



Smart and Sustainable Super-Grids
17 November 2009
INSEAD, Fontainebleau

FROM GRID TO SUPER-GRID TO SUSTAINABLE GRID

Henry Derwent,
IETA



IETA
INTERNATIONAL EMISSIONS
TRADING ASSOCIATION



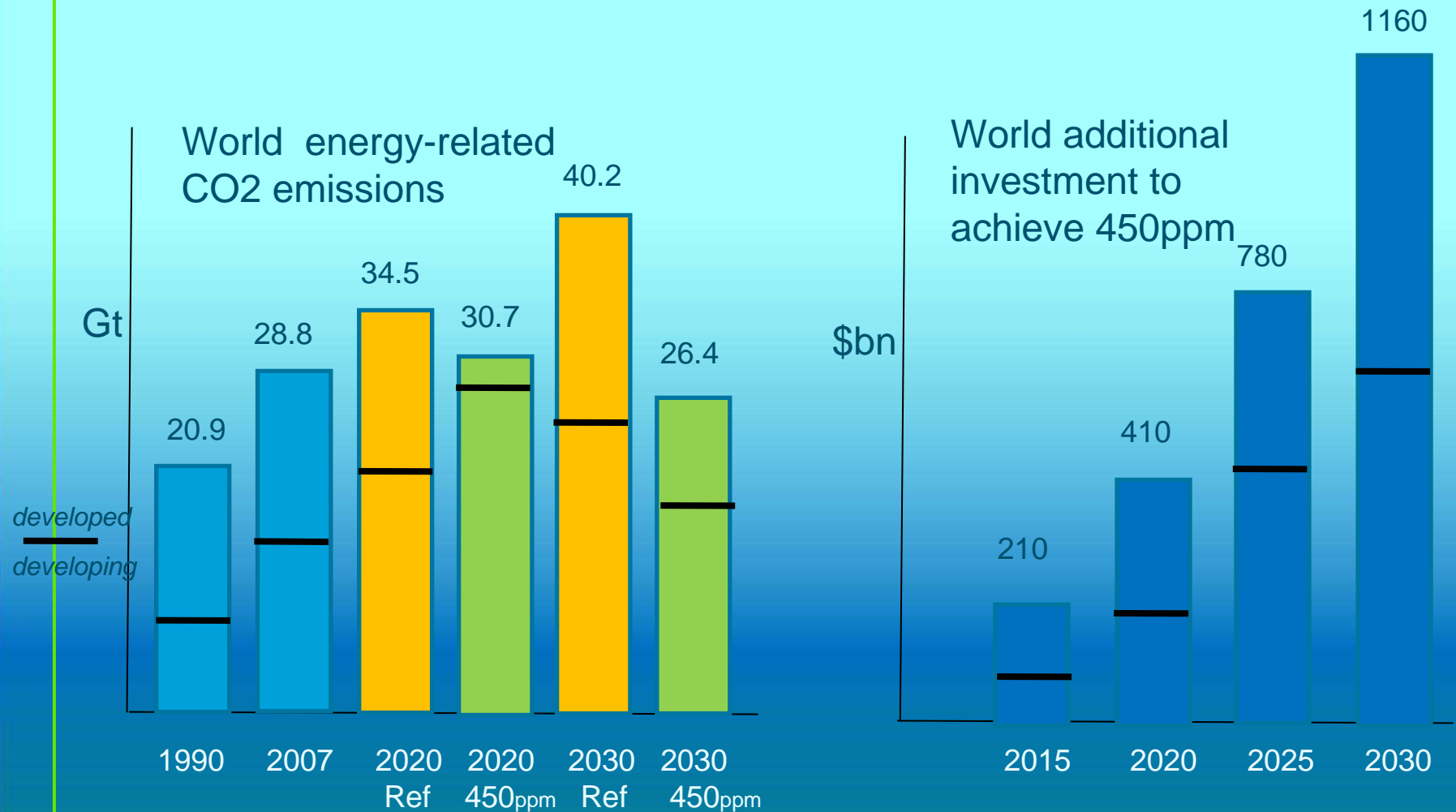
Who are IETA ?

- Only cross-sectoral, private sector international organisation promoting emissions trading to secure environmental goals
- Founded in 1999
- Membership: ~170 companies
 - 50% emitters
 - 50% project developers, intermediaries, financial institutions, brokers, verifiers, legal firms
 - 60% EU, 30% US/Canada, 10% Asia
- Swiss non profit
- Offices: Geneva, Brussels, Washington, Ottawa
- Role in Australia, Japan



The size of the problem

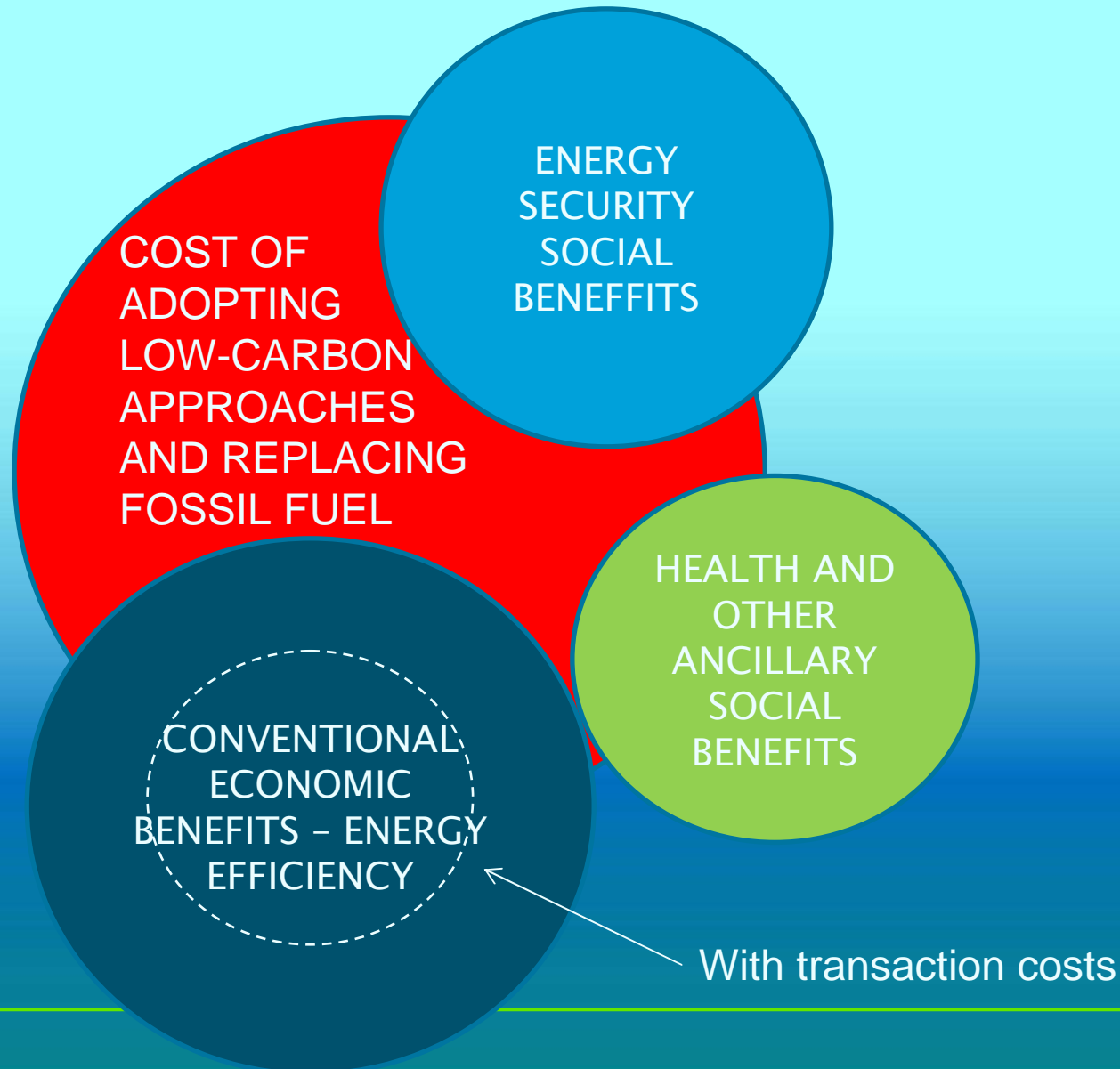
...at least the latest IEA view of the energy part of it



Adapted from IEA WEO preview 2009



Carbon - the Residual Cost





What do we need to invest in?

Energy-related CO₂ is 61% of all anthropogenic GHG emissions

.

To reduce it requires investment in:

1. Energy efficiency
2. Lower-CO₂ fossil fuels (eg gas instead of coal)
3. CO₂ sequestration – geological (esp. CCS) or biological (esp afforestation)
4. All renewables (wind, solar, marine, hydro, geothermal, etc)
5. Other non-fossils, esp nuclear

Smart Grids help all, but particularly 1 and 4



Who pays and how?

- Impacts on economy
- Consumption and investment
- First and second order
- Through different elasticities

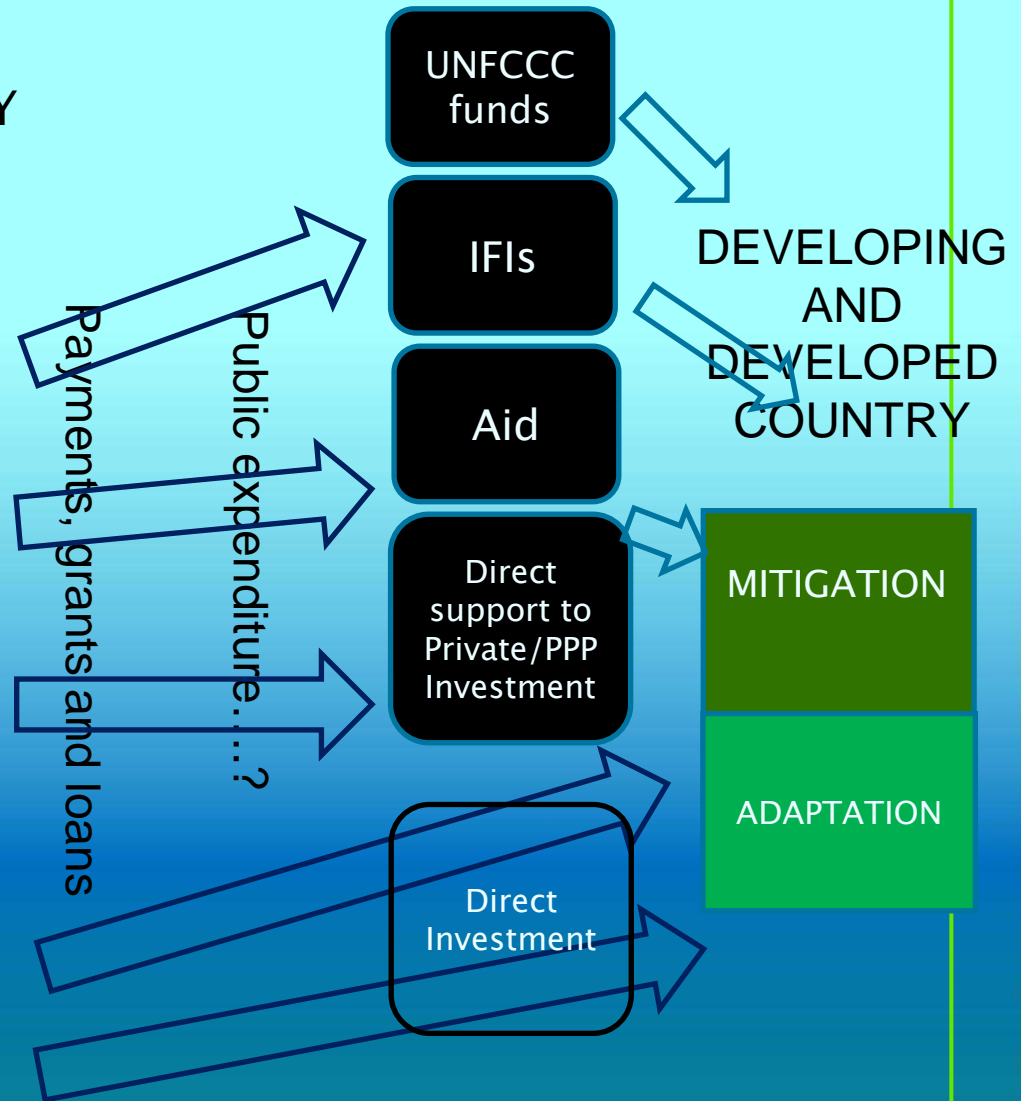
DEVELOPED COUNTRY

PUBLIC SPENDING

- All Taxpayers
- Govt borrowing (future taxpayers)
- Hypothecated taxes
- Receipts from sales/charges, incl emissions rights
- Guarantees

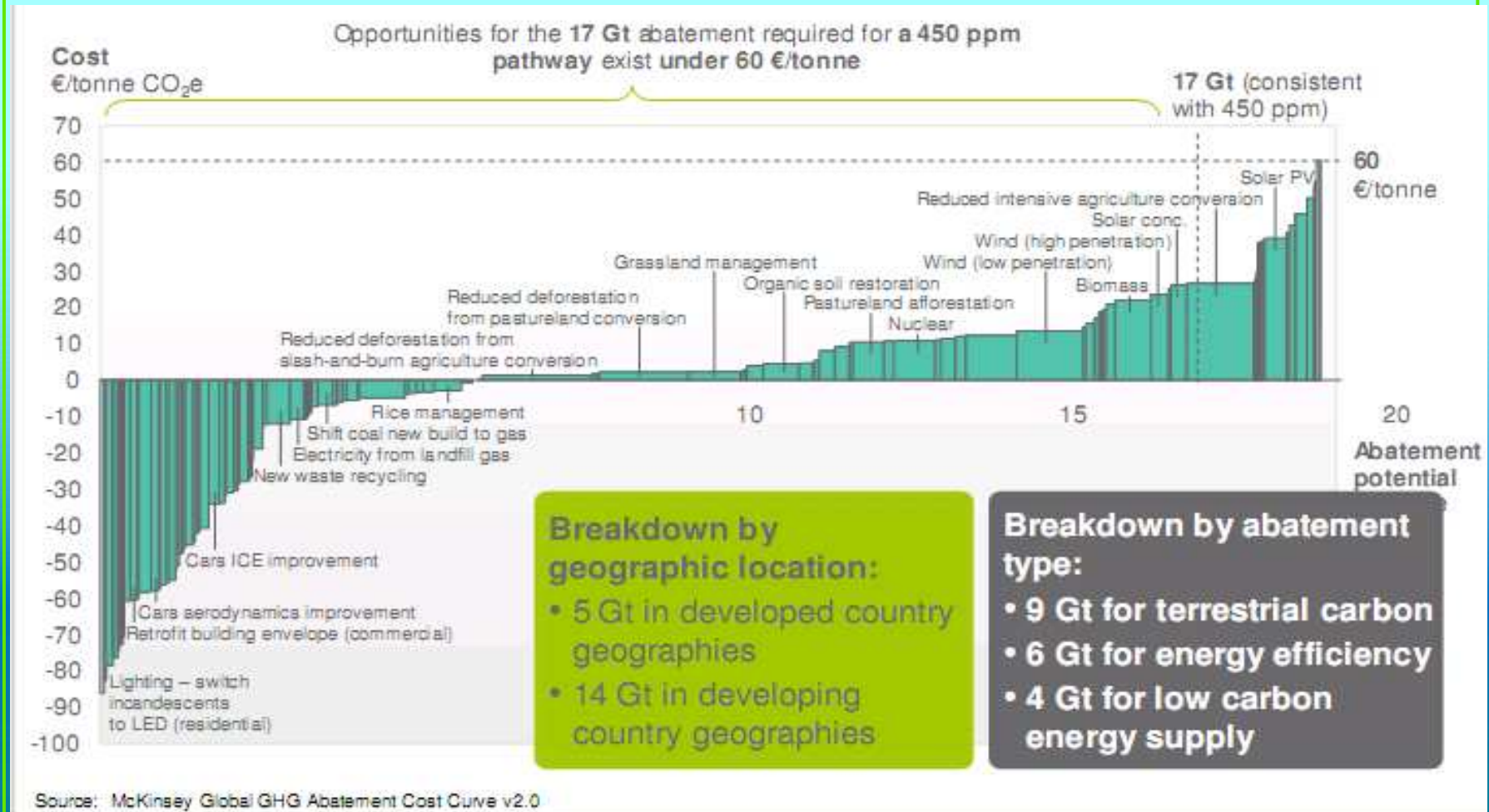
PRIVATE MONEY

- Conventional economic
- Voluntary payments
- Obligated purchases (offset-based, tradable, finite)
- Obligated spending (non-offset-based)
- Other obligated
- contributions



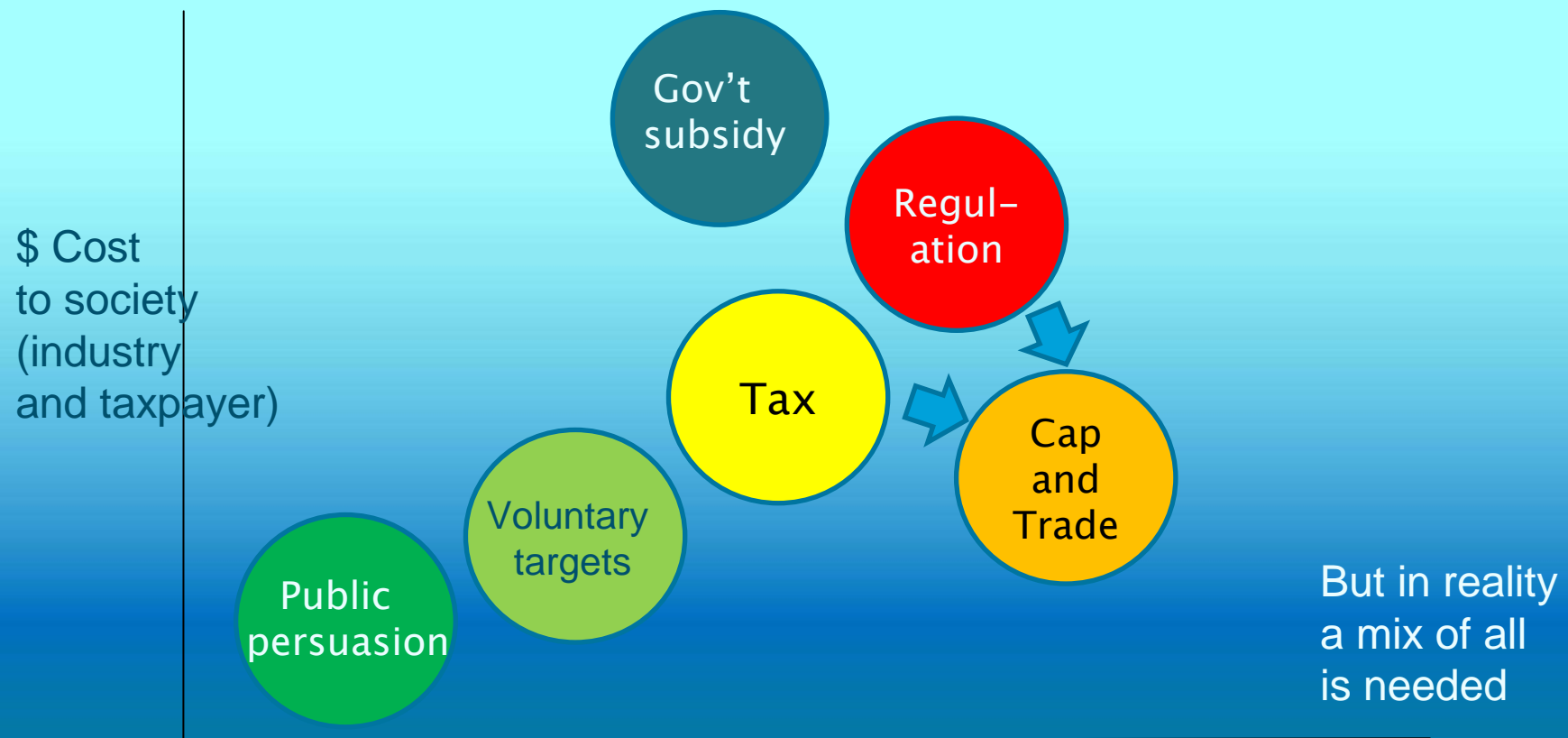


Carbon Reduction International Merit Order





The Right Instrument – Regulation, Voluntarism and Trading

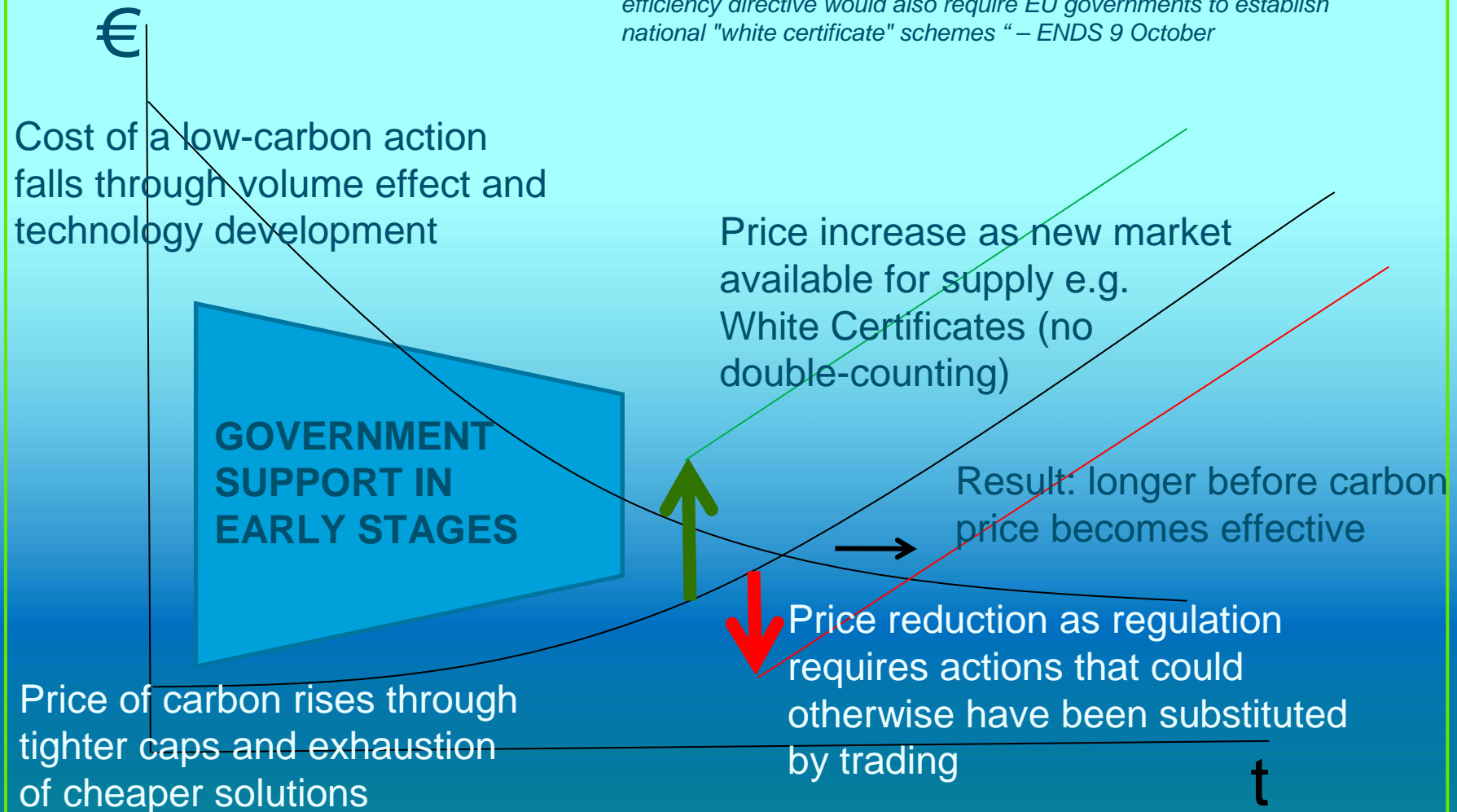


-C Certainty of achieving ambitious carbon reductions



Continuing confusions

"As well as setting binding efficiency targets, the planned energy efficiency directive would also require EU governments to establish national "white certificate" schemes " – ENDS 9 October

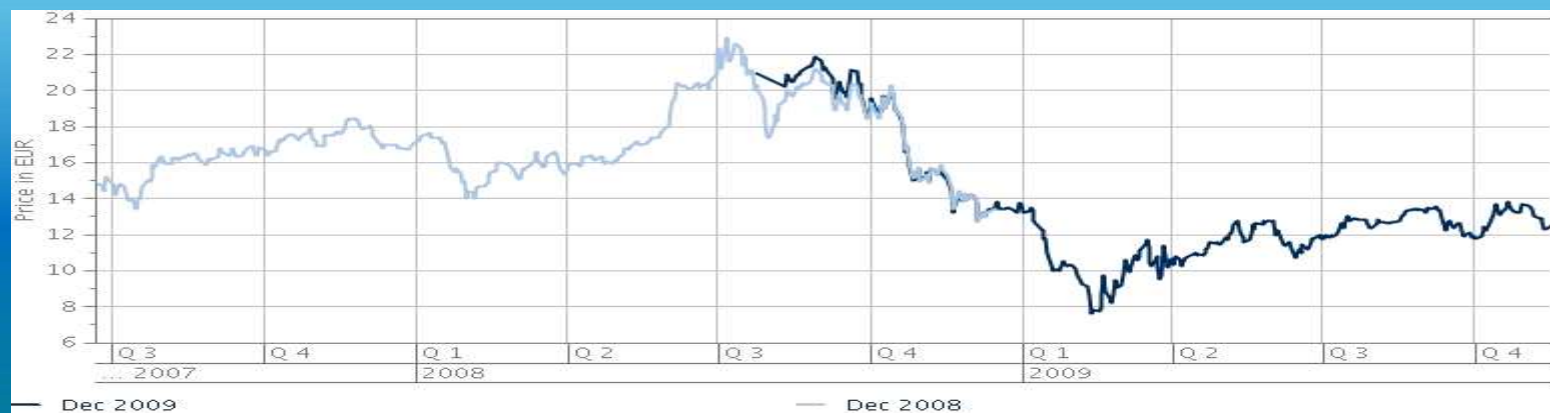




Where carbon prices have been



EUAs



CERs



Where carbon prices may go

€60t

• Project Catalyst price for 450ppm

• CCS economic?

€30t

• EUETS price at -20%

€15t

• Initial US price?
• Initial Australian price



EU-ETS Historic

2012

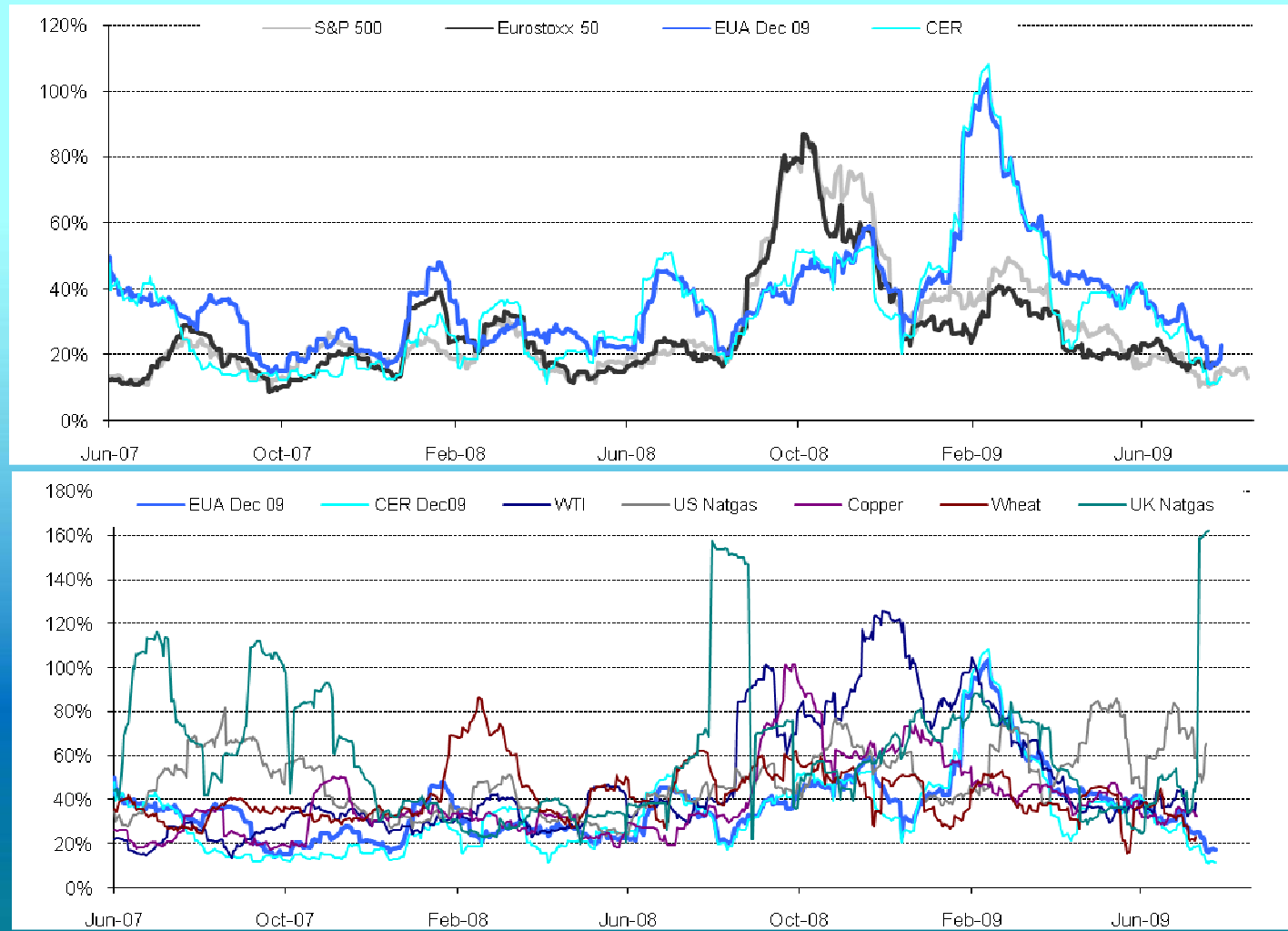
2015

2020

2030



Carbon Price Volatility



Source:
Orbeo



The Price of what? Some Economic Problems with Smart Grid Solutions

- Consumers not all that sensitive to electricity prices (SRPC ~0.2): low value on savings
- Covered entities not alert to carbon sales opportunities
- Actual consumer resistance
- Product differentiation difficult
- Not easy to persuade firms to invest in order to sell less
- No real confidence in continuous high carbon prices
- Confused and multiple responsibilities divorce expenditure from returns
- Appliance-led savings may work better
- Replacement of assets that still work adequately
- Hard to drive by competitive pressure
- Habit of waiting for Government grant may be forming



And some Regulatory Barriers to Smart Grid Solutions

- Regulatory jurisdictions smaller than optimum field for capturing smart grid benefits (influenced by transmission losses)
- Mix of public and private operators confuses roles and requirements
- Consumers' contributions into grid a whole new ball-game
- Many regulators only focus on short-run costs to consumers
- New infrastructure (source and distribution) faces severe planning hurdles
- Easiest investments to introduce may not be optimum





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MAKING MARKETS WORK FOR THE ENVIRONMENT