

Multinational Repositories

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- Transferred to Government from BNFL in 2008
- 850 staff covering programs across nuclear fuel cycle
- Support to national R&D programs including Geological disposal
- GoGo from 2013
- National Laboratory for both UK Government and Industry



- Nuclear power expansion – current plans x2
 - Existing nations
 - New nations
- Possibility for significant number of modest programs
- Test reactors in additional countries
- Responsibility for safe management of waste > 50 disposal programs / repositories

Benefits?

- Economy of scale
 - Safety and security
 - Options for siting
 - Capabilities
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- International support and legislation
 - National political approval and stability
 - Economic case for all participants
 - Agreement on siting process
 - SQEP capabilities
 - High level safety and security
 - IAEA and NPT
 - Common waste treatment and storage approaches
 - Stakeholder engagement and committed support
 - Time
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- Acceptance for supply of fuel for international markets
- Fuel bank
- Fuel leasing
- Common storage facilities / shared disposal facilities ?

- Political and **public** acceptance is key
 - Established large nuclear programs accept waste – UK?
 - Large international repository based on best geology
 - Regional – small / modest programs with common interest



Generations of nuclear energy systems

Generation I



Early Prototype Reactors



- **Magnox**
- Shippingport
- Dresden

Generation II



Commercial Power Reactors



- LWRs: PWR, BWR
- CANDU
- **AGR**

Generation III



Advanced LWRs

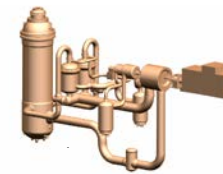


- **ABWR**
- **AP1000**
- **EPR**

Generation III+



Evolutionary Designs

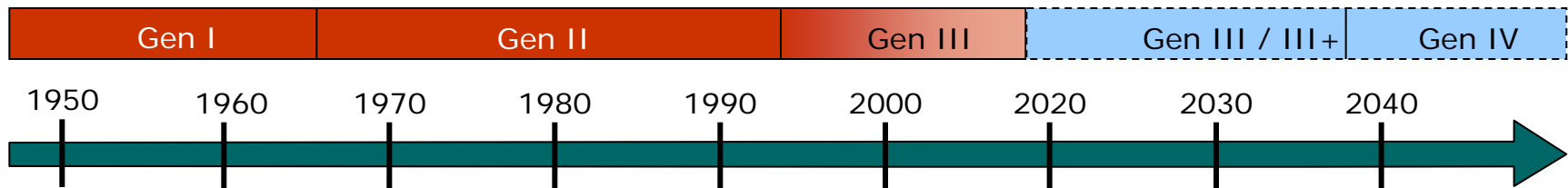


- SMR
- NGNP

Generation IV



- Highly Economical
- Enhanced Safety
- Minimize Wastes
- Proliferation Resistant

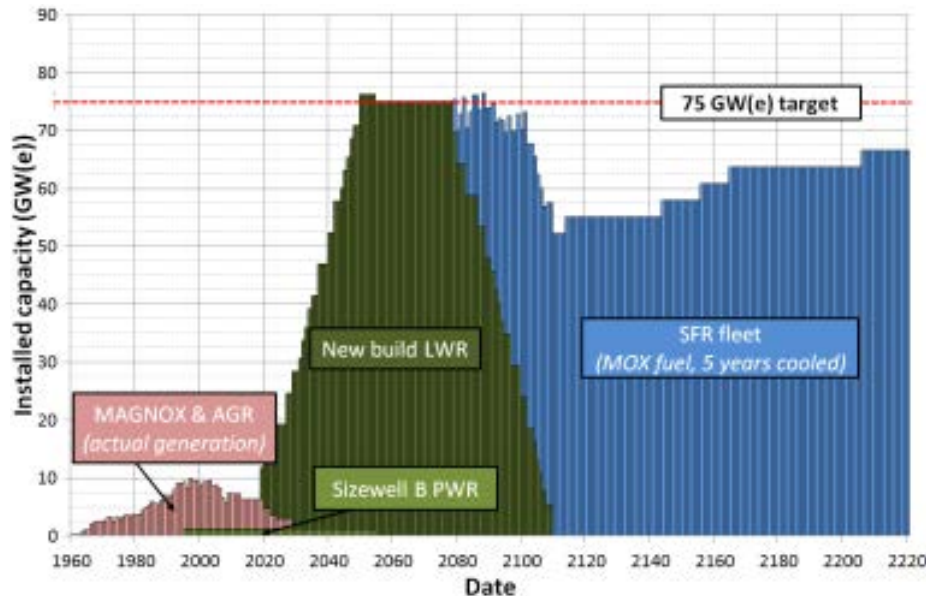


Generation IV systems

- Need for reprocessing
- Major capital investment
- Limited service providers
- Will involve international transport of used fuel
- Return or retention of waste and fissile material



Potential future scenarios



- Fissile material for FR could be in limited supply
- Driver to recycle used fuel
- Value of fissile material exceeds HLW
- Likelihood for international repositories