



UK energy efficiency programmes

Mark Allington, May 2010

Agenda

- UK industrial and commercial energy efficiency
- UK energy agencies
- Lessons learned

Agenda

- UK industrial and commercial energy efficiency
- UK energy agencies
- Lessons learned

UK – industrial and commercial energy efficiency

- Through a range of policy measures, the UK Government has committed to reducing carbon dioxide emissions to 20% below 1990 levels by 2010, and has recently announced a target of an 80% cut in greenhouse gas emissions by 2050

Key instruments to achieving this reduction through non-residential energy efficiency include:

- Climate Change Levy
- Climate Change Agreements
- EU Emissions Trading System
- UK Carbon Reduction Commitment
- Carbon Trust programmes

UK non-residential EE - Climate Change Levy

- The Climate Change Levy (CCL) is designed to encourage businesses to become more energy efficient and so help reduce the carbon emissions that threaten the world's climate
- The levy came into effect on 1st April 2001
- It applies to natural gas, electricity, liquefied petroleum gas and coal provided to consumers in industry, commerce, agriculture and the public sector – i.e. the whole of the UK non-residential sector
- UK Treasury sets CCL policy

UK non-residential EE - Climate Change Levy

- 2009-2010 CCL rates <http://customs.hmrc.gov.uk/>

Taxable commodity supplied	Rate payable from 1 April 2009
Electricity	£0.00470 per kWh
Gas supplied by a gas utility	£0.00164 per kWh
Petroleum gas	£0.01050 per kg
Any other taxable commodity	£0.01281 per kg

- Electricity typically costs industrial users around £0.045 per kWh, so this levy adds around 10% to costs.
- If energy is a large part of your business costs (for example in metallurgy plants), this 10% can be highly significant.
- For this reason energy-intensive industries can opt to reduce their climate change levy costs through a ***climate change agreement***

UK industrial EE - Climate Change Agreements (1)

- The Climate Change Agreement (CCA) scheme enables eligible **energy intensive** businesses to receive an 80% discount from the Climate Change Levy if they meet challenging energy efficiency or carbon emission reduction targets.
- CCAs apply to firms with
 - energy costs >3% of sector production value
 - Industry import penetration ratio >50%
- There are currently 53 sector agreements within the scheme, covering approximately 10,000 facilities. A full list can be found at:
http://www.decc.gov.uk/en/content/cms/what_we_do/change_energy/ta/ckling_clima/ccas/umbrella_ccas/ccas_umbrella/ccas_umbrella.aspx
- Between 2001 and 2010 CCAs have achieved 7mt CO2 savings
- In 2006 alone, CCA companies made £1,500m (RUR75,000m) savings on their energy bills through adopting EE improvements

UK industrial EE - Climate Change Agreements (2)

CCAs have a two tier structure:

- Sector level agreements between DECC and sector associations
 - Sector targets, sector and govt obligations, administration procedures
- Individual agreements between DECC and facility operators
 - Facility targets, operator and govt obligations, administration procedures

CCA targets are phased to ensure continued energy efficiency improvements over several years

Government provides supporting data analysis and CCA audit programme

Over-achievements can still be traded with other CCA holders within the UK Emissions Trading Scheme (world's first economy wide GHG ETS)

UK ETS was superseded in 2005 by the **EU Emissions Trading System**

EU Emissions Trading System

- The European Union Emissions Trading System (EU ETS) is the central component of the EU's Climate Policy
- The aim of the EU ETS is to help Member States achieve compliance with their commitments under the Kyoto Protocol in a cost effective way.
- Covers some 12,000 large industrial plants, representing over 40% of the EU's total CO₂ emissions.
 - Sector coverage: power, steel, cement, refining, ceramics, lime and glass as well as combustion installations (e.g. chemical crackers, dryers) in many other sectors
 - **Whole sectors are not covered**, including transport and buildings, which represent a large share of emissions
- The basic currency traded is European Union Allowance (EUAs)
- EU ETS participants can also use a limited number of international emission reduction credits from Clean Development Mechanism and Joint Implementation projects: Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs)
- Market value of the EU ETS in 2008 > €80 billion
 - By far the largest segment of the world carbon markets

Using Market-Based Tools to Incentivise Emission Reductions: Tax vs Trading

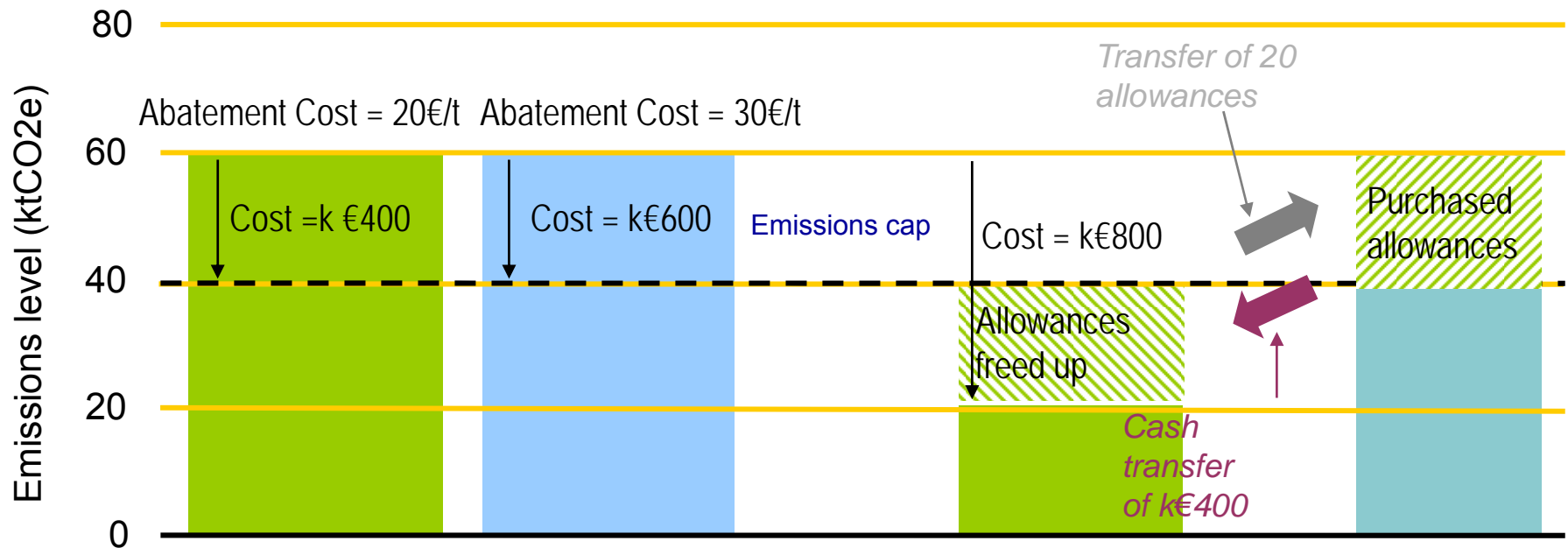
- Objective of market-based tools: *to generate an effective carbon price signal to create incentives to invest in low-GHG products, technologies and processes and internalise emissions costs*
- The two main type of market-based tools used to incentivise emissions reductions are tax regimes and emissions trading systems

Option	Principle	Pros	Cons
Tax regime	Price-based regulation	Predictability → easier investment decisions	<ul style="list-style-type: none"> ◆ No certainty on final emissions ◆ Cash outflows
Emissions Trading System	Volume-based regulation	<ul style="list-style-type: none"> ◆ Environmental integrity ◆ Cost-efficiency 	<ul style="list-style-type: none"> ◆ Burdensome ◆ Volatility ◆ Price manipulation?

Emissions Trading Principles

Cap-and-Trade Scheme

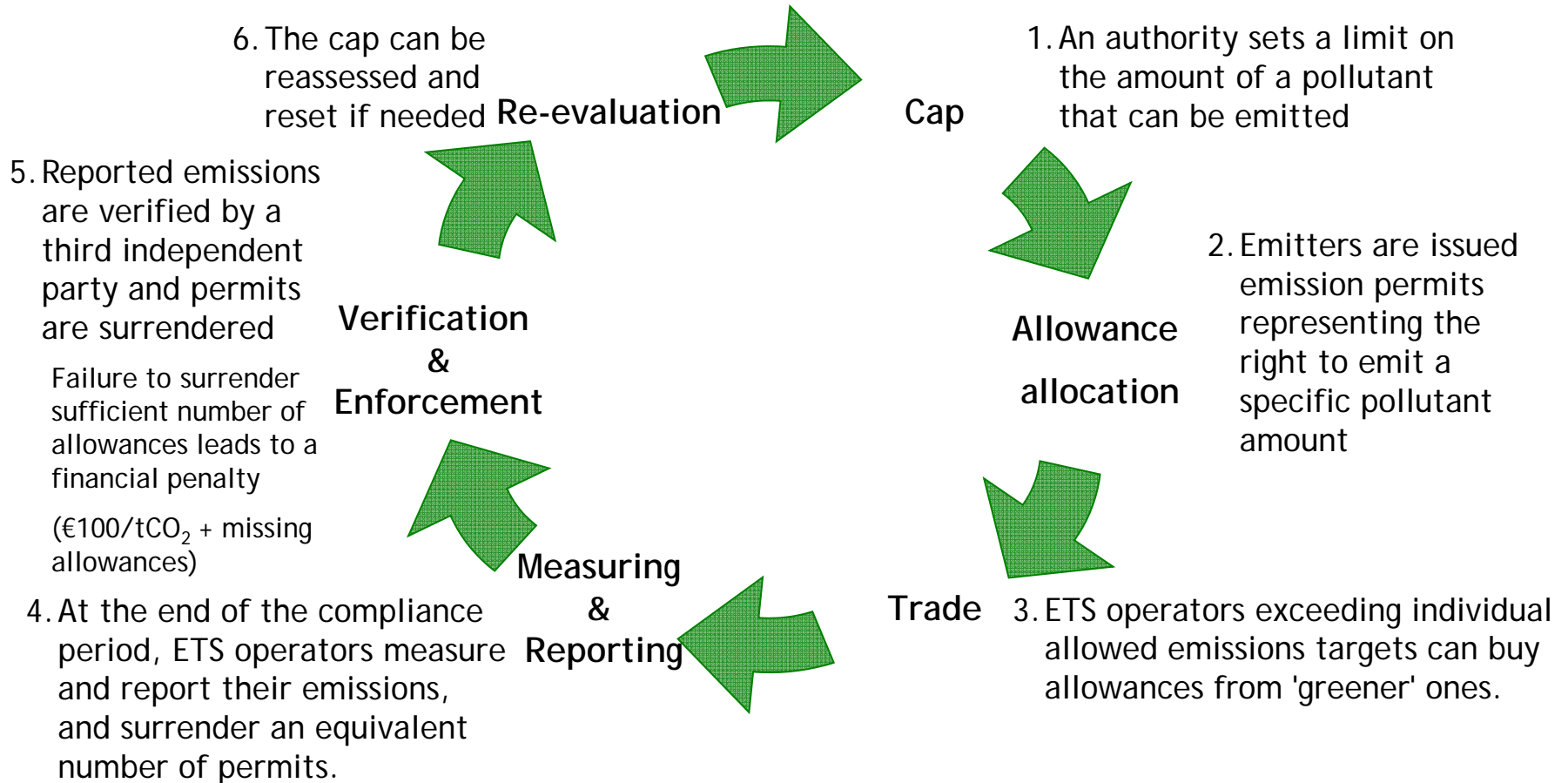
Cap-and-trade is a type of emissions trading scheme used to control pollution by setting an absolute cap on the quantity that polluters can emit



- Exchange of tradable allowances from entities with lowest reduction cost to entities with highest cost
- ⇒ Creates a price and a market for allowances (20 €/t)
- ⇒ Enables achieving overall objectives at least cost (k€800 instead of €1 million)

Emissions Trading Principles

Cap-and-Trade Scheme – cont.

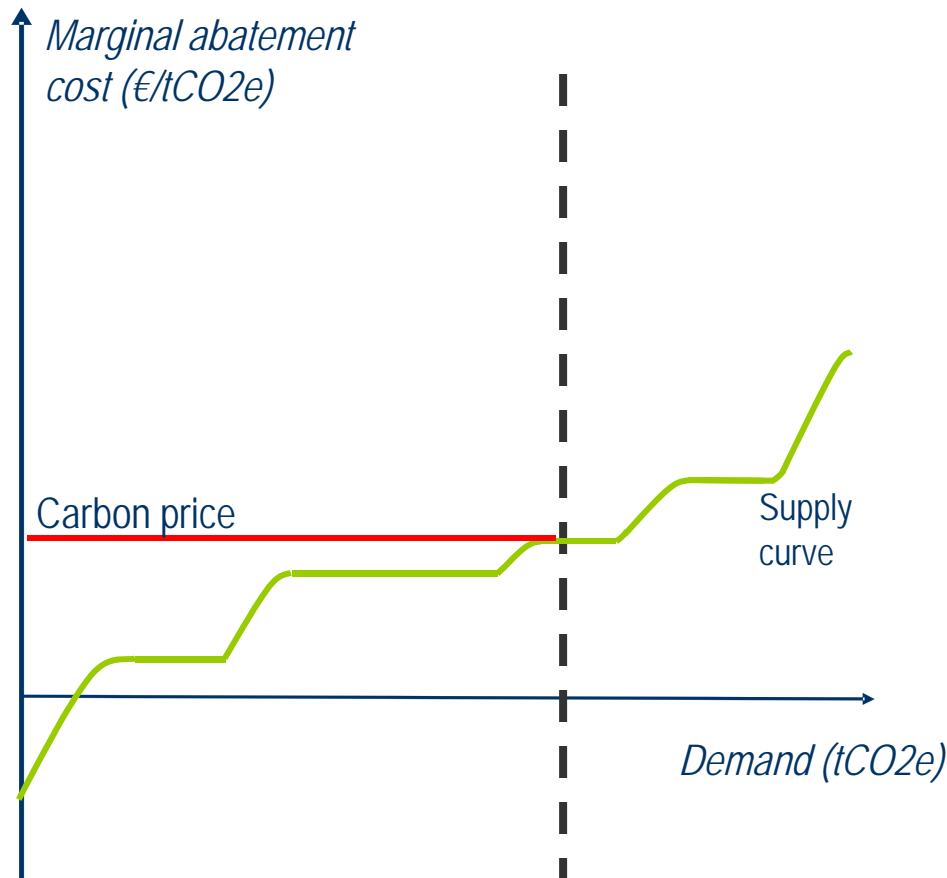


Fundamental Drivers of Carbon Price

Supply – Demand Equilibrium

In a Cap and Trade scheme, the price of carbon is determined by:

- ◆ The amount of emissions to be abated (*demand for emission reductions*)
- ◆ The cost of abatement (*supply of emission reductions*)



Demand

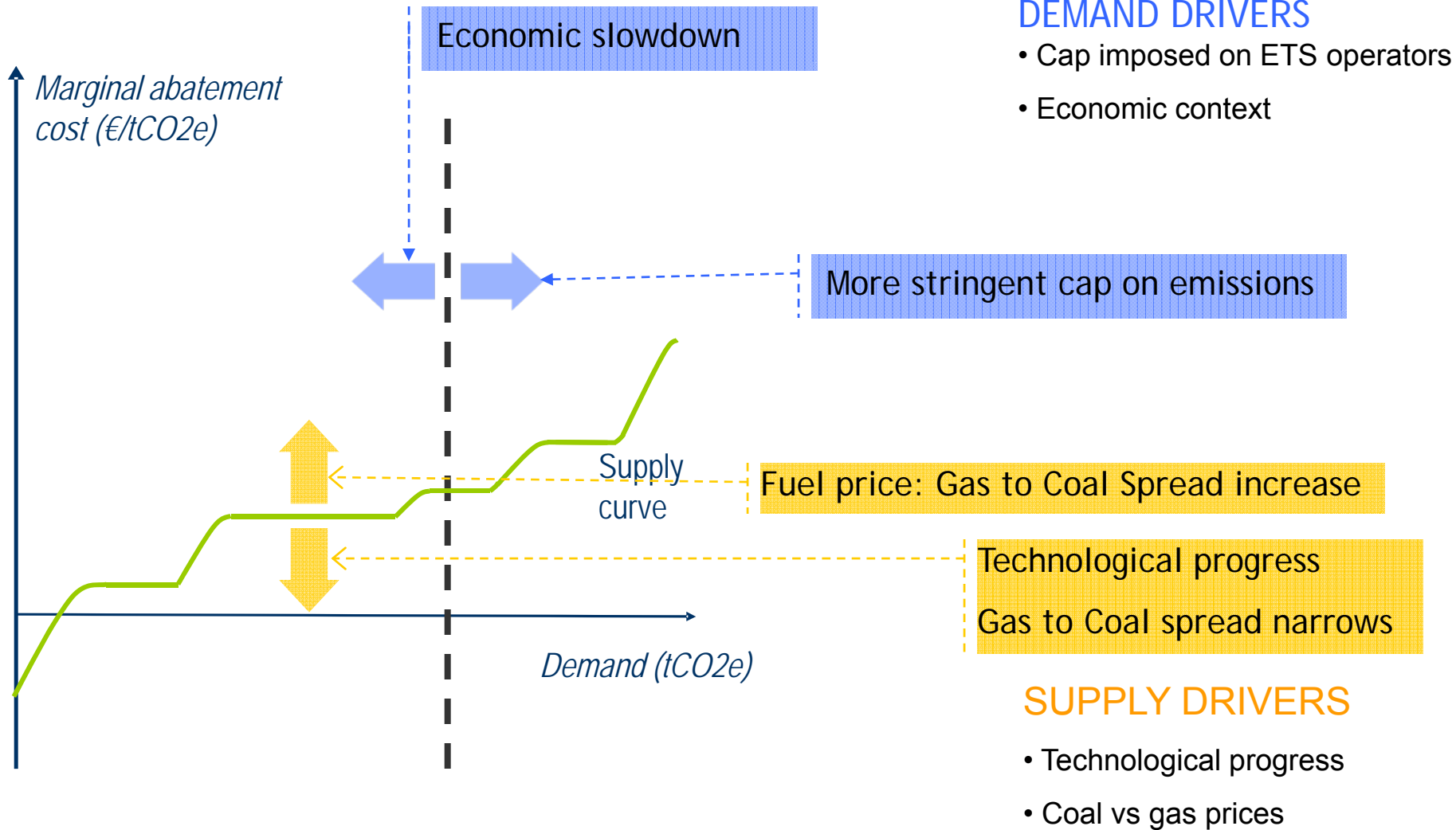
- Difference between the level of business-as-usual emissions (i.e., without a carbon price) and the imposed cap

Supply

- The cheapest abatement options in the system will be taken first, and the target will be met by increasingly dearer options
- The carbon price will be the cost of the most expensive abatement option that has to be used to meet the target

Fundamental Drivers of Supply and Demand

Impact on Carbon Prices

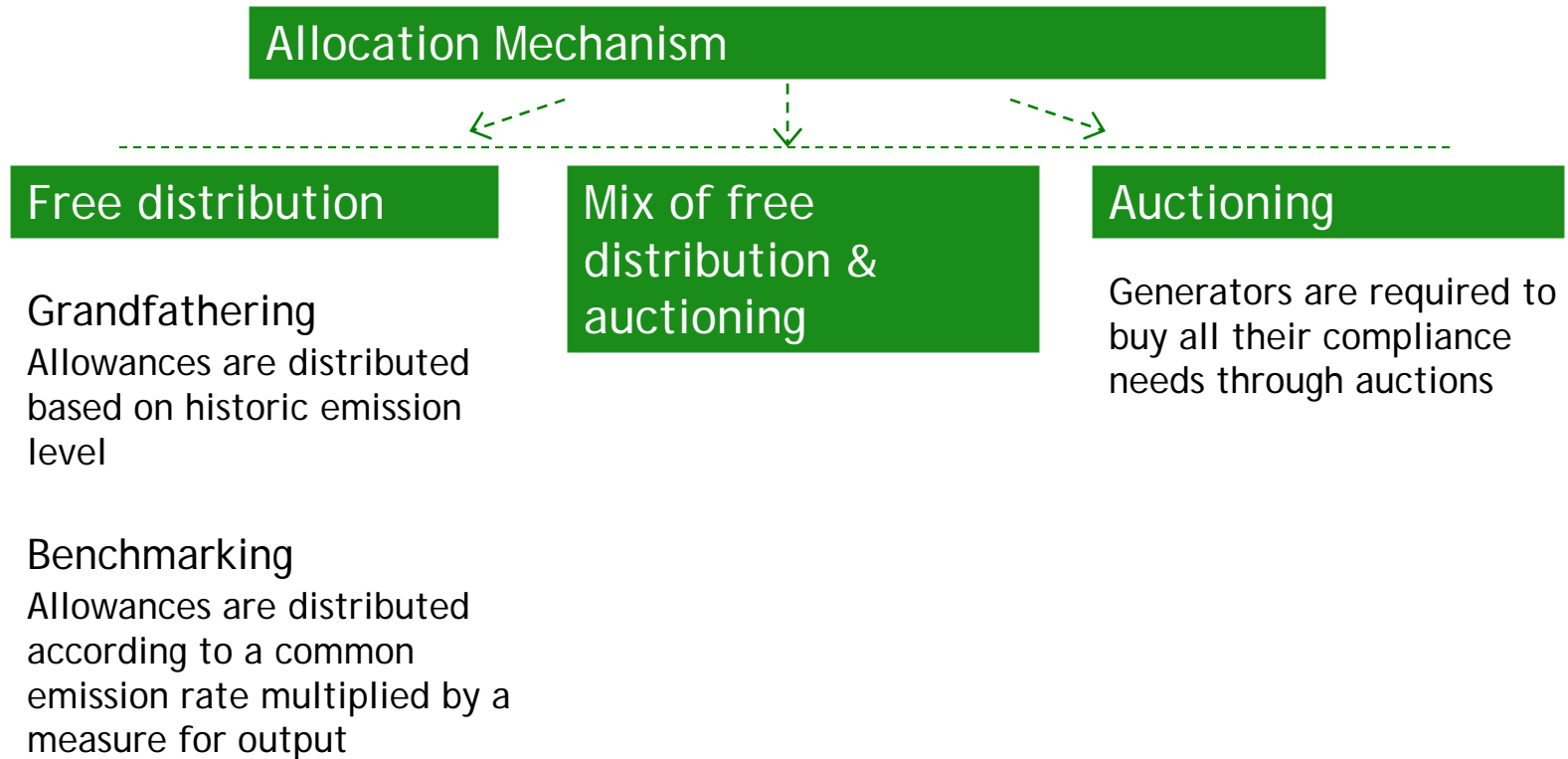


EU ETS National Allocation Plans

- National Allocation Plans (NAPs) with caps on total emissions from installations covered by the scheme (1 EU Allowance = 1tCO₂)
- Installations surrender EUAs each year to account for actual emissions.
- Installations can emit more than their allocation by buying EUAs
- Installations can sell EUAs if they do not emit their full allocation
- Price of EUAs varies with supply and demand

- In UK, EU ETS covers 42% of CO₂ emissions

Allowance Allocation Options



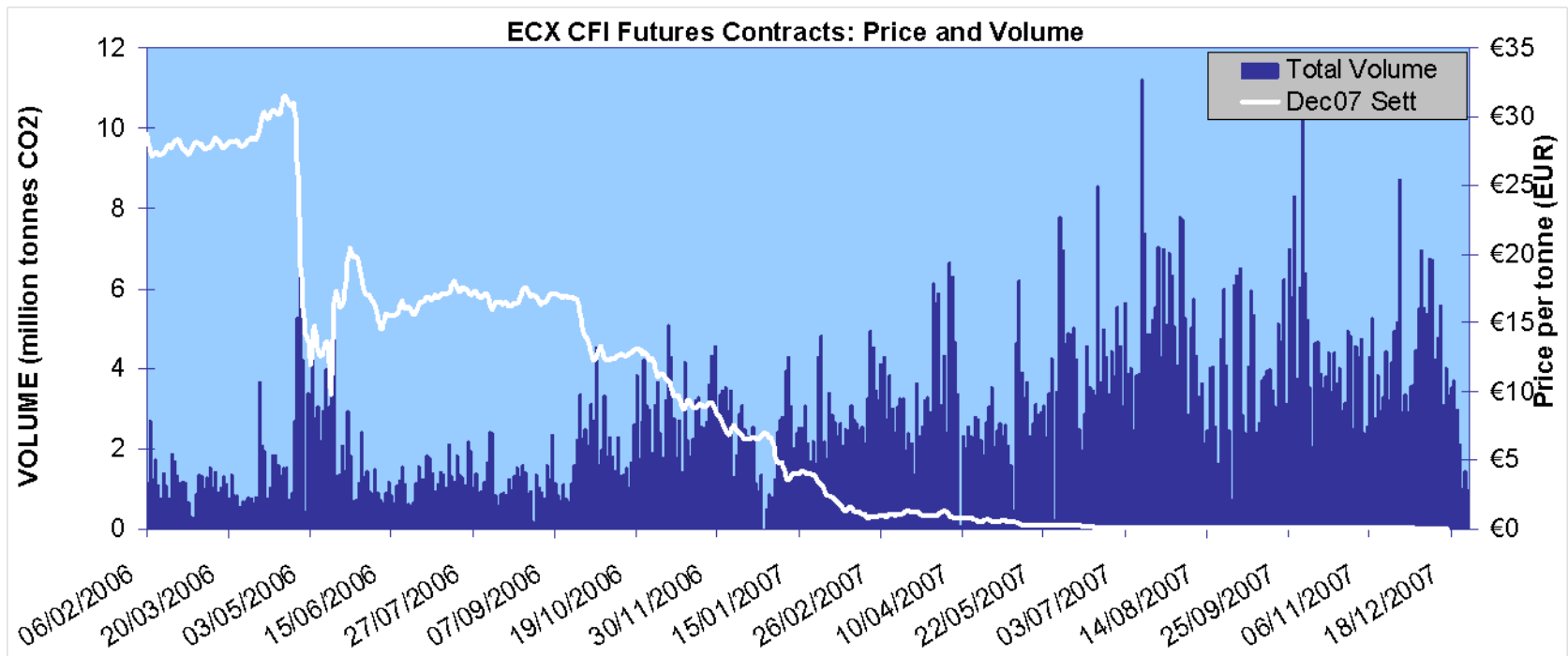
EU ETS Phases

Three phases so far:

- Phase 1 (2005-7)
 - Phase 2 (2008-12)
 - Broadened to cover CO2 emissions from glass, mineral wool, gypsum, flaring from offshore oil and gas production, petrochemicals, carbon black and integrated steelworks
 - Aviation included from 2012
 - Phase 3 (2013-20)
-
- As the phases have progressed, NAPs have applied more stringent limits and more EUAs have been initially allocated through auctions
 - Linking Directive allows limited trading with JI and CDM projects, to ensure most NAP-related savings are made within the EU.
 - More information at http://ec.europa.eu/environment/climat/emission/index_en.htm

EU ETS Phase I (2005-2007): ‘Learning By Doing’

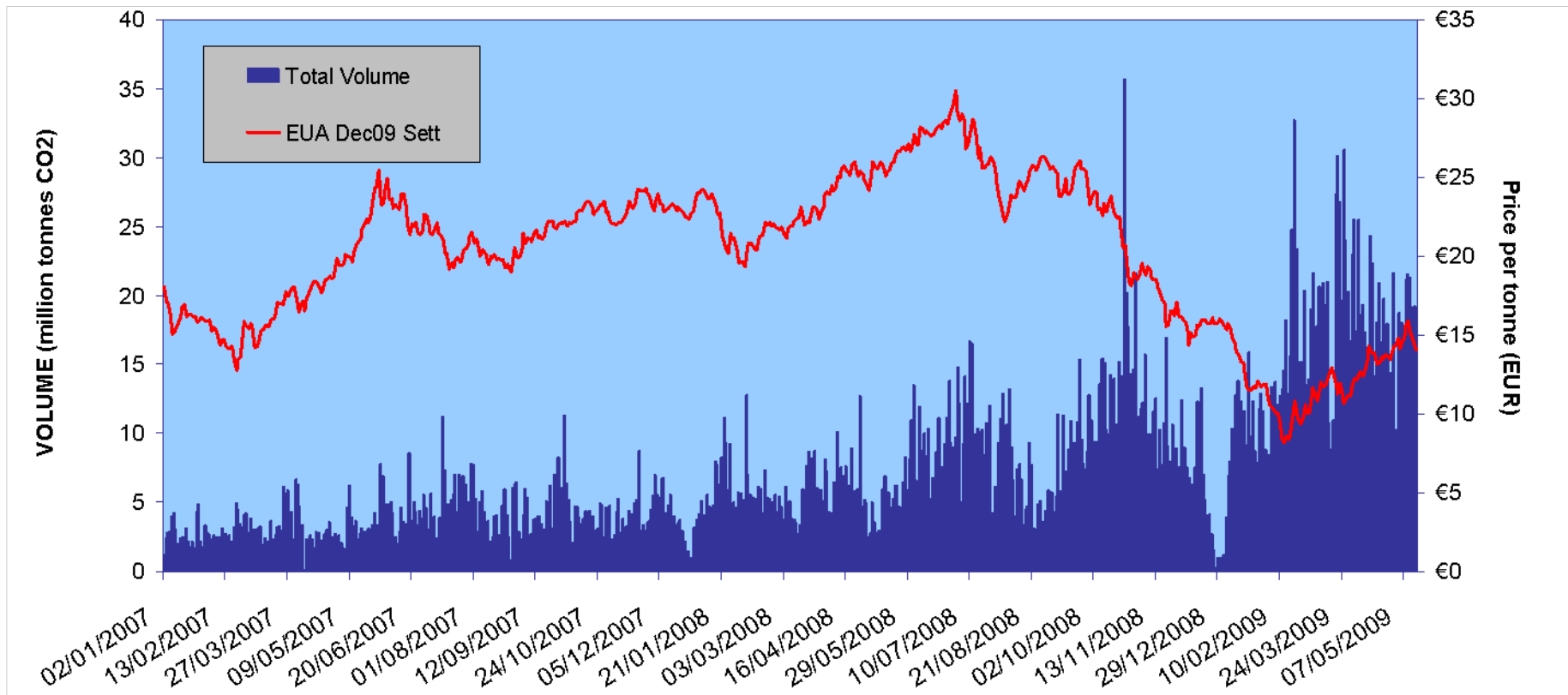
- The 1st phase of the EU ETS ran between 2005 - 2007 → “Trial phase”
- In 2006, it appeared that several Member States had significantly over-allocated allowances



Impact of the Economic and Credit Crisis on EU ETS Prices in Phase II (2008-2012)

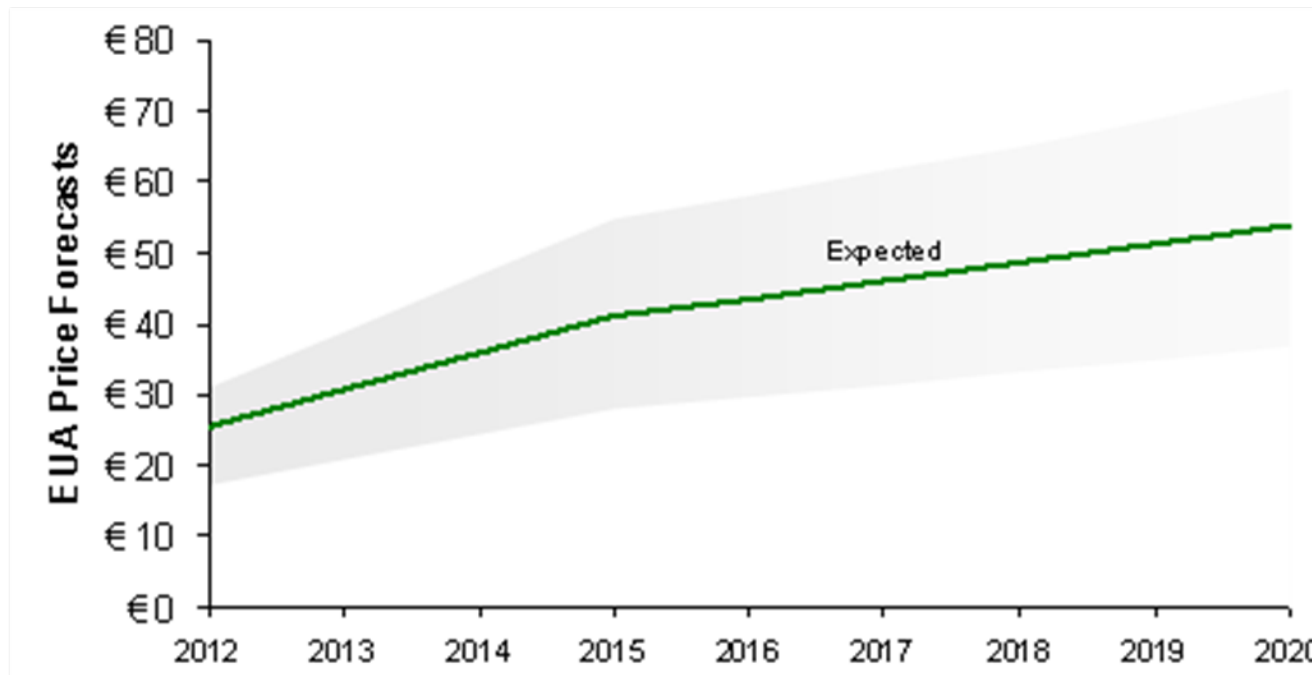
Economic slowdown → lower industrial production => lower emissions

Credit crisis → some participants selling allowances to raise cash



EUA price expected to increase dramatically in Phase III

- Current EUA price ~ €15 → projected EUA price in 2020 ~ €50



Source: ICF International's European Power and Carbon Market Outlook 2009-2030

- ◆ No restriction on banking between Phase II and Phase III

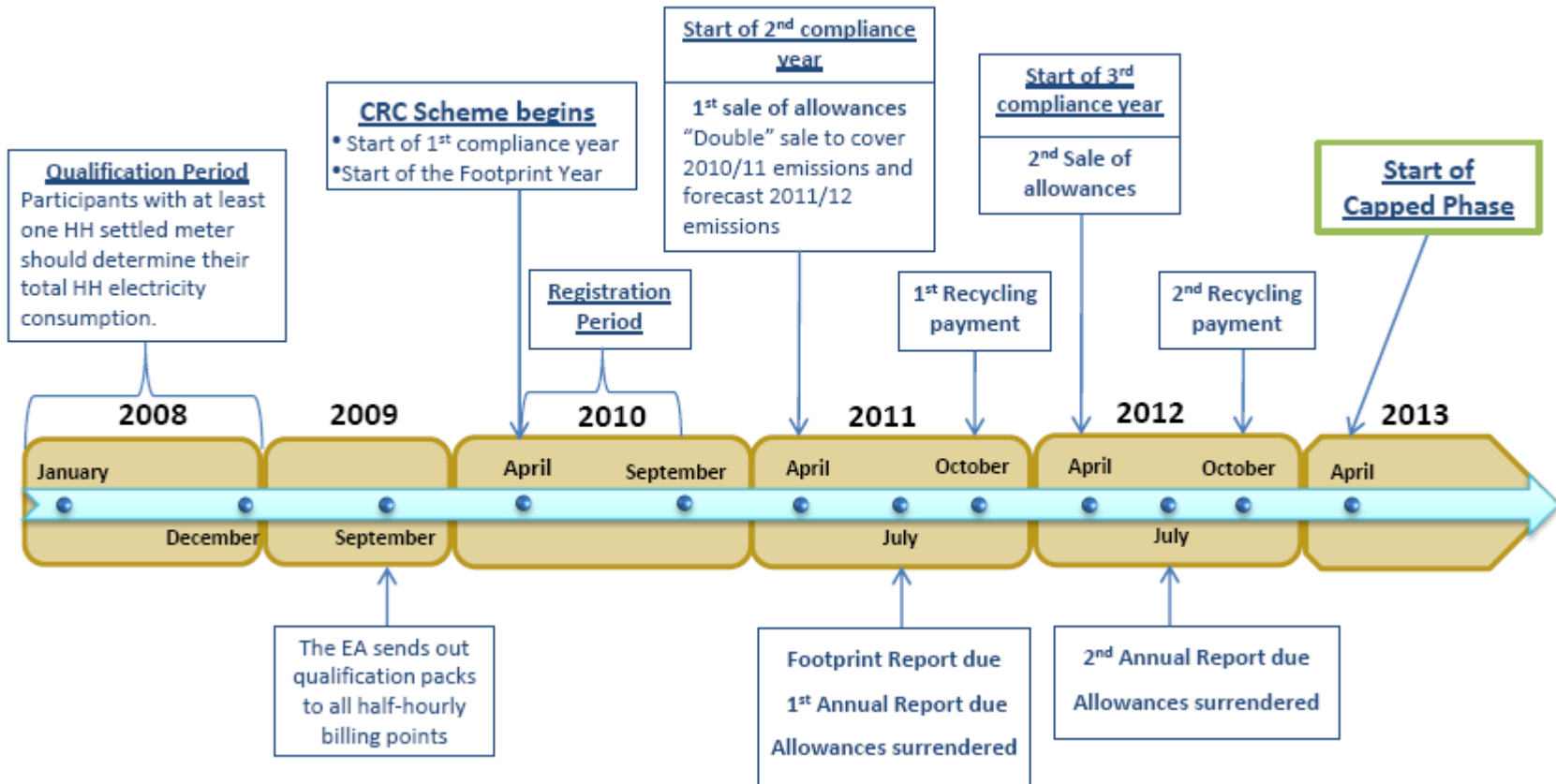
UK Carbon Reduction Commitment

- Mandatory energy efficiency scheme from April 2010
- 20,000 organisations with over 6GWh half-hourly electricity consumption in 2008 must participate – *supermarkets, restaurant / hotel chains, local authorities*
- They must monitor their emissions and buy allowances, initially from government
- More CO2 emitted = more allowances they must buy

- Phase 1 *Learning Phase* - April 2010 – March 2013
 - £12/tCO2 fixed price uncapped sale
- Phase 2 *Capped Phase* - April 2013 – March 2016
 - Sealed bid uniform price auction
 - Each participant submits a bid schedule specifying amount of allowances at particular prices –informed by a company MACC curve
 - Bids are aggregated to form a scheme-wide demand curve, which is then used to establish a market clearing price

£10	1000t
£15	900t
£20	600t
£25	300t
£30	200t

Phase 1 Timeline



CRC scope

- Electricity, gas and other fuels covered
- Vehicles emissions not included
- CCA organisations exempt
- Enhanced benefits for early action
- Penalties for reporting errors and delays
- League table published, with reputational impacts
- Should encourage firms to take energy efficiency seriously
- Adoption of the **Carbon Trust Standard** helps companies gain early action benefits



Allowance purchases

Cash flow requirements

- *The top line...*
 - Organisations need to **purchase** allowances annually to cover their emissions
 - \$19/tCO₂ (£12/tCO₂) for 2010-2013 period
 - Auctioning of allowances after 2013
- *The bottom line...*

Sector	Industrial (4 sites)	Hotel (>50 hotels)	Restaurant (>150)	Entertainment (> 10 sites)
Electricity (MWh)	42,000	175,000	48,000	60,000
Gas (MWh)	37,000	205,000	40,000	50,000
Emissions (tCO ₂)	29,000	132,500	33,500	41,000
Allowance purchase	\$560,000	\$2,600,000	\$640,000	\$780,000

League table performance

Reputational impacts and recycle payments

- The “name” and “shame” game...

- Positioning also has a financial component linked to the recycle payments

COMPANY	RANK	CO2 PRODUCTIVITY	LEADERSHIP DIVERSITY	% TAX PAID	COUNTRY
General Electric Company	1	\$27,878	24 %	98 %	United States
PG & E Corp.	2	\$8,656	30 %	76 %	United States
Tnt Nv	3	\$14,575	17 %	100 %	Netherlands
H & M Hennes & Mauritz Ab	4	\$65,236	47 %	100 %	Sweden
Nokia Corporation	5	\$320,536	18 %	100 %	Finland
Siemens Ag	6	\$32,741	10 %	100 %	Germany
Unilever Plc	7	\$21,596	13 %	93 %	United Kingdom
Vodafone Group Plc	8	\$44,047	7 %	NOT AVAILABLE	United Kingdom
Smiths Group Plc	9	\$38,047	0 %	100 %	United Kingdom
Geberit	10	\$26,028	0 %	100 %	Switzerland
Henkel Ag	11	\$20,102	20 %	97 %	Germany
Inditex Sa	12	\$39,934	22 %	100 %	Spain
Procter & Gamble Company	13	\$12,803	25 %	88 %	United States
Toyota Motor Corp.	14	\$130,187	0 %	64 %	Japan
Westpac Banking Corp.	15	\$243,299	33 %	100 %	Australia
Enbridge Inc	16	\$3,782	15 %	62 %	Canada
Koninklijke Philips Electronics Na	17	\$32,234	0 %	100 %	Netherlands
Diageo Plc	18	\$21,642	27 %	80 %	United Kingdom
Nippon Yusen Kk	19	\$1,336	4 %	90 %	Japan

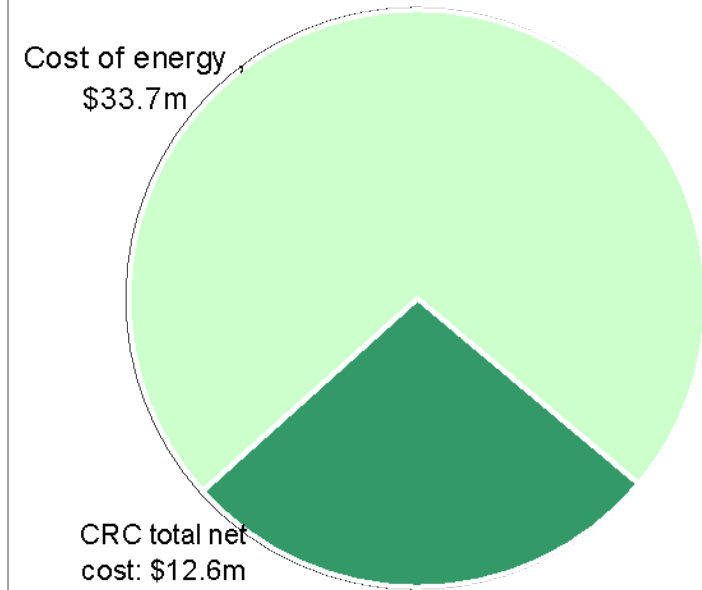
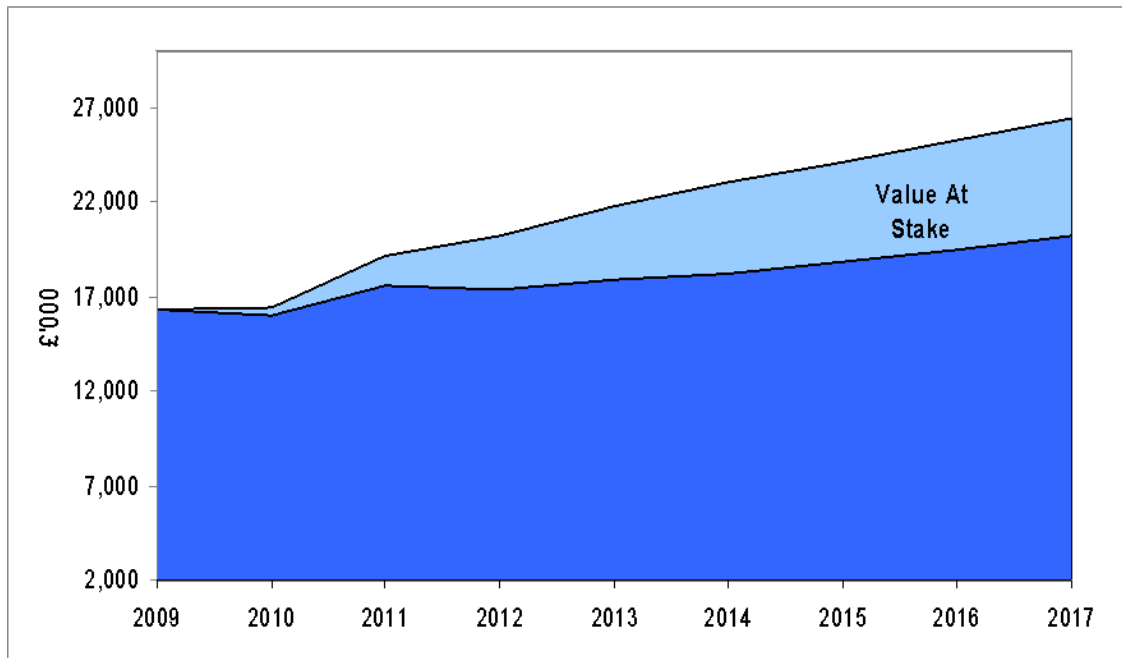
Source: 2010 Global 100

CRC impact on corporate energy efficiency performance

Reputation and cost savings opportunities will drive behaviour change

Case study: Hotel group with > 50 sites across UK

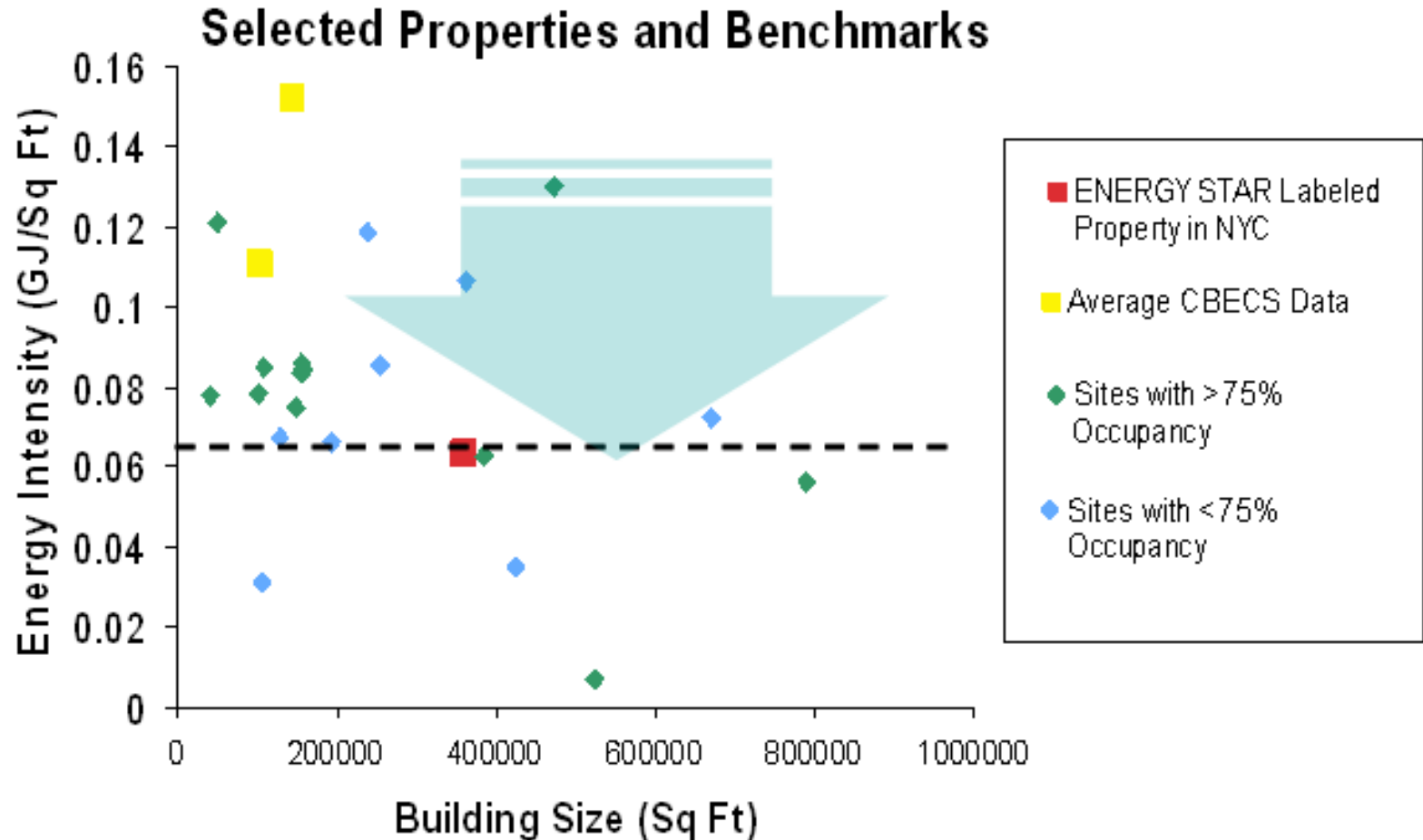
- Value-at-Stake from 2010-2017 is over **~\$45 million and 130,000 tCO2**



Critical success factors for CRC participants

- Understanding **Corporate Performance** across the entire enterprise / portfolio.
- Developing and managing to a long-term business case based on **Continuous Improvement** goals.
- Effectively **Engaging Employees** in performance improvement initiatives.
- Having the capability to accurately **Track and Manage Performance** across the entire enterprise / portfolio.
- **Communicating Effectively** to both internal and external stakeholders.

Benchmarks Inform Portfolio-Wide Targets



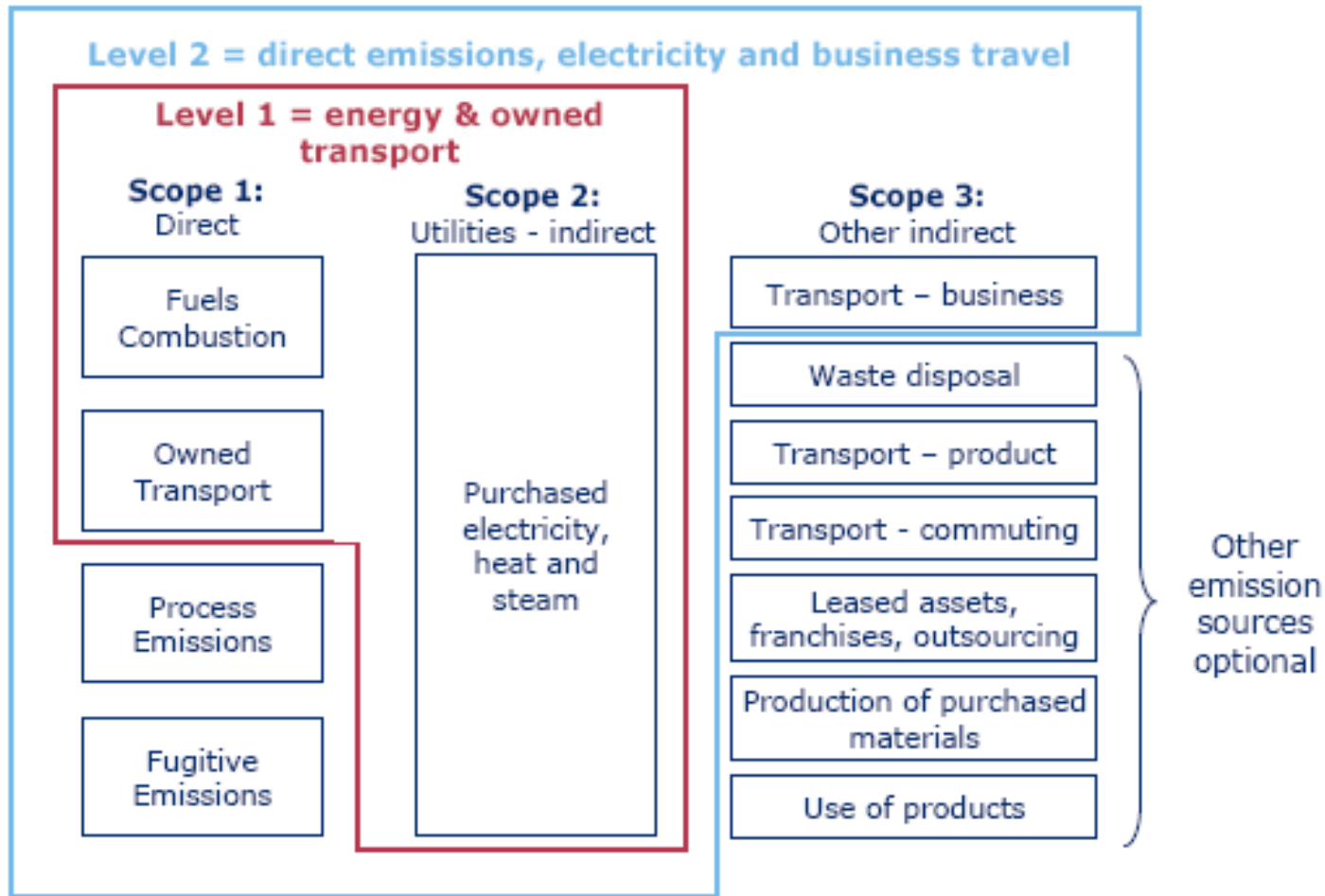


The Carbon Trust Standard

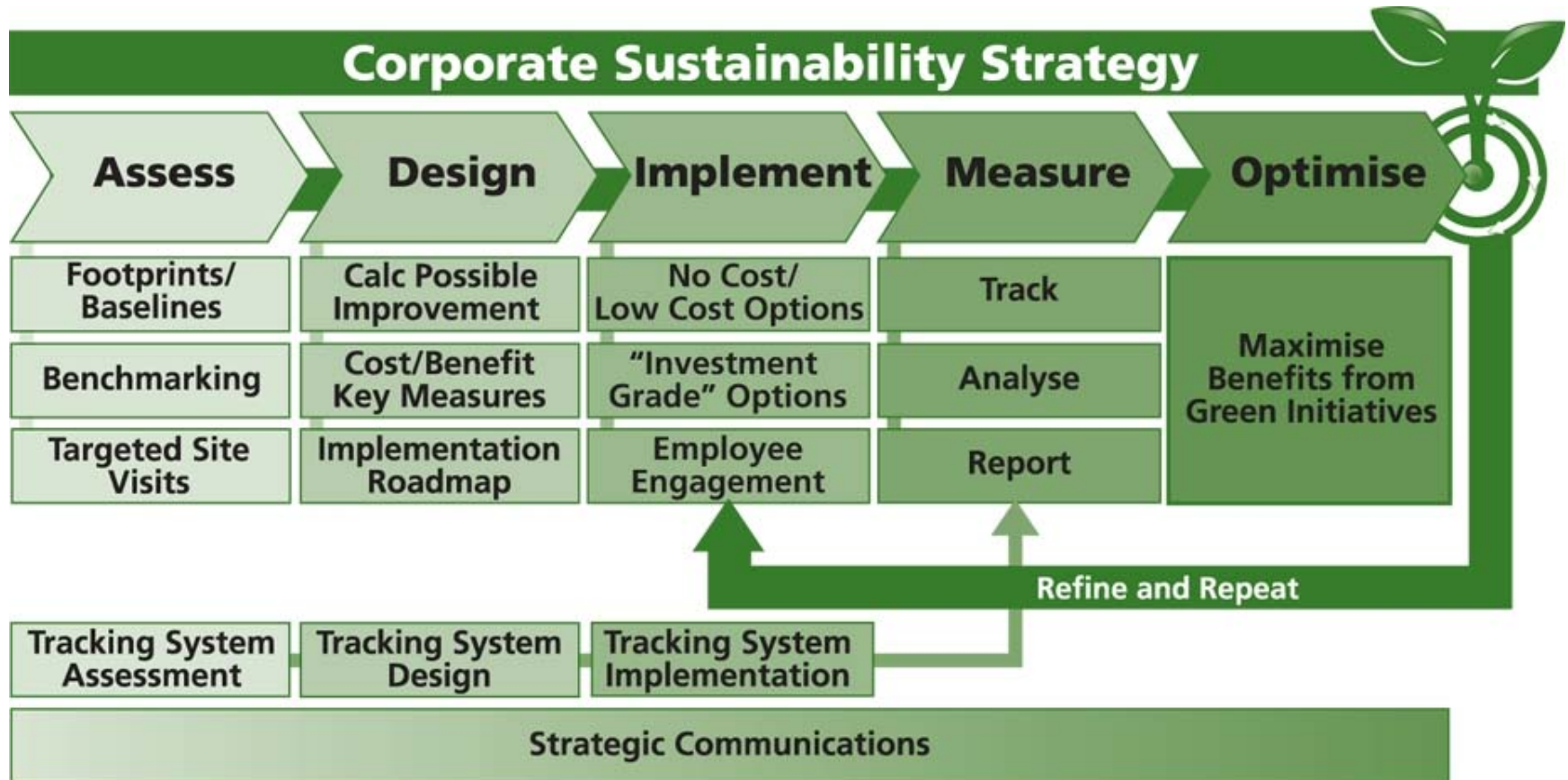
..

- To be certified, must meet or exceed criteria on:
 - **Emission measurement**
 - **Emission reduction**
 - **Qualitative assessment of corporate carbon management policy and practice**
- Applies to CRC participants or those with energy bill > £500k
- Requires evidence of emissions reductions over a 3 year historic period

Awarded at two levels



How ICF helps companies to greener profits...



Agenda

- UK industrial and commercial energy efficiency
- UK energy agencies
- Lessons learned

Carbon Trust



- Not-for-profit company established by UK government in 2001
- £90m government grant income 2009 (from total £97m)
- Board includes representatives of govt, industry and commerce
- Assists companies and government to achieve carbon and cost savings and deliver new low carbon technologies, companies and products
- 23mtCO₂ and £1.4bn cost savings between 2001-9
- Expert advice, finance and accreditation for corporate emissions savings
- Stimulation of demand for low carbon products and services
- Supporting development of new low carbon technologies through project funding, management, collaborative investment, identifying / overcoming market barriers
- Manages government grant funds, using these to lever private investment and provides subsidised services to customers

Carbon Trust programmes

- Extensive carbon management information, publications, advice and opportunity assessment service
- Interest free Energy Efficient loans scheme
- Partnership for Renewables – tax breaks and grants to build 500MW of renewables on public land
- Carbon Trust Standard – certifies emission reductions, linked to CRC
- Carbon Label Company – certifies footprint of products and supply chains
- New technology commercialisation (e.g. joint investment in organic solar cells, advanced biofuels)
- Offshore wind technology cost reduction programme
- Low carbon business incubator – 82 firms incubated, £84m attracted
- Co-investment in early stage companies - £108m attracted

- International step-out to China, USA, Qatar, Australia

- See www.carbontrust.co.uk

Energy Savings Trust



- Not-for-profit company established by UK government
- Provides free advice to people to help them save energy, conserve water and reduce waste
- Focused on individual citizens, not companies
- Provides a range of advisory information and tools e.g. personal footprint calculator from web site www.energysavingtrust.org.uk and from local advice centres throughout UK
- Administers a number of government grant schemes to encourage domestic energy and water conservation and waste management
- Cooperates extensively with local authorities and utilities

Agenda

- UK industrial, commercial, residential energy efficiency programmes
- UK energy agencies
- Lessons learned

Lessons learned from UK experience

- Provide information freely, widely and in many levels of detail appropriate to different target audiences
- Provide incentives, practical help and funding to change behaviour
- Tailor this support to the specific segment you want to change
- Lead with voluntary approaches and reward early adopters
- Make good use of emission trading schemes to keep costs down
- Involve the private sector by making energy efficiency a business opportunity
- Back up voluntary approaches with mandatory requirements that punish laggards
- Make it clear that doing nothing is not an option
- Government should lead the way by improving public sector energy efficiency

Contact Details

Mark Allington

Email: mallington@icfi.com

Tel: +44 20 7092 3005