

# **Energy Security, Innovation and Sustainability**

## **What is the Optimal Policy Focus?**

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**GM Global Strategy and Planning**

**Energy Security, Innovation & Sustainability Initiative**  
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imagination at work

# Global dynamics ... a complex picture for energy



**Rapid economic growth continues ...**  
China/India/ME



**Rising capital costs & skilled personnel shortage**  
...  
rising cost structure of energy supply



**Gas & oil prices remain high ...**  
interest in alternatives continues to grow



**Energy security concerns rise ...**  
infrastructure investment in all areas



**Global warming concerns force action ...**  
including technology incentives

# The Challenges Demand New Technology Solutions

- High fuel prices ... require higher efficiency
- Energy security ... requires more diverse solutions
- More stringent environmental standards ... require technologies with lower emissions



# GE is Committed to Technology Innovation

## Next generation programs for gas, steam, wind, nuclear, biomass



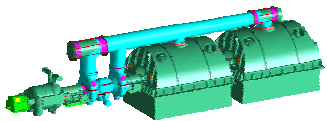
### Advanced combined cycle

- ✓ Next air-cooled gas turbine ... 20% fewer parts, lower cost, +2 pts. efficiency



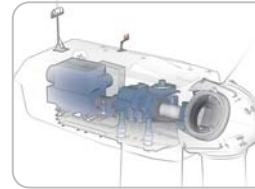
### Nuclear

- ✓ ESBWR ... certification with NRC in '07 ... plus ABWR opportunities and expanding services in PWR



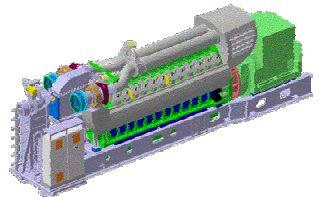
### Steam turbines

- ✓ Higher power, lower cost, +1 pt. efficiency, nuclear product



### Wind

- ✓ Improving 1.5MW reliability to 98% ... 2.5MW design underway



### Jenbacher J624

- ✓ First 24 cylinder engine ... extending range to 4.2 MW



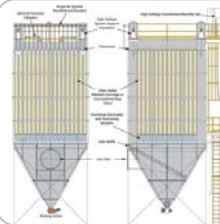
### Services

- ✓ Environmental Services launches first pulse detonation horn



### IGCC

- ✓ Cleaner coal alternative ... expanding coal envelope while improving efficiency



### IR&D technology

- ✓ Wind blade technology center ... vanadium & sulfur removal ... membranes ... combustion

# Policy Measures Are Critical to Driving Technology

Governments Can Support Technology Diffusion through

## Push & Pull Strategies

Environmental Regulation  
Administrative Capacity  
Tax Incentives  
Subsidies

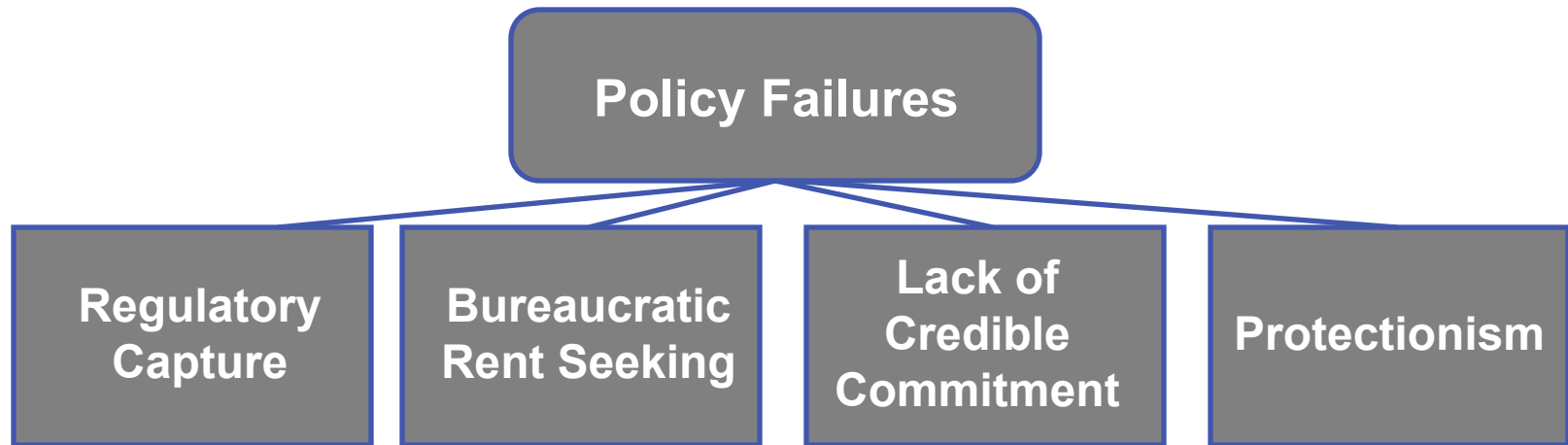
**Demand PULL**

**Supply PUSH**

Export Promotion  
Supply Market Information  
Diplomacy/Engagement  
Finance/Subsidies

# But There Are Also Risks...

## Government Intervention Can Distort Markets



- Firms take control of regulators to secure their narrow interests- e.g. blocking carbon controls

- Government officials pursue their own interests over the public good in regulating carbon

- Firms under invest due to a regulatory environment marked by inconsistency or very short time horizon- e.g. US tax credits for wind energy

- Domestic interests secure subsidies or tariffs that restrict free trade in biofuels and other clean technologies

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