



**Silex**  
Systems Limited

## **Investor Presentation**

**3 February 2022**

Silex Systems Limited (Silex) (ASX: SLX) (OTCQX: SILXY) is pleased to provide the attached presentation that will be delivered by Dr Michael Goldsworthy, Silex CEO at the Shaw and Partners Uranium Conference being held virtually today.

***Authorised for release by the Silex Board of Directors.***

Further information on the Company's activities can be found on the Silex website: [www.silex.com.au](http://www.silex.com.au) or by contacting:

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# Silex Systems Limited

## Shaw and Partners

## Uranium Conference Presentation

(ASX: SLX) (OTCQX: SILXY)

**Dr Michael Goldsworthy**  
*CEO/Managing Director*

**3 February 2022**

# Forward Looking Statements and Risk Factors

## About Silex Systems Limited (ASX: SLX) (OTCQX: SILXY)

Silex Systems Limited ABN 69 003 372 067 (**Silex** or **Company**) is a research and development company whose primary asset is the SILEX laser enrichment technology, originally developed at the Company's technology facility in Sydney, Australia. The SILEX technology has been under development for uranium enrichment jointly with US-based exclusive licensee Global Laser Enrichment LLC (GLE) for a number of years. Success of the SILEX uranium enrichment technology development program and the proposed Paducah commercial project remain subject to a number of factors including the satisfactory completion of the engineering scale-up program and uranium market conditions and therefore remains subject to associated risks.

Silex is also in the early stages of pursuing additional commercial applications of the SILEX technology, including the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing. The 'Zero-Spin Silicon' project remains dependent on the outcomes of the project and the viability of silicon quantum computing and is therefore subject to various risks. The commercial future of the SILEX technology is therefore uncertain and any plans for commercial deployment are speculative.

Additionally, Silex has an interest in a unique semiconductor technology known as 'cREO®' through its ownership of subsidiary Translucent Inc. The cREO® technology developed by Translucent has been acquired by IQE Plc based in the UK. IQE is progressing the cREO® technology towards commercial deployment for 5G mobile handset filter applications. The outcome of IQE's commercialisation program is also uncertain and remains subject to various technology and market risks.

## Forward Looking Statements

The commercial potential of these technologies is currently unknown. Accordingly, no guarantees as to the future performance of these technologies can be made. The nature of the statements in this Presentation regarding the future of the SILEX technology as applied to uranium enrichment and Zero-Spin Silicon production, the cREO® technology and any associated commercial prospects are forward-looking and are subject to a number of variables, including but not limited to, unknown risks, contingencies and assumptions which may be beyond the control of Silex, its directors and management. You are strongly cautioned not to place reliance on any forward-looking statements, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption caused by COVID-19 and other economic risk factors, as actual results could be materially different from those expressed or implied by such forward looking statements as a result of various risk factors. Further, the forward-looking statements contained in this Presentation involve subjective judgement and analysis and are subject to change due to management's analysis of Silex's business, changes in industry trends, government policies and any new or unforeseen circumstances. The Company's management believes that there are reasonable grounds to make such statements as at the date of this Presentation. Actual operations, results, performance, targets or achievement may vary materially from any projections and forward-looking statements and the assumptions on which those statements are based.

Except as required by law or regulation (including the ASX Listing Rules and OTCQX Rules for U.S. Companies), Silex does not intend, and is not obligated, to update the forward-looking statements and Silex disclaims any obligation or undertaking to update forward-looking statements in this Presentation to reflect any changes in expectations.

No representation, warranty or assurance (express or implied) is given or made in relation to any forward-looking statement by any person (including the Company or any of its advisers). In particular, no representation, warranty or assurance (express or implied) is given that the occurrence of the events expressed or implied in any forward-looking statements in this Presentation will actually occur.

## Risk Factors

Risk factors that could affect future results and commercial prospects of Silex include, but are not limited to: ongoing economic and social uncertainty, including in relation to the impacts of the COVID-19 pandemic; the results of the SILEX uranium enrichment engineering development program; the market demand for natural uranium and enriched uranium; the outcome of the project for the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing; the potential development of, or competition from alternative technologies; the potential for third party claims against the Company's ownership of Intellectual Property; the potential impact of prevailing laws or government regulations or policies in the USA, Australia or elsewhere; results from IQE's commercialisation program and the market demand for cREO® products; decisions made or actions taken by the Company's commercialisation partners that could adversely affect the technology development programs; and the outcomes of various strategies and projects undertaken by the Company.





Our Mission: to commercialise the unique SILEX laser enrichment technology for application to:



Uranium production and enrichment (nuclear power)



Silicon enrichment (silicon quantum computing)



Other potential markets (e.g. medical isotopes)

Our strategy is focused on extracting maximum value from our core SILEX technology and expertise

# Highlights of the last 12 months

## ***SILEX Uranium Enrichment Technology / GLE Highlights:***

- GLE acquisition completed January 2021 - resulting in Silex acquiring a 51% interest in GLE (Cameco 49%)
- Silex and Cameco strengthen the GLE commercialisation plan and ramp-up the engineering project
- GLE recruits key executives – CEO and CCO with extensive technical and commercial acumen to lead GLE
- HALEU fuel opportunity strengthens for Advanced Small Modular Reactors – next generation nuclear energy

## ***Other highlights:***

- Zero-Spin Silicon (ZS-Si) project Stage 2 completed January 2022 – demonstration of ZS-Si production with prototype facility
- Assessment of other applications of the SILEX technology ongoing (focus currently on medical radioisotopes)
- Capital raising completed October 2021, net Placement proceeds ~\$31.4 million plus Share Purchase Plan ~\$7 million



# Uranium Production and Enrichment for Nuclear Fuel



# Evolution of Enrichment Technology

## 1st Generation Technology

### Gaseous Diffusion

$$\beta = 1.004$$

High cost

Obsolete



## 2nd Generation Technology

### Centrifuge

$$\beta \sim 1.25$$

Lower cost

Current technology



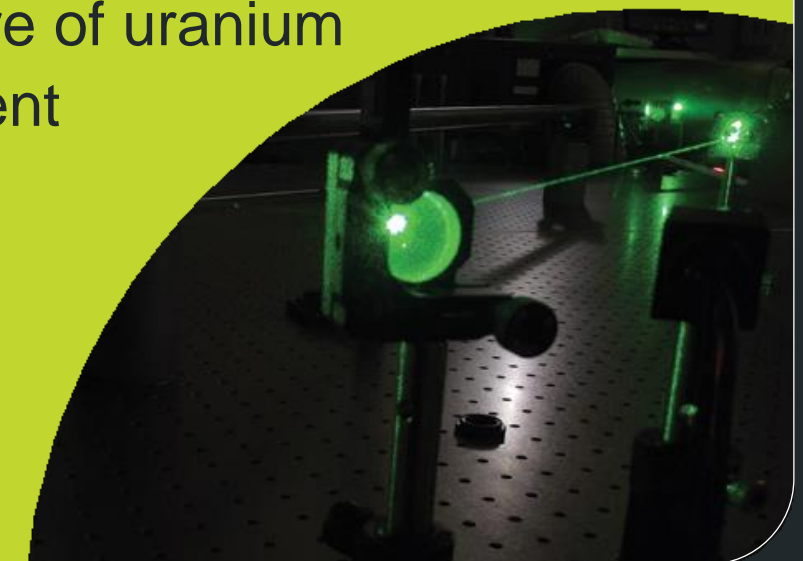
## 3rd Generation Technology

### SILEX Laser

$$\beta \sim 2 - 20^1$$

Most cost effective

The future of uranium enrichment



1.  $\beta$  is the process efficiency (Classified number)

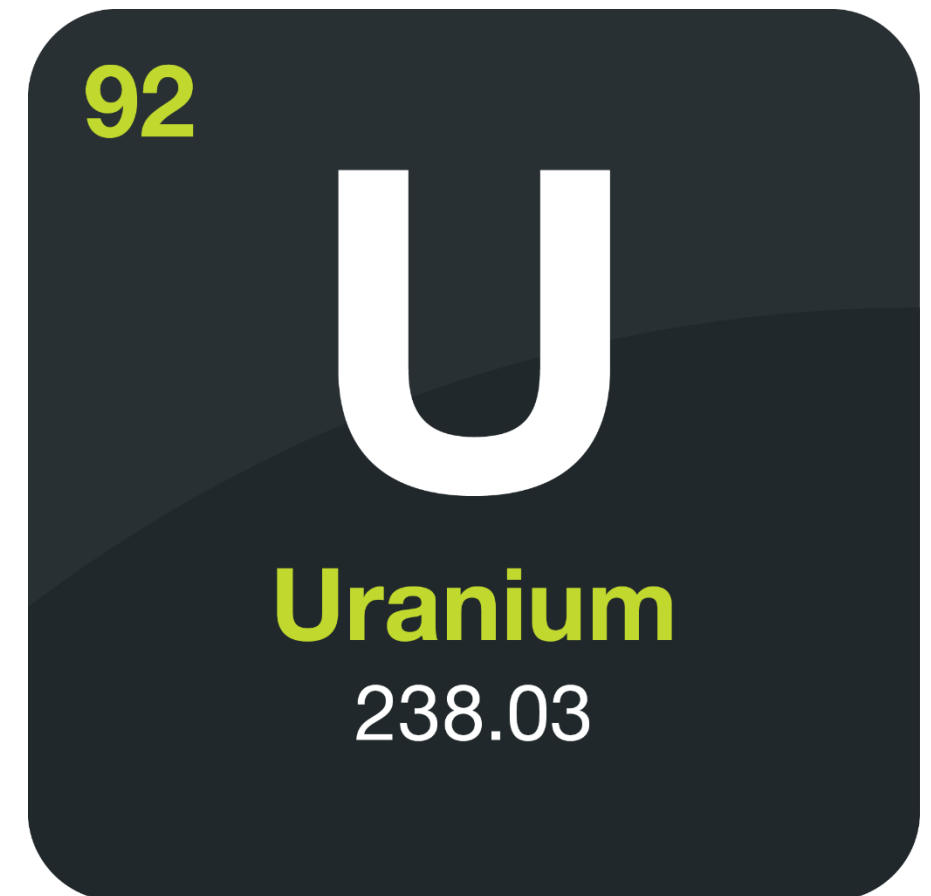
- SILEX laser process → much higher separation efficiencies vs. centrifuge technology

# SILEX Uranium Production Opportunity

## Global demand for Uranium is set to rise:

### A significant potential uranium supply shortage is forecast<sup>1</sup>

- Structural supply deficit could occur without a timely increase in production
- Demand could grow significantly as zero-emissions nuclear is embraced
- There are few low cost resources to supply increasing demand from the mid 2020's
- Uranium prices need to keep increasing to provide stimulus for increased production



### The Flagship Paducah uranium project planned by Global Laser Enrichment (GLE)

- Silex owns 51% equity interest in GLE with Cameco Corporation owning the balance of 49%
- GLE has an agreement with US DOE<sup>2</sup> to purchase tails inventories owned by the US Government
- GLE's Paducah project aims to enrich the tails using the SILEX technology to produce natural uranium

1. UxC Uranium Market Outlook, Q4 2021

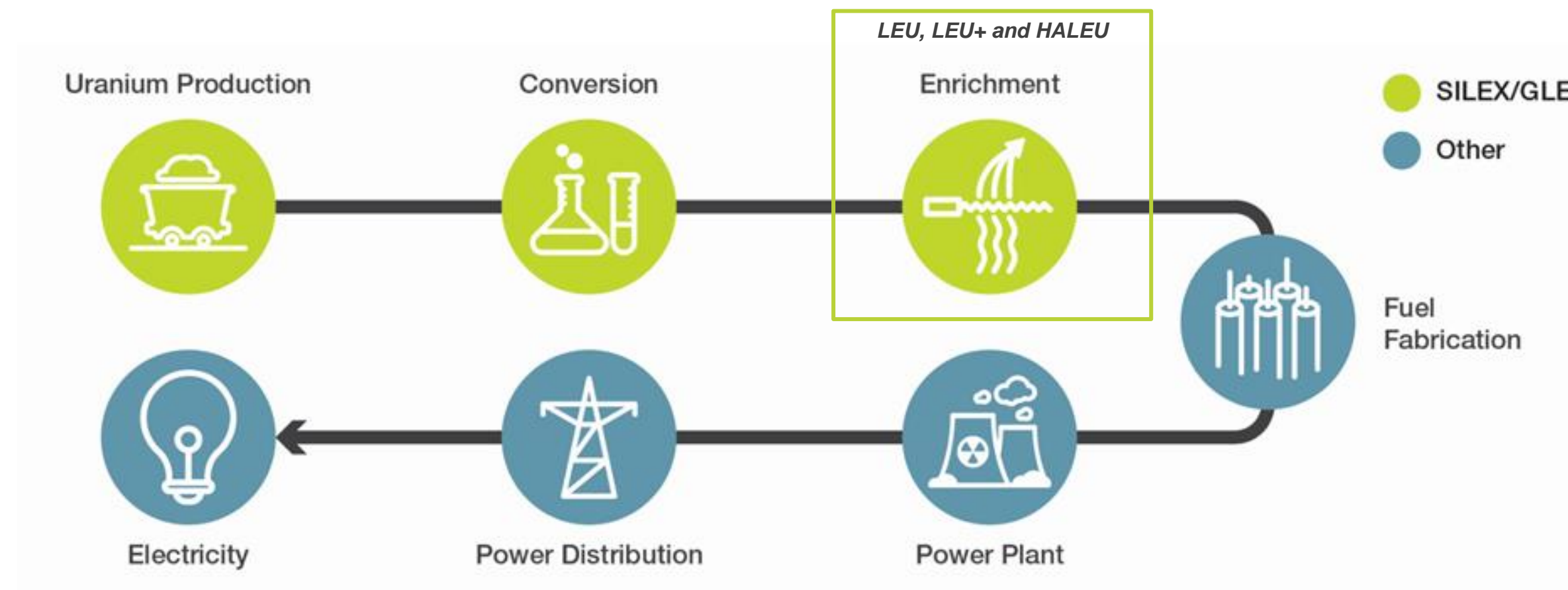
2. US Department of Energy



# SILEX and Nuclear Fuel Production

The SILEX technology provides GLE with multiple opportunities in the production of nuclear fuel:

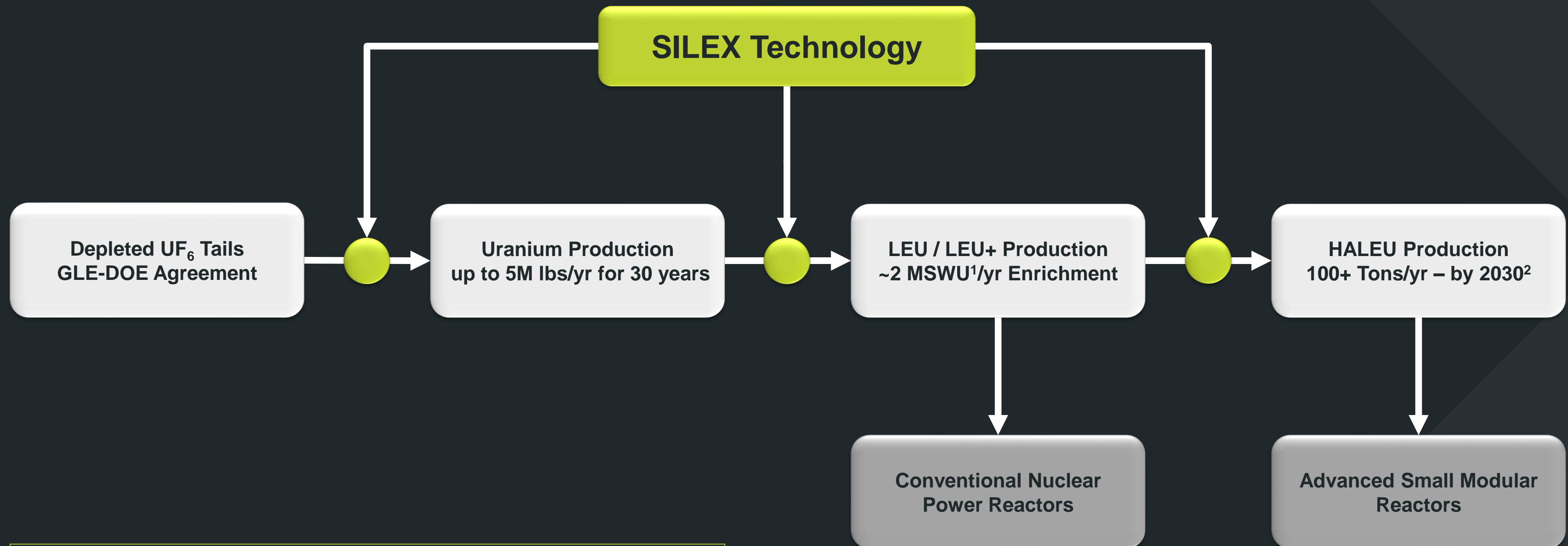
- produce natural grade uranium via enrichment of depleted tails inventories (Paducah project)
- capture the value of conversion contained in the depleted  $\text{UF}_6$  tails material (Paducah project)
- enrich natural uranium to produce LEU -  $^{235}\text{UF}_6$  assay increased up to 5%, or LEU+ up to 10% enriched
- enrich uranium up to 20% - HALEU to fuel Advanced Small Modular Reactors



The Nuclear Fuel Supply Chain

# The Paducah Opportunity Potential Value Chain

## 'Full Service' Nuclear Fuel Materials Concept



1. 2 MSWU is the estimated enrichment capacity to process ~5M lbs U<sub>nat</sub> into LEU;  
SWU – Separative Work Unit - is the unit of enrichment traded in the market;
2. US Nuclear Energy Institute estimates demand of 137 tons/yr by 2030 (2020 Letter to US DOE)



# Paducah Uranium Production Opportunity

## Target Commercial Operation Date

Anticipated to be late 2020's

## Akin to a 'Tier 1' Uranium Resource\*

Based on low cost and longevity of production  
(Silex estimate of all-in cost currently < US\$25/lb)

## Equivalent $U_3O_8$ Production

Planning for up to 5 million lbs p.a. for approximately 30 years

## Potential capture of Conversion Value

Feed and Product is  $UF_6$   
(current conversion value ~US\$18/kg)

## Potential to enrich further

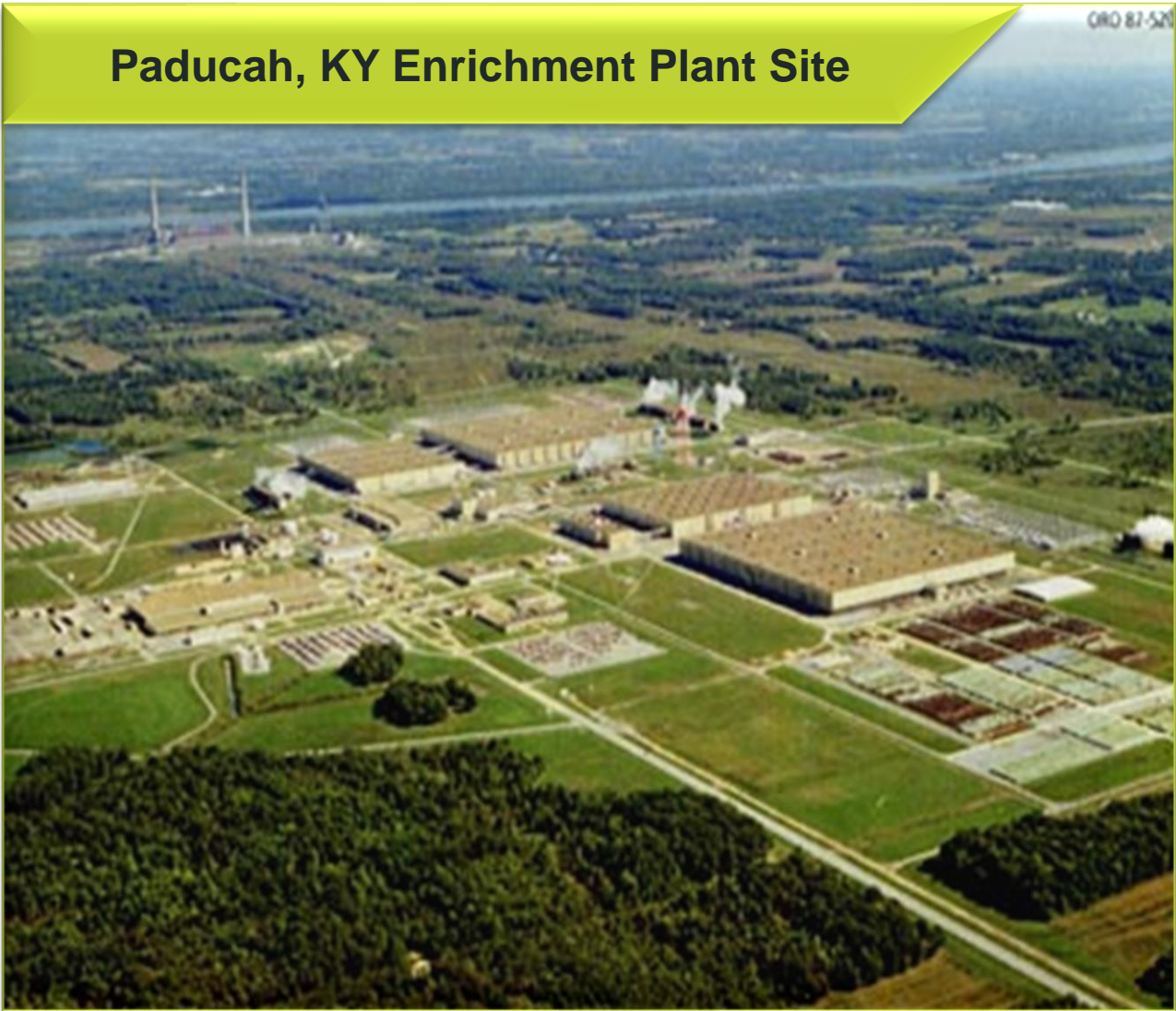
From natural grade (0.7%)  
to LEU (up to 5%)  
to LEU+ (up to 10%)  
& HALEU (up to 19.9%)

\* All production estimates are based on preliminary modelling by Silex of project economics and longevity. Actual production output will depend on prevailing uranium market prices and other factors.

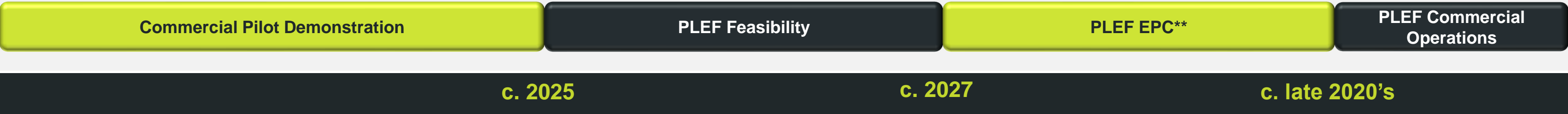
# SILEX Commercialisation and Royalty Agreement

- GLE holds exclusive worldwide license for use of SILEX laser technology for uranium enrichment
- License agreement includes US\$20 million in payments to Silex triggered by commercial development milestones:
  - US\$5 million: Commercial pilot demonstration (c.2025)
  - US\$5 million: Commencement of PLEF<sup>1</sup> EPC (c. 2027)
  - US\$10 million: PLEF commercial operations (c. late 2020's)
- Perpetual royalty of 7% (min.) on GLE's enrichment SWU revenues from use of SILEX for production of natural and enriched uranium
- Royalty and milestone payments are in addition to any equity-based distribution of profits payable from GLE's commercial operations (currently Silex holds 51% ownership)
- Cameco holds an option to purchase an additional 26% of GLE equity from Silex at fair market value

1. PLEF: Paducah Laser Enrichment Facility



## SILEX Uranium Technology Target Commercialisation Timeline\*:



\* Subject to technology development program outcomes, market conditions and other factors    \*\* Engineering, Procurement and Construction (EPC)



# Emerging Opportunity - Small Modular Reactors (SMRs)

- Several next generation SMR designs use High Assay Low Enriched Uranium (HALEU)
- SILEX technology may provide a flexible low cost alternative to produce HALEU for SMRs
- SMRs are modular, smaller size (50 MWe to 300 MWe) allows greater flexibility in deployment
- Designed for production-line manufacturing rather than conventional custom built capital projects
- SMRs anticipated to result in significant reduction in capital costs and shorter construction times
- Leading contenders anticipated to be introduced commercially from the early 2030's in the US and Canada

Small Modular Reactor (concept)



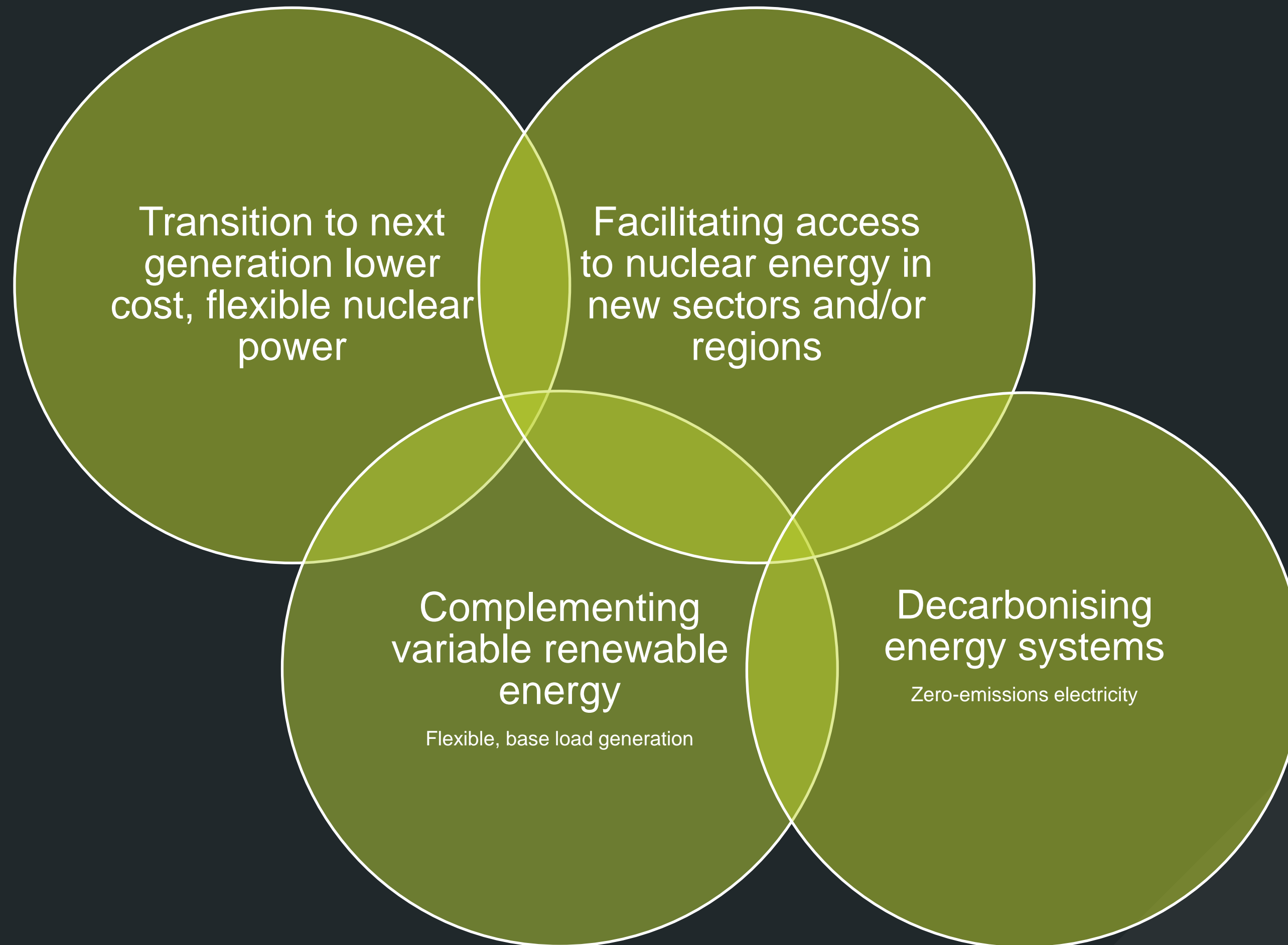
VS

Conventional Large Scale Reactor



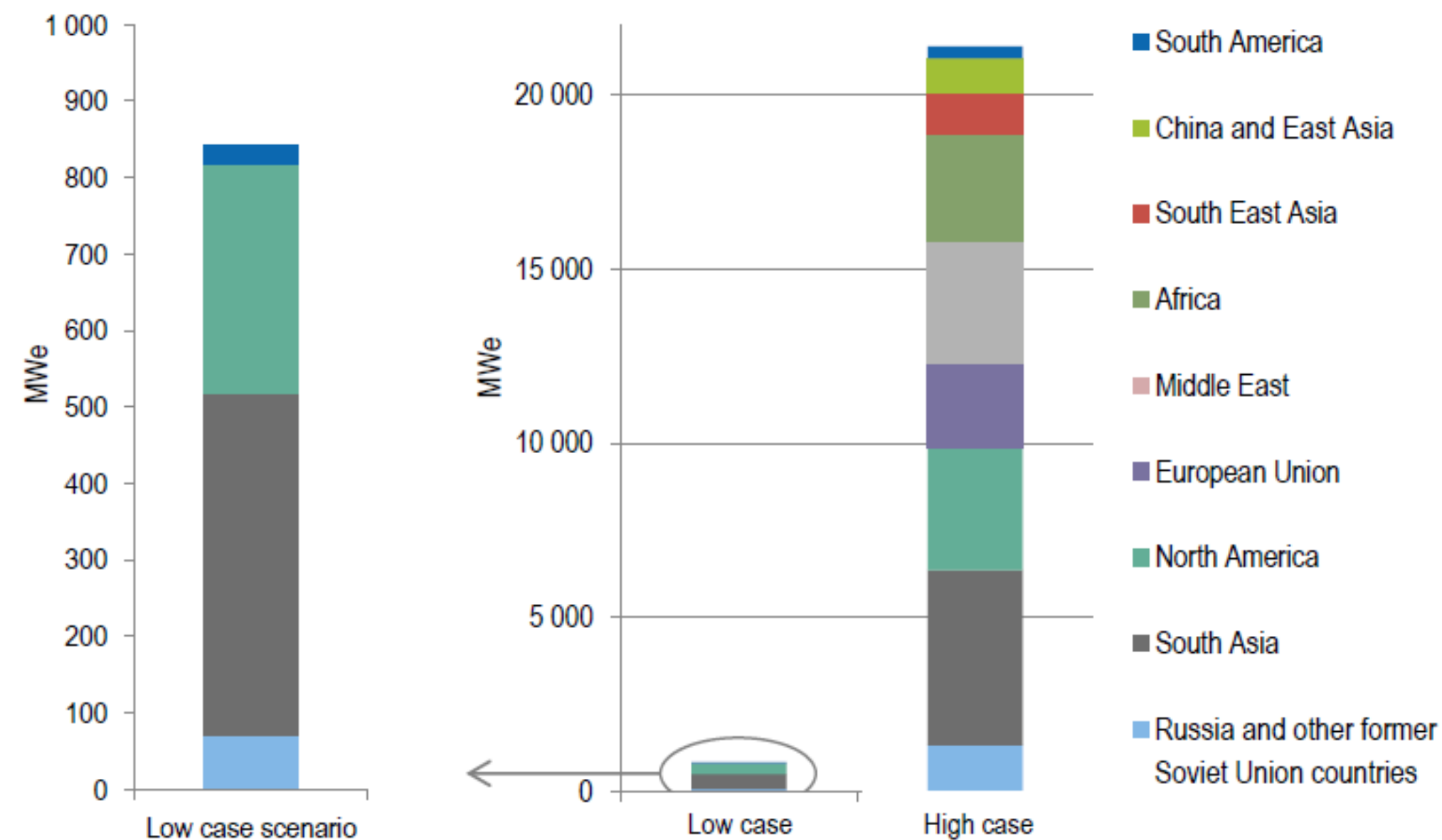


# SMRs have potential to provide next-generation zero-emissions base load electricity





# Estimated SMR Capacity in 2035 by Region



Source: *Small Modular Reactors: Challenges and Opportunities*, NEA No. 7560, © OECD 2021

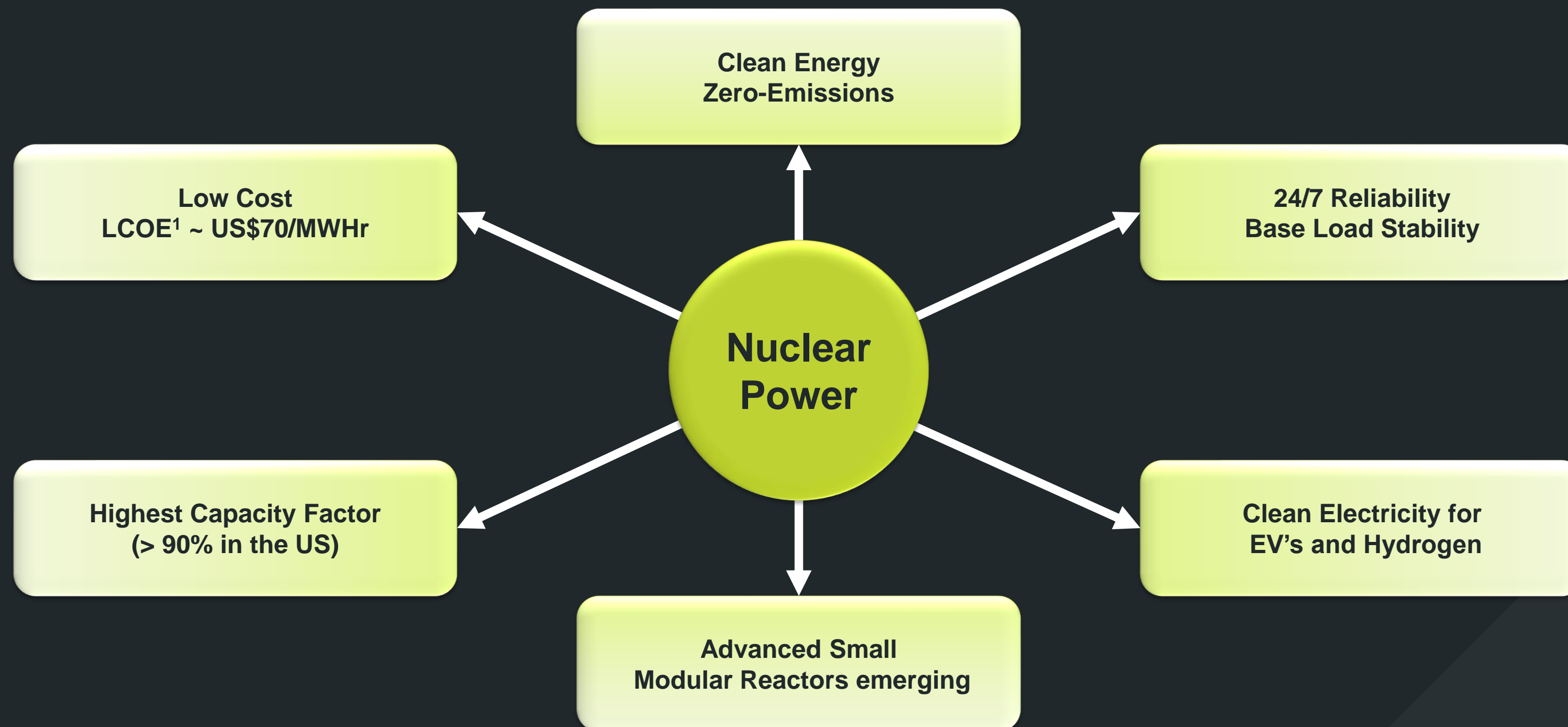
- High case scenario forecasts over 20,000 MWe installed by 2035

# Nuclear Power and the Nuclear Fuel Market Opportunity



# Why Nuclear Power is important to achieving Net-Zero

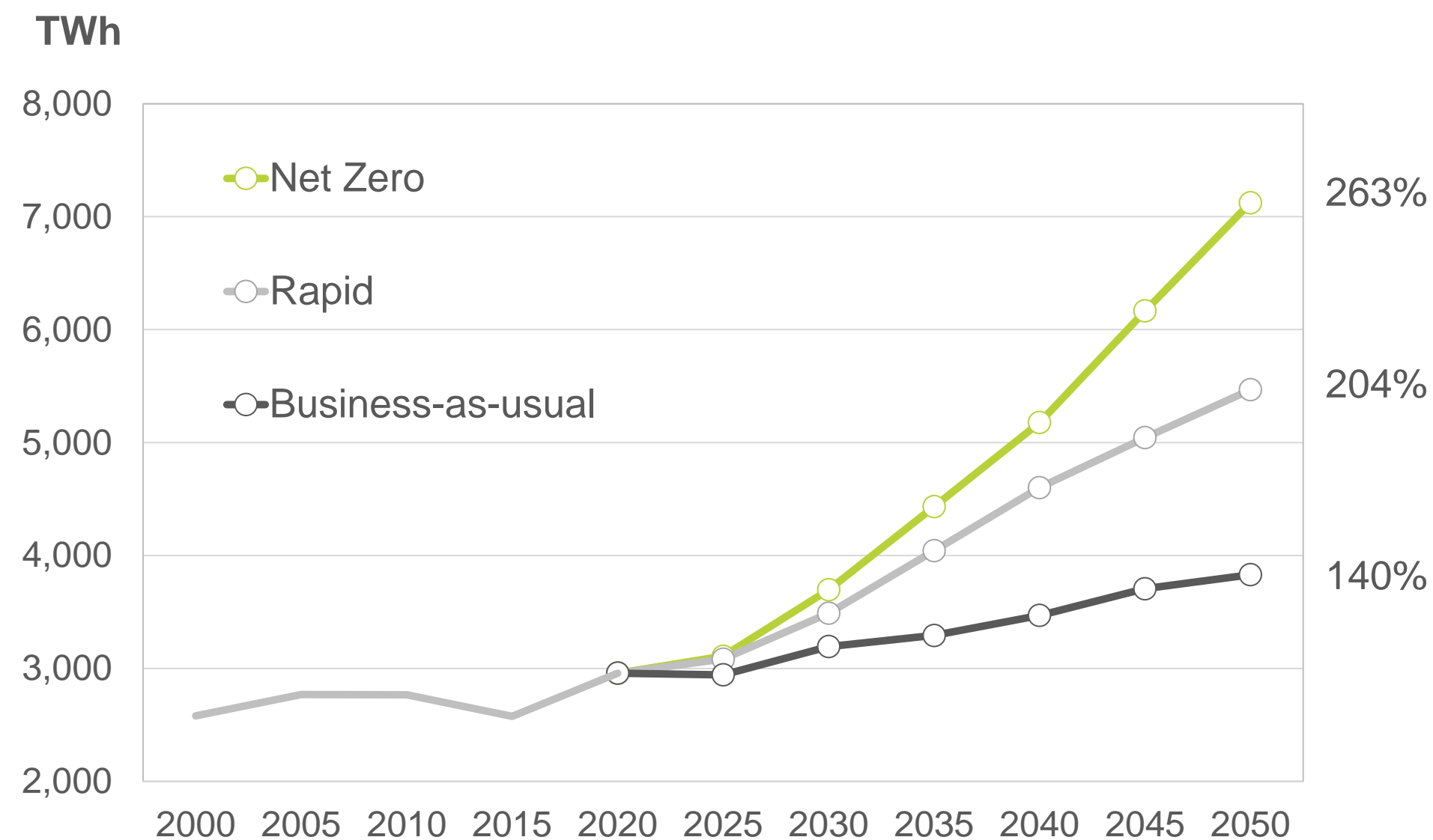
**Nuclear power is currently the only economic source of zero-emissions base load electricity**



1. LCOE ~US\$70/MWHR, IEA Projected Costs of Generating Electricity 2020  
(LCOE = Levelised Cost Of Energy – all-in costs basis)

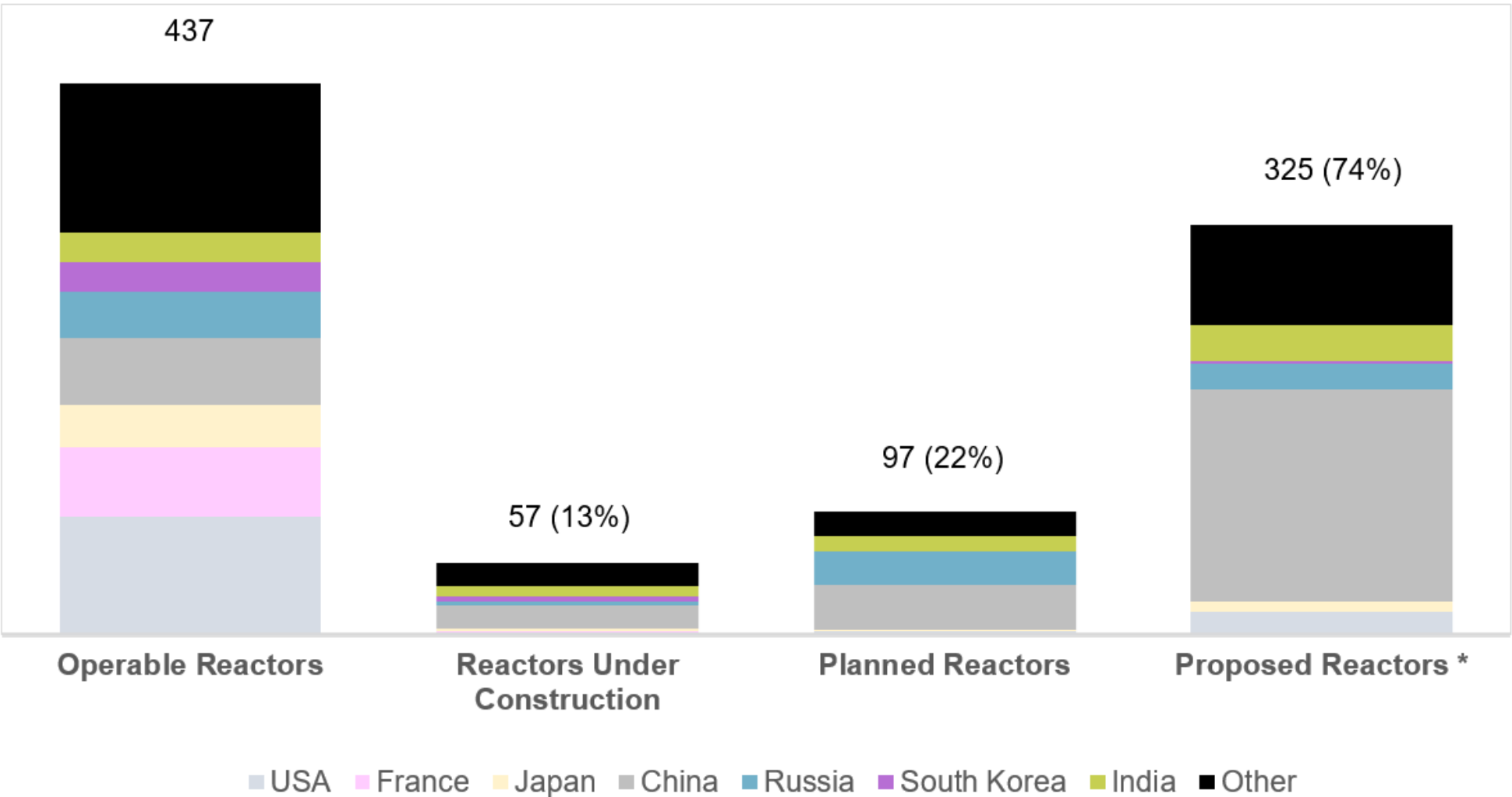
# Significant Nuclear Power Growth for Net Zero 2050

## Nuclear Generation Scenarios



Source: BP Energy Outlook 2020 Edition

## World Nuclear Reactor Population

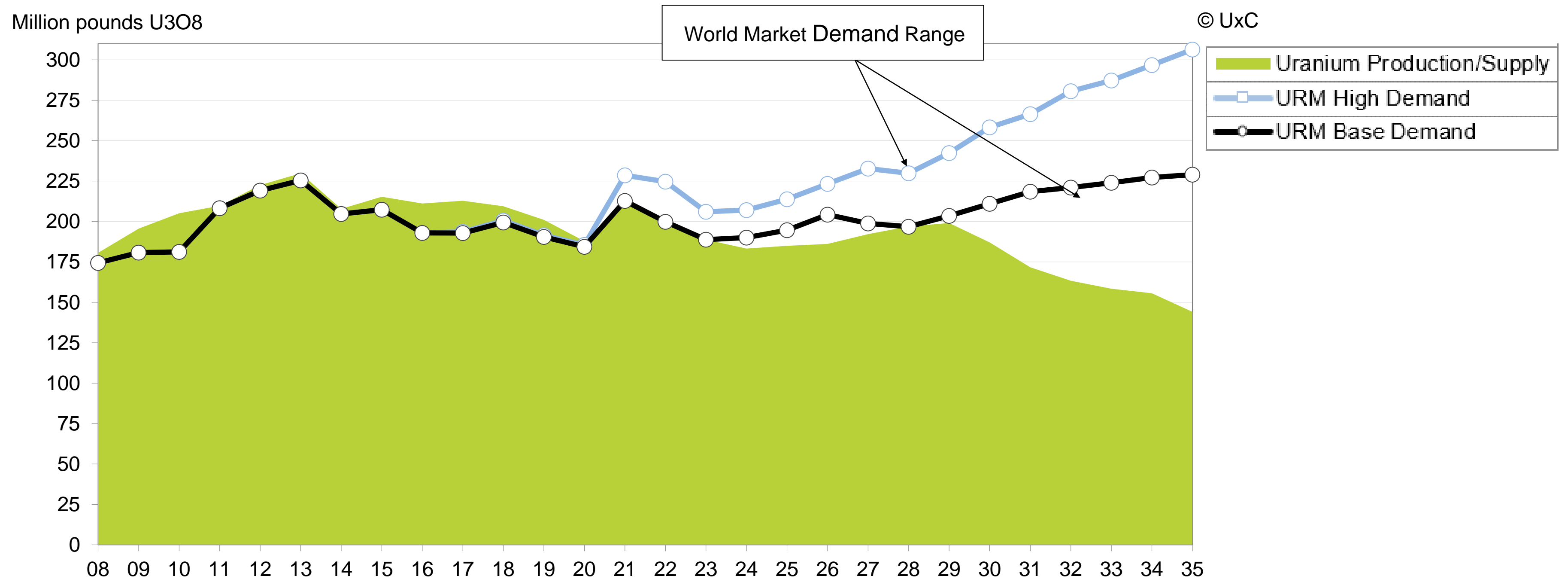


\* Other Proposed Reactors include 16 proposed in Saudi Arabia, 8 in Turkey and 8 in South Africa

Source: World Nuclear Association January 2022

# Uranium Market Outlook – Supply Shortage Forecast

## Mid-Case Uranium Supply and Demand Forecast



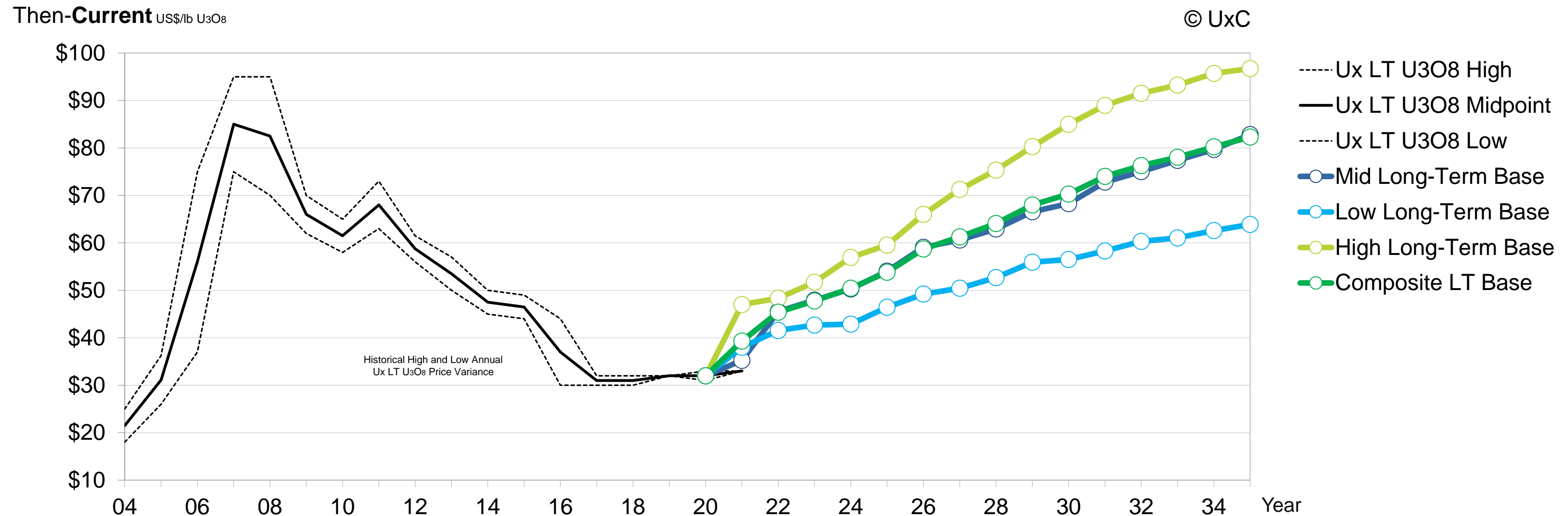
Source: UxC Uranium Market Outlook, Q4 2021

- Uranium supply forecasted to be insufficient to meet demand from mid-2020's



# Uranium Price – Price Recovery Underway

## Uranium Long-Term Base Price Forecast



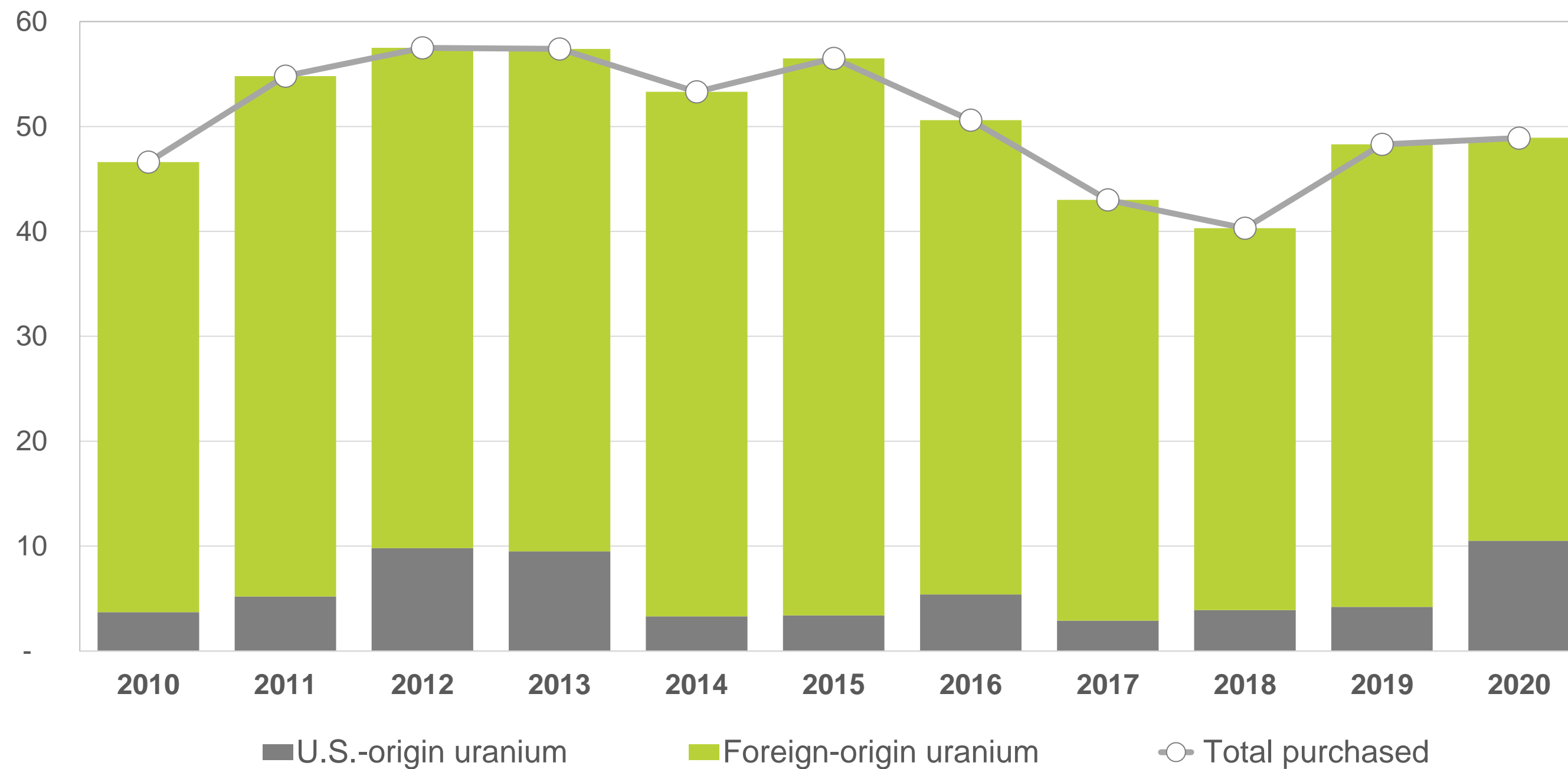
Source: UxC Uranium Market Outlook, Q4 2021

- UxC forecasts mid-case term uranium price ~\$55/lb by 2025 and ~\$70/lb by 2030
- Spot price now around \$43/lb – up from a low of ~\$18/lb in 2016
- Sprott Physical Uranium Trust (SPUT) purchasing 2021 accelerated spot price rise

# Paducah Opportunity may help address US Uranium Vulnerability

## Uranium purchased for U.S. nuclear power reactors, 2010 - 2020

Million pounds  $U_3O_8$  equivalent



US Imports ~90% (avg.)  
of Uranium purchased

Source: 2020 EIA Uranium Marketing Annual Report  
(Released May 2021)



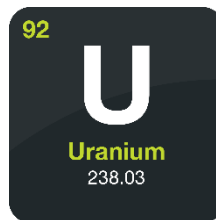
# Summary



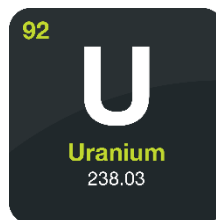
# Summary



GLE JV (Silex 51% and Cameco 49%) aiming to demonstrate SILEX uranium enrichment technology at pilot commercial scale by the mid 2020's



GLE's path to market focused on the Paducah opportunity - large, cost effective uranium production project with additional scope for uranium enrichment to produce LEU, LEU+ and HALEU nuclear fuels



Long-term fundamentals for global growth in nuclear power remain positive, however a significant uranium supply deficit may occur in the absence of a timely increase in production



SILEX silicon enrichment technology being developed to produce Zero-Spin Silicon (ZS-Si) in support of global efforts to commercialise silicon quantum computing



Silex assessing other applications of SILEX technology, potentially in the field of medical radioisotopes

***As at 31 December 2021, the Company had net assets of ~\$55m, including ~\$49.2m in cash and approximately ~\$4.2m in IQE shares***





**Thank you**