nuclear safety** - *the achievement of proper operating conditions, prevention of accidents and mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation risks (IAEA Safety Glossary)*
- The only IFI with nuclear safety mandate
- Serving international community as a manager of nuclear safety multilateral donor funds since 1993
- €5 billion in cumulative contributions

Nuclear safety funds - origin



- 1992: Nuclear Safety Account (G7 Munich Summit)
- 1995: Ukraine Memorandum of Understanding Chernobyl programmes (G7/EU)
- 2001: International Decommissioning Support Funds for Bulgaria, Lithuania and Slovakia
- 2003: Nuclear Window of NDEP
- 2016: Environmental Remediation Account

Seven grant funds – purposes aligned with priorities of international community

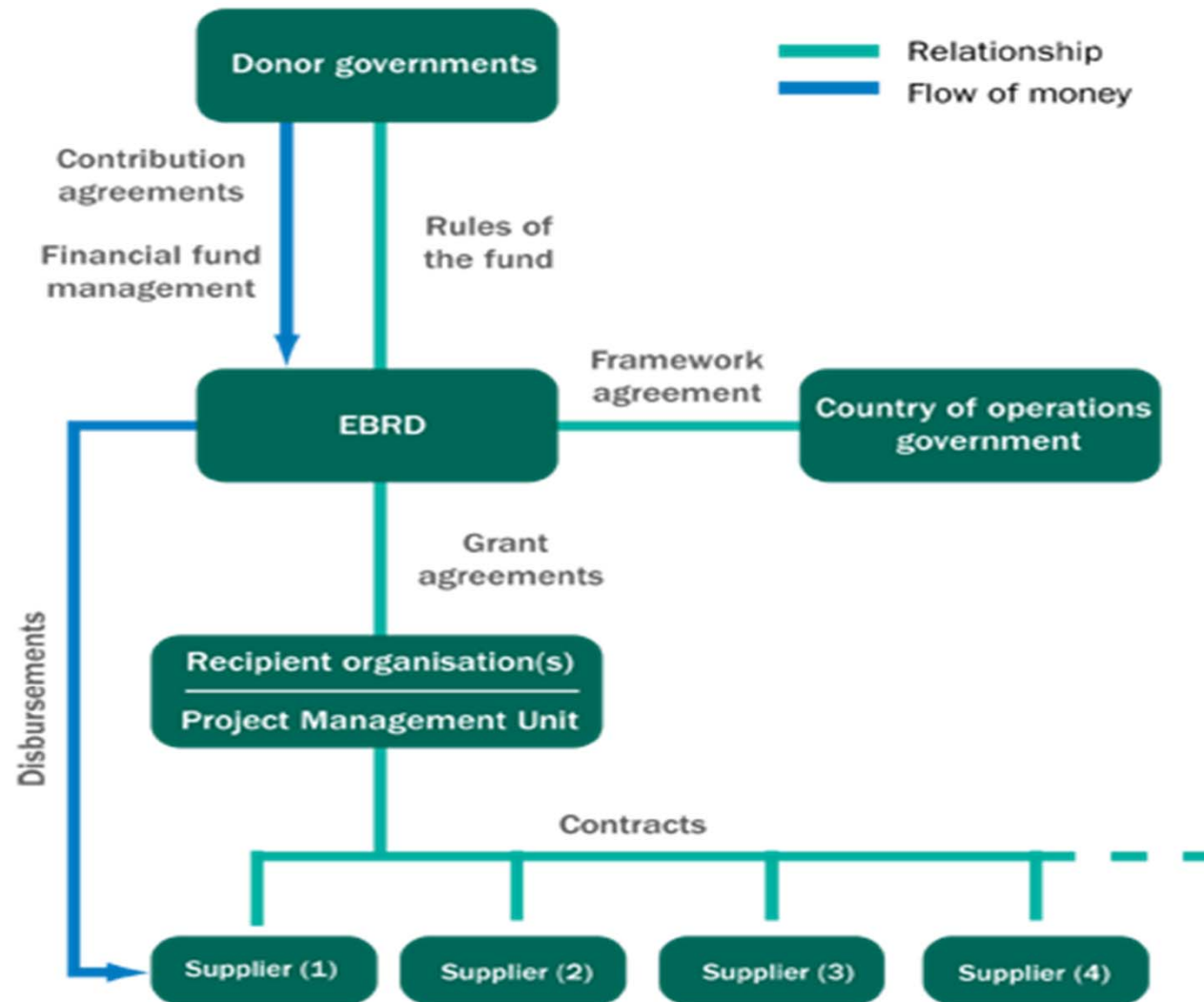
- New Safe Confinement, spent fuel store and waste management infrastructure at Chernobyl, Ukraine
- decommissioning of nuclear reactors in Bulgaria, Lithuania and Slovakia
- nuclear waste and spent nuclear fuel management from the Soviet Northern fleet in Russia
- legacy of uranium mining and processing in Kyrgyz Republic, Tajikistan and Uzbekistan

- Fund Governance by the Donor Assemblies
- Framework Agreements - status of International Treaties
 - underlines role of nuclear safety authority; regulatory framework and safety standards
 - exempt grant funds from taxes and custom duties
 - provide required nuclear indemnity to contractors
- EBRD's policies
 - **Procurement Policies and Rules** - fair and transparent worldwide competition
 - **Environmental and Social Policy** - environmentally sound and sustainable development
 - **Public Information Policy** - transparency of activities and promote good governance

Fund management



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Project management



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PMU = local staff and international consultants



Consultants provide state-of-the-art expertise for:

- Programme and project management
 - Planning
 - Engineering
 - Licensing
- Procurement and contract management
- Reporting
- Risk and interface management



Nuclear Safety Account (NSA)

Provide nuclear safety assistance to Bulgaria, Lithuania, Russia and Ukraine (1993)



€600 million grants from 18 donors and EBRD for:

- emergency safety upgrades of soviet designed reactors
- safety assessments and licensing support
- energy sector development planning to facilitate early closure of high risk reactors
- spent nuclear fuel storage and liquid waste treatment facilities at Chernobyl NPP

Chernobyl Spent Fuel Processing and Storage Facility (ISF-2)



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Nuclear Safety Account (NSA) in Ukraine

€400 million financed by the NSA and by the EBRD:

- $\geq 21,000$ spent fuel assemblies currently stored in an old wet storage
- ISF-2 – crucially important for safe decommissioning of Chernobyl 1-3
- Cold testing ongoing; commissioning and fuel processing in 2019



Short-term Safety and Security upgrade of Unit 3

- with condition to close it by 2000
- all works complete

Liquid Radwaste Facility to process 25,000 m³

- evaporator concentrates – 13,000 m³
- spent resins - 6,000 m³
- perlite pulps - 6,000 m³

Chernobyl Shelter Fund (CSF)

Assist Ukraine in transforming Chernobyl into environmentally safe state (1997)

€1.5 billion from 45 donors and €500 million from EBRD for:

- Shelter Implementation Plan, including construction of the New Safe Confinement



Largest moveable land-based structure ever built

- 257 x 162 x 108 meters and
- a total weight of 36,000 tonnes equipped
- slid on in November 2016

Northern Dimension Environmental Partnership (NDEP) – Nuclear Window



Support Russia addressing the legacy of the operation of nuclear-powered ships and submarines of the Northern fleet (2003)

€170 million grants from 13 donors for:

- Removal, handling and transport of spent nuclear fuel
 - submarine reactors
 - current storage
- Decommissioning of former spent fuel storage facilities
 - at Andreeva Bay
 - service ship Lapse
- Environmental and radiation monitoring systems in the Murmansk and Arkhangelsk regions



International Decommissioning Support Funds (IDSF)

Support early closure and decommissioning of soviet designed reactors and energy sector development in Bulgaria, Lithuania and Slovakia (2001)

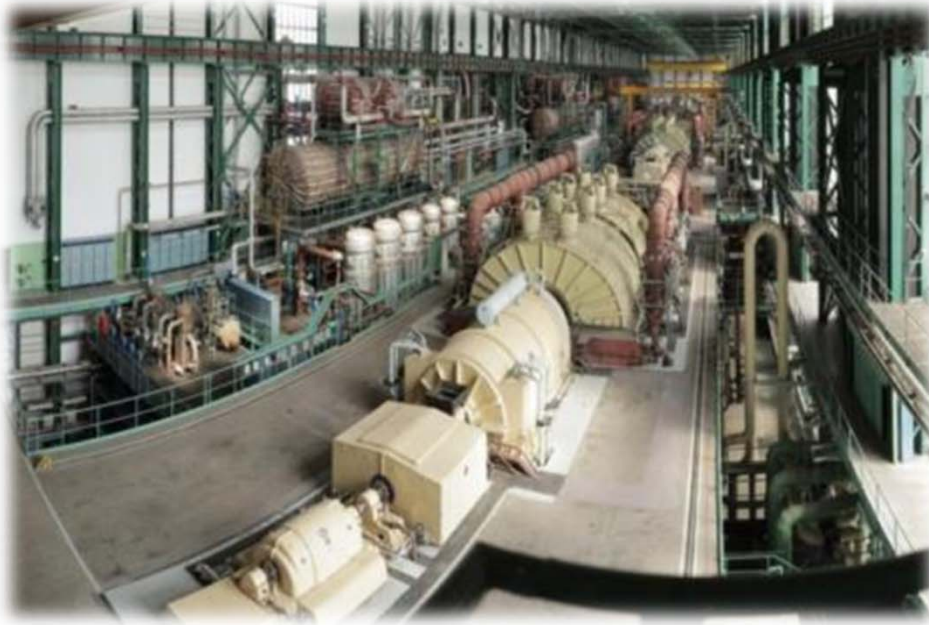


- More than €650 million grants committed by 9 donors to Slovakia, €830 million grant by 15 donors to Lithuania and €1,0 billion grants by 11 donors to Bulgaria:
 - ✓ Decommissioning of the Bohunice V1 NPP, Ignalina NPP and Kozloduy Units 1-4 NPP in a safe, secure and cost-effective manner
 - ✓ Energy sector projects to minimise the impact of closure of those NPPs, improving the demand and supply energy efficiency and reform of energy sectors
- “Immediate dismantling” on the basis of complex cost-benefit analyses
- Competent and committed decommissioning organisations in place

Bohunice V1 Turbine hall



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Environmental Remediation Account (ERA)



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Address safety risks from degrading uranium mining and processing sites in Central Asia (2015)



<http://www.ebrd.com/what-we-do/sectors-and-topics/nuclear-safety/era.html>

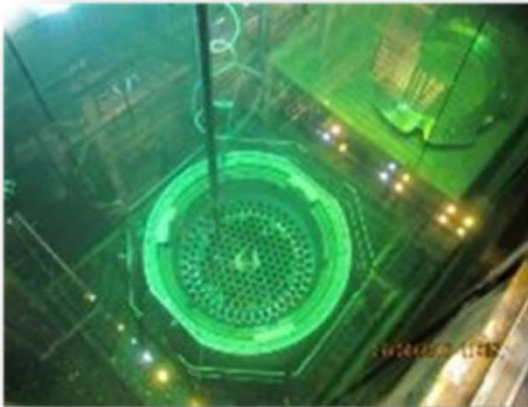


★ Uranium Legacy Sites

- Remediation of sites
- Reduction of risks
- Improvement of health and socioeconomic conditions
- Greater stability and security in the region
- Knowledge and experience for undertaking remediation

Advanced RAW management technologies

- Spent nuclear fuel storage



Advanced RAW management technologies

- Fragmentation and decontamination

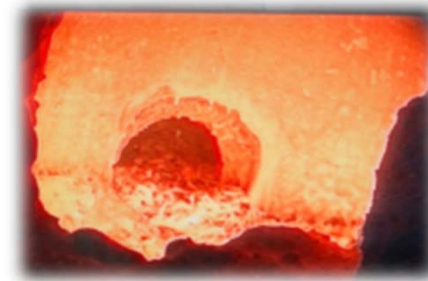
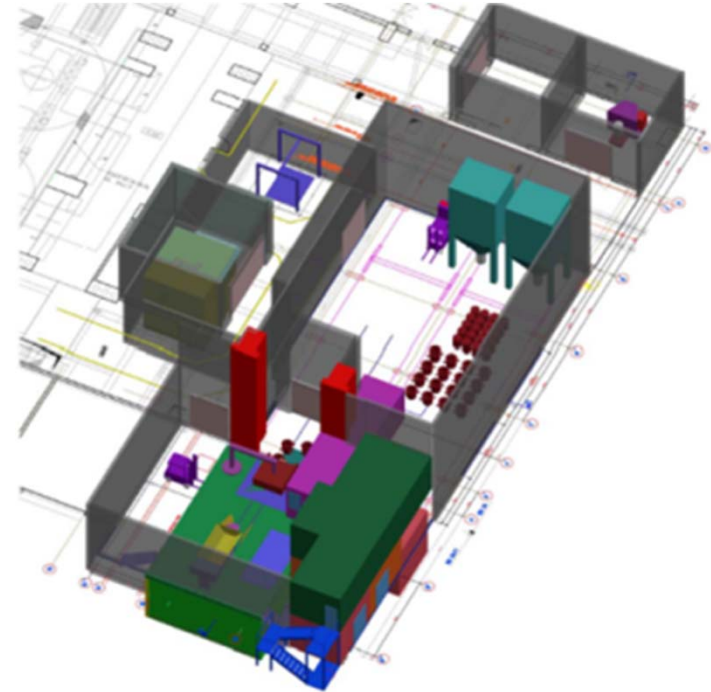
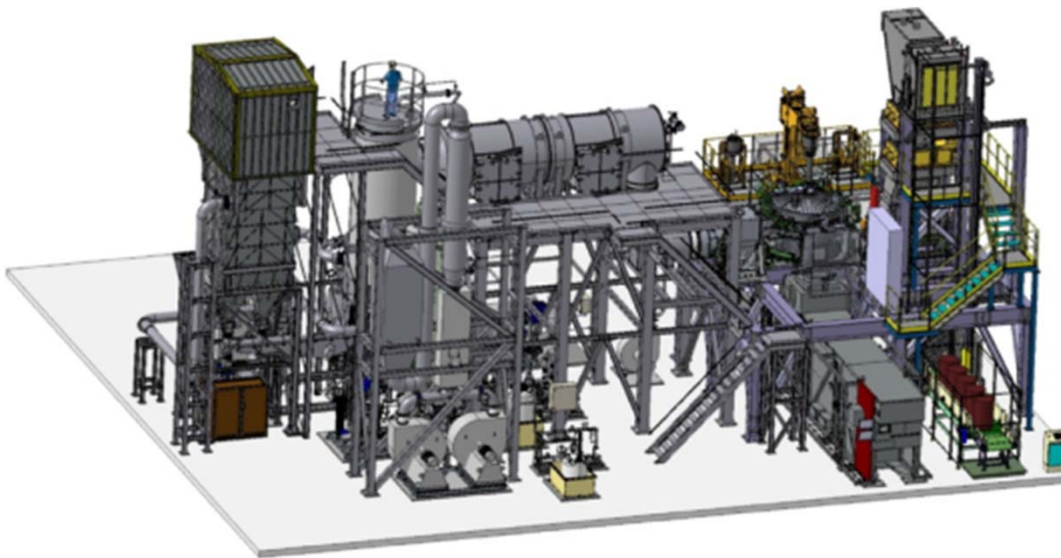


Advanced RAW management technologies



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- Size reduction and conditioning



Advanced RAW management technologies

- Storage and repositories



Challenge examples

- Strategic / Legal
 - ✓ lack of national waste strategies, master plans and licensing requirements
- Financial
 - ✓ lack of funds – no provisions for decommissioning in tariffs
- Technical
 - ✓ insufficient spent fuel and waste management infrastructure
 - ✓ lack of decommissioning technical knowledge and experience
- Organizational
 - ✓ transition from operator to decommissioning organisation



Lessons learned

- National funds – full and timely accumulation critical
- Reliable historical, fuel and waste data crucial for infrastructure projects
- Early planning of decommissioning and regular iterations of plans and risk registers - experience is key
- **Stakeholders engagement and transparency**
 - Public participation, incl. transboundary consultation
- **Regulatory framework and internationally accepted safety standards**
- **Independent and equipped nuclear regulator**
- Safety first, but pragmatism and timelines important

Added value of multilateral cooperation

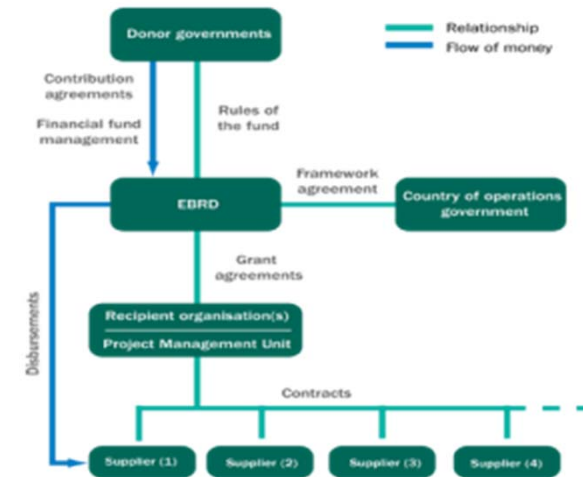
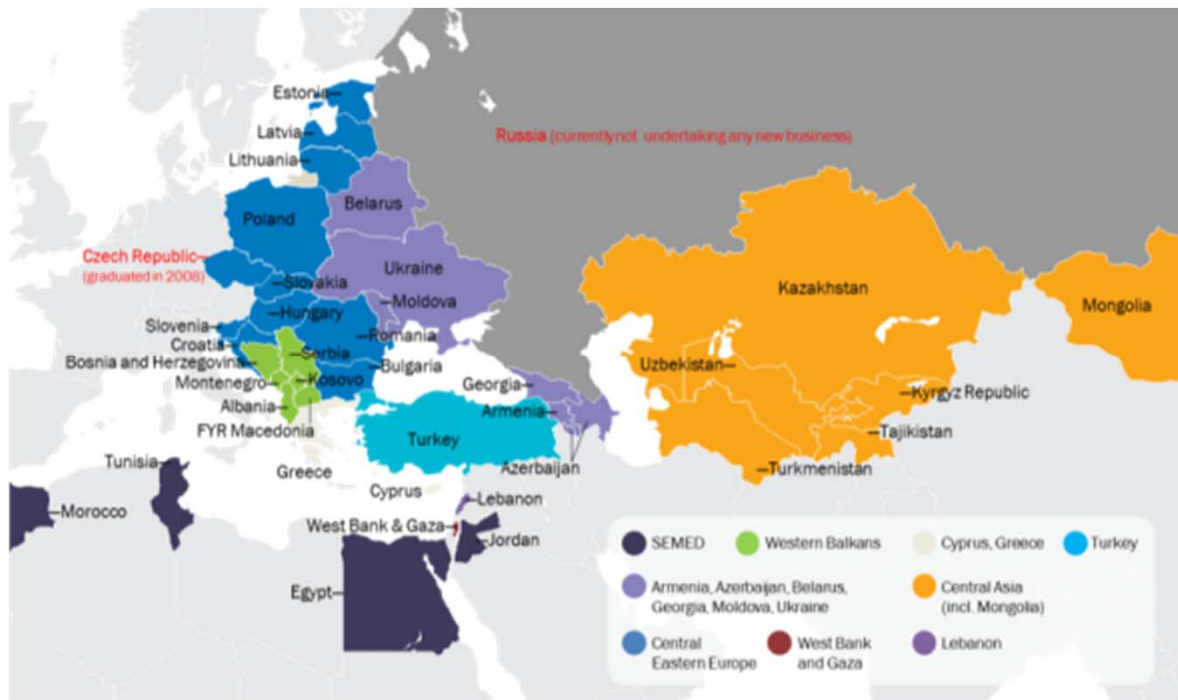
- Complements the national efforts
- Add value of multilateral approval
- High visibility and political momentum
- Systematic approach to complex programmes and ensures high efficiency and coordination which avoids duplication of efforts
- Exchange of best practice and technical knowledge with the wider nuclear community

Conclusions - proven delivery model



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- Successful model of IFI as Fund manager
 - ✓ accountability, transparency & anti-corruption
 - ✓ skills available
 - ✓ experience in the region



Conclusions – new challenges ahead

EBRD Energy Strategy

“While the Bank will not provide funding for the construction of new nuclear power plants it will continue to consider funding for safety improvements of operating plants as well as for radioactive waste management and decommissioning of nuclear facilities.”



“No one ever drowned in sweat.” – U.S. Marine Corps



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<http://www.ebrd.com/nuclear-safety.html>



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