

Supporting the Design and Implementation of Emissions Trading Systems in China

中欧碳交易能力建设项目



Regional Training on ETS

Cap-Setting Part II: Practice

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Supporting the Design and Implementation of Emissions Trading Systems in China - 中欧碳交易能力建设项目



**Current
status**

Capacities built over time

**Well-functioning
China National ETS**

Road maps

Cap setting

Allocation

MRVA

Registry

Market oversight

PRACTICE

Cap-setting in Europe

- **Cap-setting in Phase 1 2005-7: Bottom-up**
- **Changes in Phase 2**
- **Significant changes for cap setting in phase 3**
- **Impact of projections in cap setting**
- **The cap and other determinants of price**
- **Burden-sharing between countries in Europe**



Phase I: learning by doing

Cap-setting EU-ETS phase I: national/bottom-up approach

- > Each EU Member State (MS) established the 'national cap' on the basis of criteria set by the European Commission
 - Criteria included e.g. 'consistency with Kyoto targets', consistency with emission developments', 'consistent with potential to reduce emissions', 'consistency with other policies', 'not higher than needed' and 'no distortion of competitiveness'
 - Still left room for very different approaches.
- > The European Commission reviewed the proposed amounts and required (limited) changes (including views from other MS)
- > The total EU cap was determined by adding up all those amounts of allowances across MS



Implications

- > Difficult to prove criteria were not met, and that total allocation therefore needed to be reduced, due to large amounts of country-specific information and too generic criteria
- > This led to problems in terms of a too lenient cap, resulting in low carbon prices, and distortion of competitiveness between countries
 - Expectations upfront: 18-36 E/t (including/excluding the use of project credits, respectively)
 - Trading around 20-30 E/t in 1st year, down to near zero at the end of Phase I (no 'banking')



Phase II: limited time for changes

Cap-setting EU-ETS phase II : little changes from Phase I

- > the same rules applied as in Phase I
- > A 'mid-term review' was foreseen (2006), with potential changes in the rules effective as of Phase III
- > NAPII due June-2006, no time for a formal adoption of new legal text replacing the 2003 EU ETS Directive to have new rules in place for Phase II
- > Maximum achievable were small changes that all MS could agree to informally



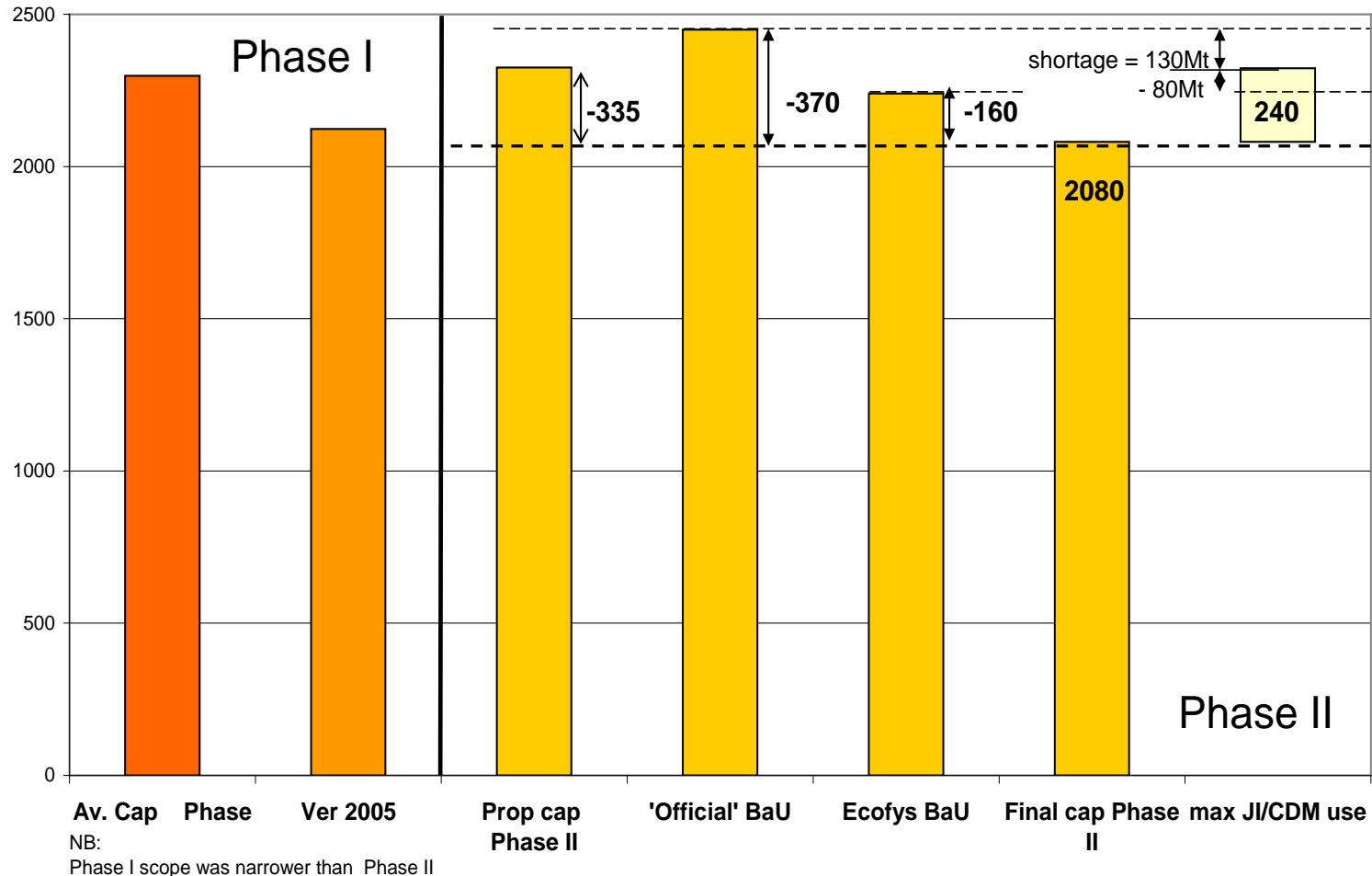
Implications

- > Little time was available for change
- > Focused on improving the process as much as possible
- > Focused on more significant change in phase III



Projections vary significantly, and the projections used can impact the system significantly

The impact of using projections on cap-setting

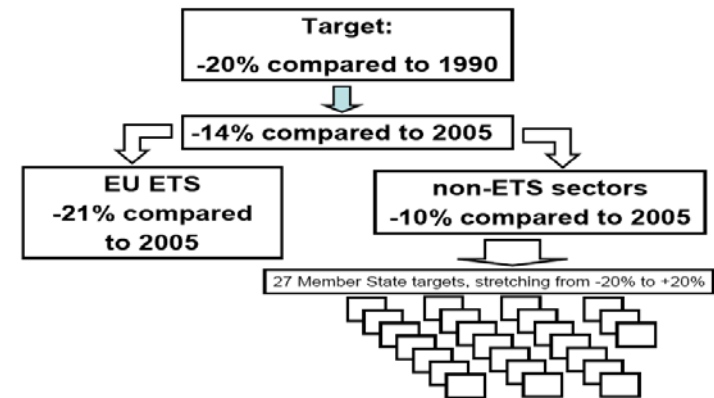


Source: Ecofys

Phase III: substantial changes based on lessons learned from Phase I-II

Cap-setting EU-ETS phase III : substantial changes

- > While not in time for Phase II, lessons from Phase I fed discussions on changes in the system as of 2006, with draft legislation published at end 2008, and adopted at end 2009. Changes to affect Phase III, as of 2013
- > Part of the Climate and Energy, or 20-20-20, Package, adopting a set of 3 targets for 2020: 20% reduction of EU GHG emissions, 20% energy efficiency improvement, 20% renewable energy



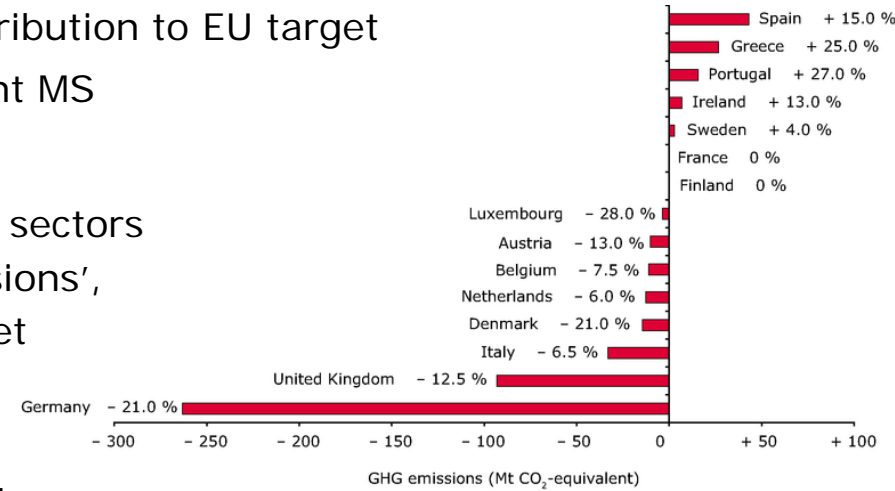
Implications

- > For ETS, this GHG target was translated to a -21% reduction in 2020 compared to 2005, assuming a distribution over ETS/non-ETS sectors
 - > Cap set top-down instead of bottom-up
 - > One EU-wide cap instead of summing up 'national caps'
 - > Much more stringent cap
 - > No impact of differing national targets on ETS participants
- > Meeting all three targets is more expensive than only the 20% GHG target
- > Non-ETS emissions still managed at the MS level



Sidebar: 1997 EU Burden sharing: distributing joint efforts

- > EU could not agree on its shared Kyoto target due to many differences between MS
- > A burden sharing approach was developed to estimate the reasonable contribution of each MS to joint target, given these differences
 - Triptych approach applied uniform criteria to different starting point in each MS
 - Adding resulting reductions yielded MS contribution to EU target
 - Resulted in differentiated targets for different MS
- > Alternative considered in negotiations:
 - to take emissions of internationally oriented sectors (energy, industry) 'out of the national emissions', as if a separate 'country' with separate target
 - Similar to approach for EU 2020 targets, where ETS sectors are no longer covered by MS targets, but are separated into a stand-alone system (the EU-wide ETS) with one target for all emitters across the EU
- > Approach also applied to distribute energy conservation targets in 12th FYP over provinces
- > Could be a tool in distributing China's national GHG ambitions over sectors (ETS/non-ETS) and/or over provinces



PRACTICE

Cap-setting approaches in the current pilots

- **Details of cap-setting in Shenzhen, Beijing, Shanghai, Guangdong, Tianjin, Hubei, Chongqing**

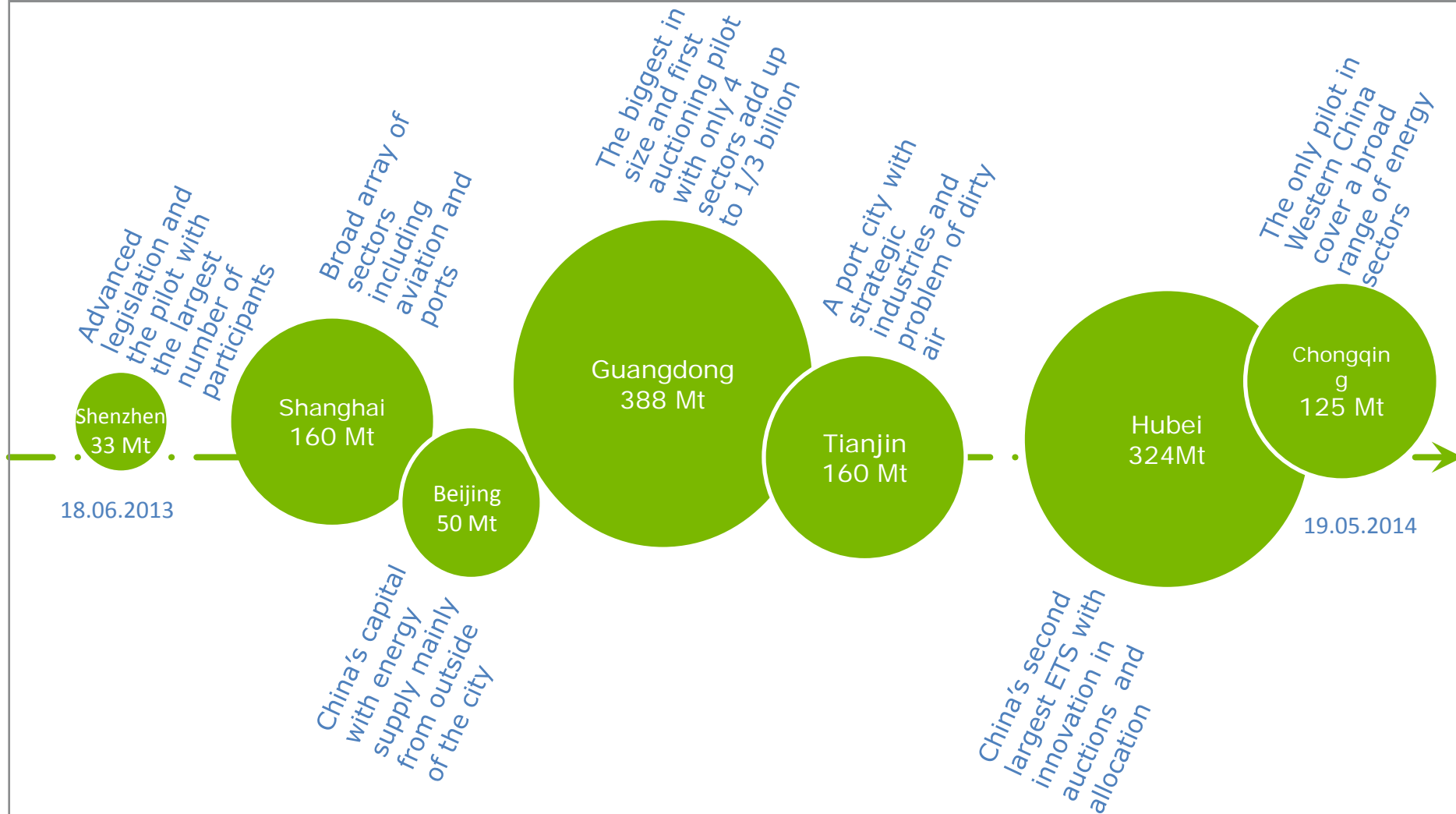
Cap-setting of Chinese ETS pilots (1)

Characteristics of Chinese ETS pilot caps

- > Each pilot has a cap in absolute term: tCO₂e
- > Factors to considered when setting the carbon emissions cap:
 - Scope:
 - CO₂ or other gases;
 - sectors: choose sectors that cover the most emissions e.g. power, cement, iron and steel etc.
 - Carbon intensity targets allocated to the provinces or municipalities
 - Economic growth targets
 - Emissions controls in place when considering the development plan by sector
- > The caps are growing in the pilot phase unlike other ETS schemes

Cap-setting of Chinese ETS pilots (2)

New caps of Chinese pilot schemes in chronological order



Source: Ecofys, World Bank

PRACTICE

Cap-setting in some other jurisdictions

- **Examples of California, Australia, South Korea, Québec**

Cap setting in other ETS

	California Cap-and-Trade Program	Québec Cap and Trade System	Australia's Carbon Pricing Mechanism *	South Korea's Emission Trade Scheme
Type of cap	Absolute	Absolute	Absolute	Absolute
Emission Reduction Target	By 2020: 15% below 1990 level under a BAU scenario	By 2020: 25% below 1990 levels under a BAU scenario	By 2020: 5% below 2000 levels under a BAU scenario	By 2020: 30% below 1990 level under a BAU scenario
Cap-setting estimation	Estimation based on historical emissions	Estimation based on historical emissions	Estimation based on historical emissions <i>(no cap during the fixed price period)</i>	Estimation based on historical emissions
Price Containment Mechanism	Allowance Price Containment Reserve	Allowance Price Containment Reserve	Fixed price period, afterwards n.a.	Early Reserve Auction
Flexibility	<ul style="list-style-type: none"> • Offset credits 	<ul style="list-style-type: none"> • Offset credits • Early action credits 	<ul style="list-style-type: none"> • Offset credits 	<ul style="list-style-type: none"> • Offset credits • Early Action credits

* Australia's Carbon Pricing Mechanism was repealed from 1 July 2014

IN-DEPTH STUDY

supply demand mechanisms to cope with
inherent uncertainties

- The problem – lack of supply response
- Solutions

In-depth: the surplus debate in the EU ETS – record high surplus and record low prices

The development of carbon prices and allowance surplus in 2008-2014



“Potentially there will be a structural surplus in most of phase 3 of around 2 billion allowances. This risks undermining the orderly function of the carbon market.”

European Commission

In-depth: the surplus debate in the EU ETS – Is there actually a problem in the EU ETS?

Different interpretations on the functioning of the EU-ETS are voiced

The EU ETS is established “in order to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner”

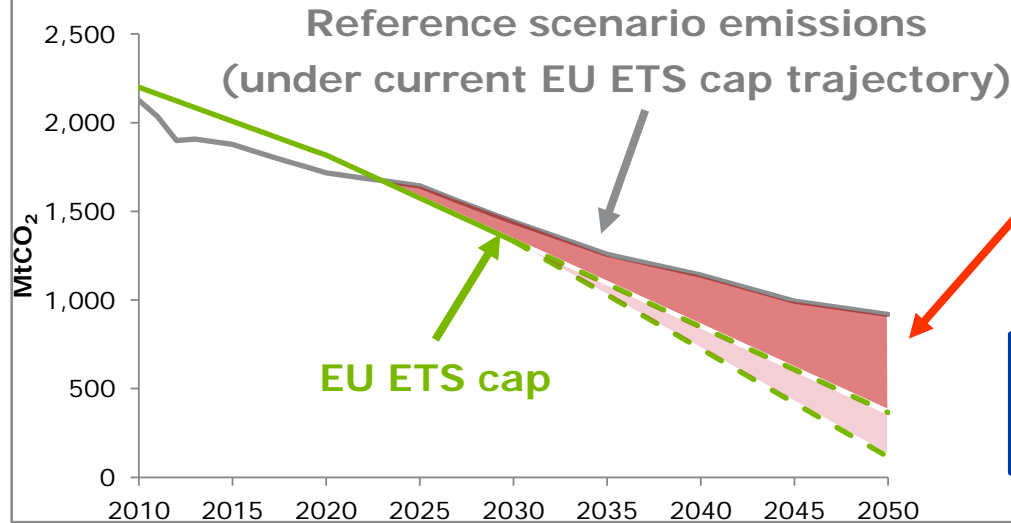
There is no problem

Emissions remain below the cap and the market is setting the carbon price, so the EU ETS market is working

VS

There is a large problem

Carbon price is not stimulating low-carbon investments, jeopardising achieving future GHG reduction targets



Significant GHG emission reductions will be necessary to meet the 2050 target, requiring action now

Is the market appropriate to incentivise longer term action?



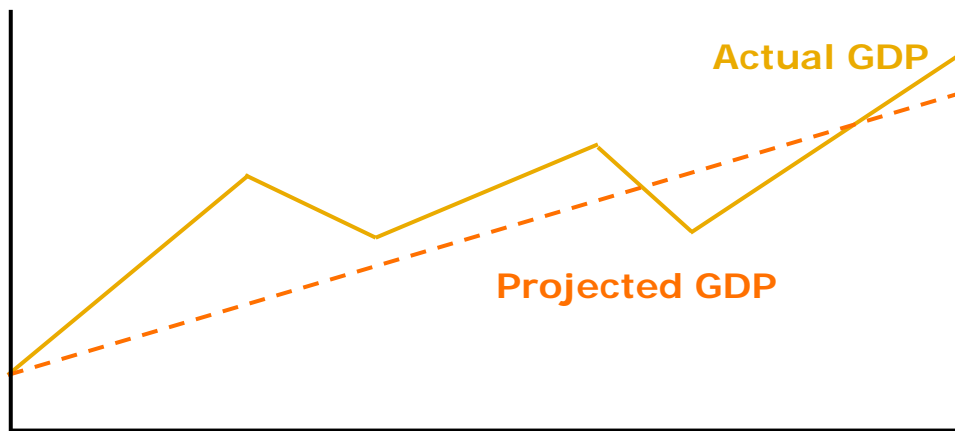
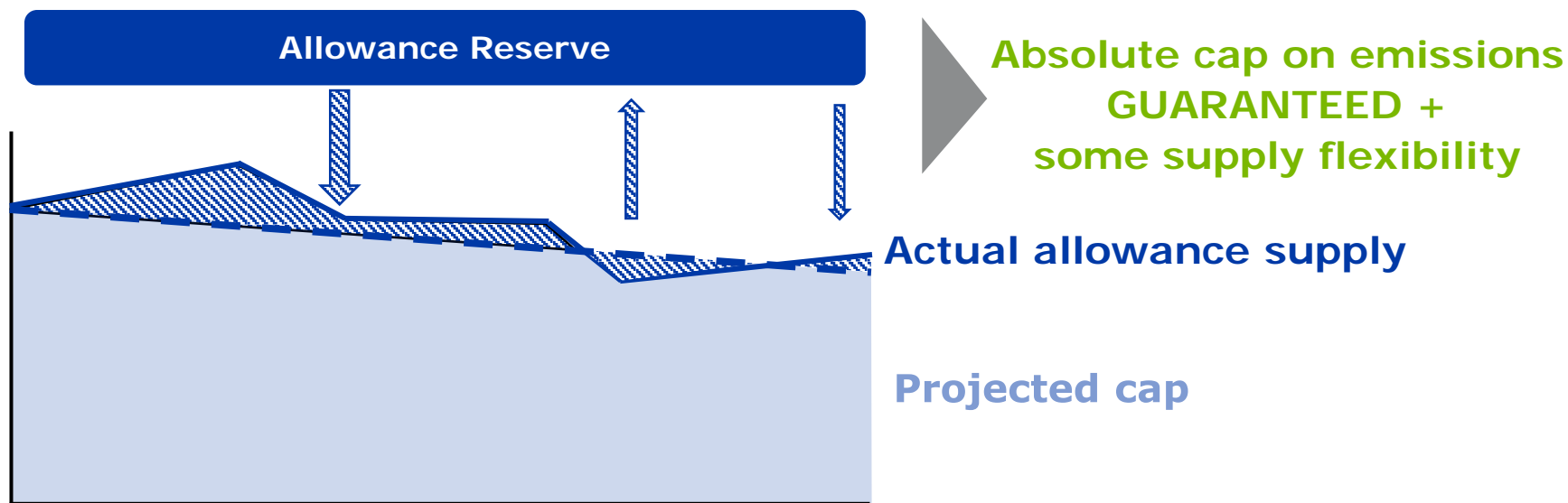
In-depth: different supply mechanisms to cope with uncertainties and unexpected shocks

Options to implement a form of supply flexibility in an ETS

- > Dynamic intensity-based cap-setting
- > Cap trajectory gateway
- > Rolling cap
- > Periodic review of the cap
- > Price floor and/or ceiling (price corridor)
- > Auction reserve price
- > Allowance reserve mechanism
- > ...

In-depth: using a reserve mechanism to cope with uncertainties and unexpected shocks

The functioning of a reserve mechanisms

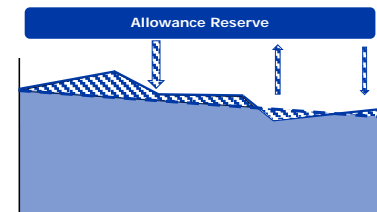
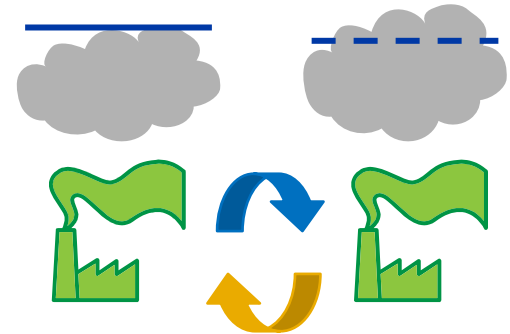
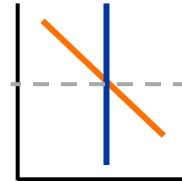


Different triggers can be used to determine the operation of the reserve mechanism, e.g. GDP, allowance price or surplus

In conclusion, there are different aspects to take into consideration when setting the cap

Main takeaways for cap-setting

- > Cap determines the total supply, and supply and demand determine the carbon price
- > Demand is uncertain and depends on many factors
- > Actual quantity of allowances for sale may differ again, depending on a range of factors
- > Trade-offs of absolute cap-setting vs dynamic intensity-based cap-setting
- > Consider how money flows between sectors
- > Different ways to regulate supply and demand to cope with uncertainty and unexpected shocks to the ETS market





Key sources with considerations for cap-setting

- > Ecofys and OEA (2014). "Cap-setting, Price Uncertainty and Investment Decisions in Emissions Trading Systems", UK Department of Energy and Climate Change, January 2014.
- > Fankhauser, S. and Hepburn, C. (2010). "The Design of Carbon Markets Part I: Carbon Markets in Time", in: Energy Policy, 38(8), pp. 4363-4370.
- > Murray et al. (2009). "Balancing Cost and Emissions Certainty: An Allowance Reserve for Cap-and-Trade", Review of Environmental and Policy, January 2009.
- > DIW Berlin (2013), "EU Emissions Trading: The Need for Cap Adjustment in Response to External Shocks and Unexpected Developments?", German Federal Environment Agency, February 2013.