

# Financing The Transition To A Low Carbon Economy

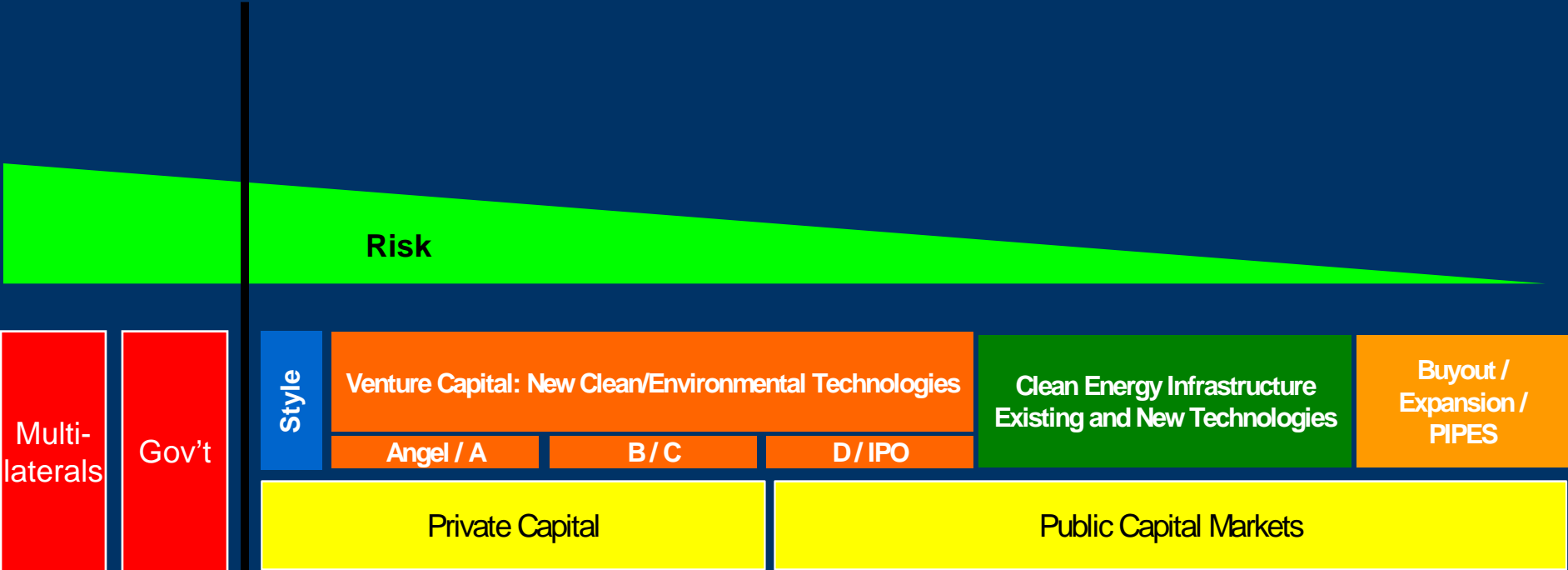
**American Response to Climate Change  
Conference  
June 2008**

**Paul Ezekiel  
Global Head of Carbon Trading**

# Introduction

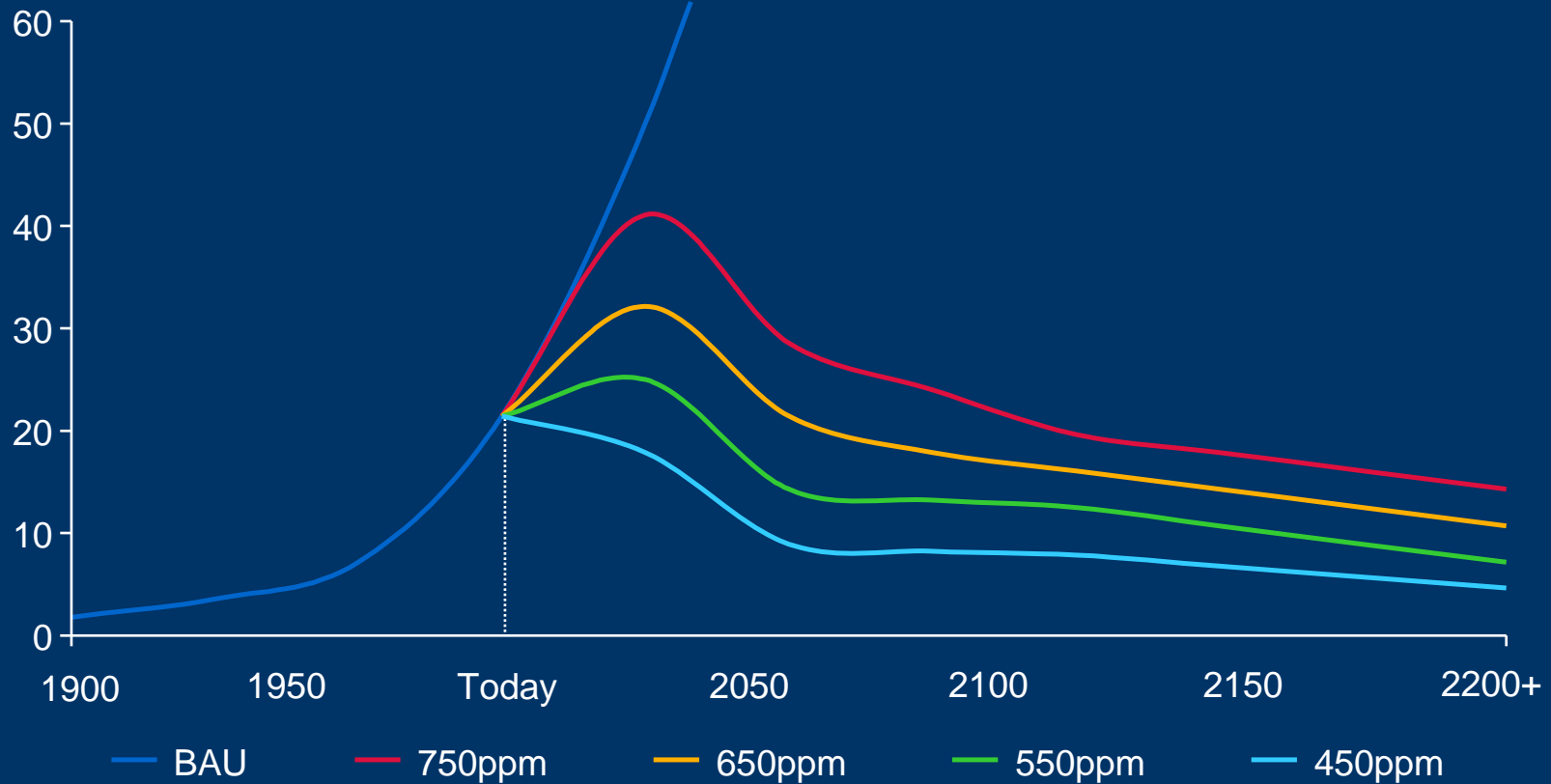
- ▶ Decarbonizing the economy will require disruptive capital flows
  - A fundamental restructuring of energy infrastructure
  - In face of significant demand growth
- ▶ Capital markets are very efficient at distribution of risk
  - Differing investor appetite
- ▶ Early stage Carbon markets are relatively liquid
  - \$70b
  - But is a “precursor market”
- ▶ How de we create a financing framework?

# Stages of Investment



# Global emissions need to fall dramatically

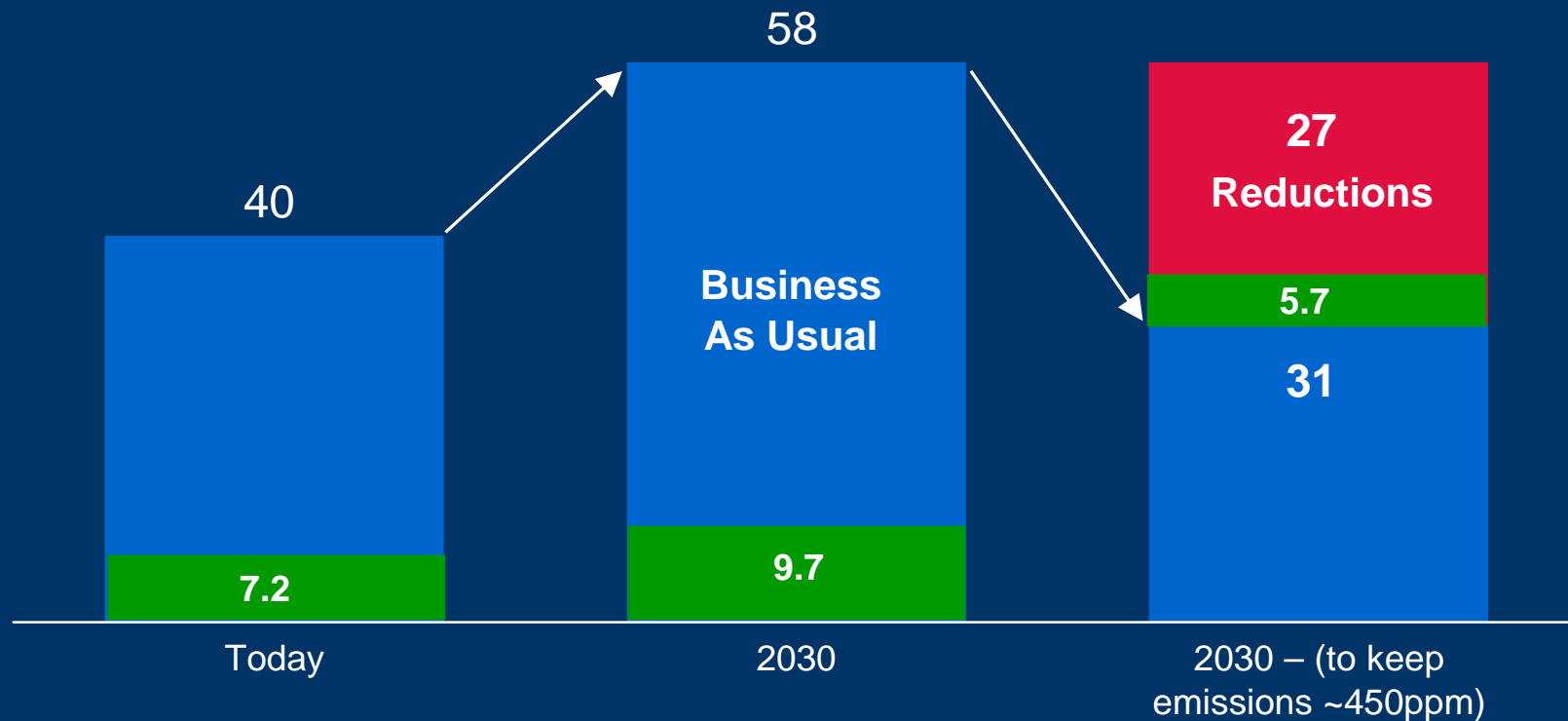
Global Emissions From Fossil Fuels  
Gt CO<sub>2e</sub> / Year



Source: Edmonds, Wise, Wilson, Et al.

# Stabilizing emissions will require substantial global reductions

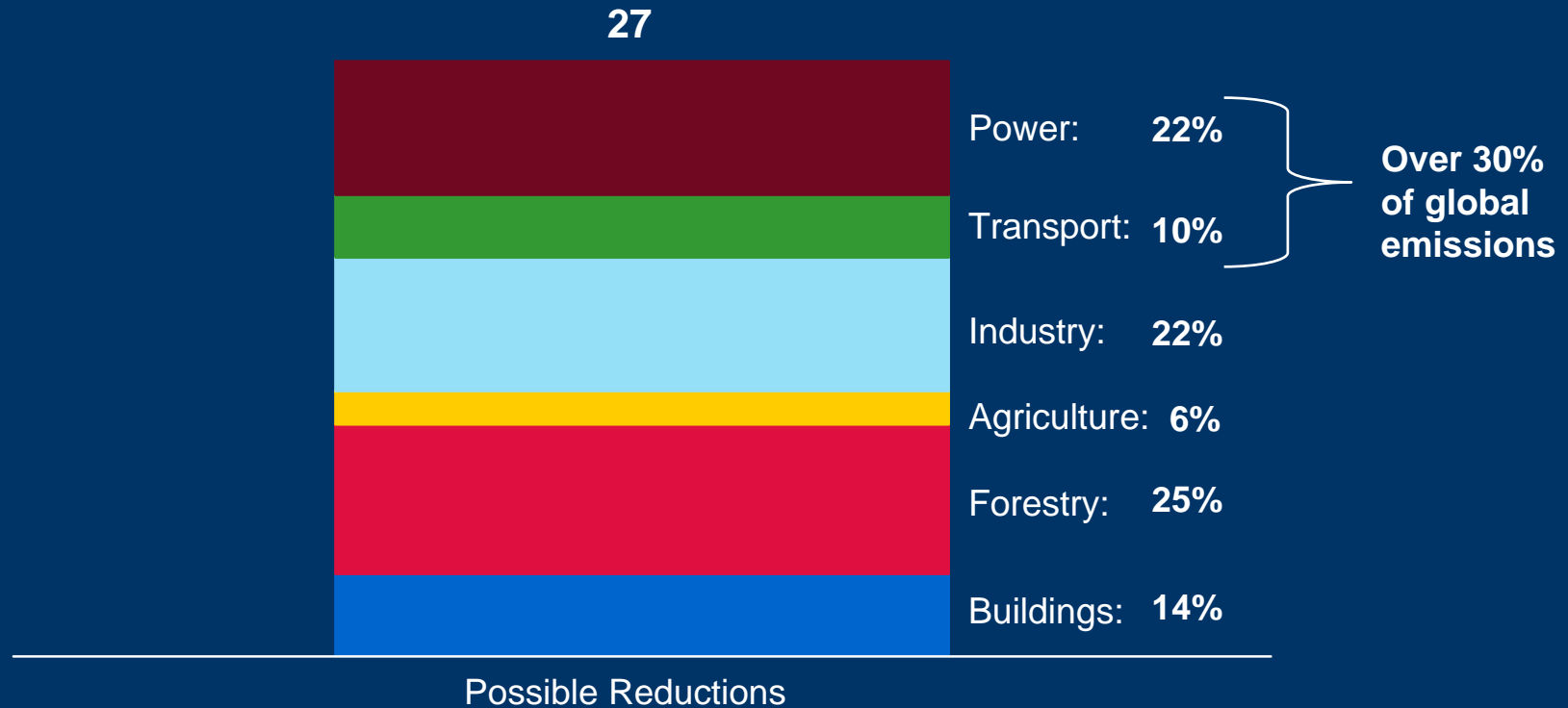
Gt CO<sub>2e</sub> / Year



Source: IEA

# Reduction Opportunities by Sector

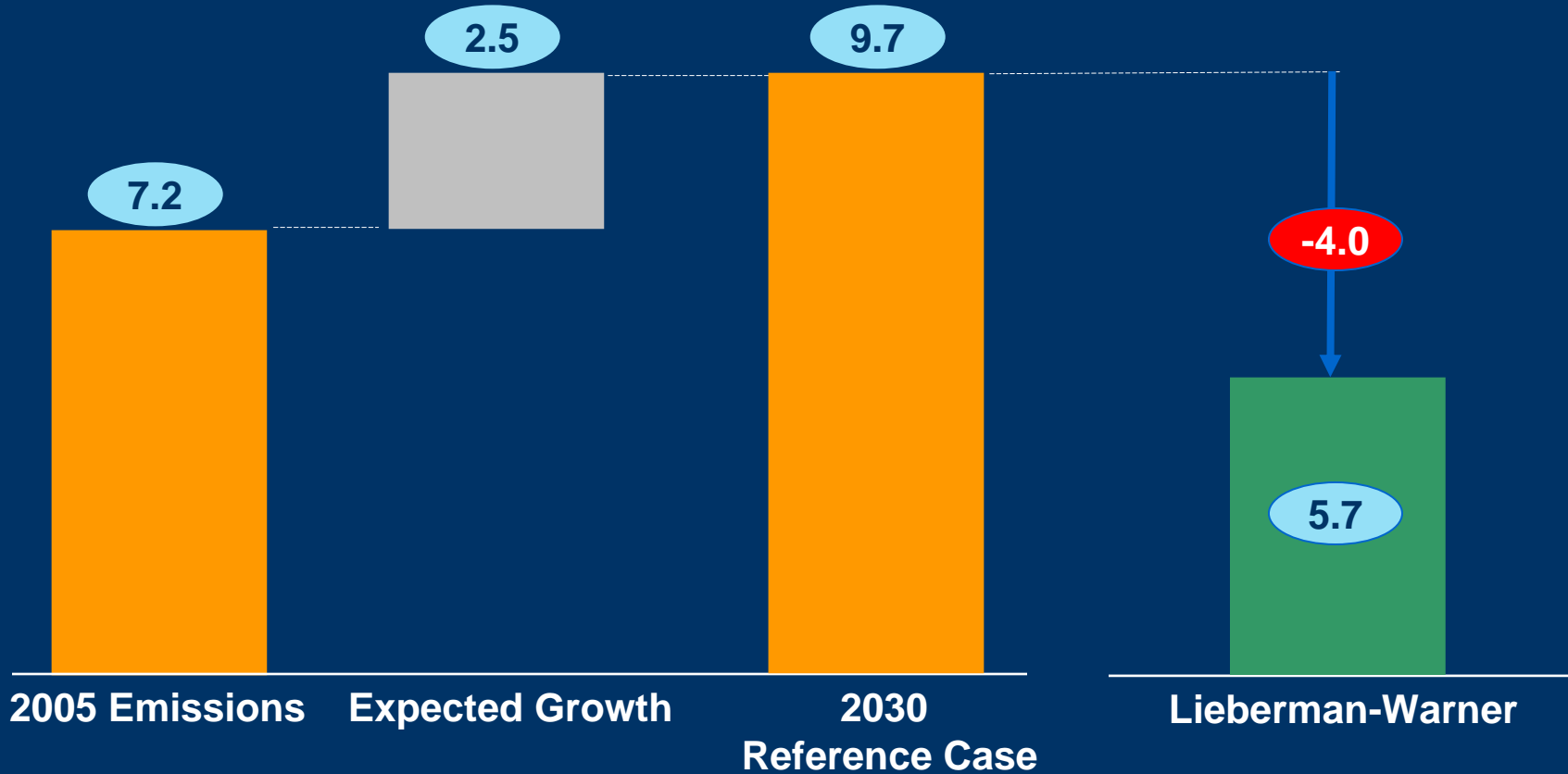
Gt CO<sub>2e</sub> / Year



Source: IEA

# U.S. Emissions Profile

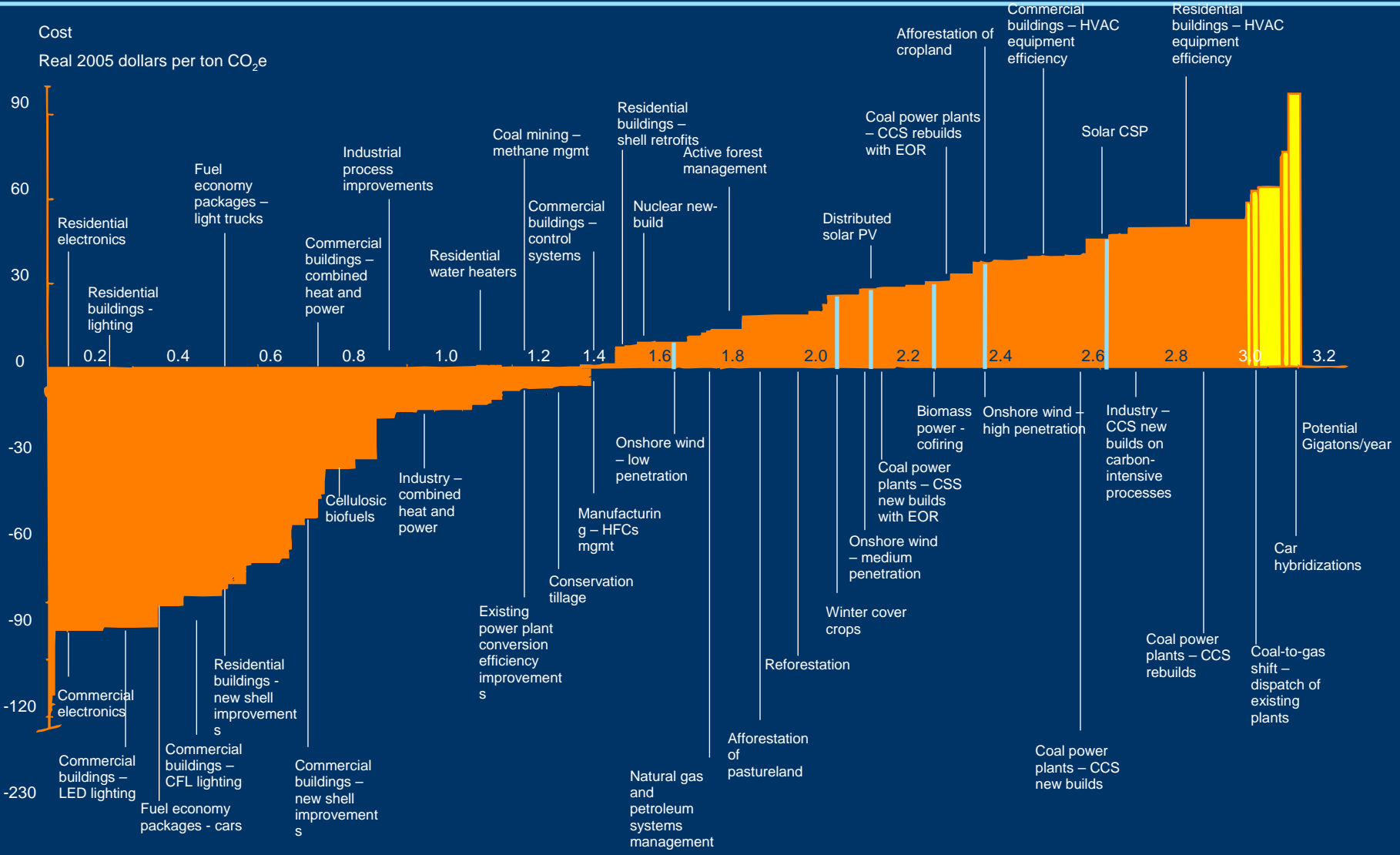
Gigatons CO<sub>2</sub>e



Source: EIA, McKinsey analysis



# 3 Gigatons of abatement

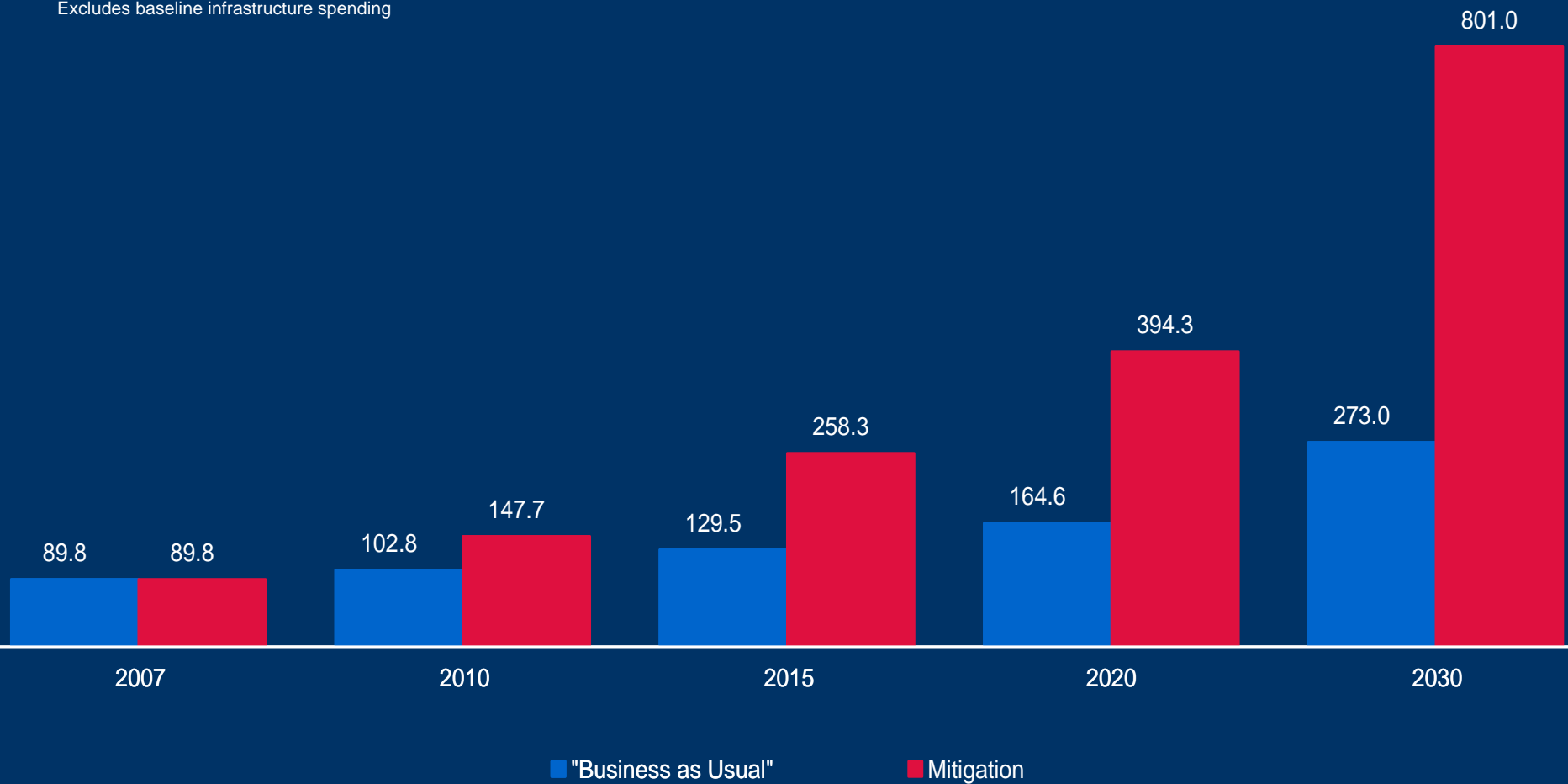


Source: McKinsey analysis



# Globally, massive increases in 'Green Infrastructure' will be required

Note: (in \$ billions)  
Excludes baseline infrastructure spending

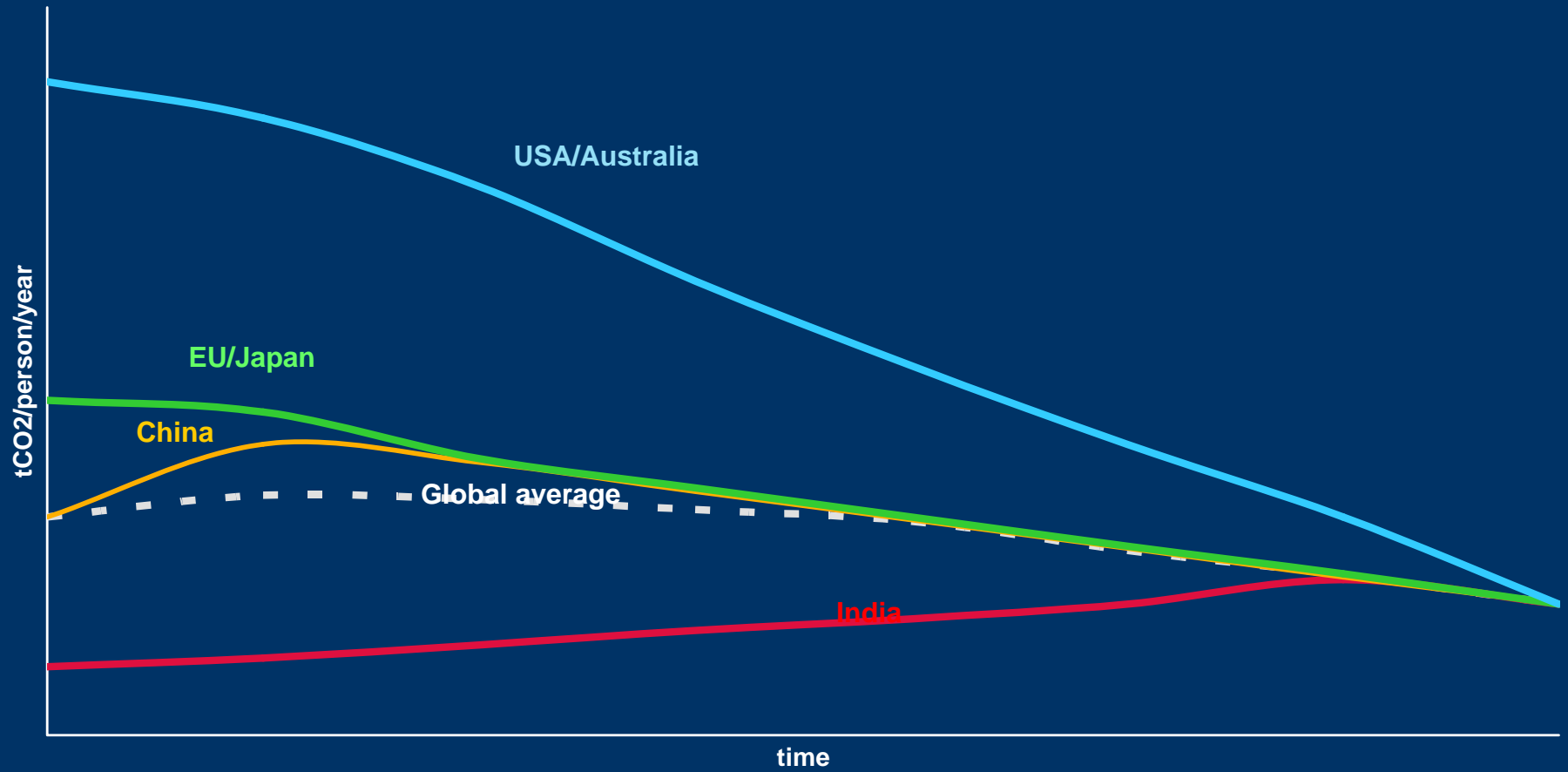


Source: Credit Suisse estimates

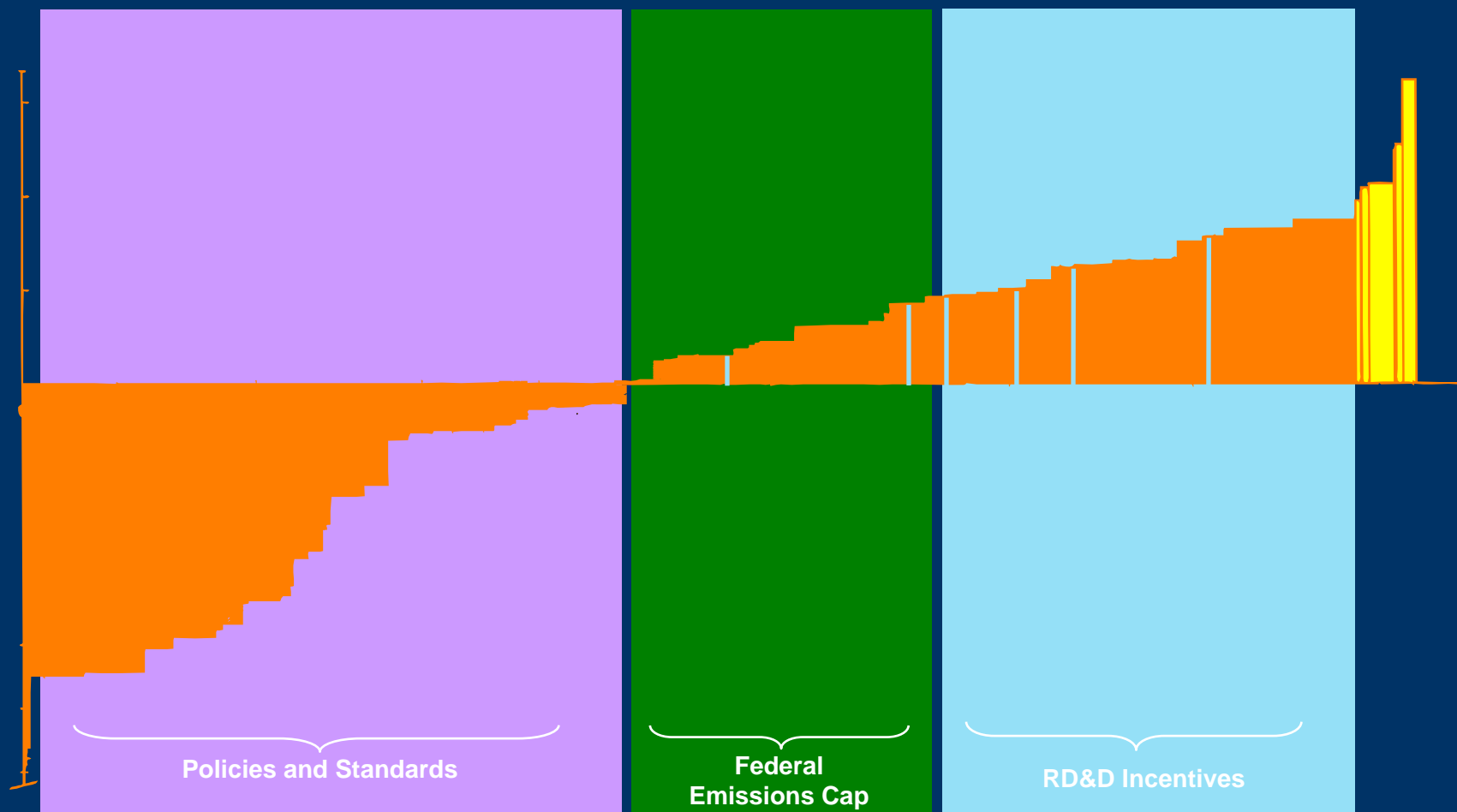
# The (Foreign) Policy Challenge

- ▶ U.S.
  - Cap and Trade may be preferred approach
  - Current US economic cycle may make cap either conservative or delayed
    - Recession
    - High commodity prices
    - ?2010 agreement
- ▶ EU
  - Continue to take lead on issue
  - Industry - separate system with no linkages to global market is not tenable
- ▶ Developing Countries
  - Growth will continue with coal
  - Agreeing to caps challenging
  
- ▶ This is a Foreign Policy and Trade issue

# Contraction and Convergence



# Market needs a price signal



Abatement beyond 'business as usual', GtCO<sub>2</sub>e<sup>1</sup> per year in 2030

Source: The McKinsey Quarterly

# Essential Elements of Market Design

Long-Term Regulatory Framework

Multi Sector & Emissions Coverage

Accurate & Rigorous Baselines

Standards-based Offsets

No Price Caps

Linkages to Other Markets

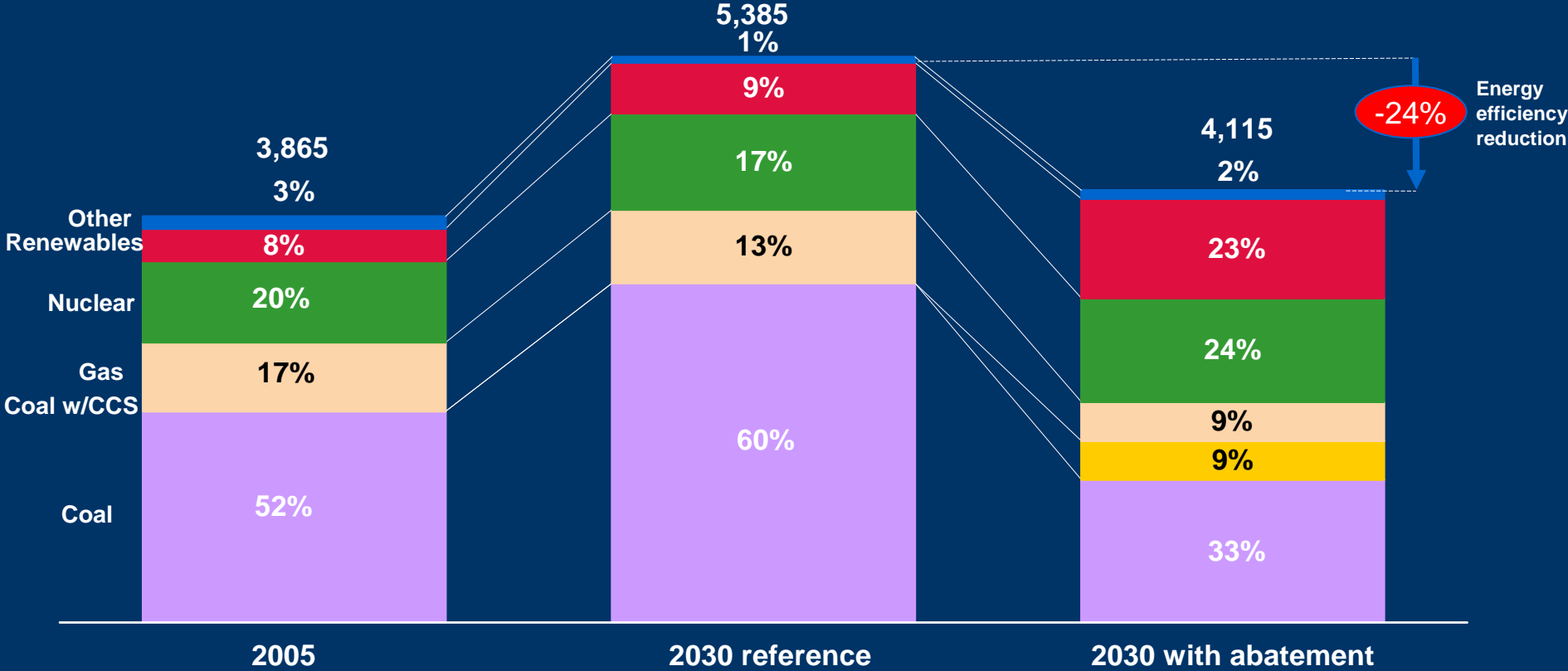
Regulation as Financial Market



Price Signal  
Investment  
Innovation

# A significant build-out of 'green' power generation will be critical

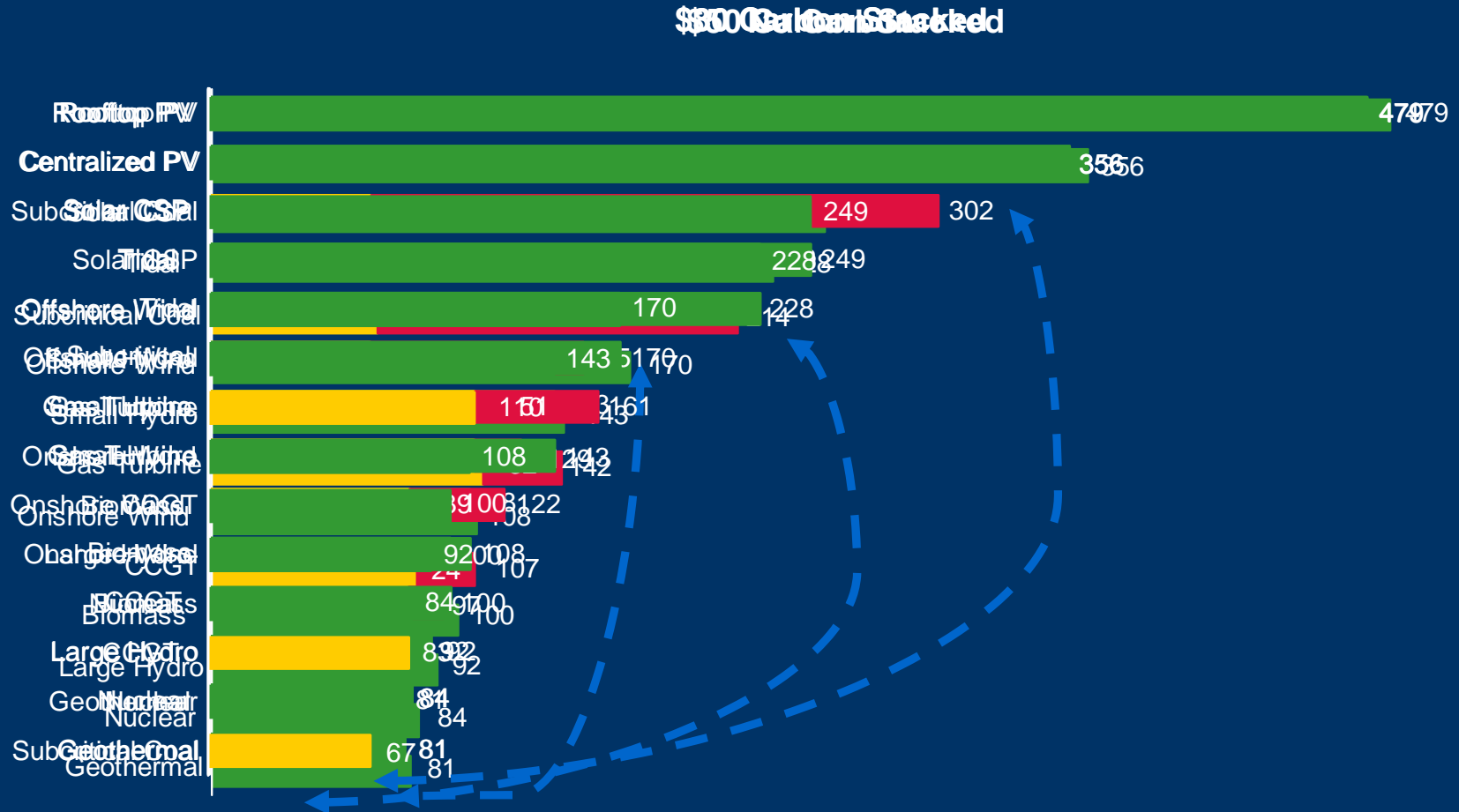
Terawatt-hours



Source: EIA, McKinsey analysis

# A price on Carbon will change the merit order

in \$/MWh



Note: Assumes gas prices of \$9.5/mmbtu and coal prices of \$2/mmbtu

# The Capital Markets – Stages of Investment

## Equity & Debt Securities – Operating Companies

Development Stage	R&D / Seed	Start-up	Early-Stage Growth / Private Markets	Late-stage Growth / Public Markets	Mature
Tech/Service provider	New technologies, new methodologies, new services		Market-making for carbon value creation	Pure play carbon companies	Carbon-backed notes; low carbon sector winners

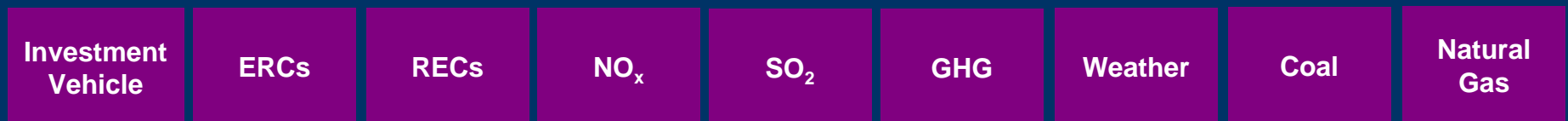
# The Capital Markets – Stages of Investment

## Hard Assets

Development Stage	Siting / Hosting	Data Collection	Future Cash Flow	Installation / Construction of the Asset	Operation of the Asset
Infrastructure	Developer's equity needs carbon cash flow certainty / guaranteed offtakes		Structured carbon finance and commercialization	Carbon commodity commercialization and risk management	

# The Capital Markets – Stages of Investment

## Commodities



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## Commodities

Investment Vehicle	ERCs	RECs	NO <sub>x</sub>	SO <sub>2</sub>	GHG	Weather	Coal	Natural Gas
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# Questions

- ▶ Market structure
  - Voluntary Markets
  - Auctioning
  - Regulators
  - Role of exchanges
- ▶ Policy
  - What happens to regional schemes i.e. RGGI
- ▶ Sectors
  - Energy efficiency
  - Carbon Capture and Storage
  - Forestry
- ▶ Carbon as an investable asset class

# Takeaways

- ▶ Markets are efficient at deploying large scale risk capital
  - Version 1.0 has begun
- ▶ Markets are good at distributing risk
  - (Most) Technology risk
  - Scale up risk
  - Project infrastructure risk
  - Insurance risk
  - Commodity risk
- ▶ Markets need clear regulations
  - Only speculative capital will be involved until that time
    - Limited in depth and breadth
- ▶ Govt support of scale up and discrete (but large) technology risks critical