



**BANNERMAN**  
RESOURCES

# DYNAMICS OF URANIUM MARKETS

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27 April 2017



**Nuclear industry (ie U demand) growing sharply through China expansion**

**Further strong non-OECD growth fuelled by Russia and India**

**Key source of clean, base load power sees solid growth profile in OECD**

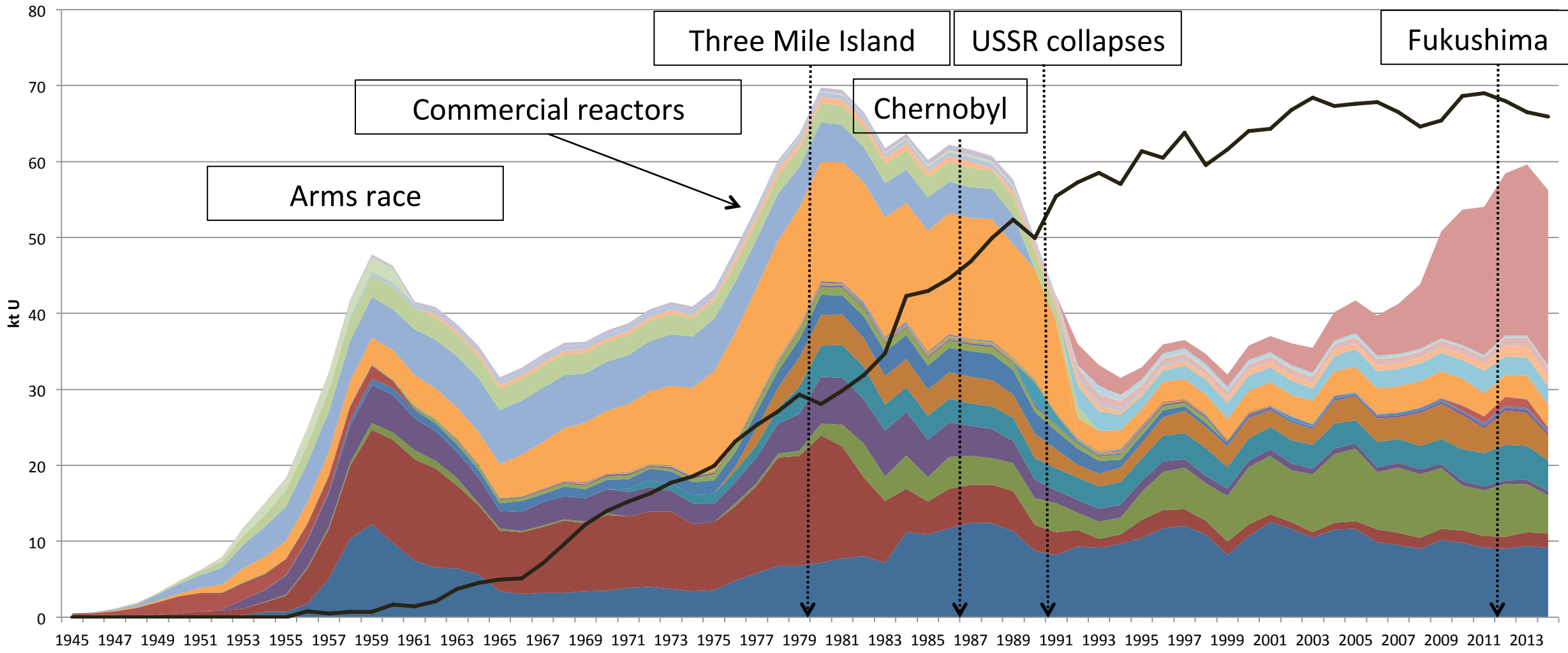
**Looming supply shortfall with potential short term catalysts**

**Very few U development projects of scale ready to respond**

**Dynamics point to abrupt and sustained price correction... but when?**

**BUT: Kazakhstan dominates supply with ~40% of market and vast resources**

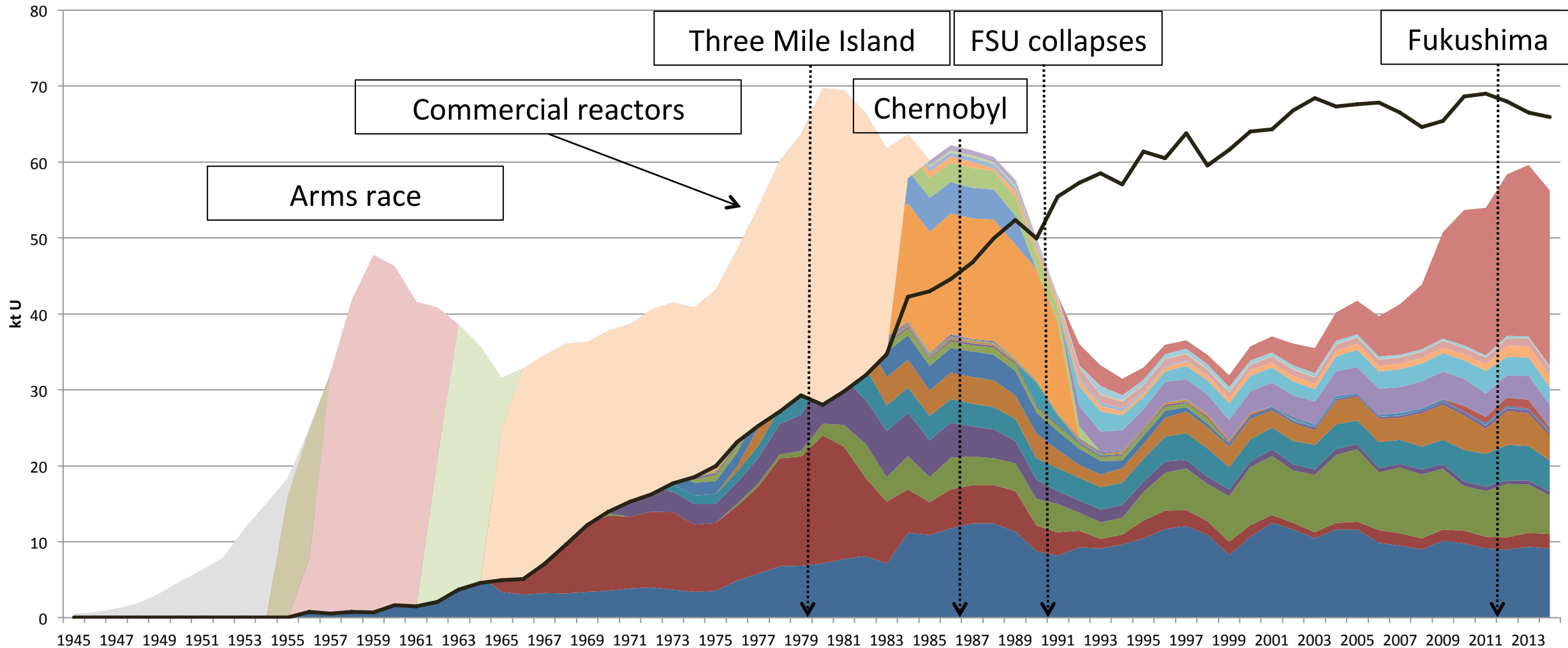
# Uranium history



- |         |         |          |           |              |          |                |            |              |         |
|---------|---------|----------|-----------|--------------|----------|----------------|------------|--------------|---------|
| Finland | Canada  | USA      | Australia | South Africa | Niger    | Namibia        | France     | DRC          | Gabon   |
| India   | Germany | Spain    | Brazil    | Malawi       | Portugal | Argentina      | Pakistan   | Madagascar   | Belgium |
| Sweden  | Japan   | Mexico   | USSR      | GDR          | Russia   | Czechoslovakia | Uzbekistan | China        | Hungary |
| Ukraine | Romania | Bulgaria | Czech R   | Poland       | Mongolia | Yugoslavia     | Kazakhstan | Requirements |         |

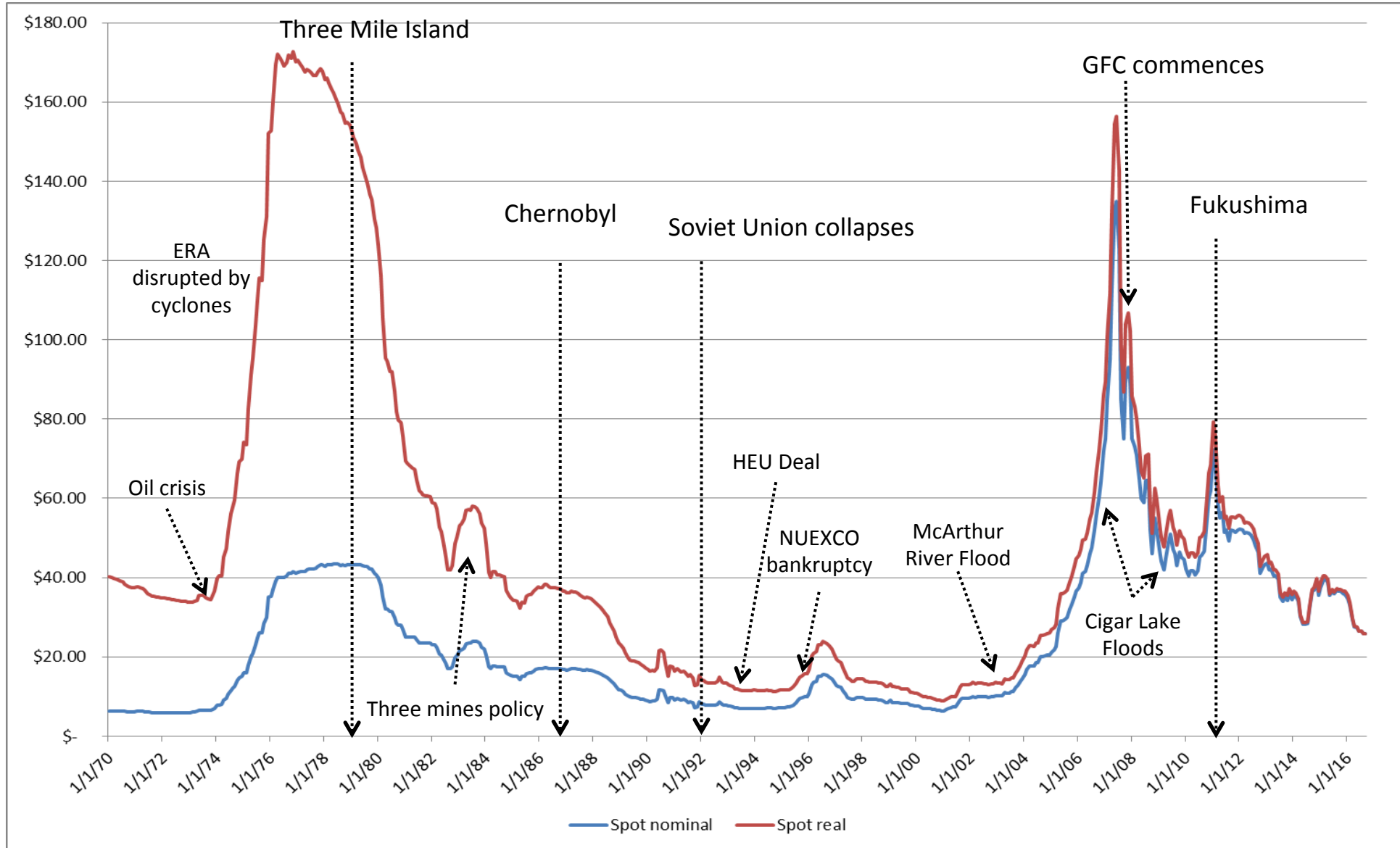
Source: NEA, WNA, Bannerman

# Uranium history

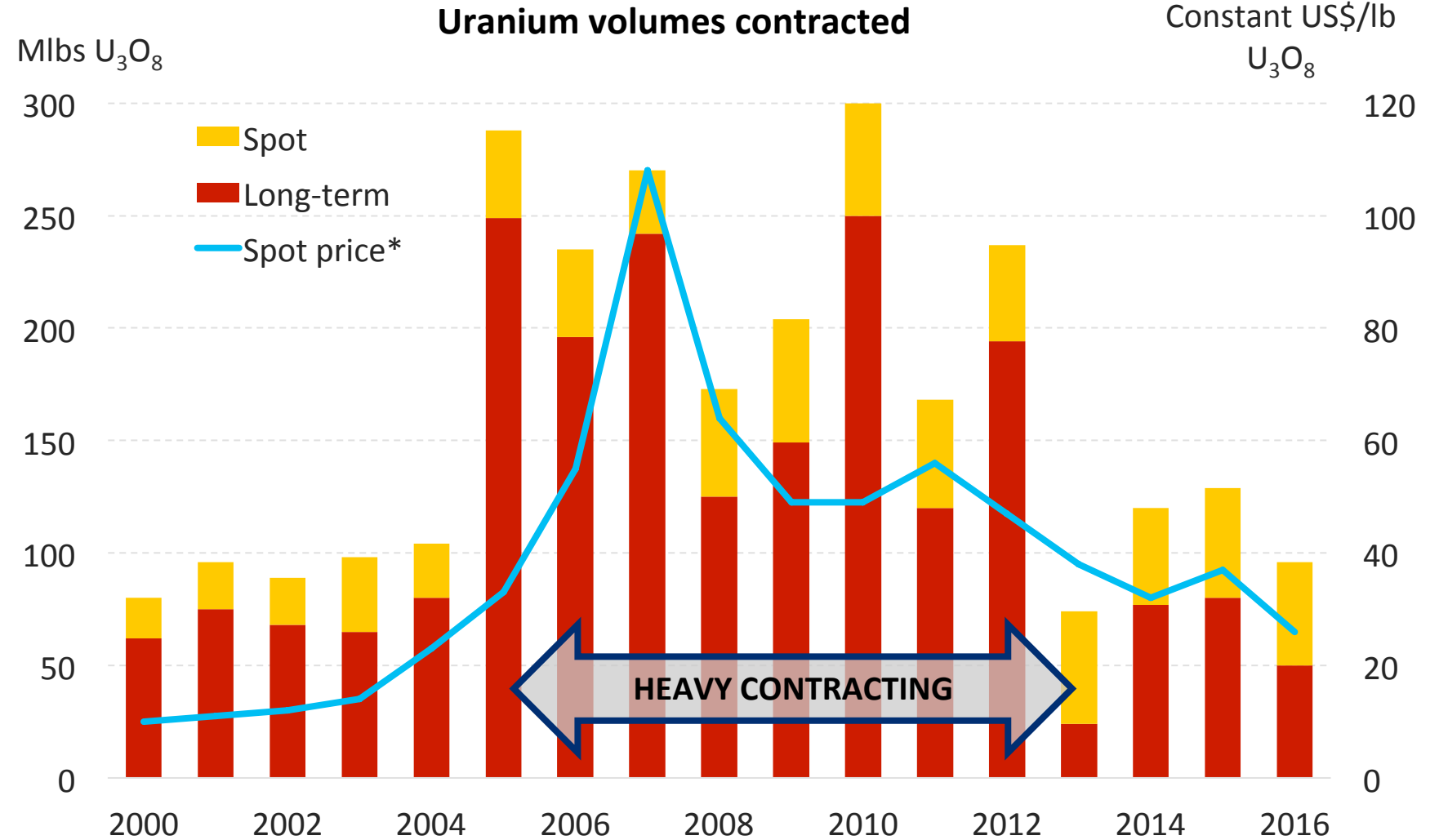
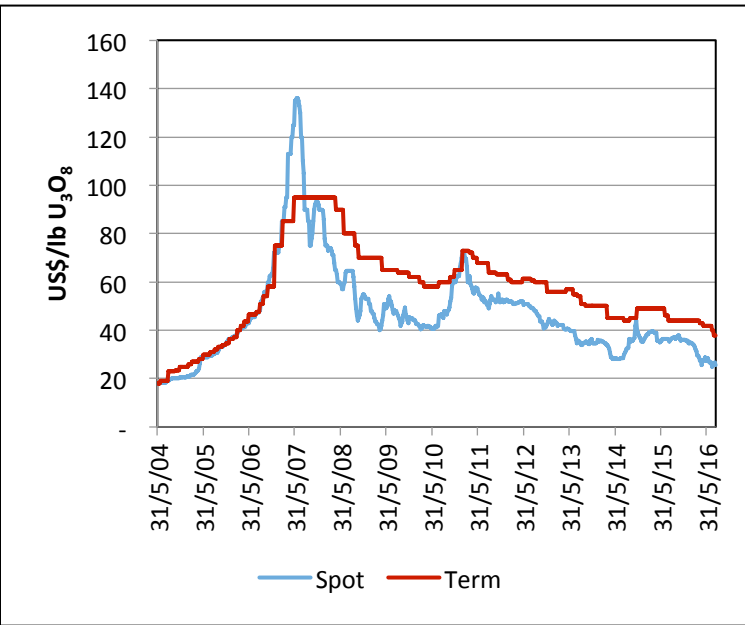


- |                 |                |                    |              |              |            |          |                    |
|-----------------|----------------|--------------------|--------------|--------------|------------|----------|--------------------|
| Finland         | Canada         | USA                | Australia    | South Africa | Niger      | Namibia  | France             |
| DRC             | Gabon          | India              | Germany      | Spain        | Brazil     | Malawi   | Portugal           |
| Argentina       | Pakistan       | Madagascar         | Belgium      | Sweden       | Japan      | Mexico   | USSR               |
| GDR             | Czechoslovakia | Russia             | Uzbekistan   | China        | Hungary    | Ukraine  | Romania            |
| Bulgaria        | Czech R        | Poland             | Mongolia     | Yugoslavia   | Kazakhstan | Consumed | Reserved for Naval |
| Nuclear Weapons | HEU deal       | Secondary consumed | Requirements |              |            |          |                    |

# Uranium history



# Why are spot and term prices in the doldrums?



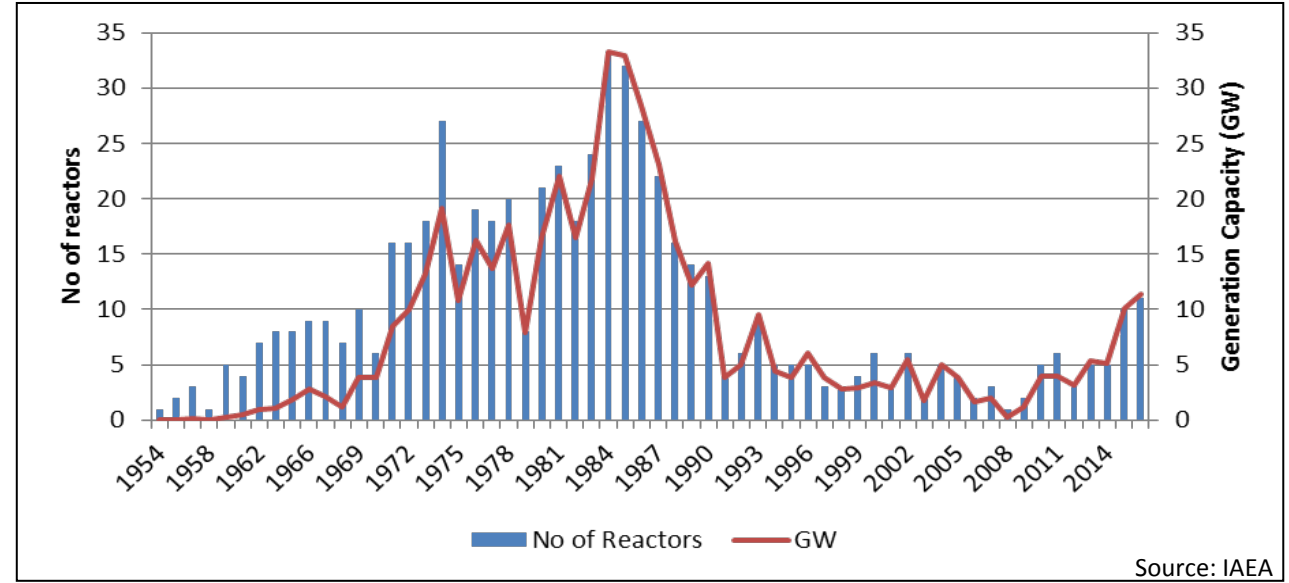
\* Industry average price (UxC and TradeTech)  
Source: UxC, Cameco

**Which means future supply requirements are compounding**

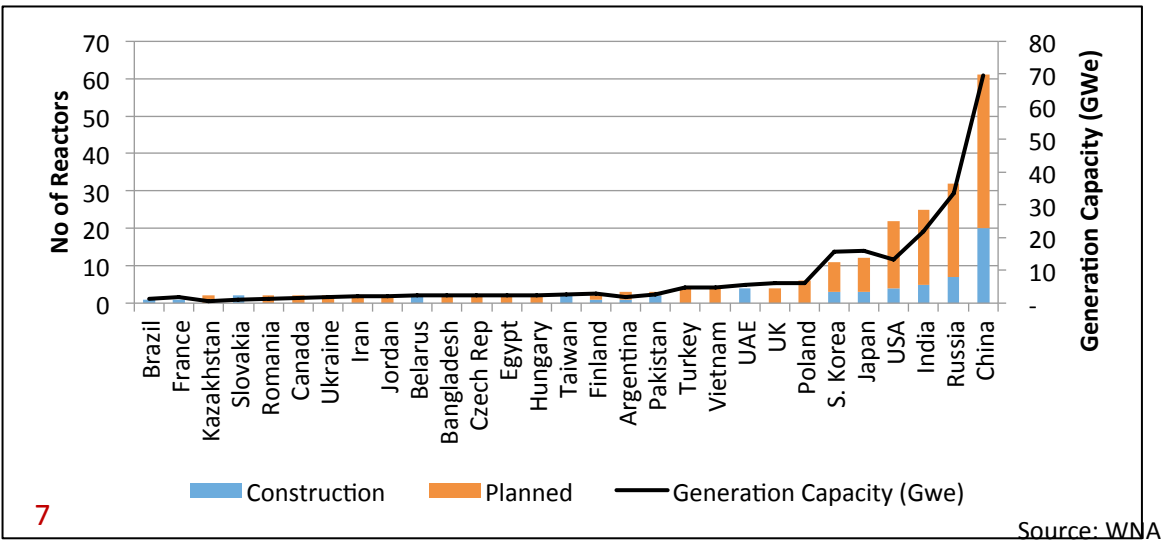
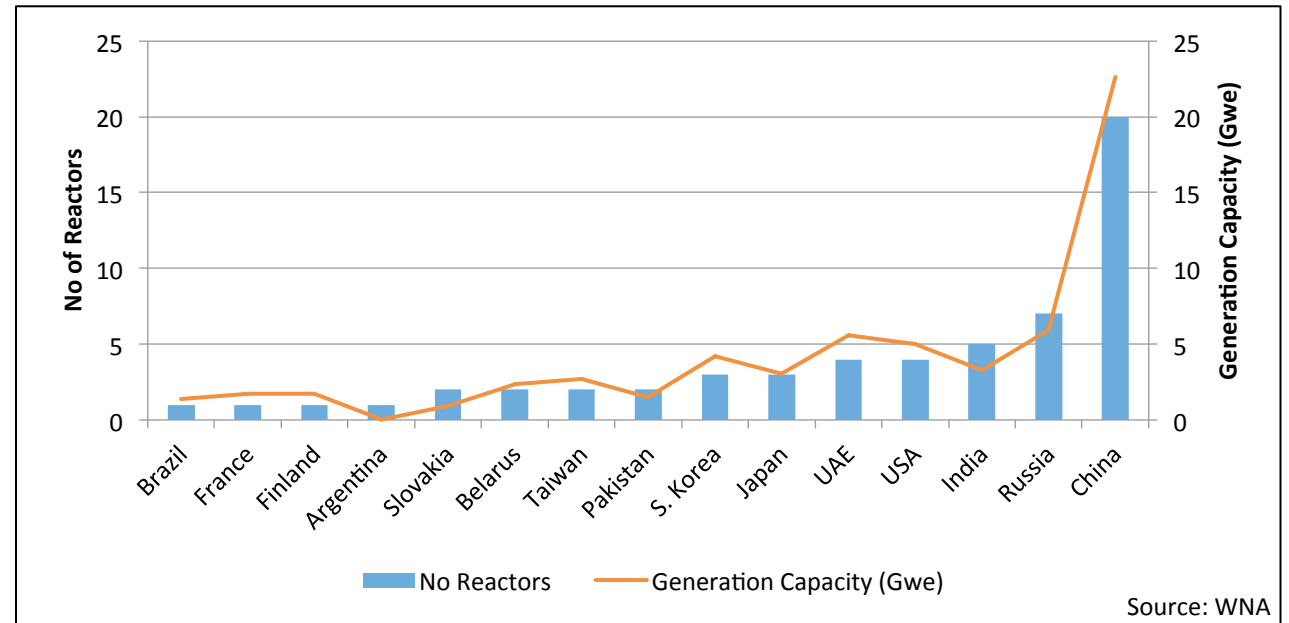
# Uranium demand

- Current installed capacity 392 GWe.
- Represents 11.5% of total electricity generation.
- Reactor build program rebounding post Fukushima
- 58 reactors currently under construction in 15 countries representing capacity of 62 Gwe
- A further 167 reactors planned

Historical Grid Connections

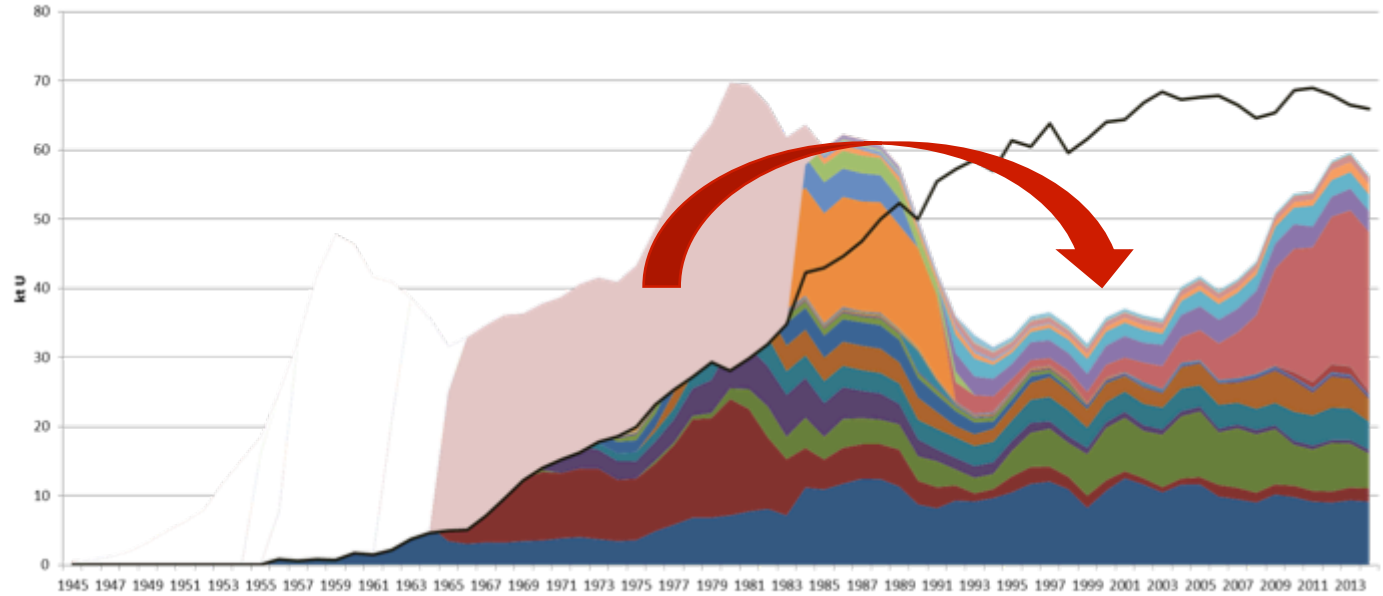


Currently under construction



# Uranium supply

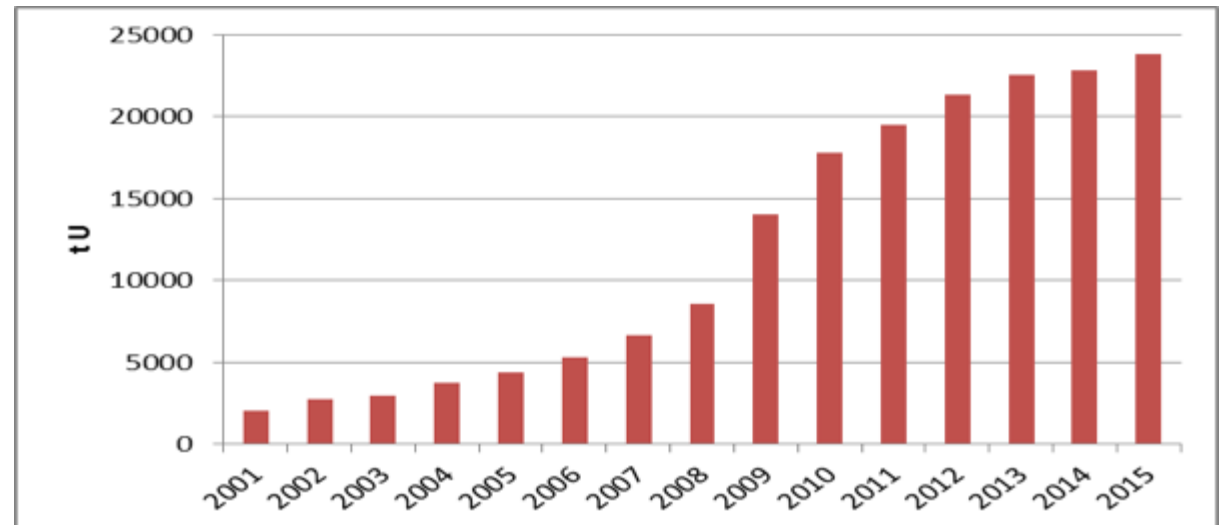
- Long running primary supply deficit
- More than two decades of reducing inventories from
  - Russian & USA HEU
  - Russian & USA LEU



Over 80% of mine supply from 5 countries



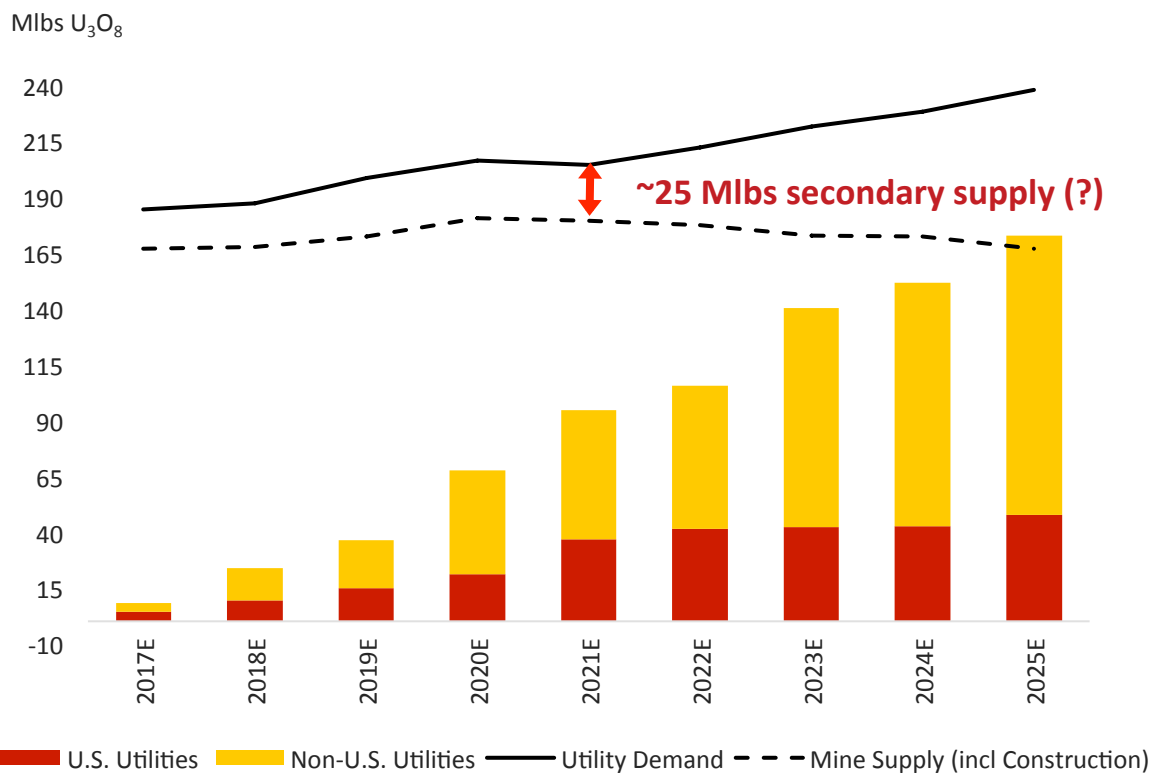
## Kazakhstan increase - over tenfold



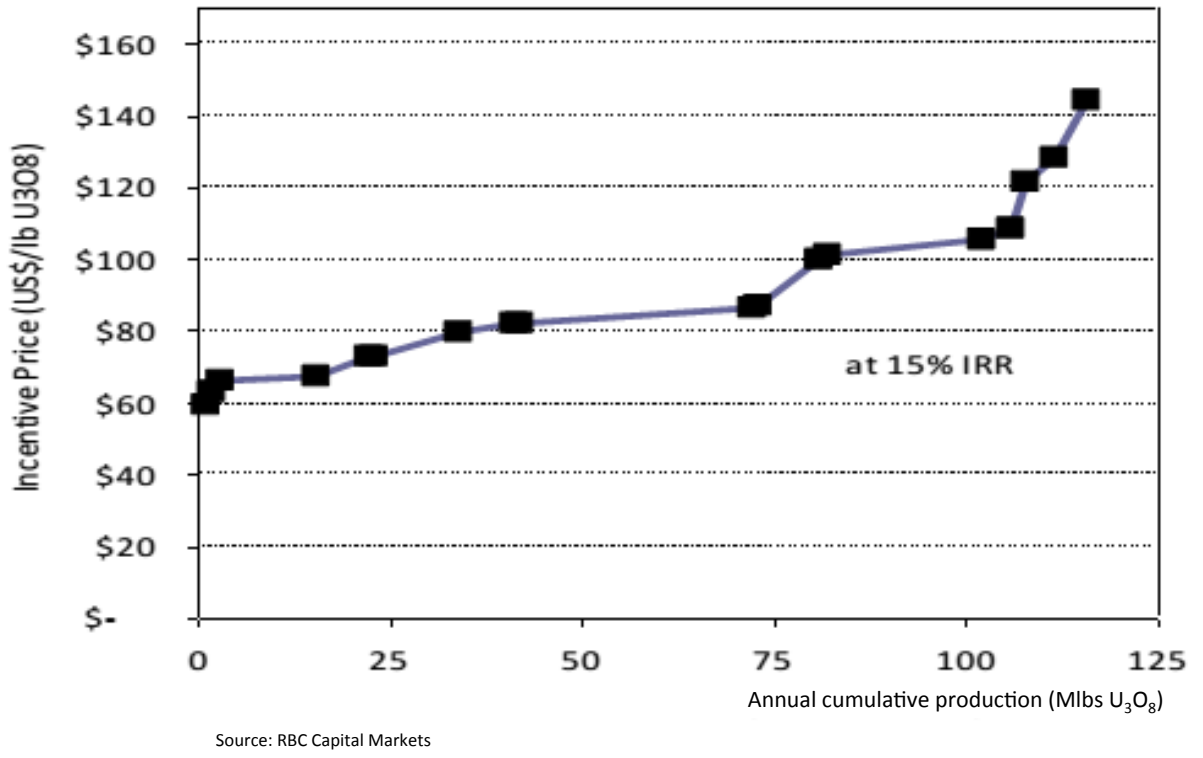


Large uncovered positions plus growing uranium demand

### Future uncontracted fuel requirements globally



### Global uranium projects incentive pricing curve



And mine supply unable to respond adequately at prices below ~US\$75/lb



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# QUESTIONS?

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