

The European Union's Cap and Trade Program

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What This Talk Will Cover

- History & context
- Detail of the EU ETS cap & trade program
 - Phase I (2005-07) pilot
 - Phase II
 - Where the EU is going
- The international dimension

Enough Talk: What It Won't Cover



- The science: “*The debate is over. We know the science. We see the threat. And we know the time for action is now.*” (Governor Schwarzenegger, 2006)
- The level of the cap – takes the various politically agreed goals as a given (e.g. AB32 target of 427 MMtCO_{2e} by 2020)

Cap & Trade – Born in the USA

- Designed, tested and proven here in the United States within the 1990 Clean Air Act Amendments
- Europe copied many elements of that program

Why Europe Wanted to Put an Explicit Price on Carbon

- To reduce emissions cost effectively
- Gives financial incentive for abatement and new technology
- Intention was to have same price of carbon EU-wide – a level playing field for business (unlike national taxes)
- So, either a tax or a cap & trade program

Why Europe Chose Cap & Trade

- Easier to agree politically than an EU tax
 - Tried that, and failed
 - Europe has carbon taxes but at country level.
- Europe already facing a cap on total emissions, as a result of Kyoto protocol.
- EU governments are participants in Kyoto cap & trade system
 - Can trade between each other and through the CDM
 - Similar approach for industry & electricity emissions **guarantees** achieving target in those sectors, unlike a tax

Not So Different to Direct Regulation

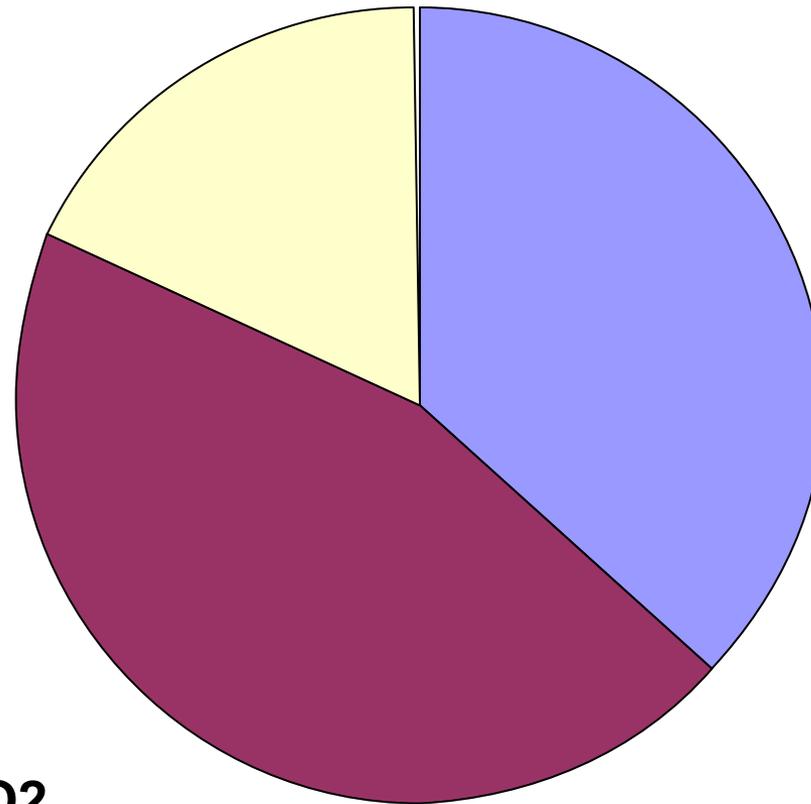
- Obsession with markets sometimes obscures how cap & trade works, or makes it seem complex or novel
- Need a license to emit, and a permit for each ton
- Total number of permits is fixed
- So emitters are still regulated, and total emissions are limited to the desired level
- Gives flexibility to take account of unexpected events, local circumstances and so on
- Penalties and incentives are built in

What do Stakeholders Think?

- Once need for action on climate change is accepted, business prefers cap & trade:
 - Cheaper, with clear incentive for overperformance
 - More flexible and less prescriptive
- Environmental groups?
 - *“One of the world’s most important mechanisms to tackle climate change”* WWF
 - *“The best economic solution for reducing global warming emissions”* EDF
 - *“A tremendously important achievement for European Climate Change policy”* Climate Action Network (CAN) Europe

What Emissions does the EU ETS Cover?

Non CO2
emissions

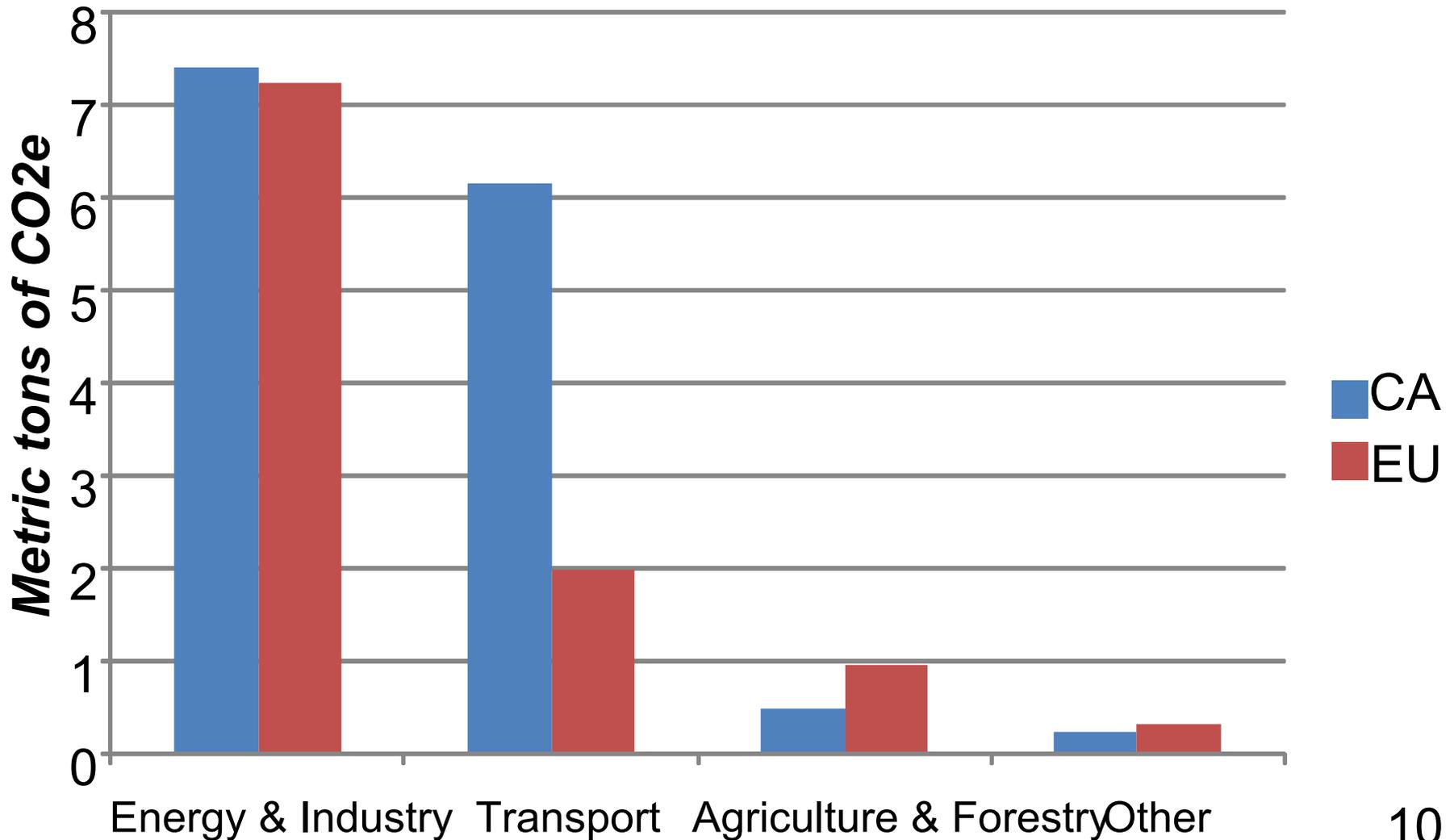


EU ETS

Other CO2

Where do emissions come from?

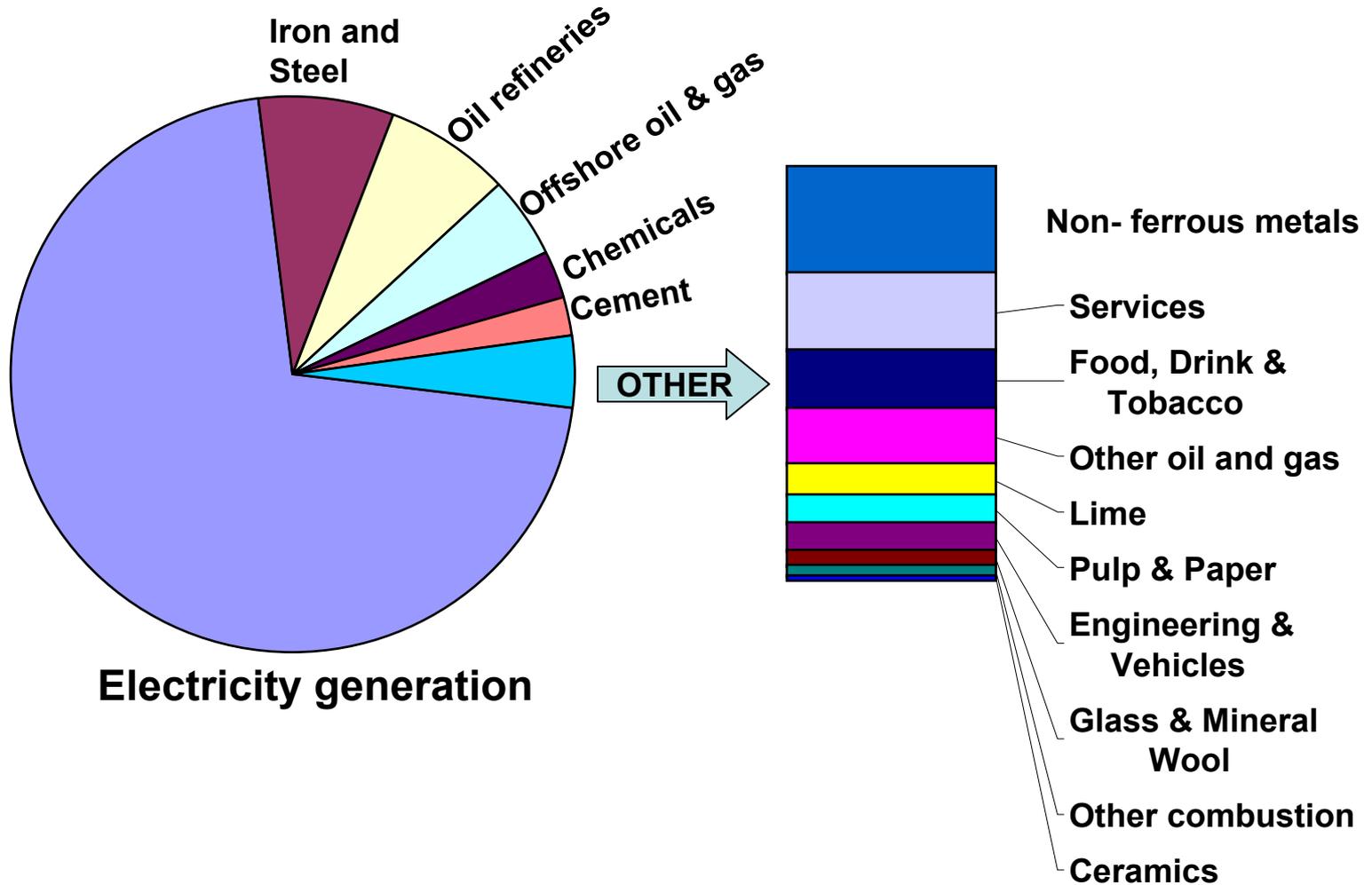
Emissions by sector, per person, per year



What About the Other Emissions?

- EU put forward proposals in January on renewable energy, carbon capture & storage, energy efficiency and cap & trade
- Cap & trade one of a suite of measures
- Role for governments in supporting long term research and development and driving energy efficiency

Which Sectors are Covered?



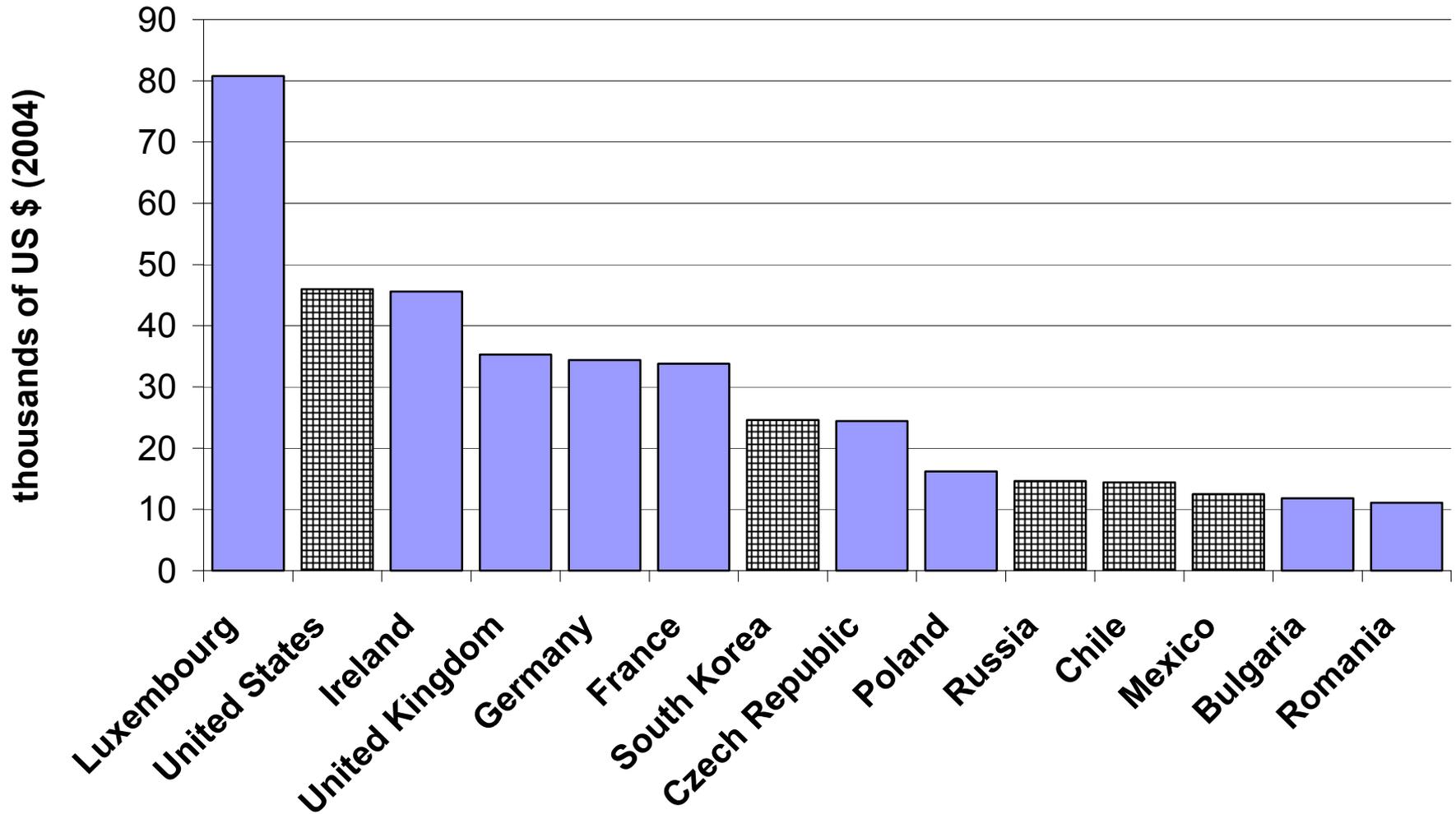
The Scale of the Task

- Was 25 countries (now 27)
- 20 official languages
- 12,000 emitters
- Many different industrial sectors
- 427 million people
- 2 billion metric tons of carbon dioxide emissions per year



EU Countries are Very Different

GDP per capita



Let's Get Started - Phase I

- Cap & trade a big project – so Europe did a pilot phase
- Put systems in place, e.g. monitoring, data collection
- Gain practical experience
- Highlighted some issues
 - Weak emissions data leading to over-allocation
 - Windfall profits
 - Industry treated differently in neighboring countries

Windfall profits

- Cap & trade allowances are valuable! At \$40 each:
 - \$78 billion per year in EU
 - CA: up to \$17 billion?
 - In US: \$200 billion?
- Need to decide who gets this value:
 - Electricity generators
 - Communities/ consumers
 - Particular industries, to shield them from overseas competition
 - Particular emission reduction projects
 - ...or some combination of the above
- Decision is a political one

Phase I – Solutions

Issues	Solution for future
Weak emissions data leading to over-allocation	Use verified data for 2005-07
Windfall profits	More auctioning – do not give permits for free
Industry treated differently in neighboring countries	Allocation the same in all EU countries

Stakeholder Views Following the Pilot

- Keep it simple
- Set the cap further ahead (in line with investment cycles)
- Make it more harmonized between EU countries ('level playing field' for business)

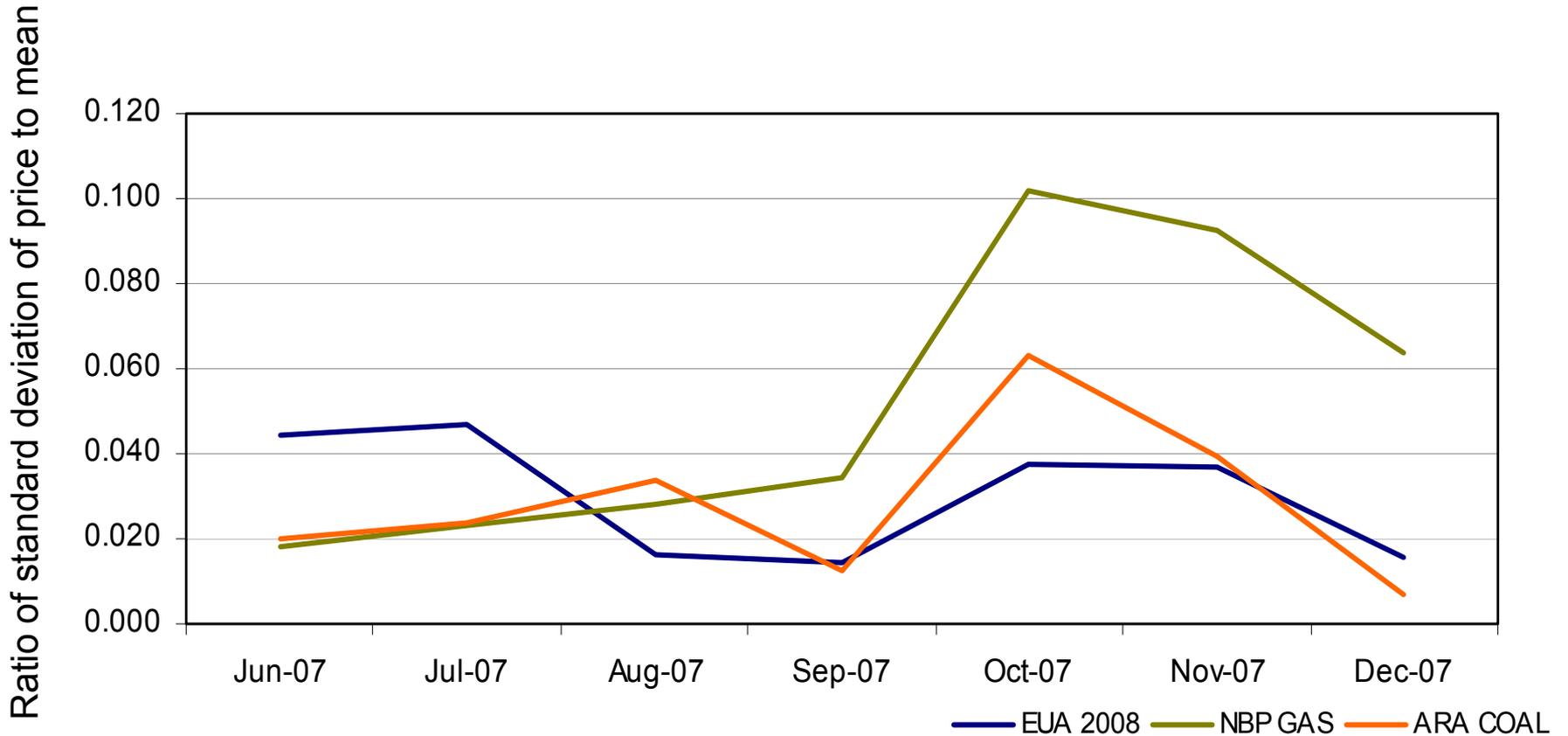
Getting Real - Phase 2

- As in Phase I, each EU country proposed its own cap
- As before, Commission assessed proposals against rules set out in the Directive (EU law) governing the program.
- BUT... much more strict for Phase II, because:
 - Better baseline data (2005 verified emissions)
 - Allocation tied to previously agreed national targets, under Kyoto
 - Result? Revised allocation downwards by an average of nearly 7% (first wave)
- Legal challenges by a number of Member States
- Made a difference...

Made a Difference to the Price



Made a Difference to Volatility



Emission price is *less* volatile than natural gas or coal

Made a Difference to the Environment

EU ETS expected to reduce emissions by **>200 million metric tons of CO₂ per year** in 2008-2012

Like making all transport in California run on 100% renewable energy

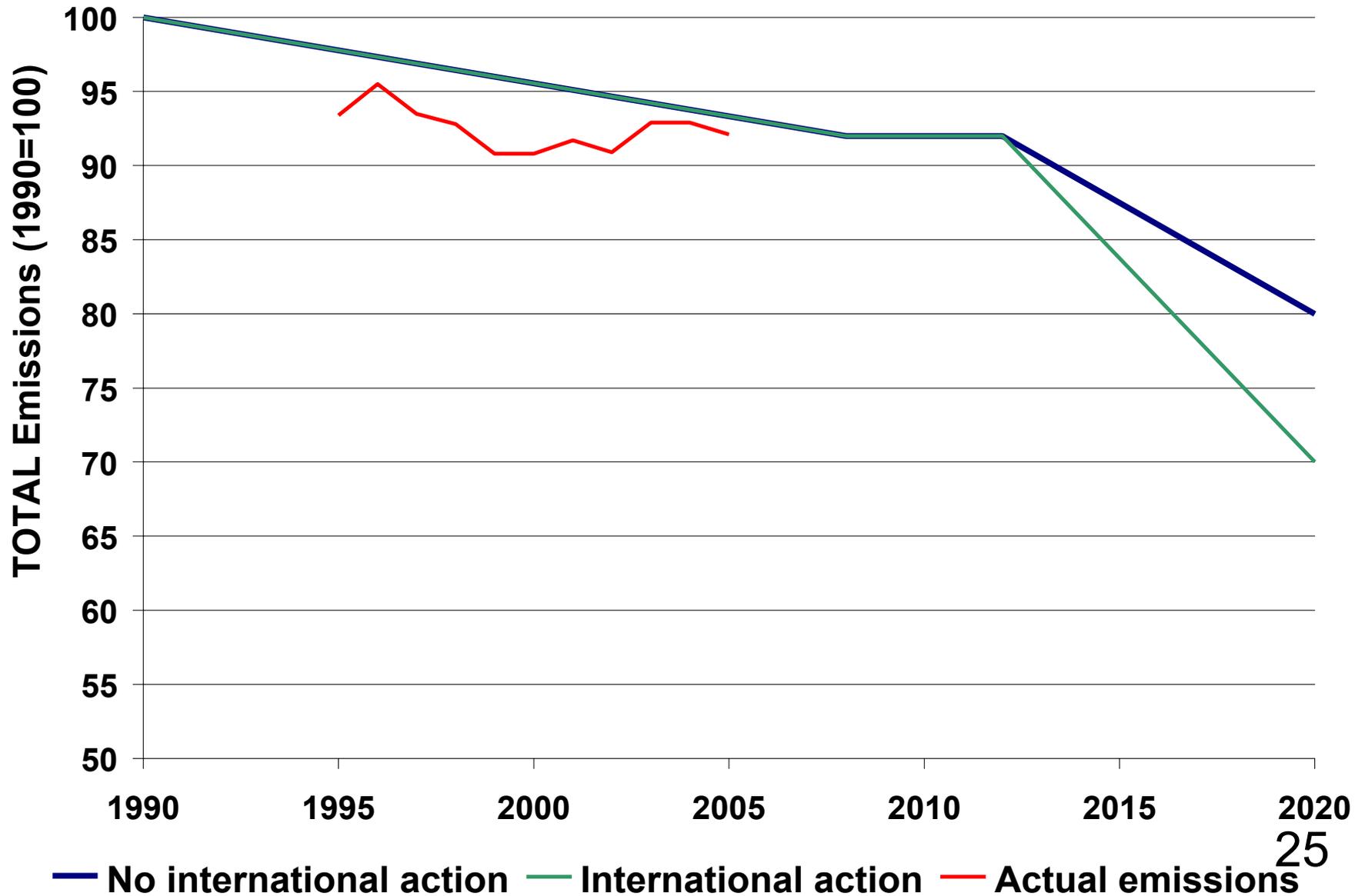
End of Part I

Clarifying questions before we move on to looking at the future?

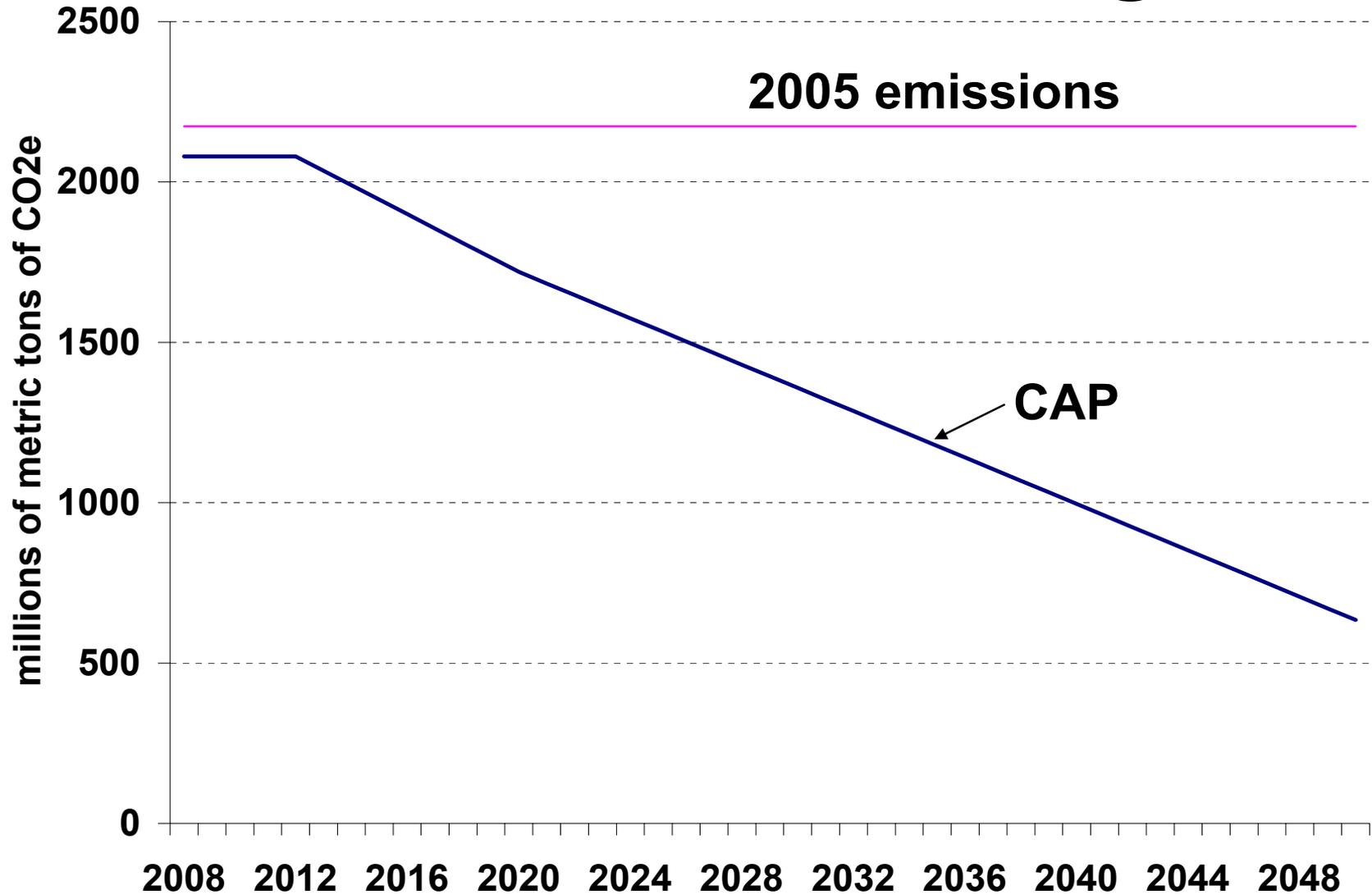
Proposal for 2013 and Beyond

- Central (i.e. EU) cap – reducing by 1.74% per year from 2008-12 levels, forever
- Polluter pays:
 - Full auctioning for electricity generators and carbon capture & storage
 - Full auctioning for everyone by 2020, unless risk of carbon leakage
 - If permits given for free, same rules Europe wide, based on 2005-07 baseline data.
- Tighter limits on use of CDM ('offsets') in Europe until international agreement reached

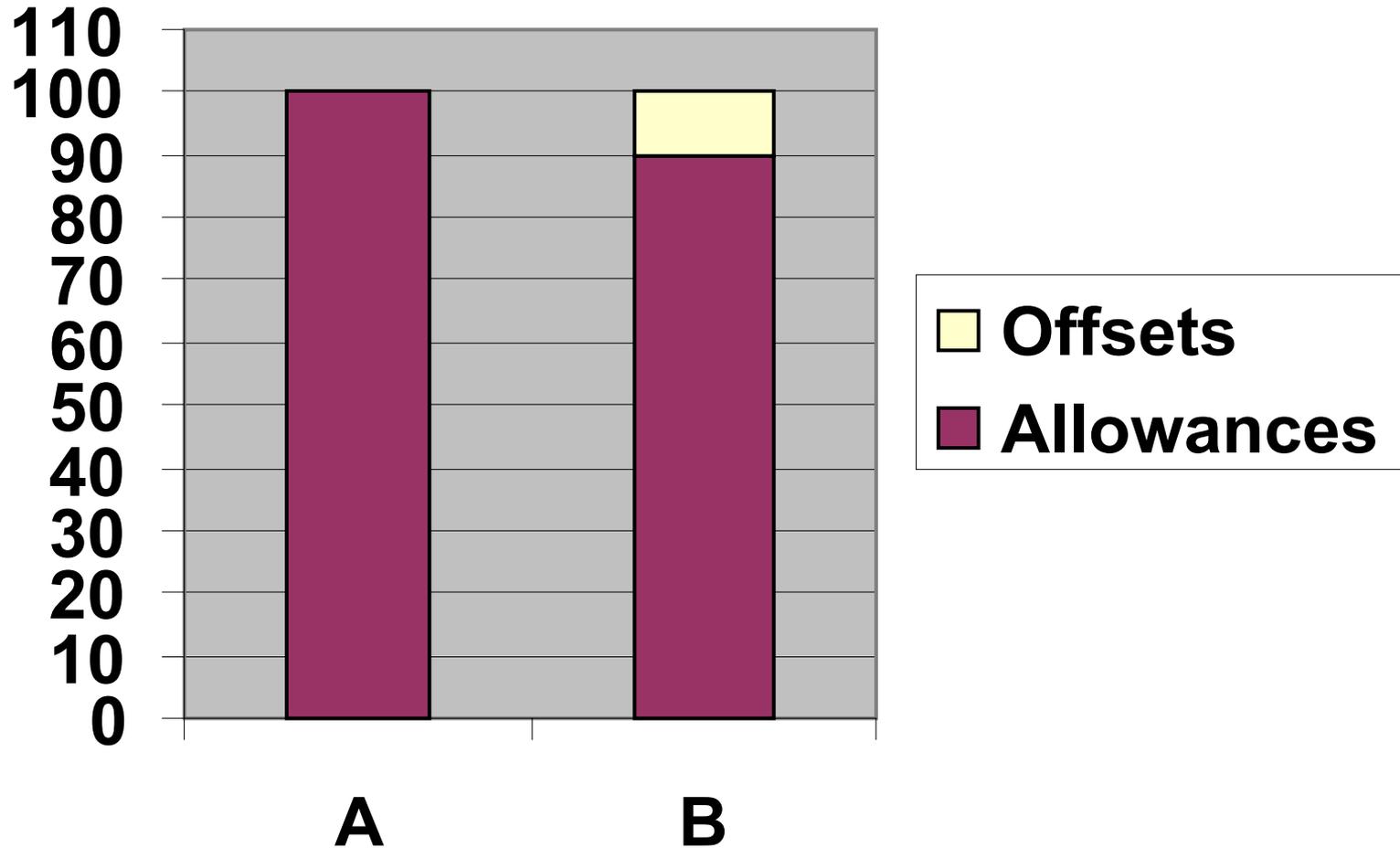
EU Emissions and Targets: 1



EU Emissions and Targets: 2



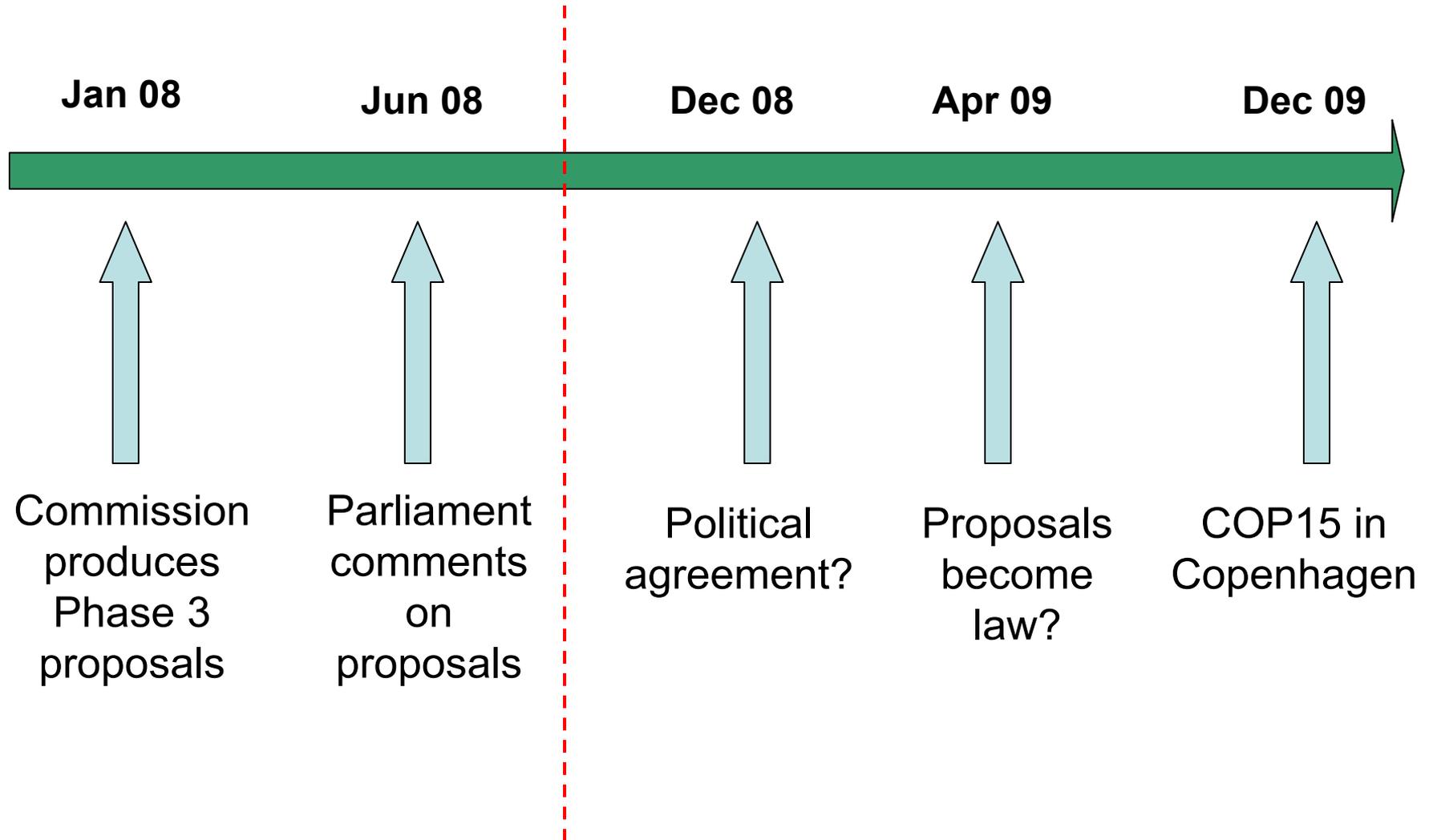
How offsets are used



What is the CDM?

- ‘Clean Development Mechanism’
- Part of the Kyoto Protocol
- Generates ‘emissions credits’ from emissions reductions in developing countries
- Companies regulated by EU ETS can use credits to cover some of their emissions
- Buzzword – ‘additionality’
 - Are the ‘emission reductions’ real?
 - Difficulty of defining what would have happened otherwise
- Like EU ETS, practical experience has shown many imperfections. Like EU ETS, CDM is under review

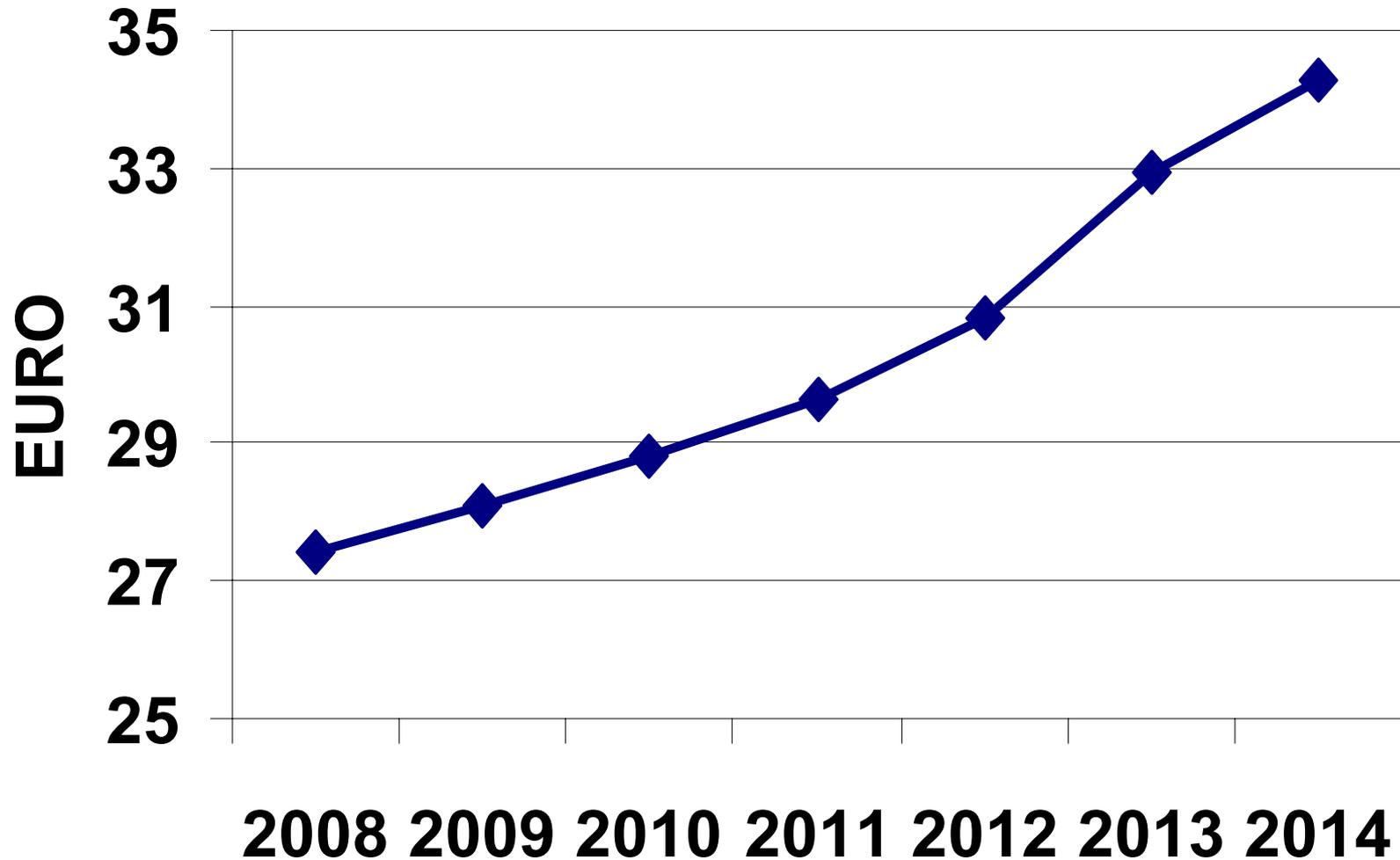
Agreeing the Proposals



Price of Emissions in Europe



Market Treats Phase 3 Like Phase 2



All prices for December contracts, data from ECX

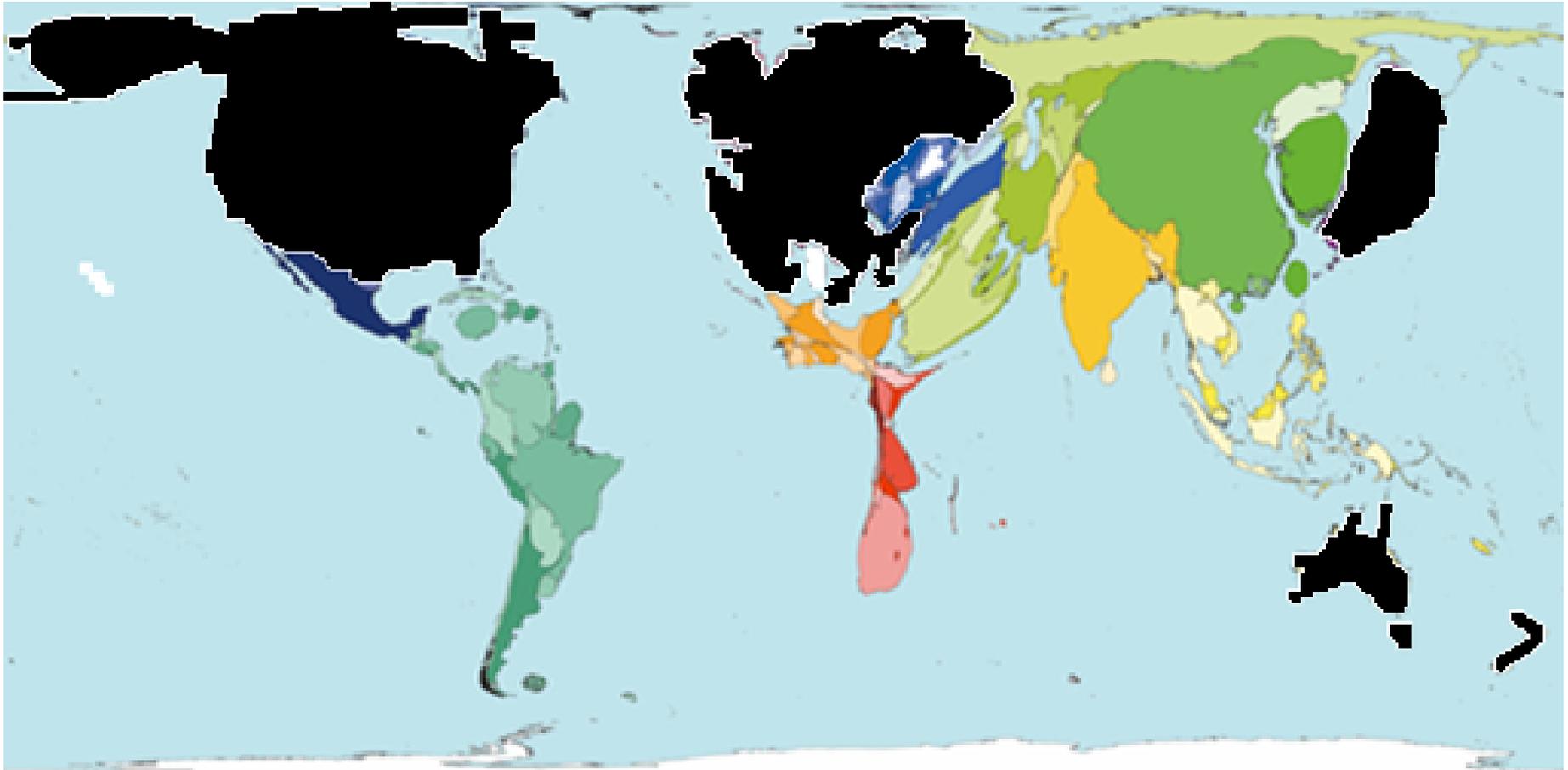
Looking Outside the EU

- What are other countries doing?
- Emissions that aren't assigned to one country:
 - Aviation
 - Shipping

What are other countries doing?

- Program in operation:
 - EU ETS
 - Norway, Iceland, Liechtenstein
 - New Zealand
- Program close to operation
 - Regional Greenhouse Gas Initiative (RGGI), in Northeastern US
- Proposed/ under discussion
 - Australian federal program
 - Japan
 - North America

Who is Considering Cap & Trade?



Source: Worldmapper.org

Linking

- Benefits
 - Reduce total costs to the world
 - Ensure businesses across the world face the same price for carbon; a ‘level playing field’
 - Broaden and deepen the markets, making them work better
- But, linking to another system means you are affected by the structure of that system.

The Next Challenge: Aviation

- International aviation not covered by Kyoto
- EU Parliament agreed (yesterday) to include in EU ETS from 2012
- Growing source of emissions, with very limited substitution options
- Impact is greater than suggested by CO₂ alone

Summary

1. Don't be misled by the difficulties of the EU ETS pilot phase – look at the current program
2. Set caps in line with agreed higher-level targets
3. Get good, verified, emissions data
4. Cap & trade is not enough on its own
5. Don't worry if the program is not perfect at the start.
6. Excess volatility is exaggerated
7. Have a strong independent body enforcing the rules
8. Allowances get treated like any other commodity
9. Market is already trading emissions for 2013

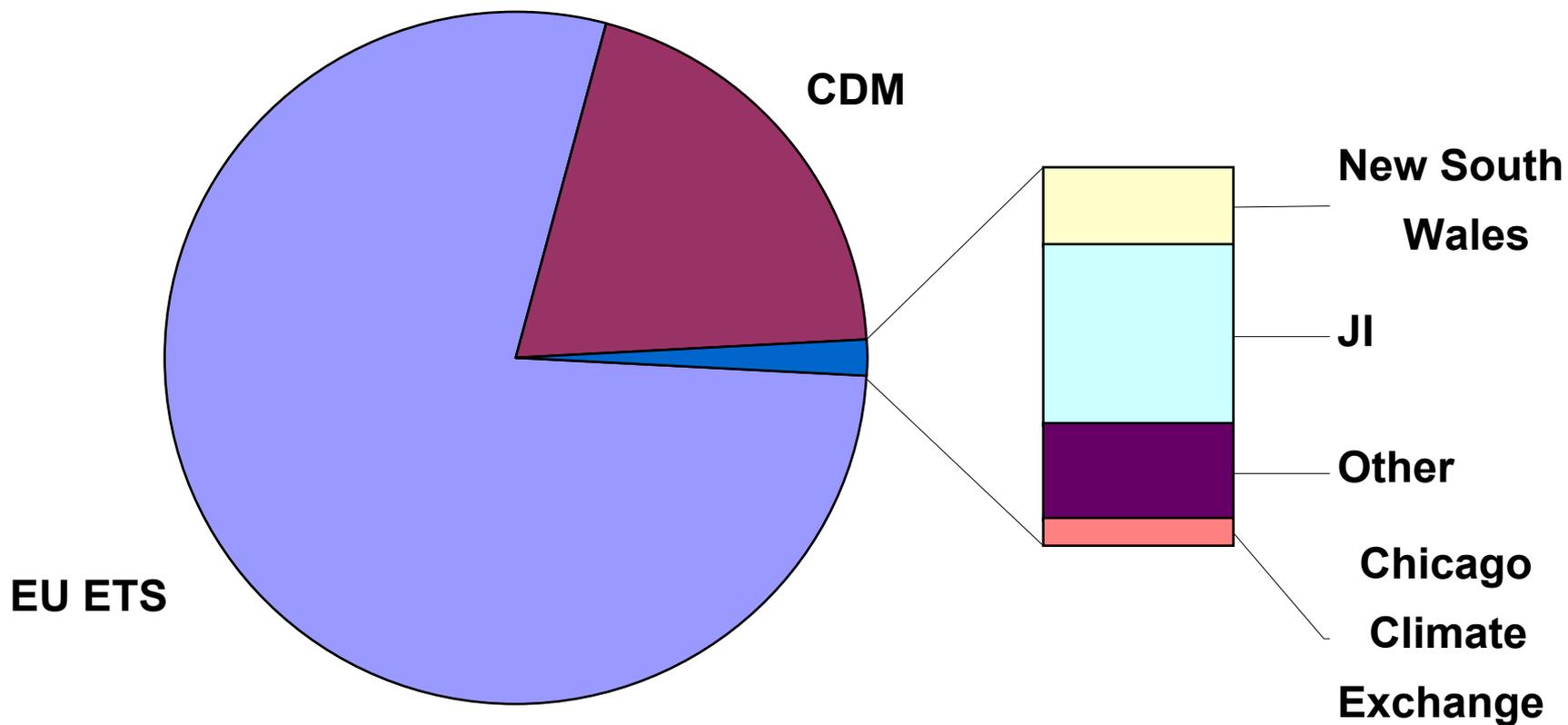
imorrow@arb.ca.gov, +1 (916) 323-1182

Reserve Slides

Details of the EU ETS

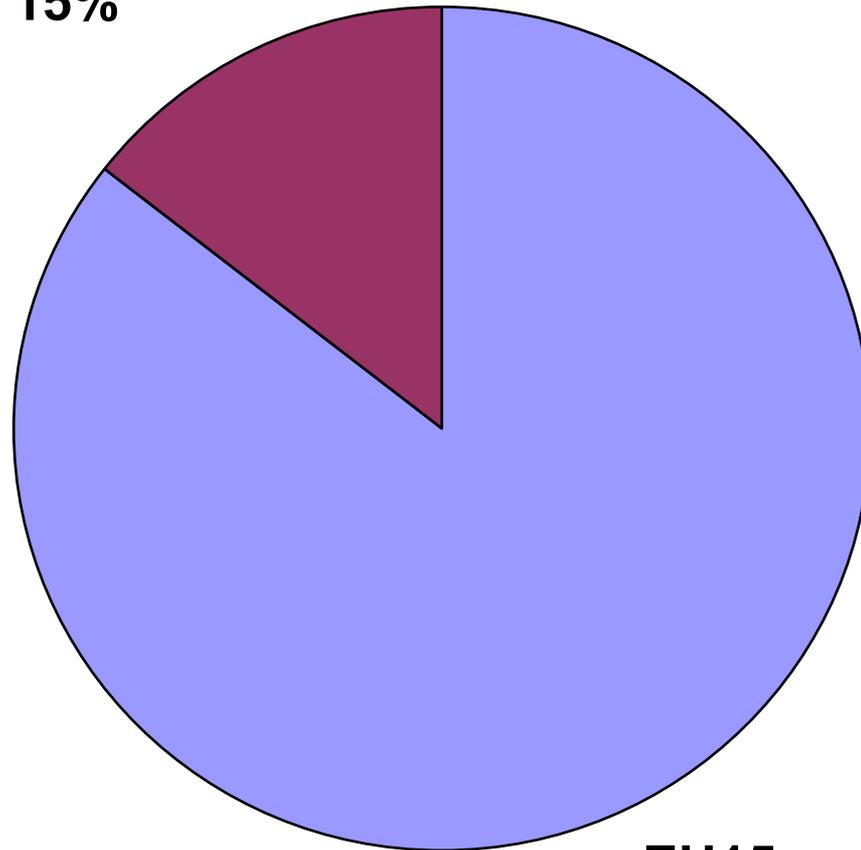
- Started in 2005. No end date.
- Cap set to achieve EU's targets under Kyoto protocol
- Covers:
 - electricity generation above 20MW, and emissions from heavy industry (specified sectors)
 - Will shortly cover aviation
 - Only carbon dioxide (for now)
- Emissions allowances:
 - issued and surrendered on annual basis. Can borrow one year ahead, and bank forever
 - Up to 2012, most (>90%) issued for free, based on past emissions
- Companies can use CDM credits ('offsets') to cover some of their emissions

Value traded, compared to other markets



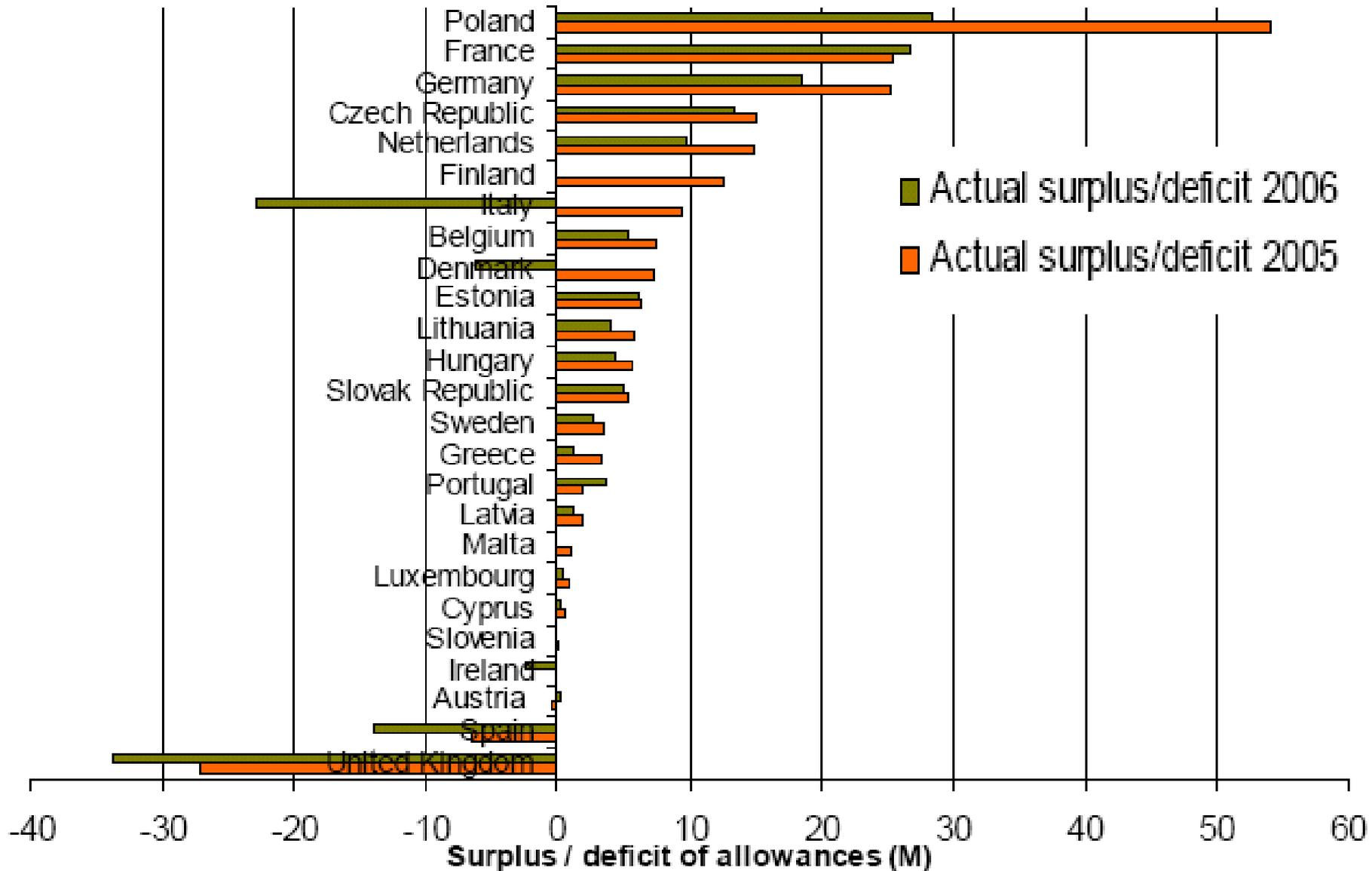
Where in Europe do the emissions come from?

EU10+2
15%

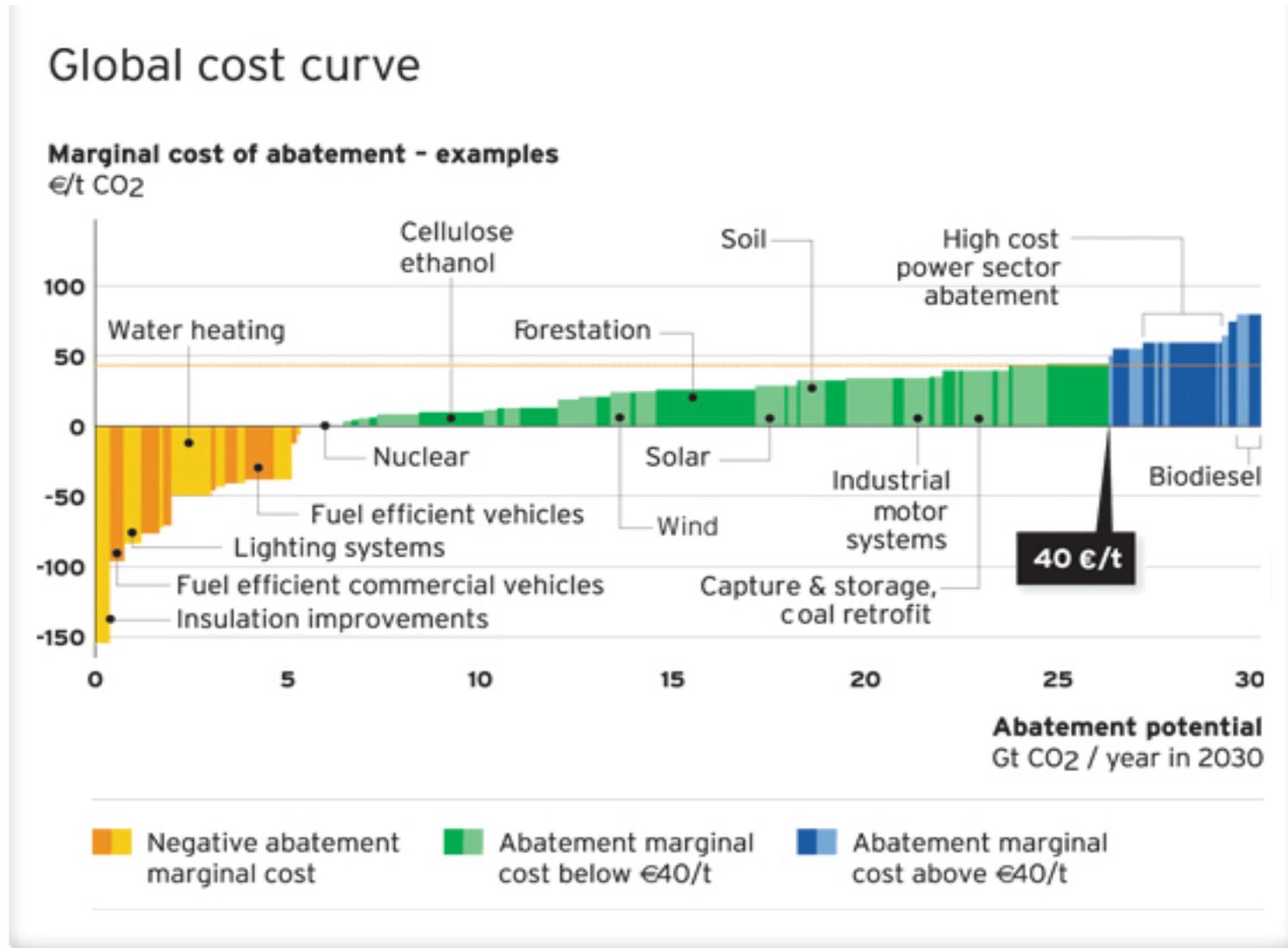


EU15
85%

Over-allocation



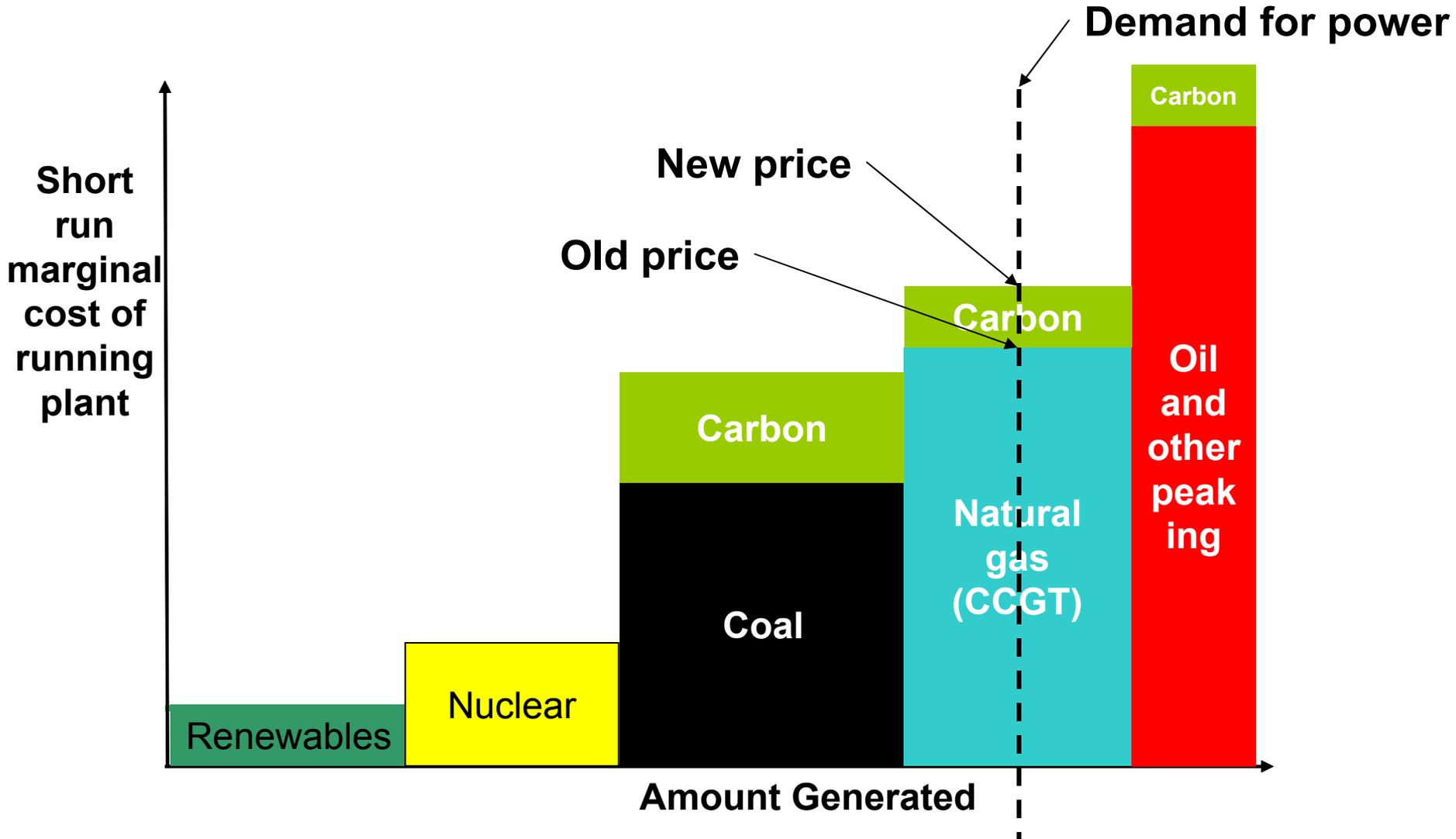
How are we going to do all of this?



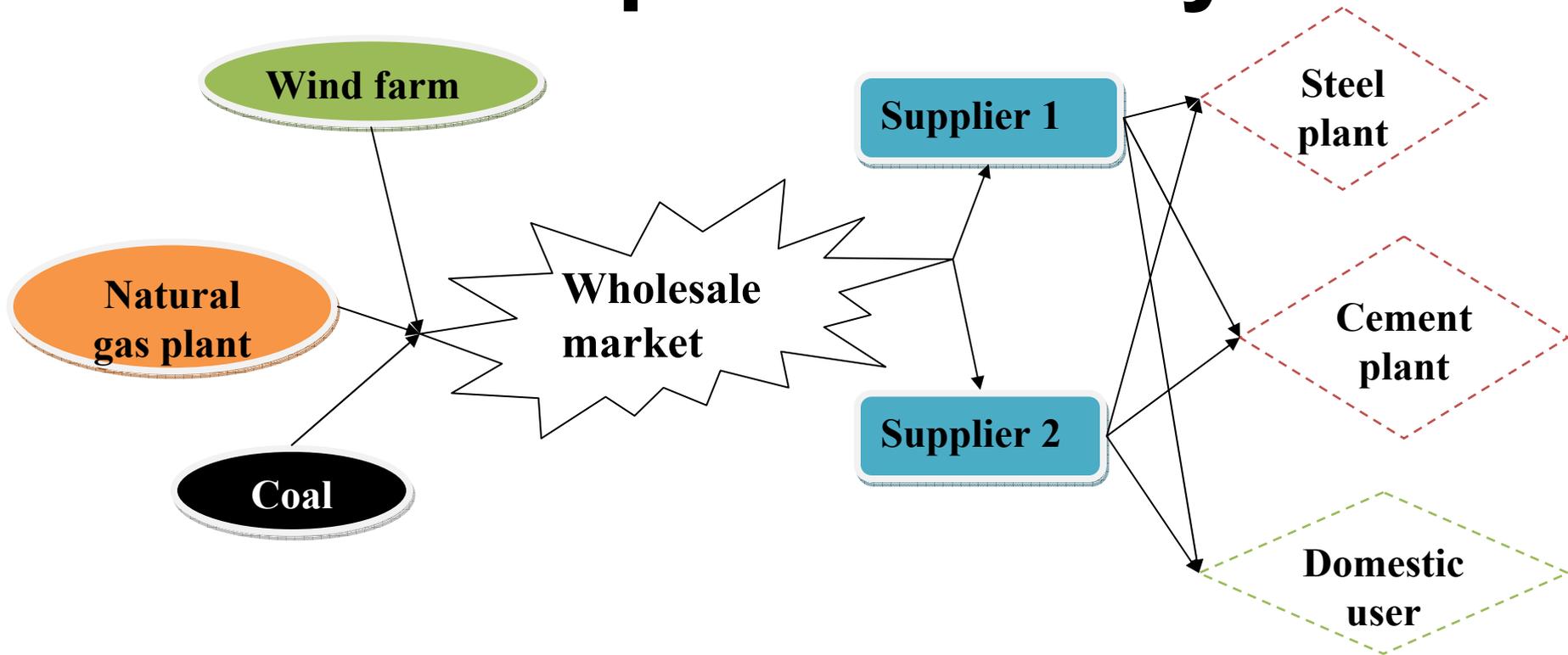
Concerns About Linking and Offsets

- All existing or proposed programs put limits on the use of credits from other cap & trade or offset programs
- One reason for limits is concern about monitoring and ability to enforce in other jurisdictions.
- But any international effort on climate change must have well monitored and verified reductions in many countries. So this is not a linking issue.
- Options for addressing this might include mutual recognition of standards/ verifiers.

Electricity prices and carbon



Windfall profits – why?



- In competitive market, generators compete to produce electricity as cheaply as they can
- So – wholesale electricity price is opportunity cost of producing marginal unit of electricity

Features of Market-Based Policies

- Markets attempt to deliver objective *at lowest cost*
- A major reason for using them
- BUT... don't be surprised if they don't achieve the objective in the way you expect
 - Powering down dynamic positioning systems on oil drilling ships
 - Non-CO₂ gases. High global warming potential, relatively easy to abate
 - With SO₂ program, EPA expected plants to install scrubbers...
- Need to resist temptation to say that market is achieving objective in the 'wrong' way

Tax benefits?

- A single tax across the economy
 - No exemptions?
 - Cap & trade allows discussions about who pays to be separated from discussions about the environmental effectiveness
- Price is more predictable
 - Taxes can change too
 - Can guarantee price of allowances for 5 years into future
 - Cap & trade price not that volatile anyway
- A single global tax? Not realistic

EU ETS & Lieberman/ Warner

	EU ETS	Lieberman/ Warner
Cap	EU-level cap set into indefinite future, review by 2025	US federal-level cap set to 2050
Auction	100% for electricity production. 100% for most by 2020	Free allocation at start, moving to 100% auctioning by 2036
Sectors	Electricity, industrial, aviation. Consider maritime. Not transport, res/ commercial natural gas or ag / land use	Electricity, industrial, fuel use. Not agriculture or land use (although allowed as offsets).
Outside credits	Open to credits from other cap & trade. Strict limits on use of CDM, subject to international climate negotiations	Open to credits from other cap & trade for up to 15% of obligations. Systems have to be approved by US EPA. 5% credits from uncapped systems