



Nuclear Growth at Home and Abroad

Building the Next Generation of Nuclear Energy

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The slides that follow are not a complete record of the presentation and discussion

The views expressed in in these slides and the discussion today are mine

My views may not be the same as the views of NERA's clients or my colleagues



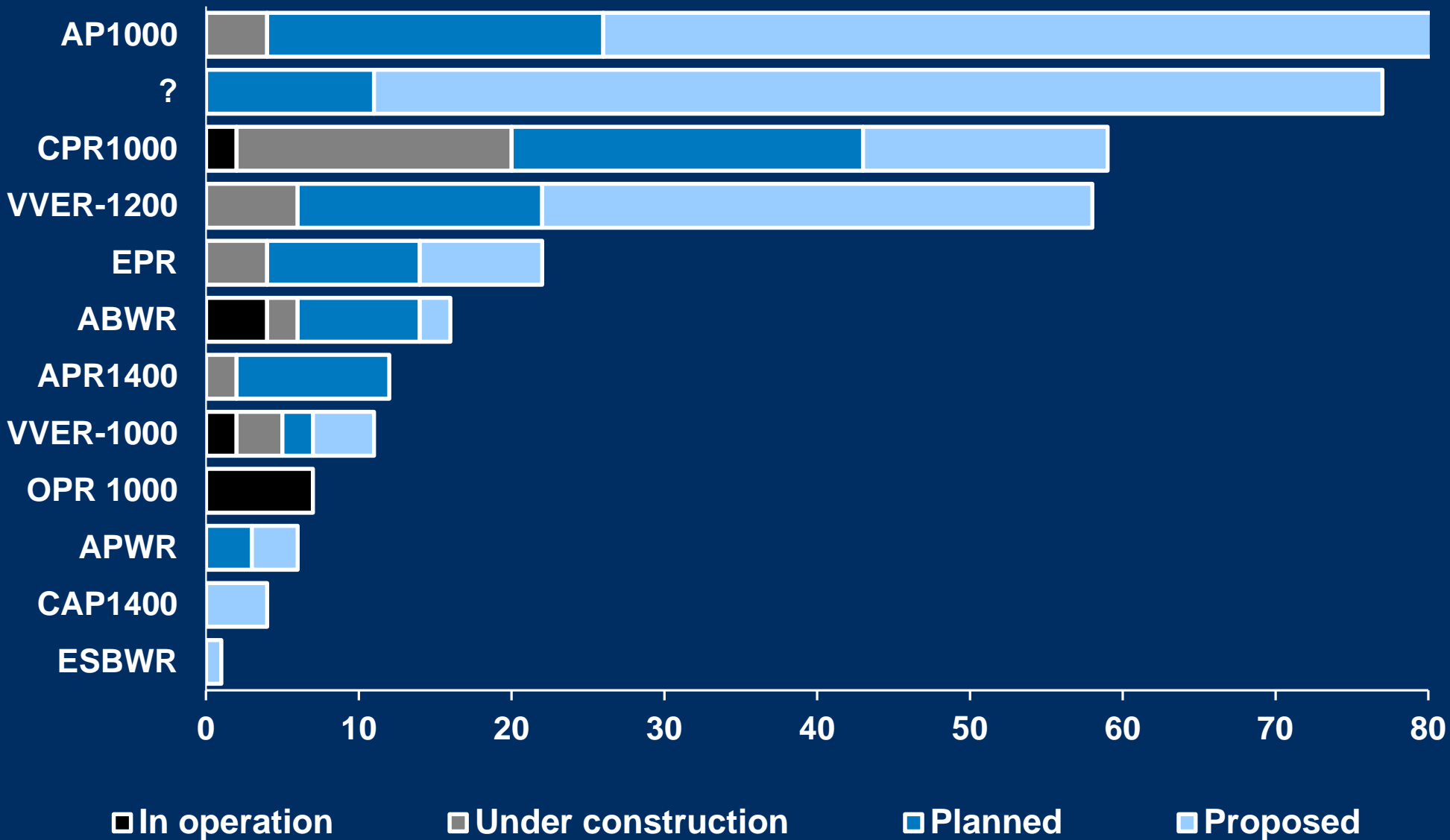
- Global league tables
- Electricity industry & nuclear business models
- Insights

Global nuclear power

Advanced LWR designs



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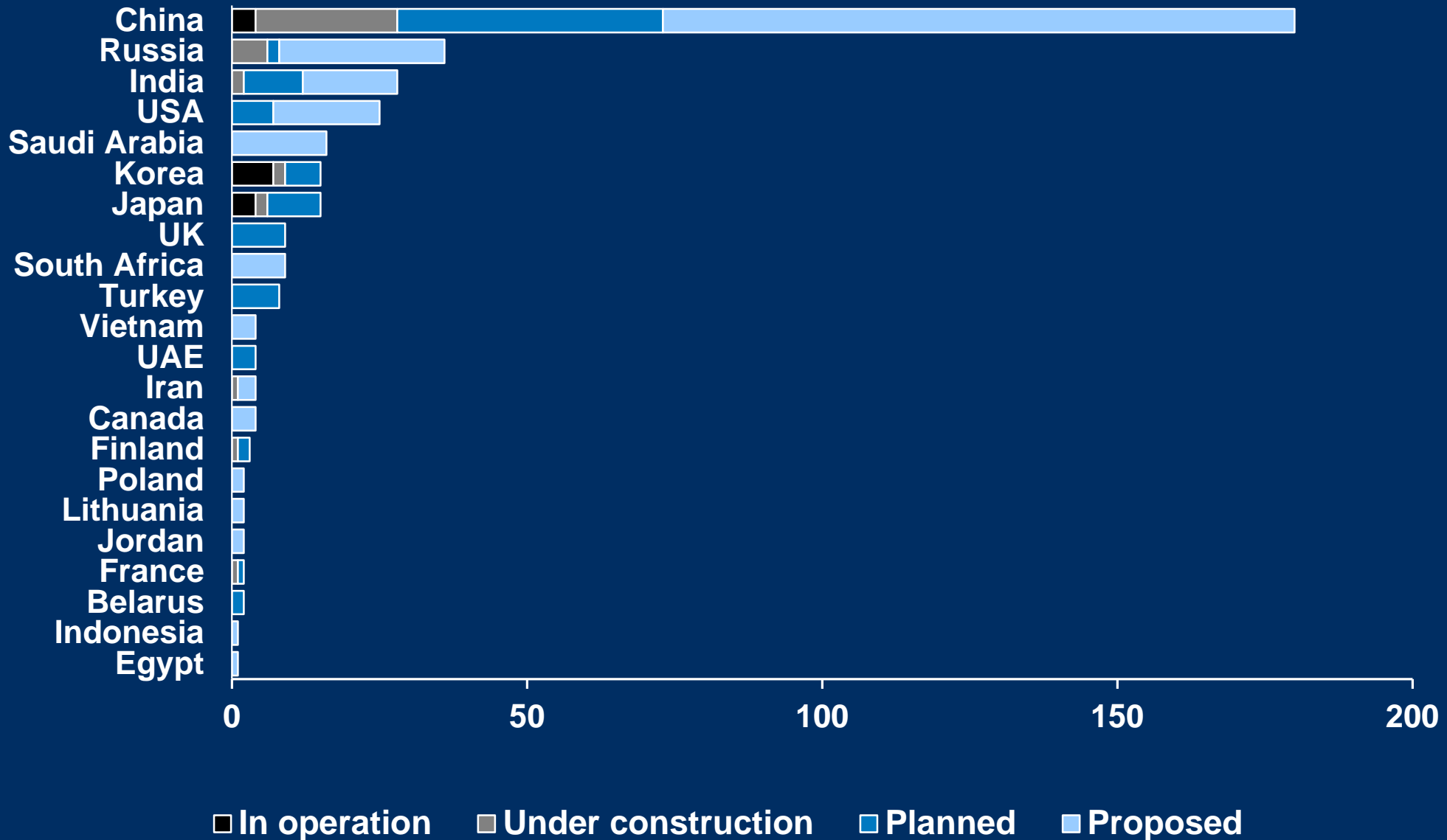


Source: NERA global nuclear power database

Global nuclear power (same data by country)



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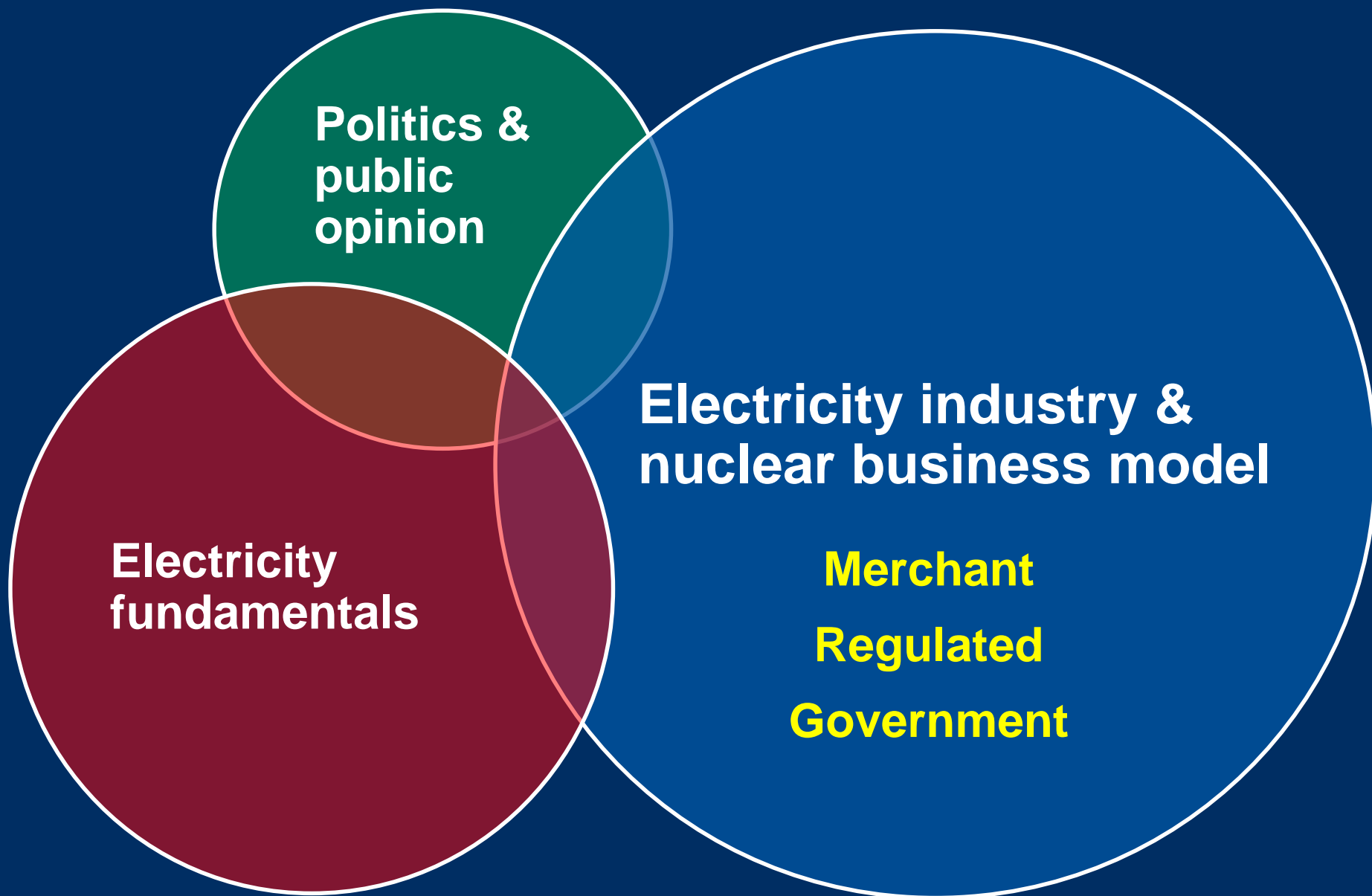


Source: NERA global nuclear power database

Nuclear development factors



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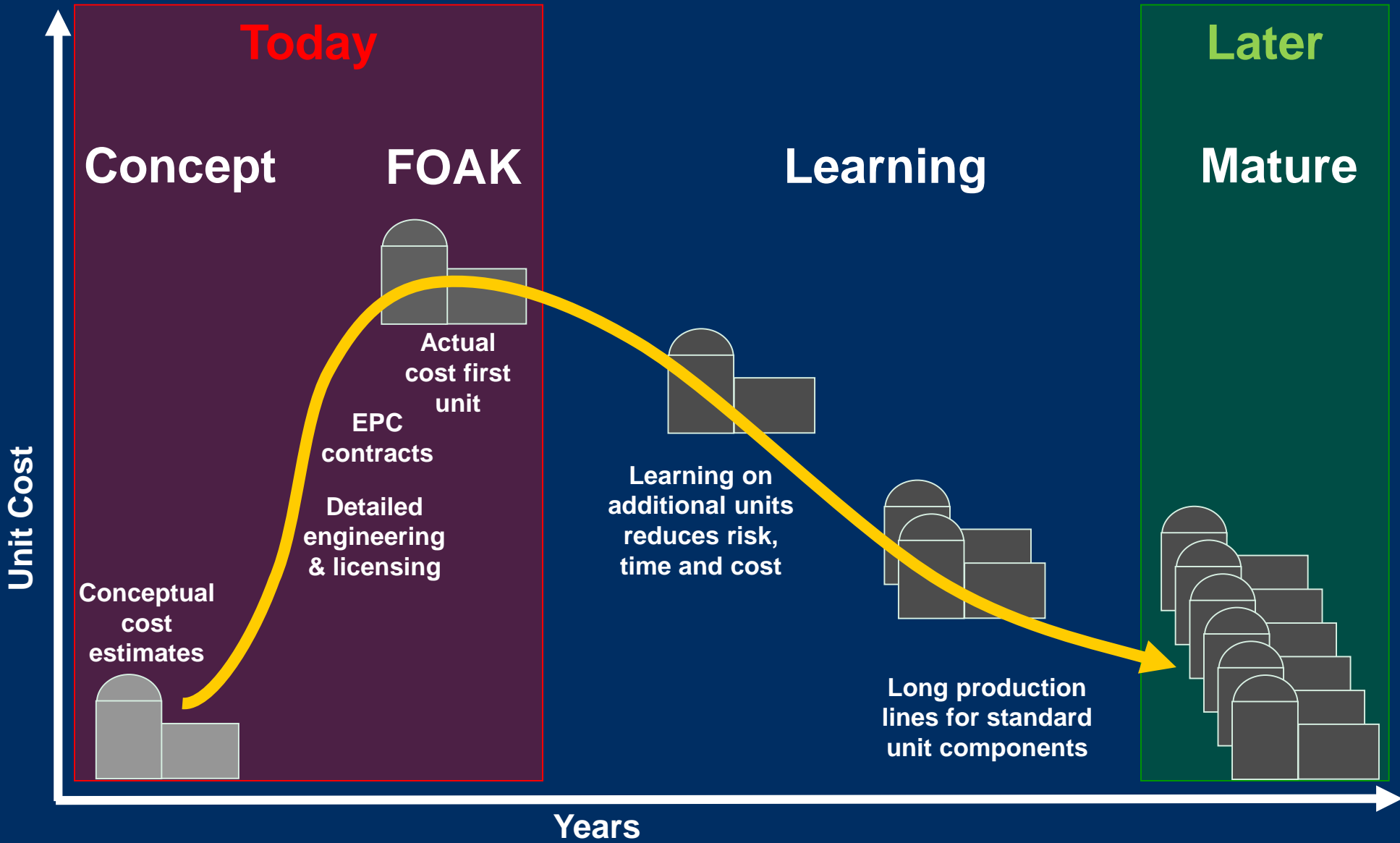




- This is *really hard* – none have been built
- Project *and* market risk assumed by developer
 - Project cost & completion risk - before COD
 - Project availability and market price risk - after COD
- Project finance approach strained by
 - High capital intensity and large project size
 - Long development and construction period
 - Lack of revenue certainty
 - NPV / IRR / payback period for investors/lenders



FOAK issues add difficulty



Regulated nuclear plants



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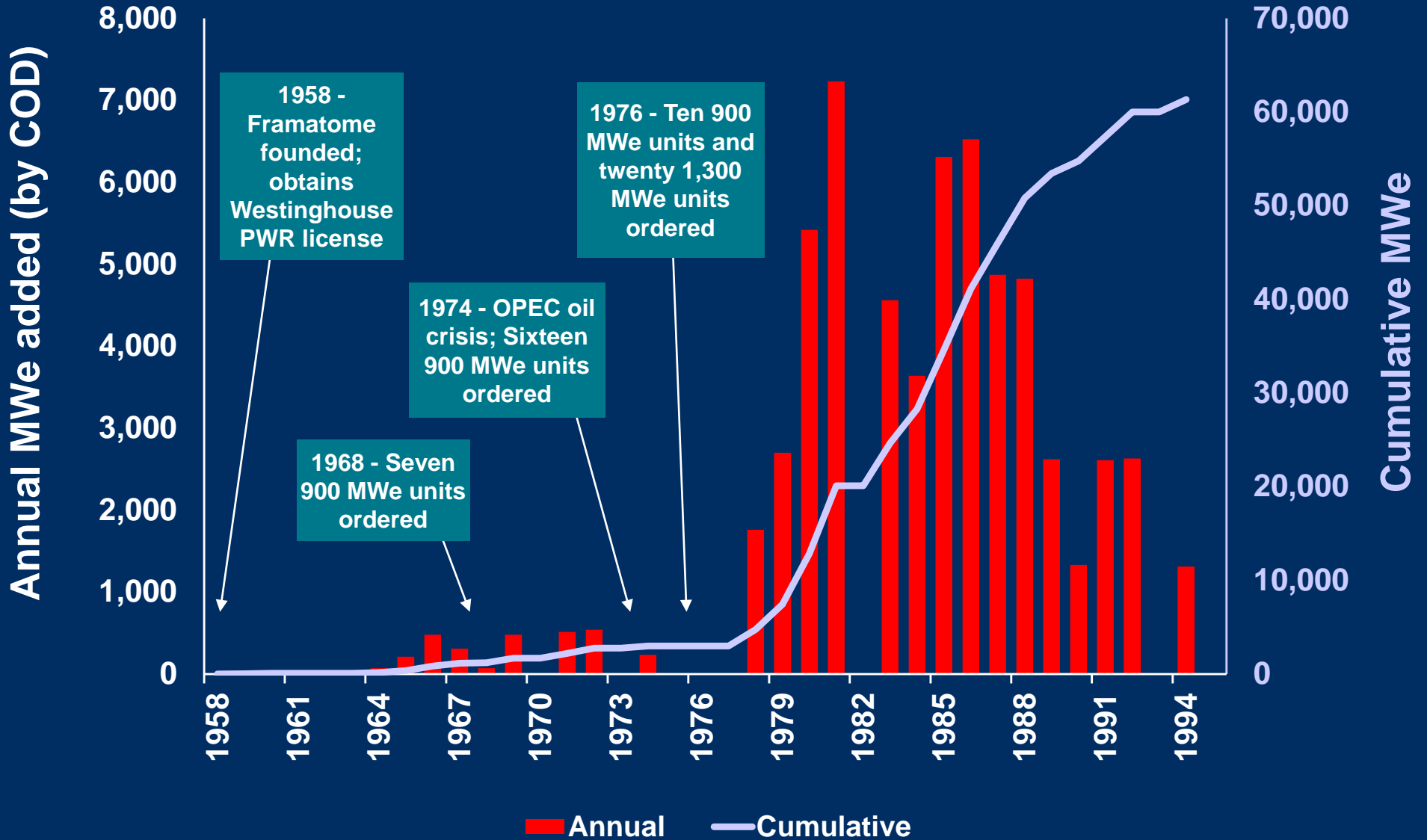
- Ratepayers take most project ***and*** market risks, with oversight by regulator (long-term view)
- But not all risk - in 1980s, *ex post* prudence reviews shifted project (and market) risks to shareholders
- Regulatory approach in US reflects lessons learned in earlier nuclear cases
 - Resource planning / IRP processes
 - Regulatory oversight of projects



- Government assumes project and market risk
- **May** mean faster decision-making
- Big purchases by creditworthy buyer may mean strong bargaining position with vendors
- Buyers want power **and** non-power outcomes
 - Develop local jobs and skills
 - Develop industrial capability / join global supply chain
 - Implement energy / climate change policy



French nuclear fleet



Source: NERA global nuclear power database

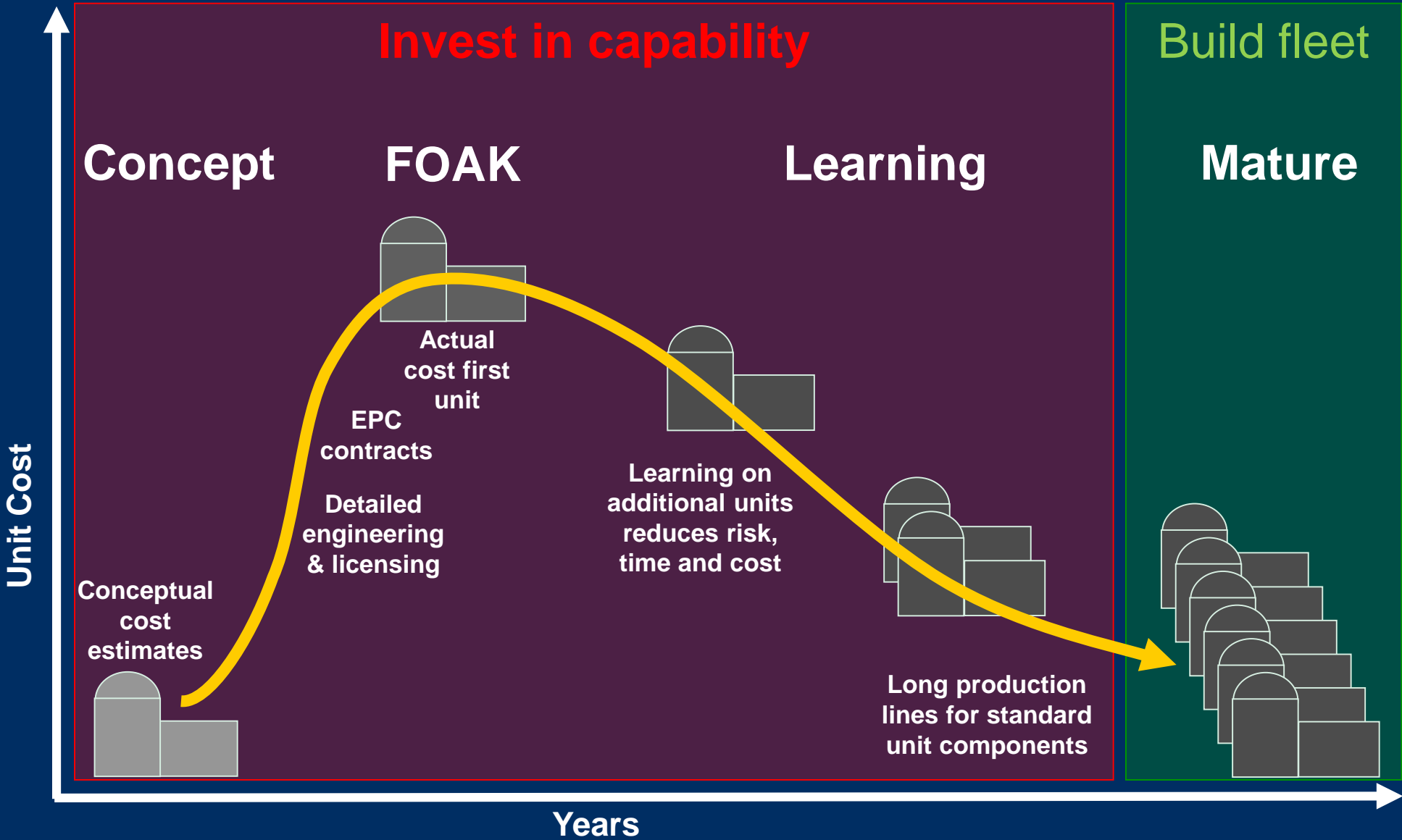
National nuclear power champion

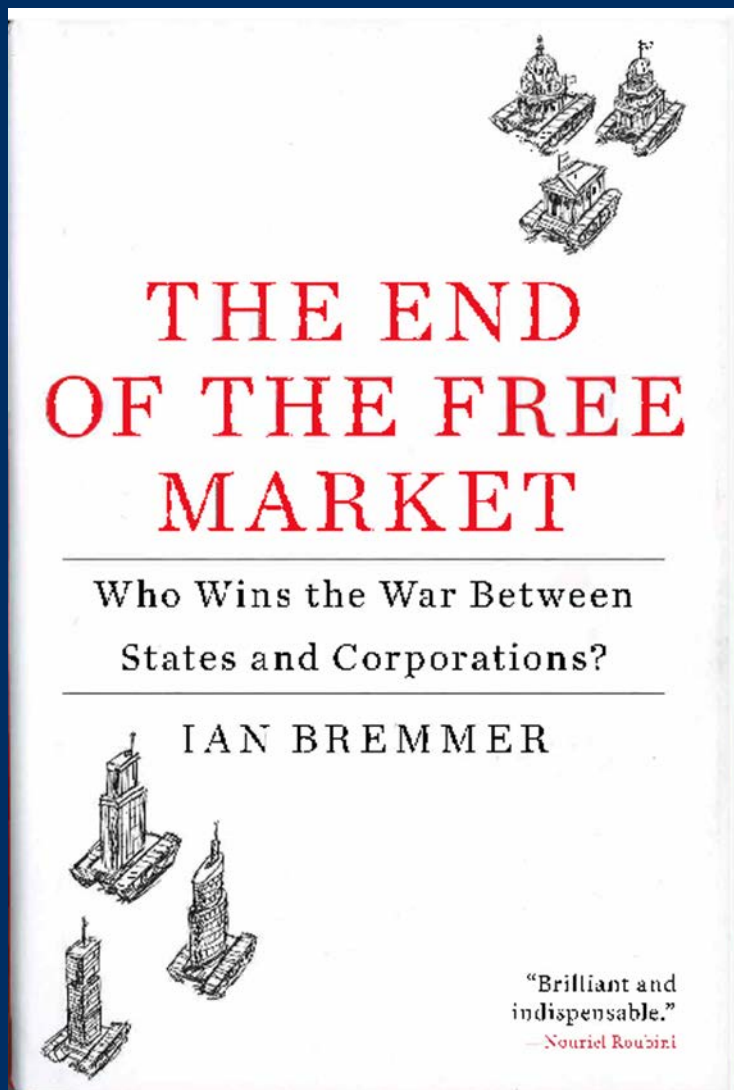


- Decide to adopt nuclear power
- Establish state-owned nuclear entities
- Acquire nuclear technology
- Build nuclear plants for government utility
- Gain experience and build supply chain
- Compete in global market
- Act as vendor, investor, maybe even operator



National nuclear fleet





- National Corporations & State-Owned Enterprises
- State domination of markets over long-term
- Gov't - to - Gov't deals with multiple objectives
- Strategic objectives more important than profitability



- New nuclear outside US; large government role
- Vendors have big nuclear tenders on horizon
- Merchant nuclear needs low project cost/risk, good electricity fundamentals, and capital
- National nuclear vendors have increasing role
- Buyer need for non-power objectives and investment capital may mean G - G deals



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