



**ROSATOM**

**STATE ATOMIC ENERGY CORPORATION "ROSATOM"**

# **Perspective areas of cooperation with Latin American countries**

**October, 2016**

**No 1** in uranium enrichment

**No 1** in new NPPs construction abroad

**No 2** in uranium reserves, incl. Rosatom foreign assets

**No 1** in power generation in Russia

**No 2** nuclear fleet globally with **28,3 GWe** total installed capacity

Projects in over **40** countries on **5** continents

Over **260 000** employees in Rosatom enterprises and R&D institutions

The world's only company of the complete nuclear power cycle.

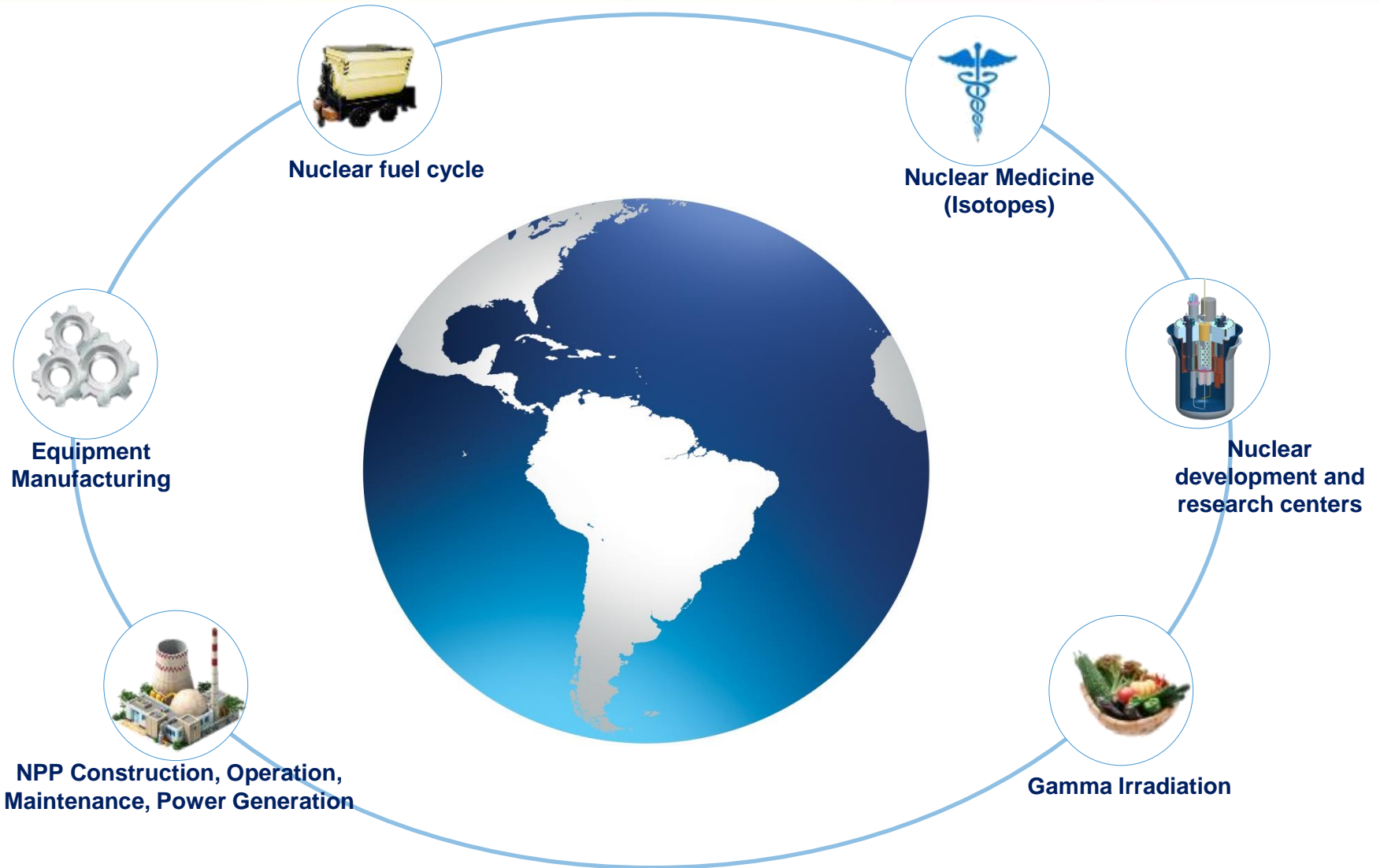


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# Possible areas for Latin America regional nuclear cooperation



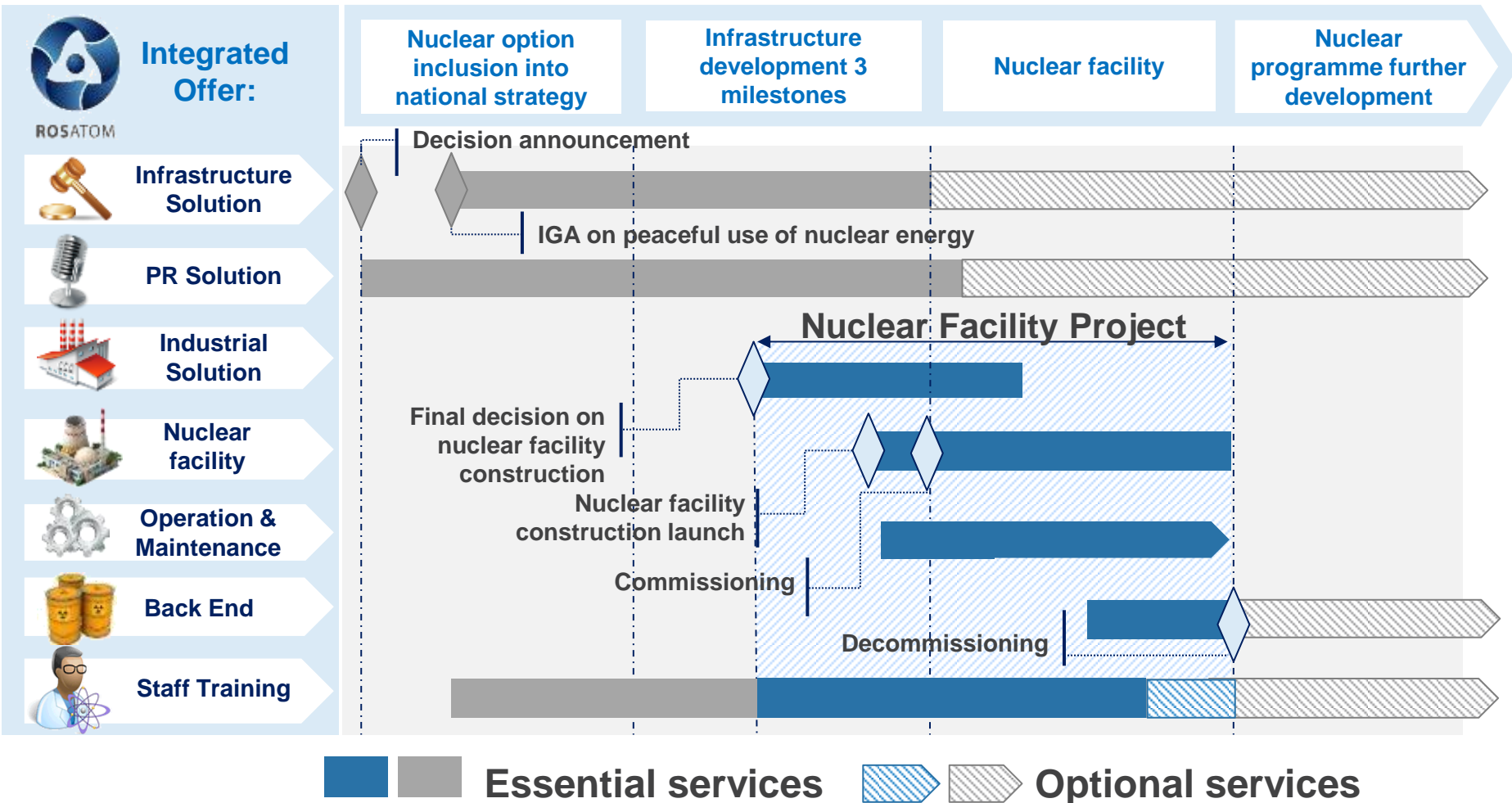
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# Rosatom Integrated Offer



Rosatom integrated offer supports national nuclear programme development on the intergovernmental level from policy adoption to the reactor decommissioning.

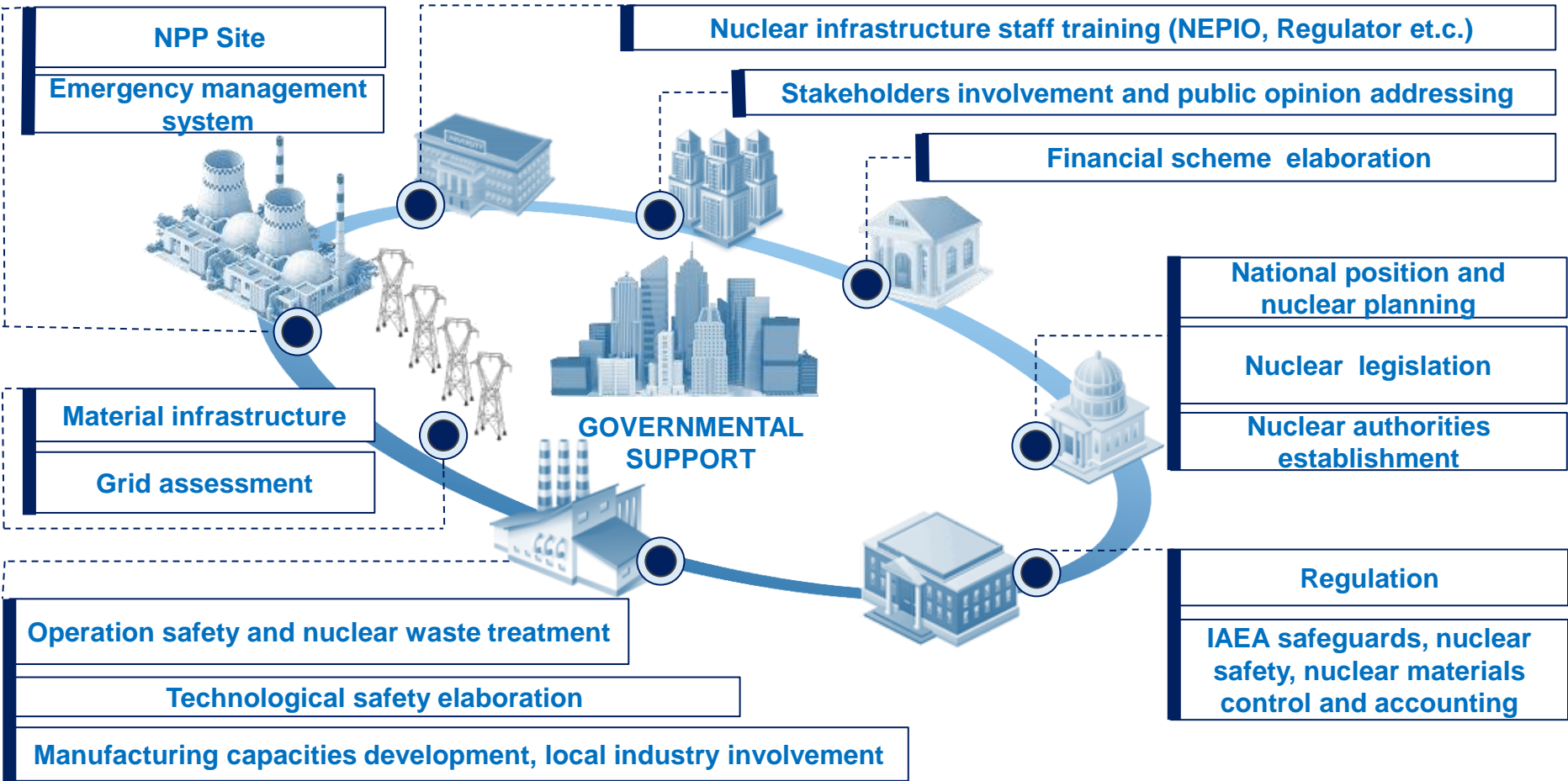




# Rosatom Complex Approach to Infrastructure Development

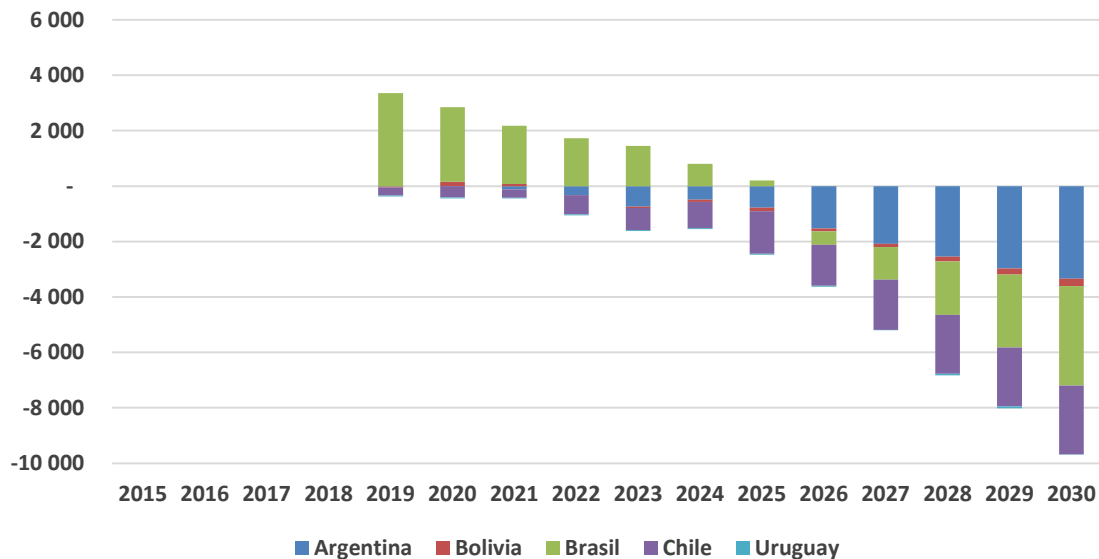


Rosatom contributes to infrastructure development and supports customers throughout the whole national nuclear energy programme.



Even with conservative hypothesis the regional balance will be of overall deficit starting 2024 – increasing of renewables will not fill in the gap and additional baseload will be needed

Supply - Demand Balance per Country (MW)



## Assumptions

- Growth rate of demand was estimated between 1,5% and 3% for all countries\*
- Fase out of old blocks was delayed for 20/30% of the Nominal capacity
- Giving the low installed capacity and demand – Paraguay was not considered in the analysis (the large hydro capacity installed will fill in the demand need without problems)
- Additional interconnection capacity will be needed in case of shared project between countries (the time to the deficit ensure that additional capacity can be built)

At 2030 there will be ~ 8 GW of deficit: Argentina ~1,2 GW, Brasil with ~3.6 GW and Chile with ~ 2.5 GW.

New Hydro projects could help to fill the gap but will not be enough anyway and the growth renewables should be pair with stable generation capacity

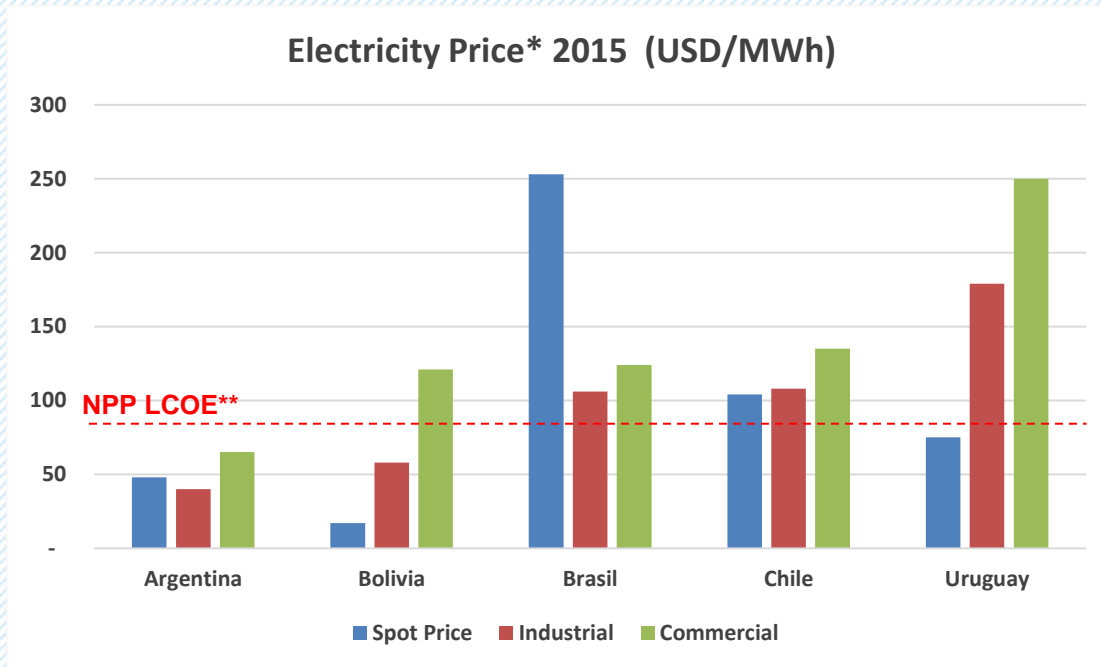
\* [www.cndc.bo](http://www.cndc.bo); [www.centralenergia.cl](http://www.centralenergia.cl); Departamento de Potencia del de Ingeniería Eléctrica (Uruguay); Enerdata; [www.adeera.com](http://www.adeera.com)

# Regional balance – Price level



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The current price in Latin America indicated that – despite large hydro – will be economically viable to add Nuclear baseload



## Note

- Price - with exception of Argentina – already allow to payback LCOE of standard NPP.
- Despite large Hydro plants, national energy resources and low oil price the average price of the region is quite high.
- Growth of renewable energy will not fill in the baseload but could potentially increase pick in spot price giving their loading profile.

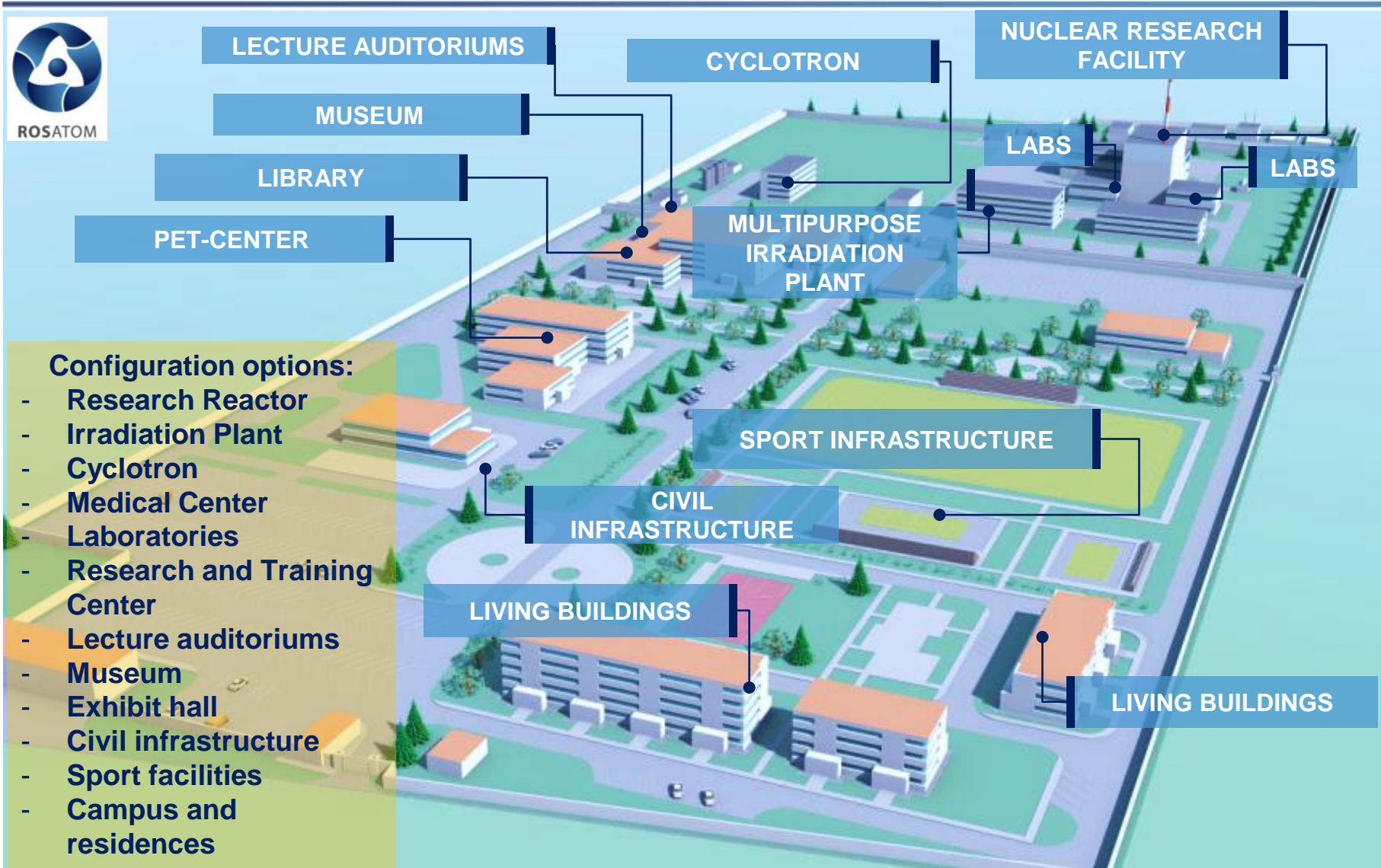
Success of the ITAIPU and Yacyretá hydro plants (share capacity and investment) shows that this type of projects can be realized – this imply probably a lower LCOE needed for the NPP and will help decrease the average price in the region

\* *ClimateScope report 2015*

\*\* *Projected Costs of Generating Electricity 2015 Edition*



# Optional configurations for Nuclear Research and Development Centers

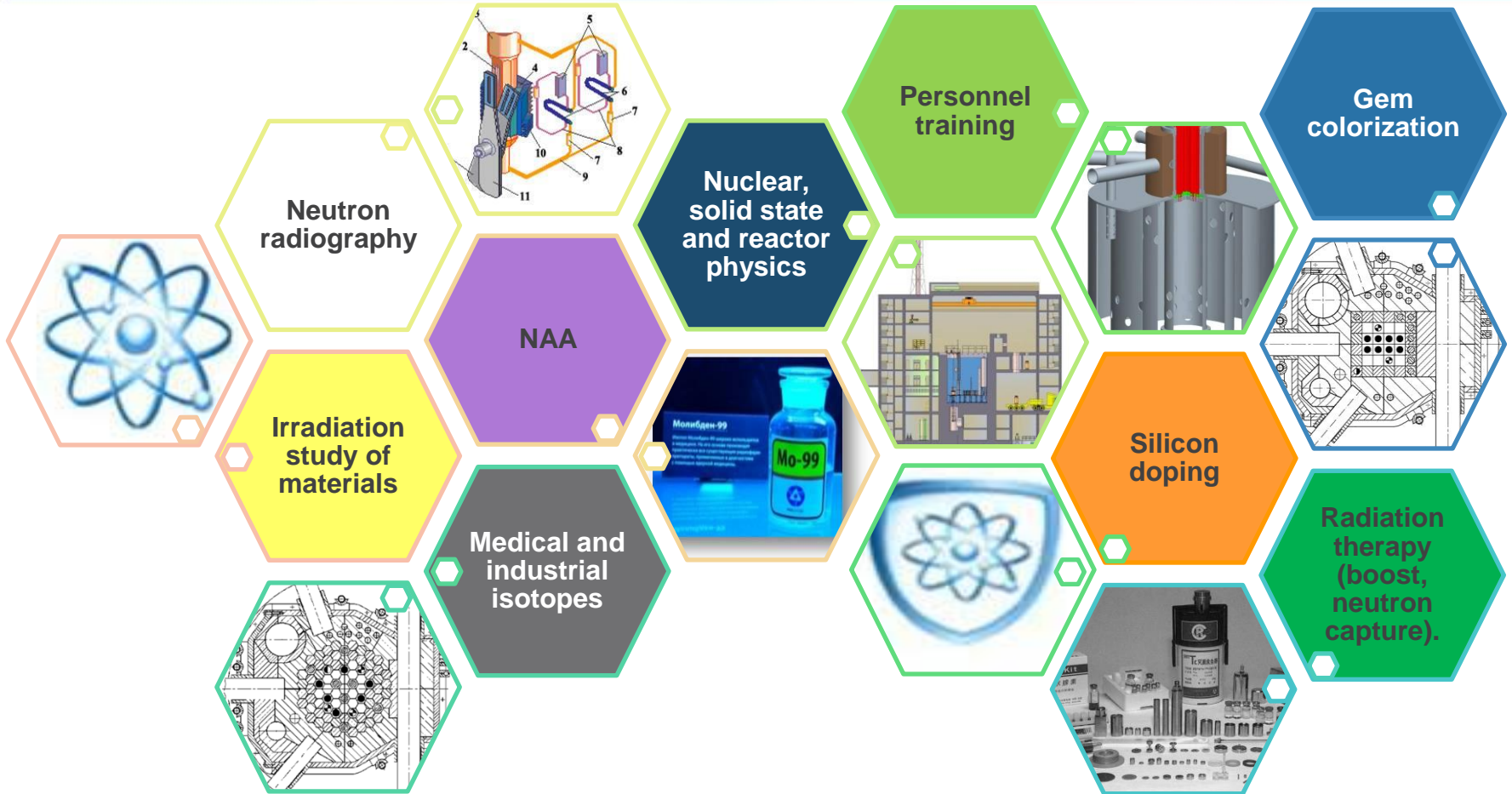




# Identification of potential customers



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**Customers and their needs are important to be identified to elaborate a sound and efficient technical proposal: training/science vs. training/science/business**

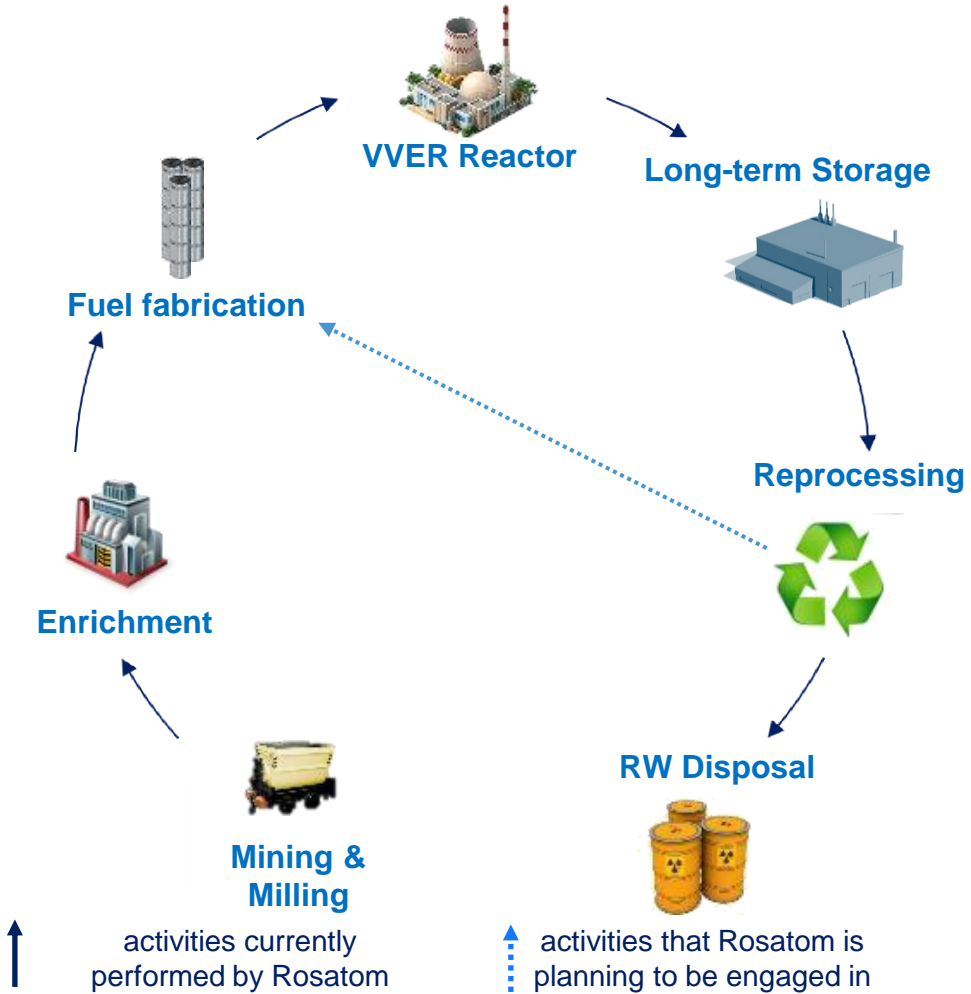


# Sustainable Nuclear – Rosatom Comprehensive Back-End and Nuclear Fuel Cycle Solution



Rosatom strategy long-term priority is to create closed fuel cycle

Scope of Back End services offered by Rosatom to its overseas customers



Comprehensive solution for fuel of Russian origin

- construction of the **long-term storage**;
- supply of **dual-purpose casks** (transportation and storage)
- transportation of spent nuclear fuel to Russian Federation for its **reprocessing** in the form of irradiated fuel assemblies and further return of reprocessing products.



# Promoting Public Acceptance – Rosatom Public Relations Offer



Rosatom comprehensive approach to NPP Projects development covers addressing public acceptance of nuclear energy.

- Rosatom offers its assistance in creating national nuclear PR-block
- Russian PR experts are eager to provide consultancy services to customer's PR-block in following areas:

1



**Conducting survey  
on public acceptance  
of nuclear energy**

2



**Developing  
communication  
programmes for all  
groups of stakeholders**

## Communication programme:

- Communication strategy, Road maps elaboration;
- Promoting Nuclear information centers (NICs) in hosting country;
- Promoting education as a public acceptance driver;
- Being always open to media – a key channel to tell people the truth about nuclear technologies: arranging workshops and press-tours for national PR-experts;
- Being prepared to implement emergency communications;
- Using various channels: TV, mobile apps, books, etc.

# Rosatom activities in Latin America countries



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## VENEZUELA



- IGA on cooperation in peaceful uses of atomic energy (2010)

## PERU



- Consultations on cooperation with IPEN in nuclear technologies

## BOLIVIA



- IGA on cooperation and IGA on NRDC construction
- PDA on NRDC construction
- Contract for NI assessment
- Contract for site investigations

## ARGENTINA



- MoU on cooperation in peaceful uses of atomic energy (2010)
- IGA on cooperation in peaceful uses of atomic energy (2014)
- MoU on cooperation of NPP construction (2015)
- MoU between TVEL and CNEA (2015)
- PPDA on NPP construction (2015)
- Contract on Mo-99 supplies (2013)
- MoU on cooperation with CASA (2014 and 2015)



## MEXICO

- IGA on cooperation in peaceful uses of atomic energy (2015)
- Supply of enriched uranium to NPP Laguna Verde (2003-2016)



## CUBA

- MoU on cooperation in nuclear medicine (2013)
- IGA on cooperation in peaceful uses of atomic energy (2016)



## BRAZIL

- Joint work on new NPP project in ABDAN Group
- Cooperation with universities
- IGA on cooperation in peaceful uses of atomic energy (1994)
- MoU on cooperation in peaceful uses of atomic energy (2009)
- Mo-99 supplies to CNEN (2015)



## PARAGUAY

- MoU on cooperation in peaceful uses of atomic energy (2016)



**Thank you for your attention!**

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