Global nuclear developments and the impact on the fuel cycle

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Ad Louter

- Managing Director, Urenco Netherlands since 2015
- Mechanical engineering at Delft University
- Various positions at Stork, Fokker, Jacobs and at Delta and EPZ
- Chairman of Nuclear Netherlands (NRG, COVRA, TU Delft, Pallas, Shine and Urenco) and chairman of Novel-T (Twente University)

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Summary

- Urenco Netherlands is a 100% subsidiary of Urenco Limited.
- Urenco enriches uranium for nuclear energy generation and it also produces stable isotopes for use in medical, industrial and research applications.
- Our workforce of 350 committed employees is expanding.
- Main market developments:
  - Both markets are expanding: increased demand for enrichment services
  - More diverse enrichment levels: LEU+ and HALEU
  - RepU enrichment (in Almelo): closing the loop by enriching reprocessed uranium.
- Conclusion: the nuclear fuel cycle is adapting to developments

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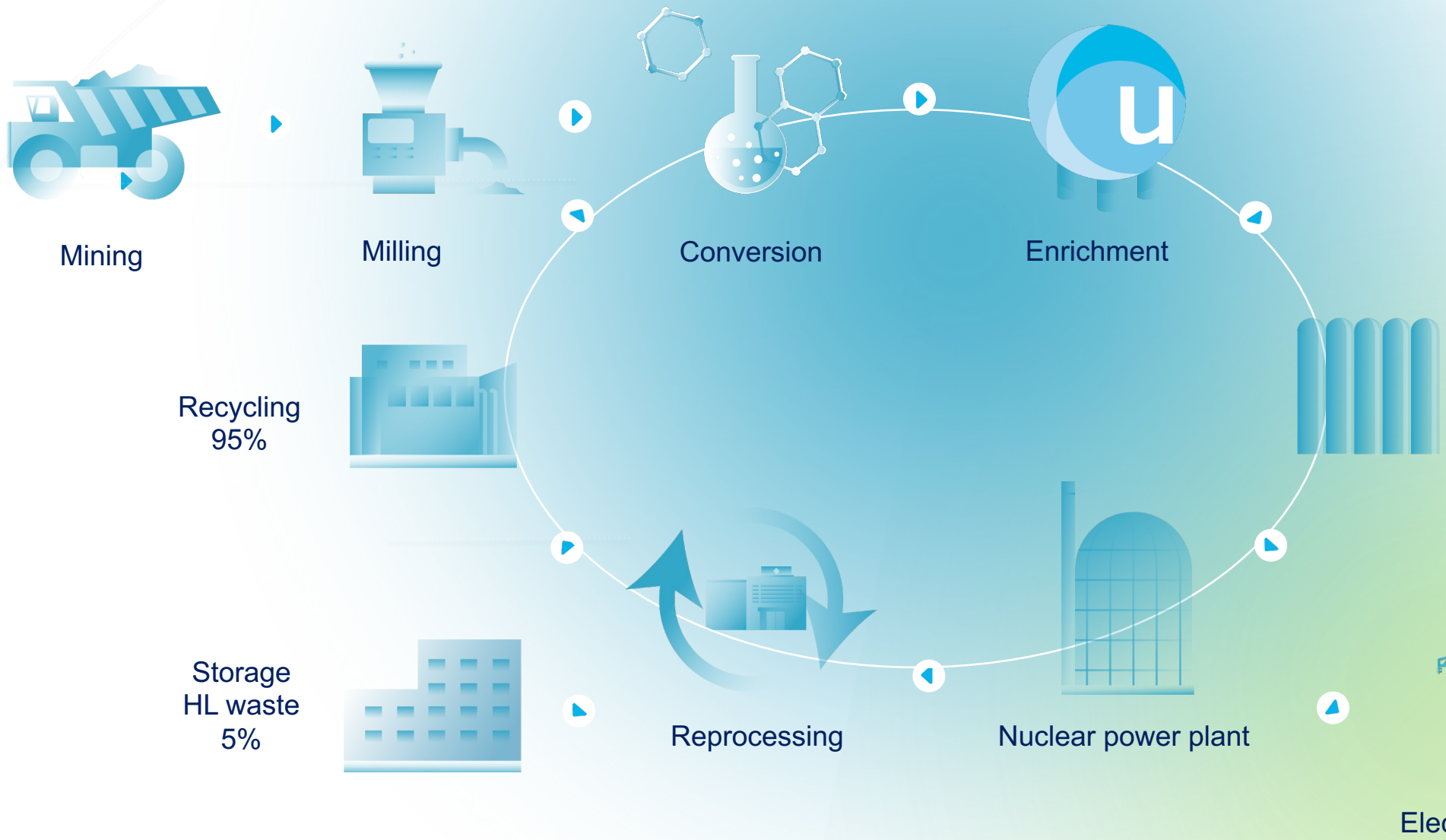
Nuclear fuel cycle



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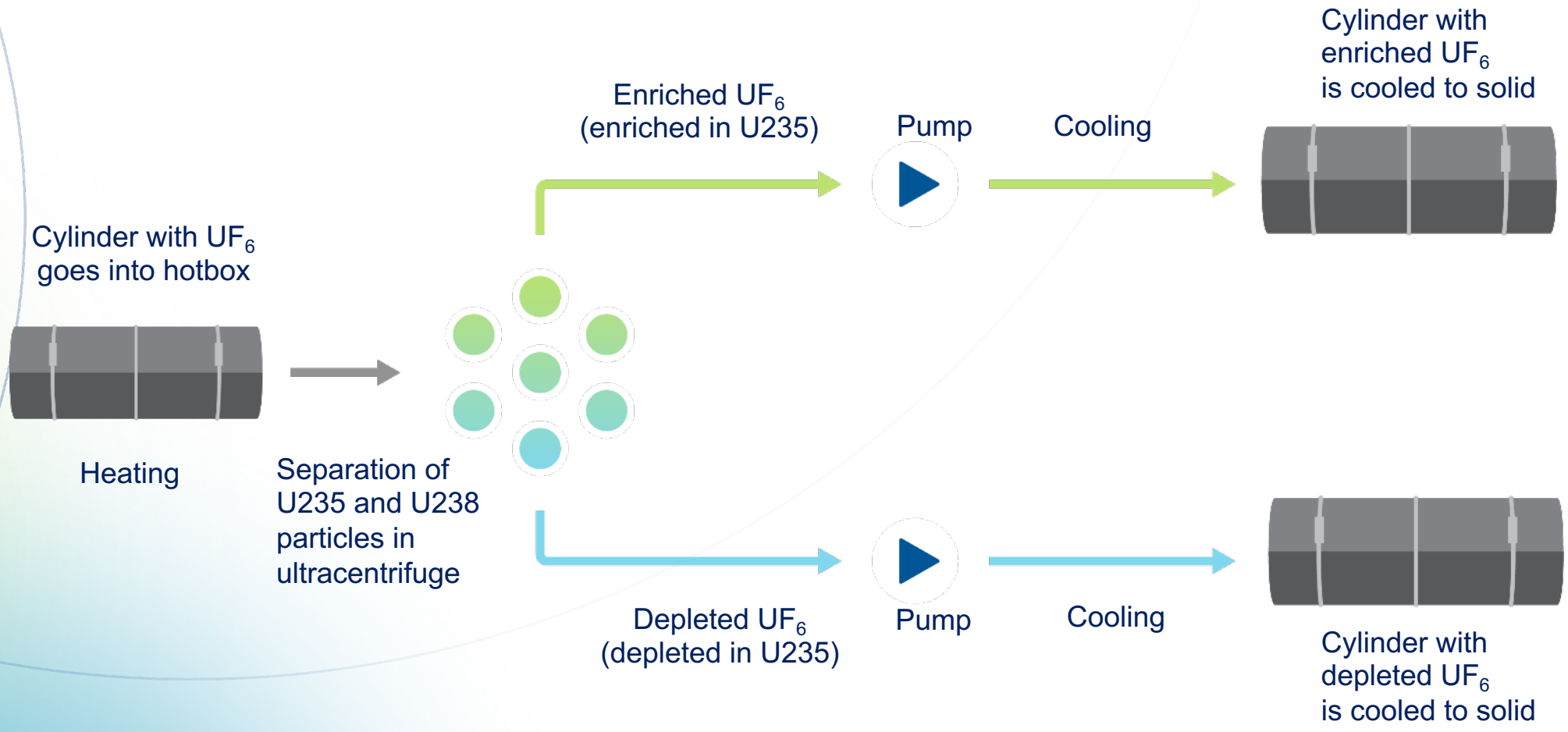
Uranium enrichment



Locations

Urenco UK
Capenhurst
Capacity:
4.5 million SWU/year

Urenco Nederland
Almelo
Capacity:
5.1 million SWU/year

Urenco Deutschland
Gronau
Capacity:
3.6 million SWU/year

Urenco USA
Eunice
Capacity:
4.4 million SWU/year

Total capacity: 17,6 million SWU/year

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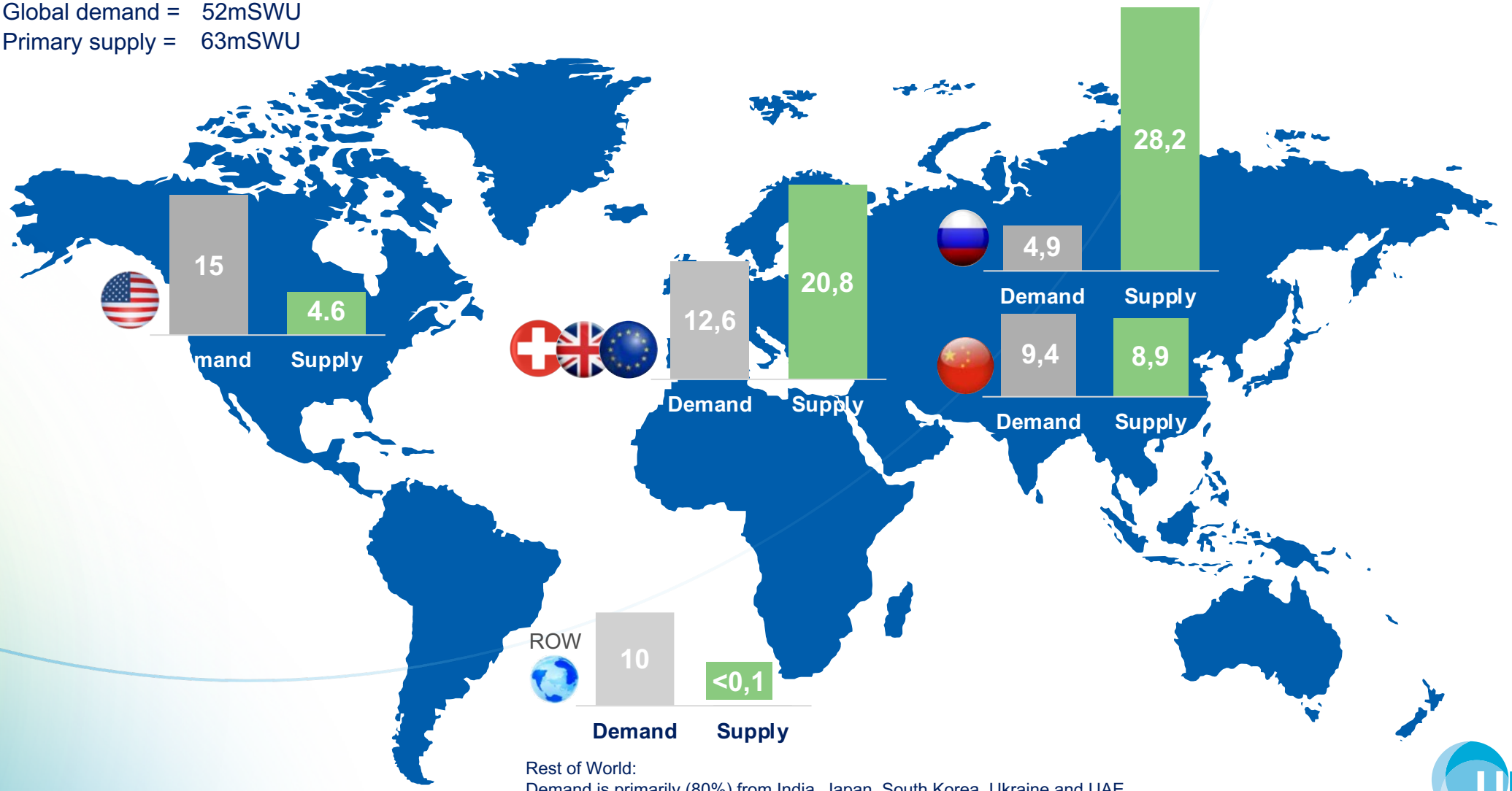
Customers

50 customers in 19 countries

Regional enrichtment capacity vs. demand in 2022

Global demand = 52mSWU
Primary supply = 63mSWU



Rest of World:
Demand is primarily (80%) from India, Japan, South Korea, Ukraine and UAE.
Limited domestic supplies are available in Brazil and Japan (<0.1mSWU/a)

Source: WNA Nuclear Fuel Report 2023
All figures shown are in millions of separative work units (SWU)

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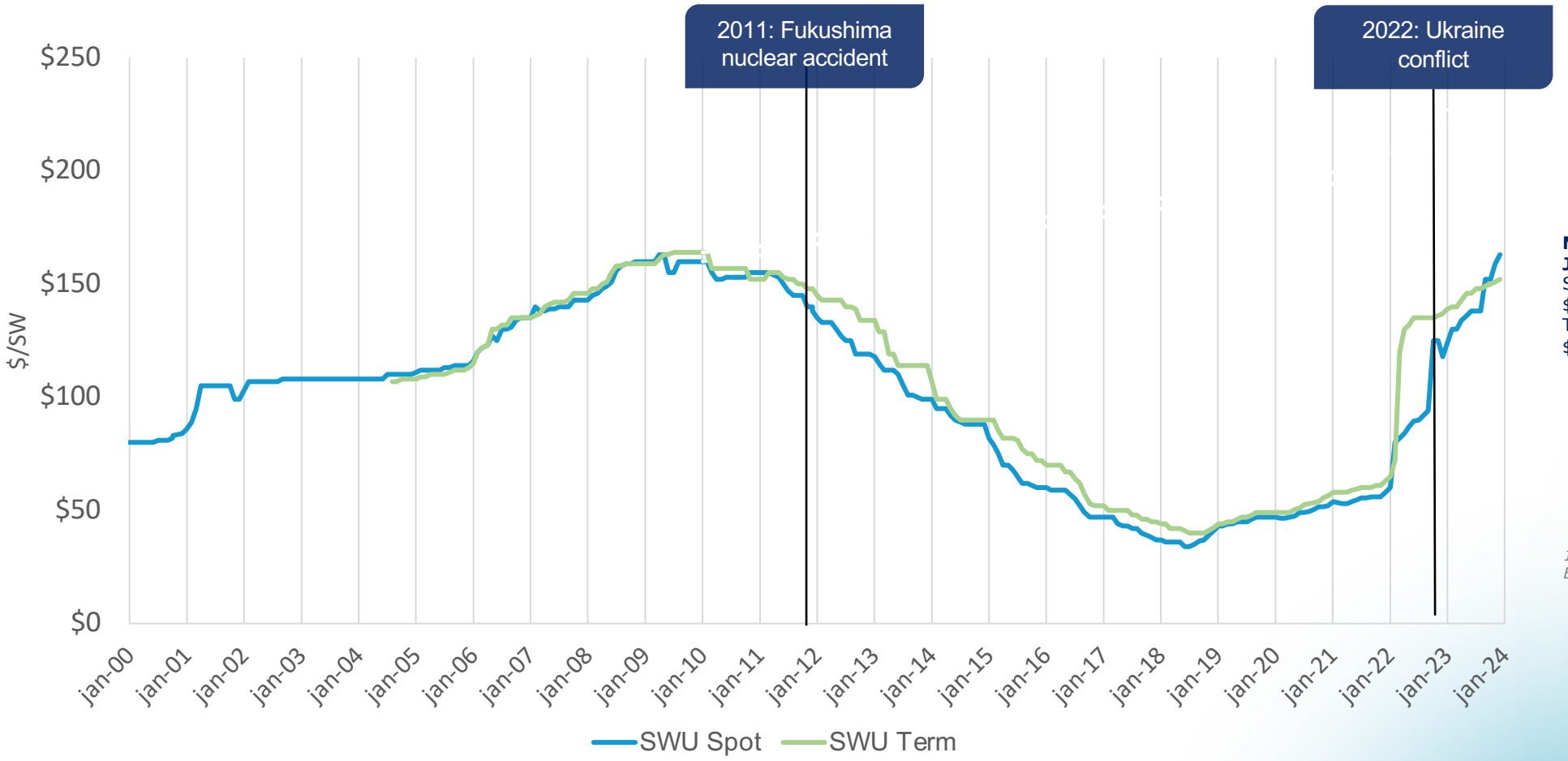
Enrichment price history



Market today
Jan 24
Spot:
$163/SWU
Term:
$152/SWU

1 US Consumer Price Index, Bureau of Labor Statistics

Next generation fuels: LEU+

- Today we enrich up to 5%; LEU+ increases this to up to 10%.
- Customers require LEU+ to optimise fuel cycles in existing power plants.
- LEU+ programmes at our US and UK sites; deliveries from 2025.

Next generation fuels: HALEU

- HALEU: enriched uranium between 10% and 19.75%.
- Projects for next generation nuclear power plants require higher enriched fuel.
- UK and US governments have announced programmes to support the development of domestic HALEU facilities.
- Urenco is counterpart in both countries to support the development of a HALEU plant.
- Market is evolving and customer relationships are growing.
- US ban on uranium imports from Russia as of January 2028

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Overview of recent policy support for nuclear as part of decarbonisation/net zero ambitions

United Kingdom
Aims to have 24 Gwe of nuclear generating capacity by 2050, representing ~25% of projected electricity demand

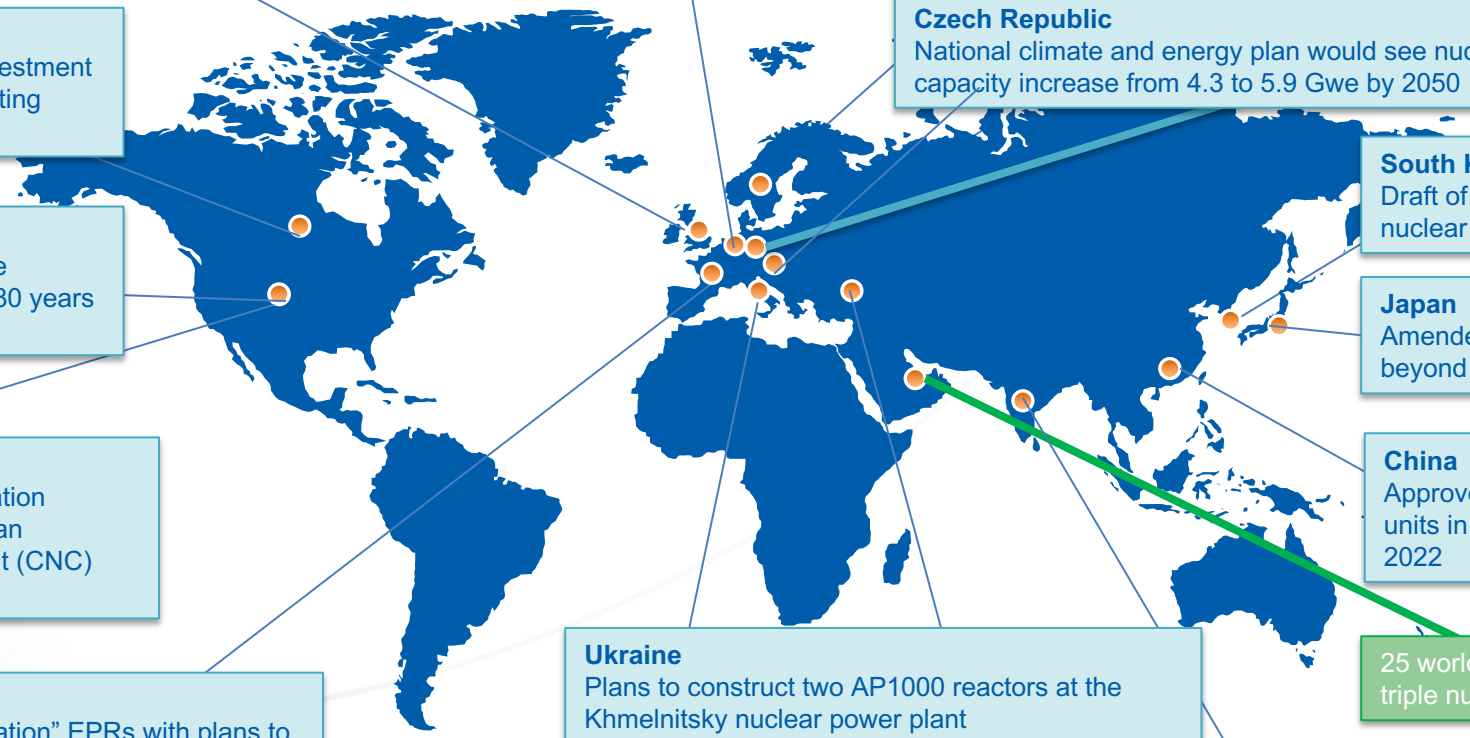
The Netherlands
Approved construction of two large reactors, with plans for the units to begin producing electricity in 2035

Sweden
Pursuing equivalent of 10 new reactors (likely SMRs) by 2045

Europe
As part of the EU's Net-Zero Industry Act (NZIA) nuclear power will be labelled as a strategic technology for the EU's decarbonisation effort

Canada
New 15% Investment Clean Electricity Investment Tax Credit, available to both new and existing nuclear power plants projects

Czech Republic
National climate and energy plan would see nuclear capacity increase from 4.3 to 5.9 Gwe by 2050



South Korea
Draft of long-term energy policy includes additional nuclear power plant

United States
Several plants initiated subsequent license renewal requests (taking units from 60 to 80 years of operations)

Japan
Amended energy law to allow reactors to operate beyond the current 60-year limit

United States
Federal support for nuclear via the Inflation Reduction Act of 2022 and the Bipartisan Infrastructure Law's Civil Nuclear Credit (CNC) programme

China
Approved the construction of 10 nuclear power units in 2023, following approval of 10 units in 2022

France
Will build six "next generation" EPRs with plans to break ground for the first unit by 2027

Ukraine
Plans to construct two AP1000 reactors at the Khmelnitsky nuclear power plant

25 world leaders signed a declaration at COP28 to triple nuclear energy by 2050

India
Plans to add 18 additional reactors with to increase nuclear capacity from 8.7 to 22.5 Gwe by 2032

Italy
Restated ambition to revive its nuclear industry within next 10 years

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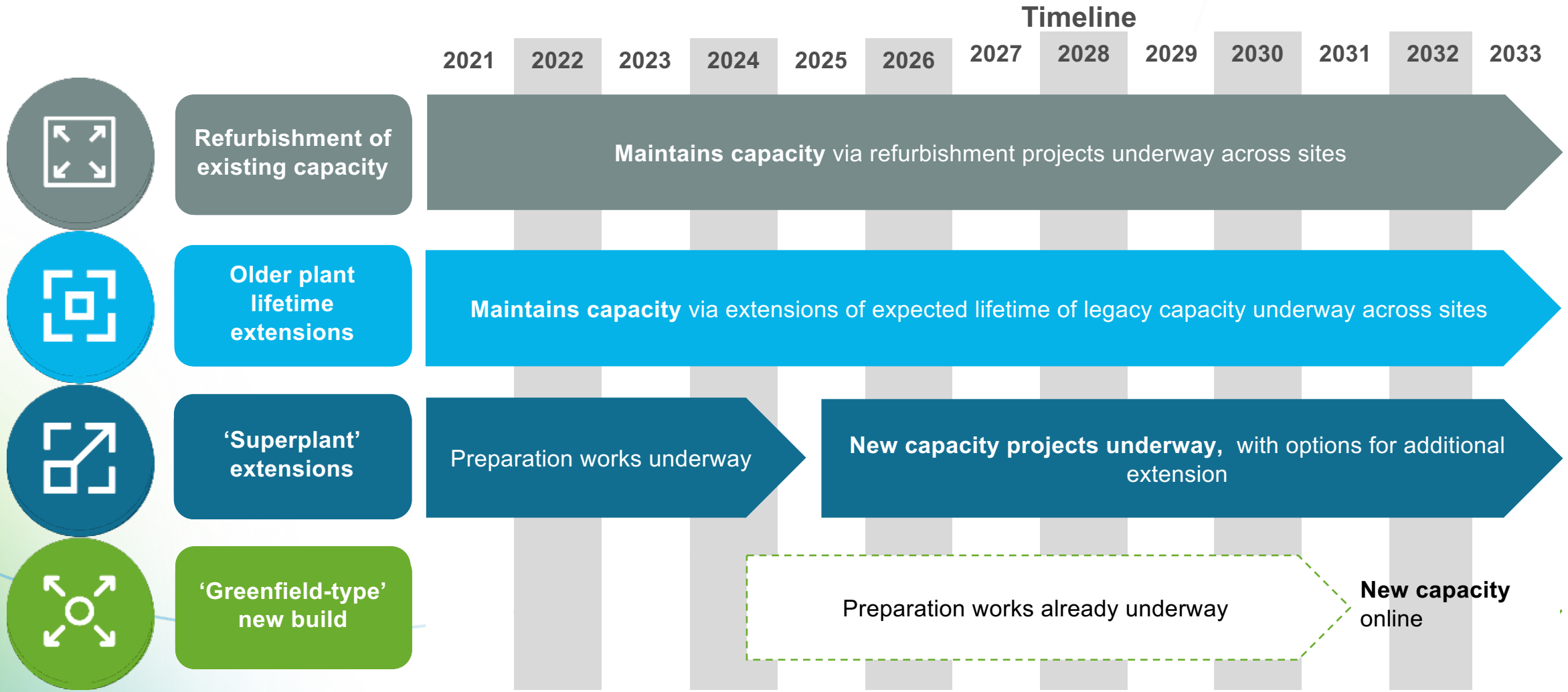
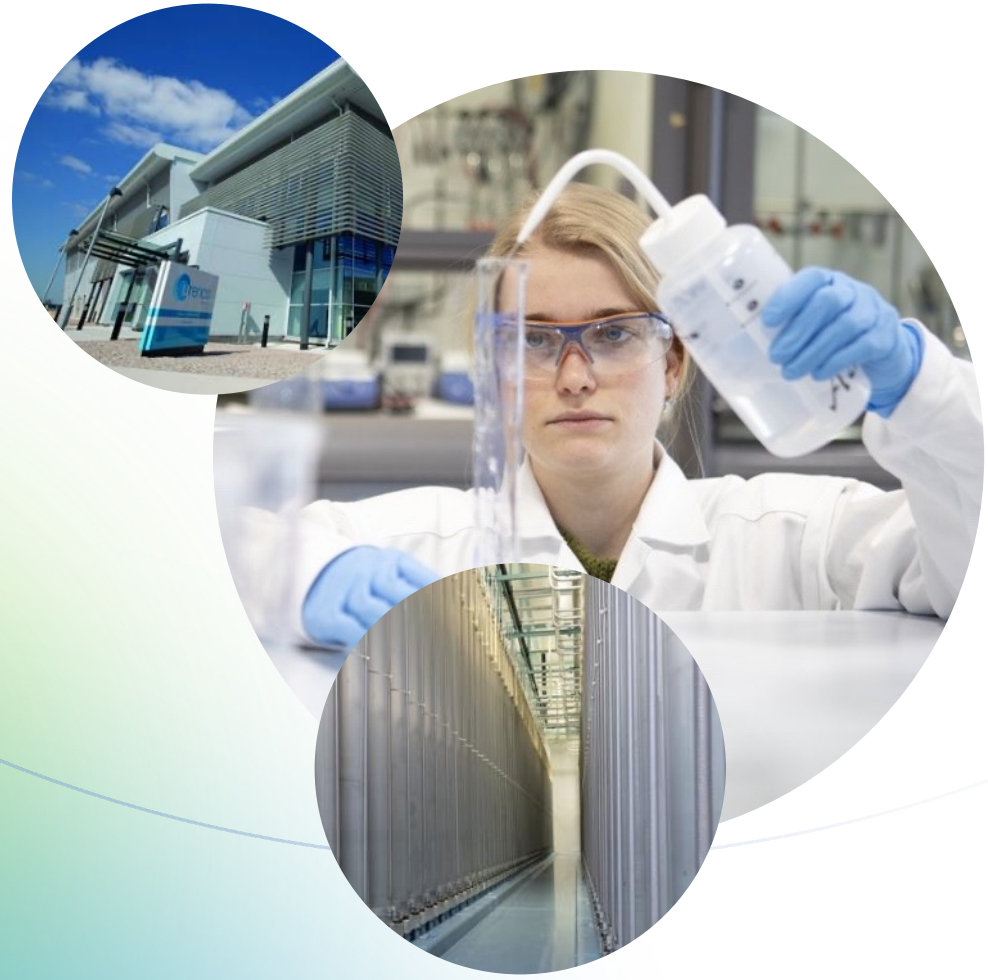
Capacity options near and long term



Other business



Urenco Isotopes

- Medical: isotopes for diagnostics, therapy and pain relief. Moving further into the nuclear medicine value chain
    - *Equivalent of around two million patient treatments.*
- Industry: stable isotopes for nuclear industry, non destructive testing, semiconductor industry
- Research: isotopes as first step in the value chain for Neutrino research and food uptake studies

Decommissioning and nuclear stewardship

- Urenco Nuclear Stewardship delivered £200 million of decommissioning activities.
- Tails Management Facility ramp up continued with two kilns in operation.

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In conclusion

Global nuclear developments have a great impact on the fuel cycle resulting in

- **More** demand for enrichment products
- **Diversification** in demand for enrichment products
- **Closing the loop** with RepU

To succeed we need:

the nuclear fuel cycle to be adaptive and responsive to developments

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Thank you

Q&A

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