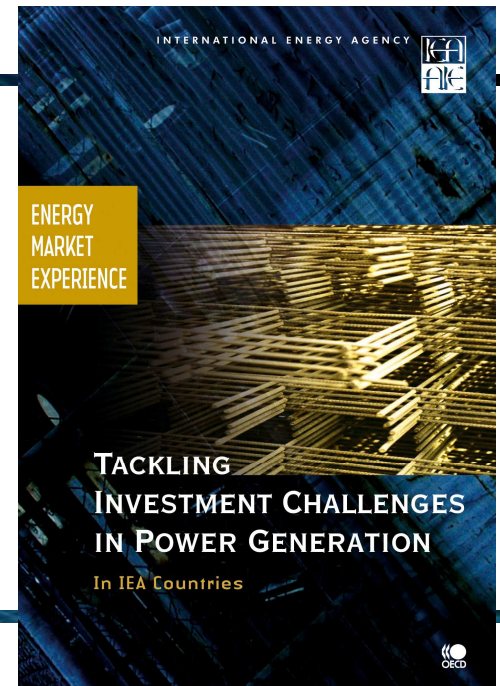


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Investment  
Challenges in  
Power  
Generation**  
In IEA Countries

# UNECE Energy Week – Electricity Forum *Fostering Investment in Cleaner Electricity Production from Fossil Fuels in the UNECE Region* 27 November 2007, Geneva

## **Tackling Investment Challenges in Power Generation in IEA Countries**



**Ulrik Stridbaek**  
**International Energy Agency**

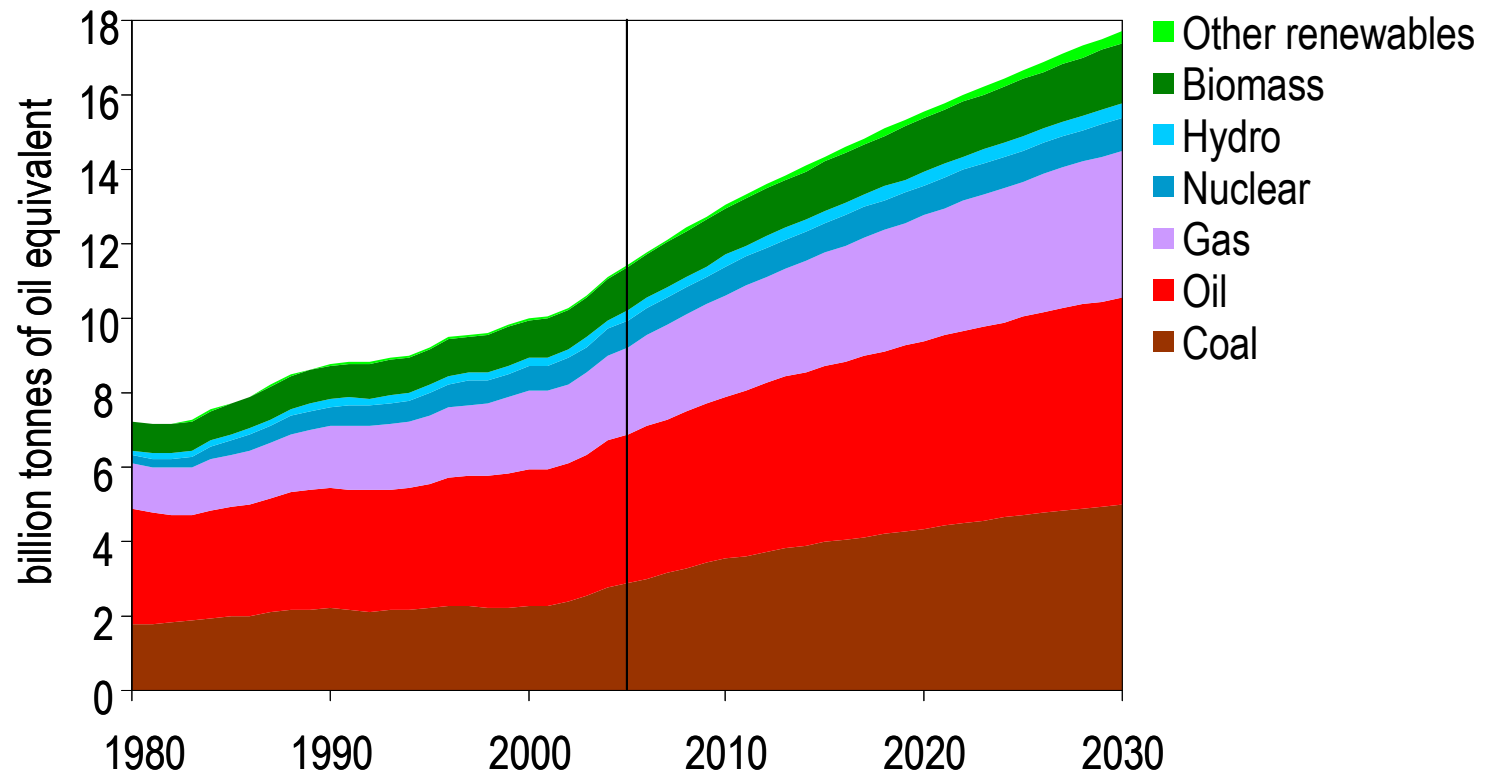
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# Increasing global primary energy demand towards 2030

## World Energy Outlook 2007: Reference Scenario



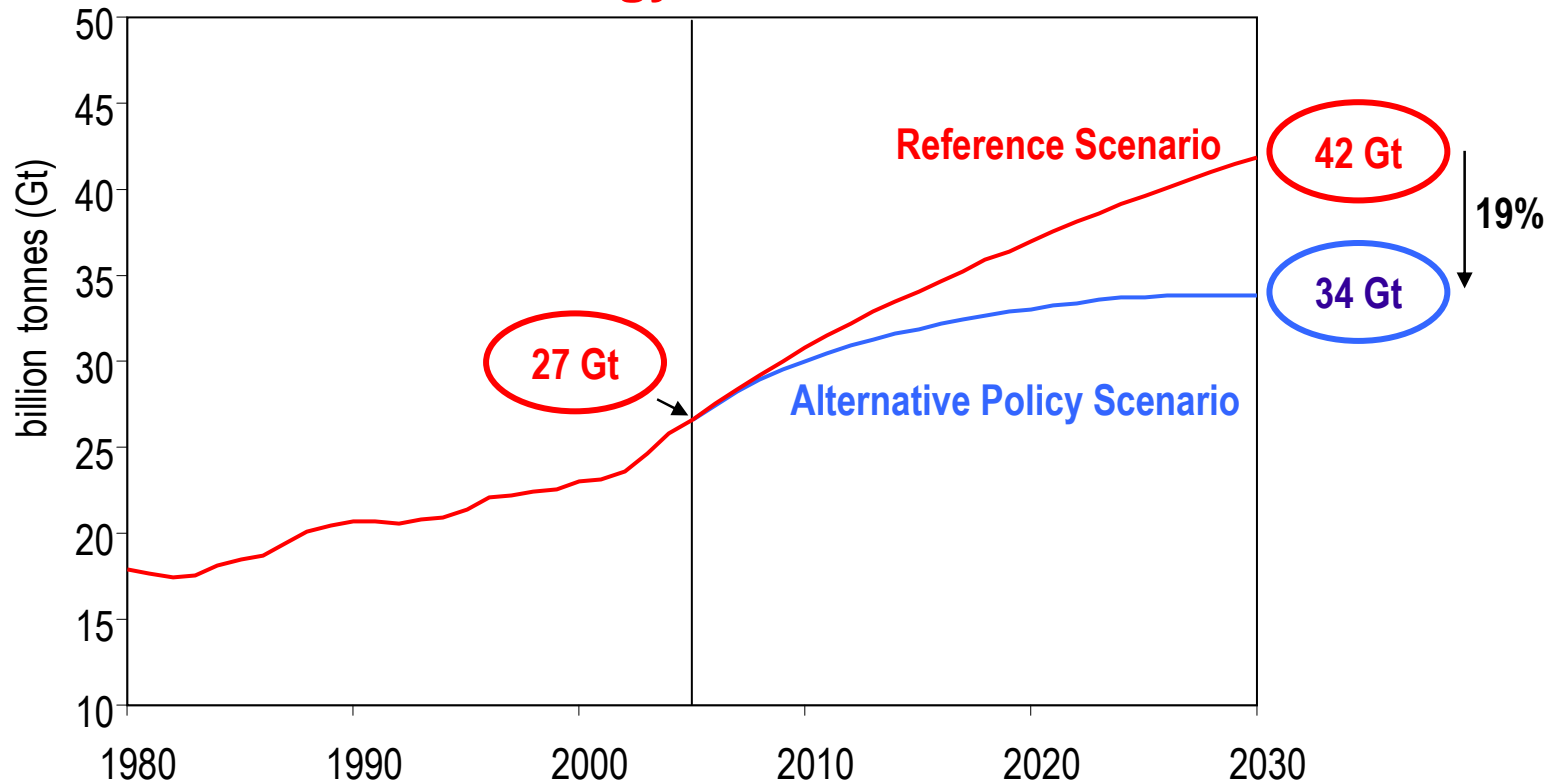
- Global demand grows by more than half over the next quarter of a century, with coal use rising most in absolute terms



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# Increasing global energy related CO<sub>2</sub> emissions

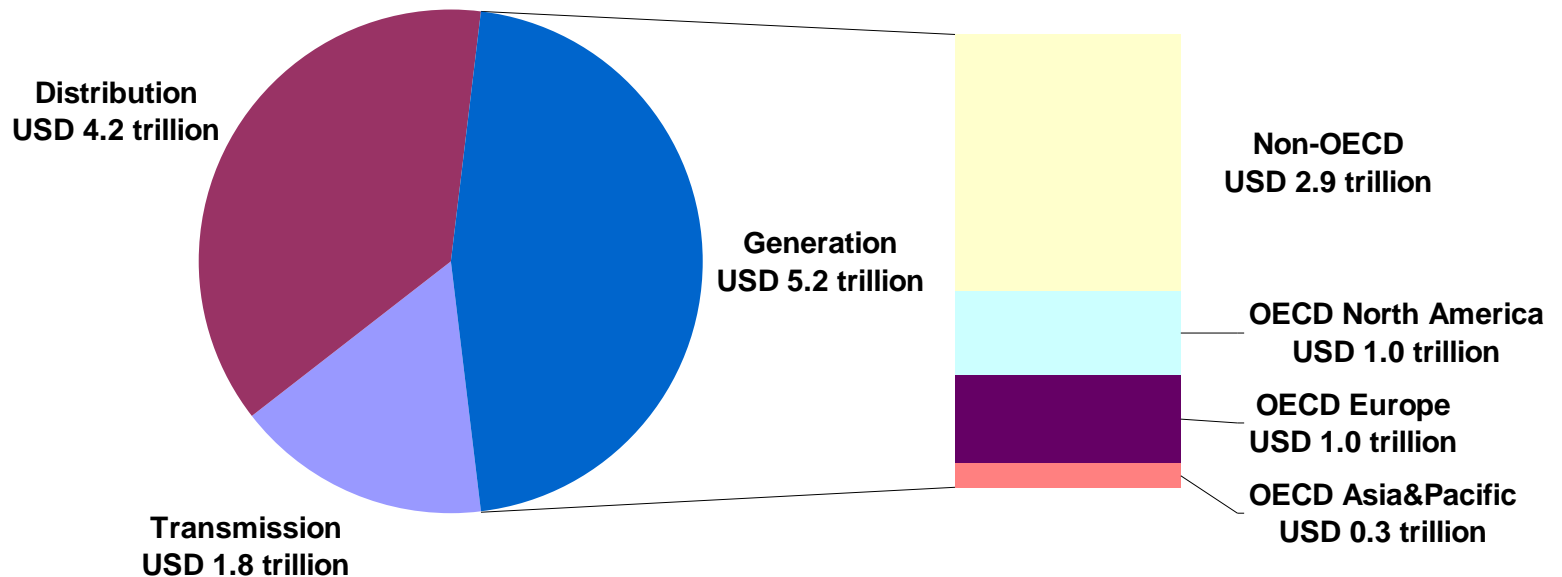
## World Energy Outlook 2007



- **Global emissions grow less than half as fast as in the Reference Scenario, stabilising in the 2020s**

# Global energy investment requirements

## WEO 2006: Reference Scenario Electricity sector investment requirements by 2030



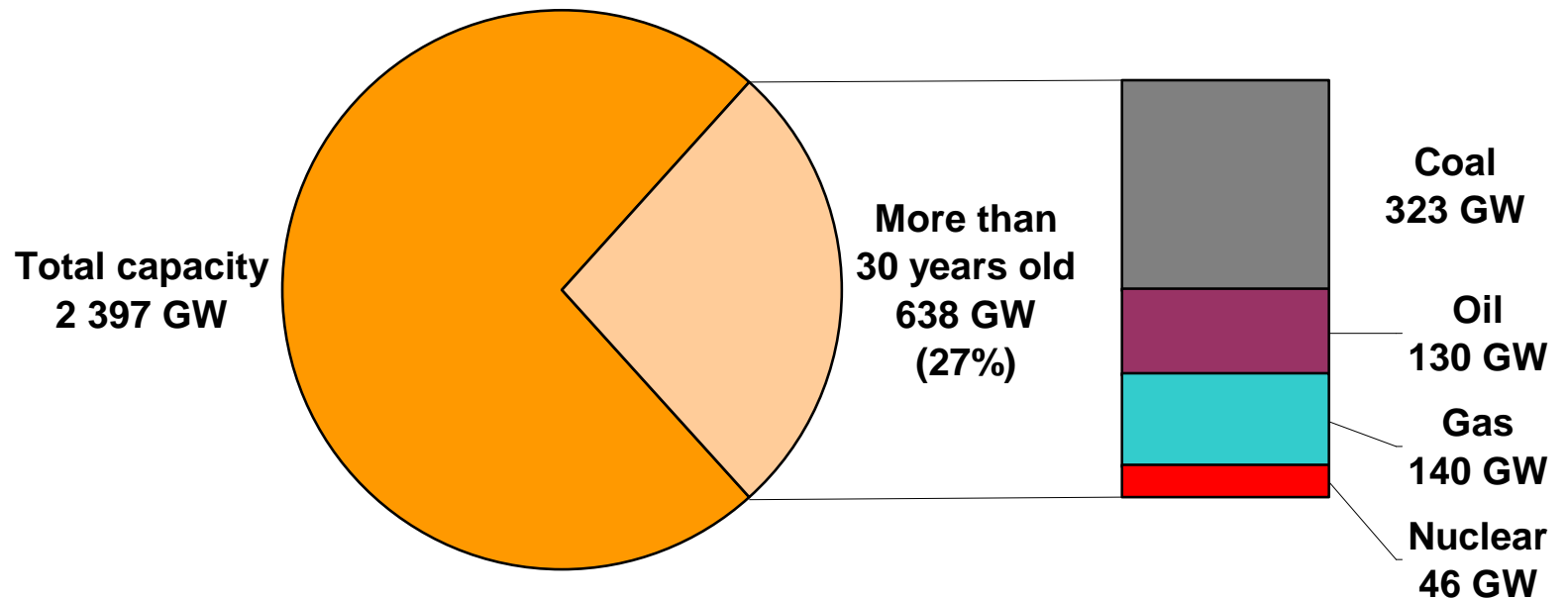
- Global investment requirements in the electricity sector by 2030 at USD 11 trillion



# **Heavy investment cycle looming in power generation**

- **Demand increasing**
- **Liberalisation delayed investments**
  - **Improved use of existing resources**
- **Need for replacement**
  - **Ageing power plants and tight environmental controls**
- ➔ **Risk of under-investment**
  - **Great uncertainty breeds considerable risks for investors**

# Power plants in IEA countries are ageing



Source: IEA and Platts

- Age of existing plants, technological development, tighter environmental controls, and nuclear phase out policies drives the need for replacements



# Replacements and increasing demand drives investments

## World Energy Outlook 2006

### Projected investments in OECD by 2015, GW

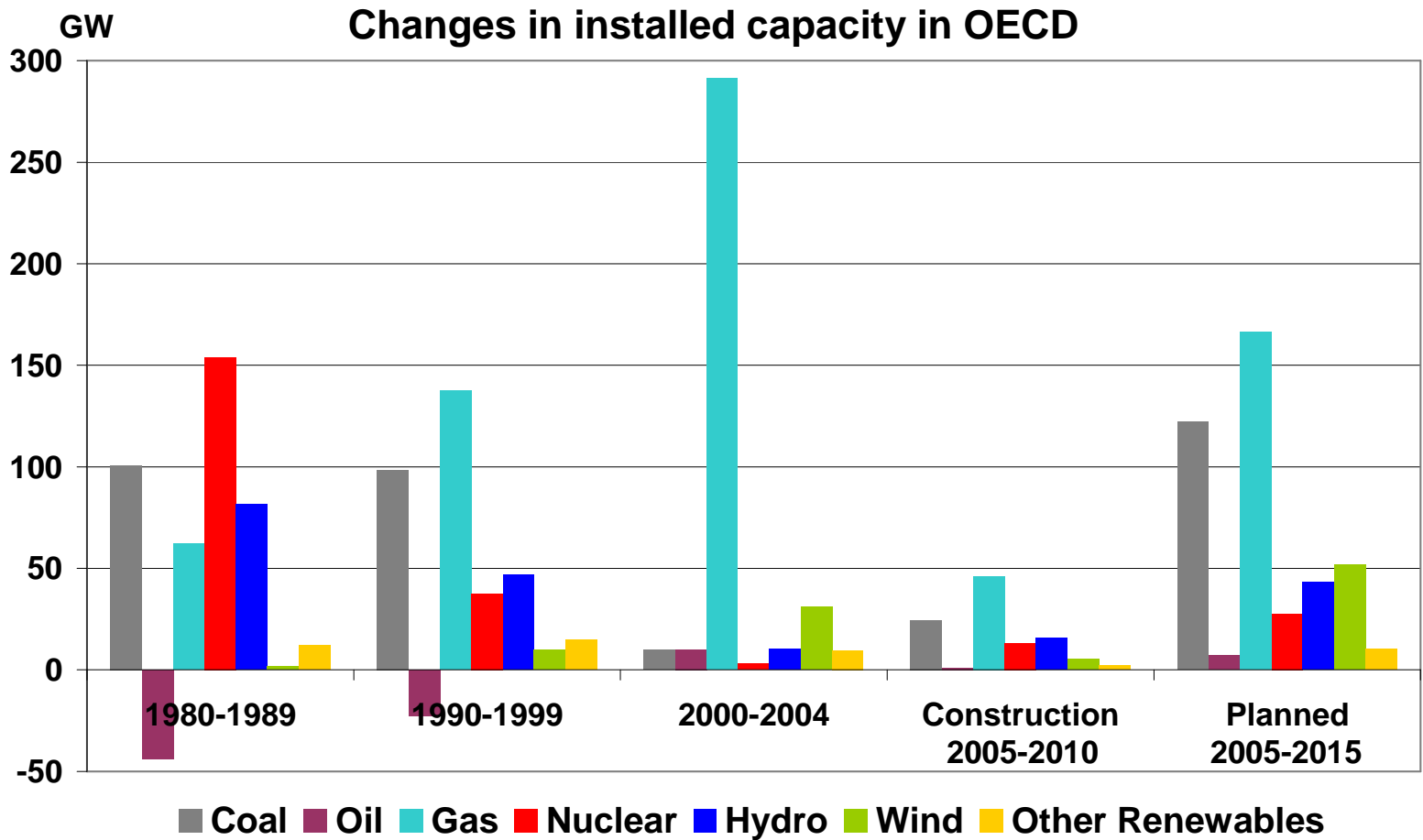
	<i>Existing (2004)</i>	Demand increase	Replacement	Total investment
Reference scenario	2360	466	207	673
Alternative policy scenario	2360	357	209	566

- Investments in OECD corresponding to at least 25% of existing capacity needed by 2015

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# Gas-fired generation dominates but increased focus on coal



Source: IEA and Platts



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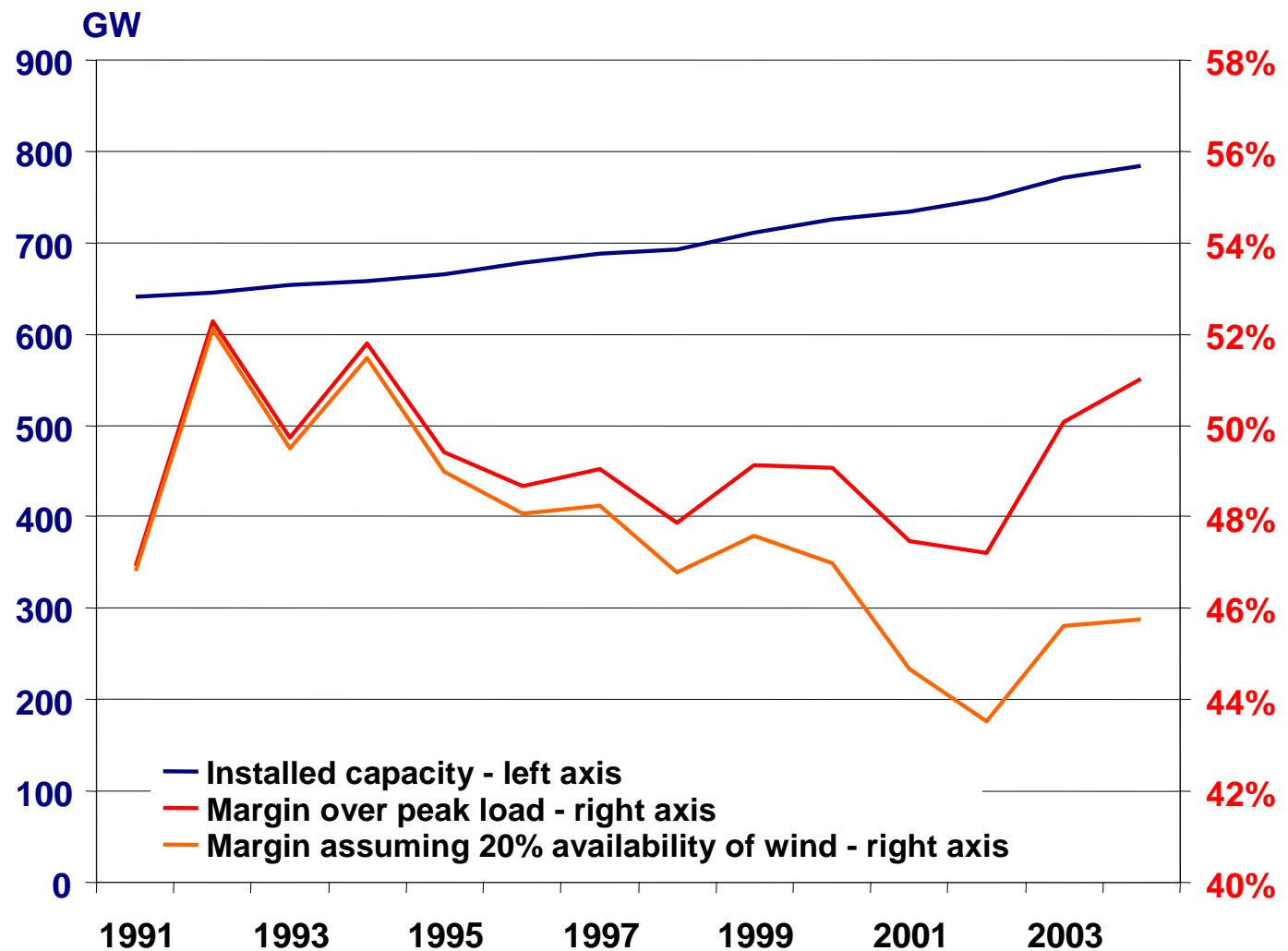
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# Margins of available capacity in Europe are decreasing



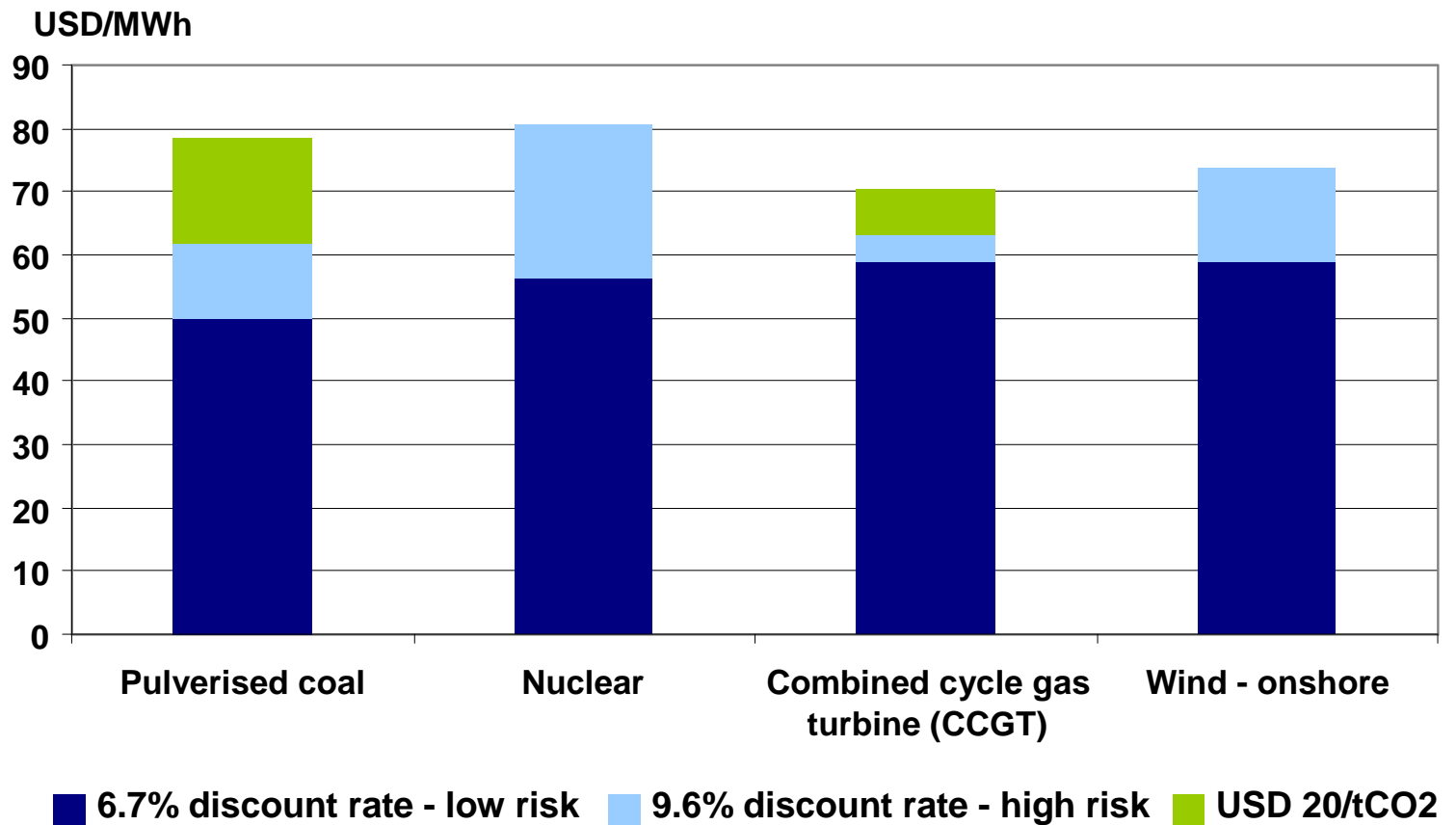
Source: IEA statistics

# **Now is a window of opportunity**

- **Opportunity for cleaner electricity**
  - **Investments today will stay for 30-50 years**
- **But investors need firm policy signals**
  - **Put a price on CO<sub>2</sub>**
    - **Credible, long-term, market-based support mechanisms for clean technologies**
  - **Avoid picking winners**

# Policy signals decisive for costs and choice of technology

## Levelised costs

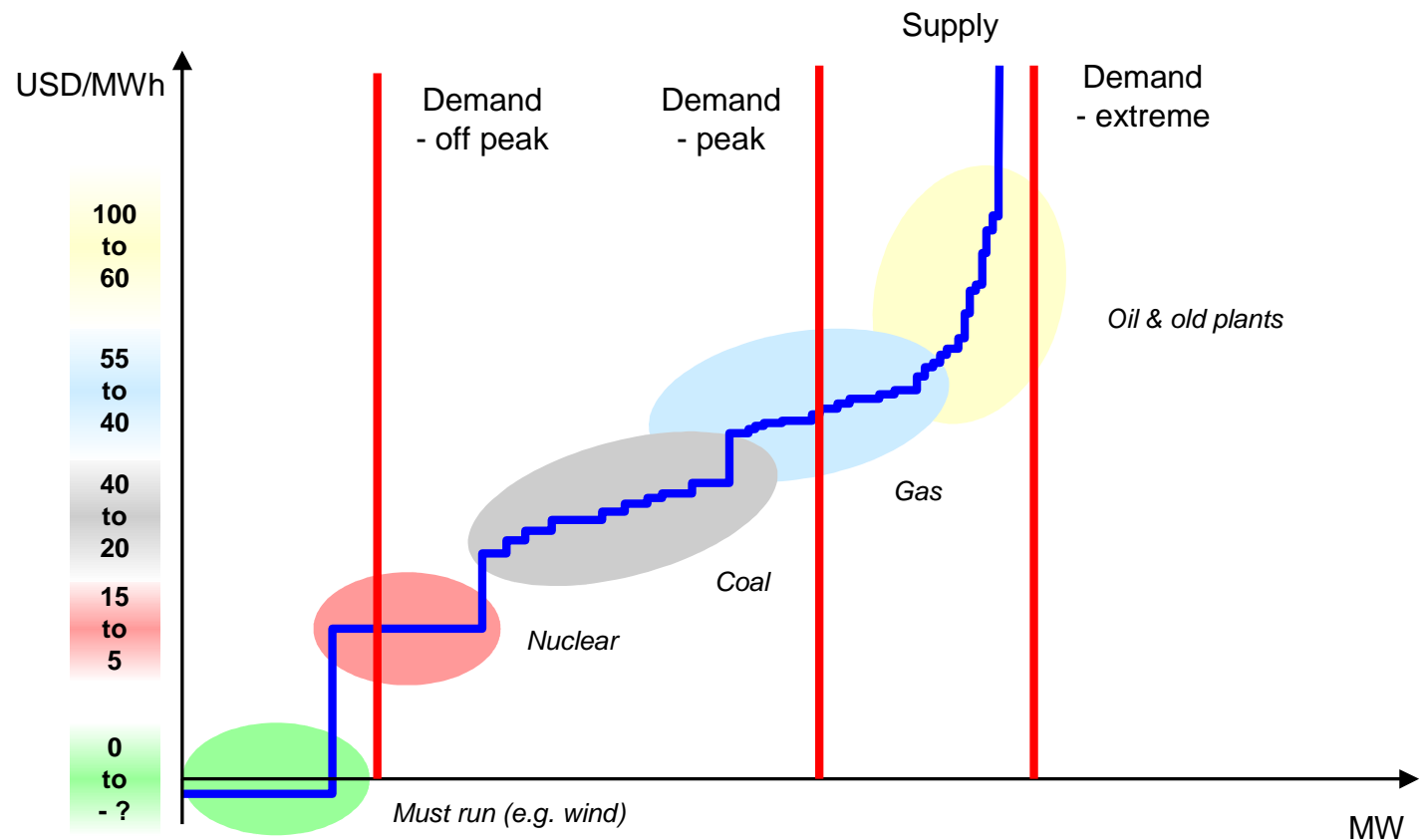


# **Cost reflective prices are the corner stone of efficient market response**

- **Establish competitive market framework**
- **Contracts and competition regulation protects consumers**
  - **Refrain from price caps and market interventions**
- **Capacity measures are last resort**
  - **Capacity markets proven poor medicine**
  - **Transitional arrangements may be necessary**



# Marginal costs determine the price in competitive markets



- Decentralised decision making in competitive markets is a strong instrument to ensure optimal dispatch
- Lack of price elasticity on the demand side may be the critical market failure for a robust price settlement at all times

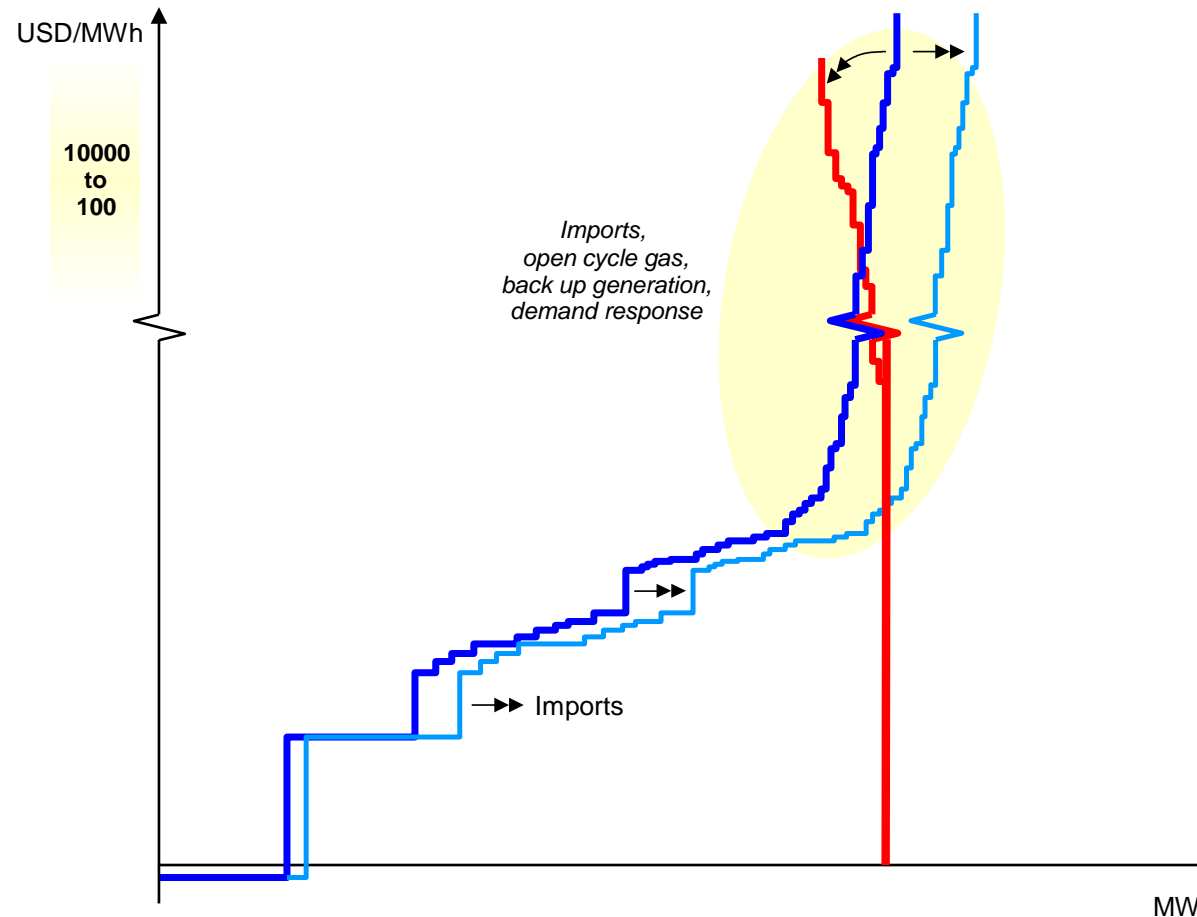
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# Flexibility is critical for market clearing in tight situations



- Cost reflective pricing creates incentives for flexible resources to meet peak-load particularly in situations of scarcity
- Price caps and other market intervention mute incentives

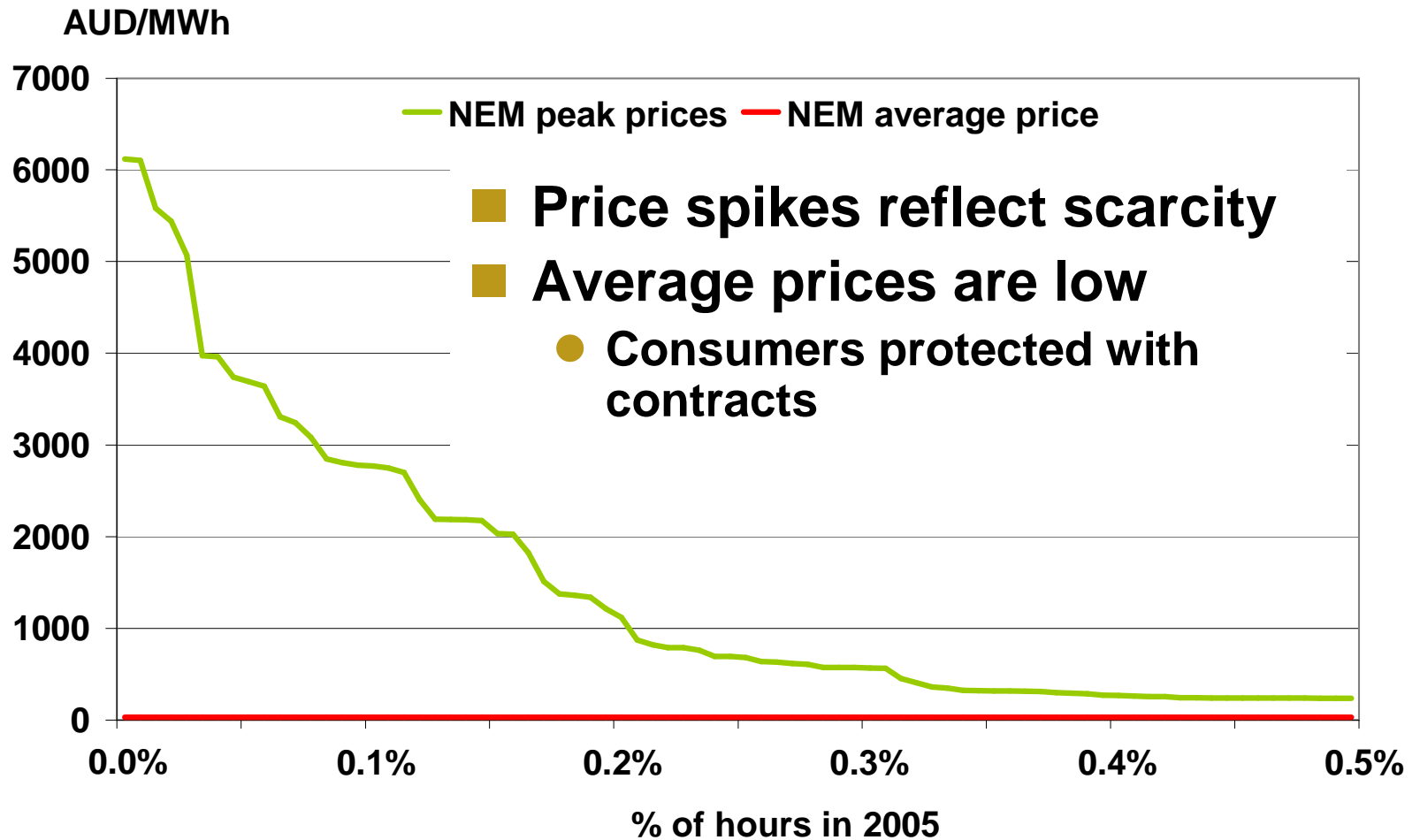
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# Cost reflective prices triggered critical investments in Australia



# Key Messages

- **New investment cycle => a window of opportunity**
- **Government action is urgent**
  - **Implement competitive framework for cost reflective price signals**
  - **Improve regulatory predictability**
  - **Faster licensing procedures needed**
- **Short-termism in policy leads to short-termism in investor response**



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**Thank you for your attention!**

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