Emissions trading and the role of a long run carbon price signal

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International Carbon Action Partnership (ICAP) Secretariat

ICAP‘s Mission

- Share **best practice** and learn from each others‘ experiences;
- Ensure that **design compatibility issues** are recognized at an early stage;
- Help to **make possible future linking** of trading programs; and
- Highlight the **key role of cap and trade** as an effective climate policy response.

Exclusive forum of ETS government leaders → **Outreach to potential new ETS** → **Fostering mandatory ETS with absolute cap**

Key messages

- ETS can deliver **“static efficiency”**
- But **“dynamic cost effectiveness”** is important for long-term mitigation goals and decarbonisation
- Dynamic cost effectivness might be disturbed by **market and regulatory failures**
- Dynamic cost effectiveness can be improved by:
  - 1. Implementing tools to manage the allowance market
  - 2. Embedding an ETS within a credible long-term policy framework.

Outline

1. Objectives of ETS
2. Dynamic cost effectiveness: Conceptual framework
3. Market or regulatory failures
4. Options to address market failures
5. Enhancing political commitment
6. Building constituents in support of ETS

Objectives of ETS

- **Achieve an emissions reduction target cost-effectively**
  - Static vs dynamic cost-effectiveness
  - Cost to society also in case of a low price

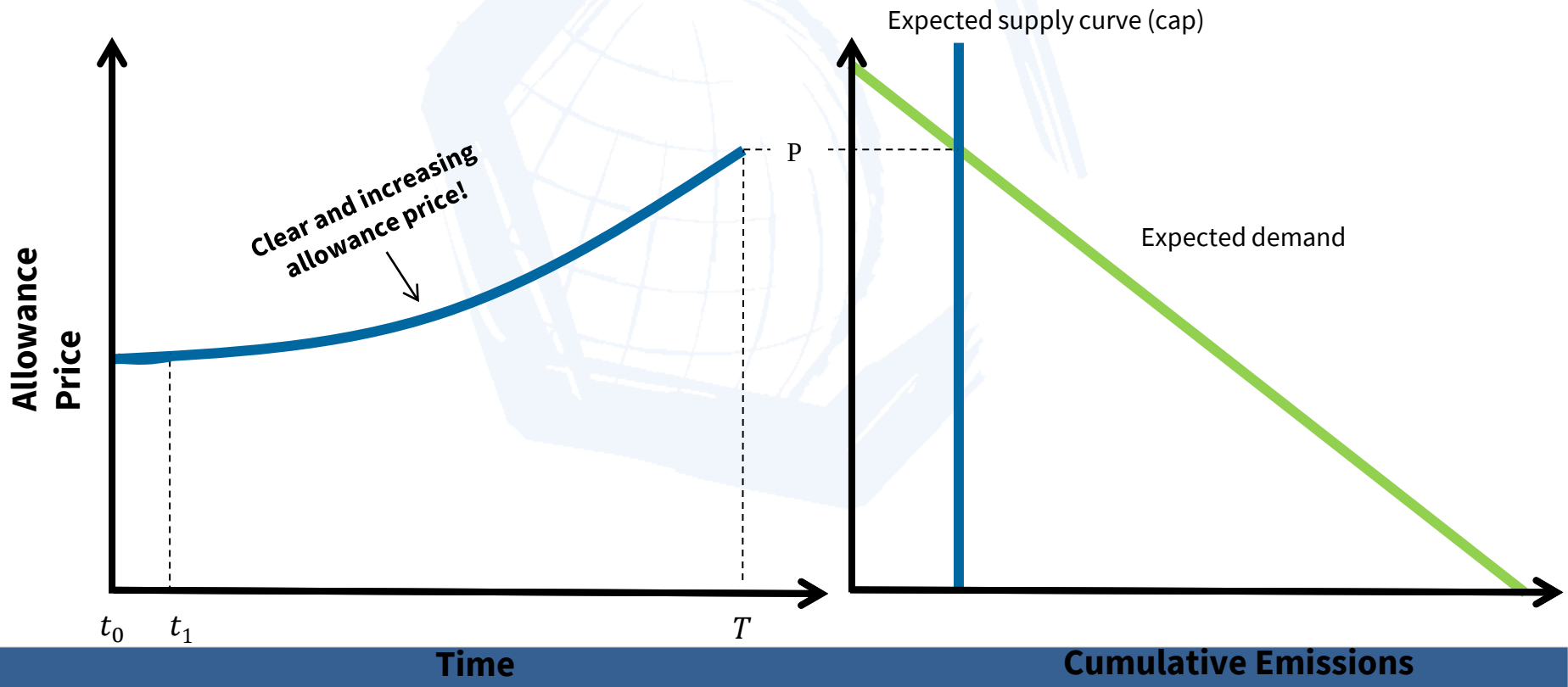
- **Broader societal goals**
  - Revenue recycling
  - Leadership

But do we actually observe dynamic cost-effectiveness and if not, why not and what can be done about it?

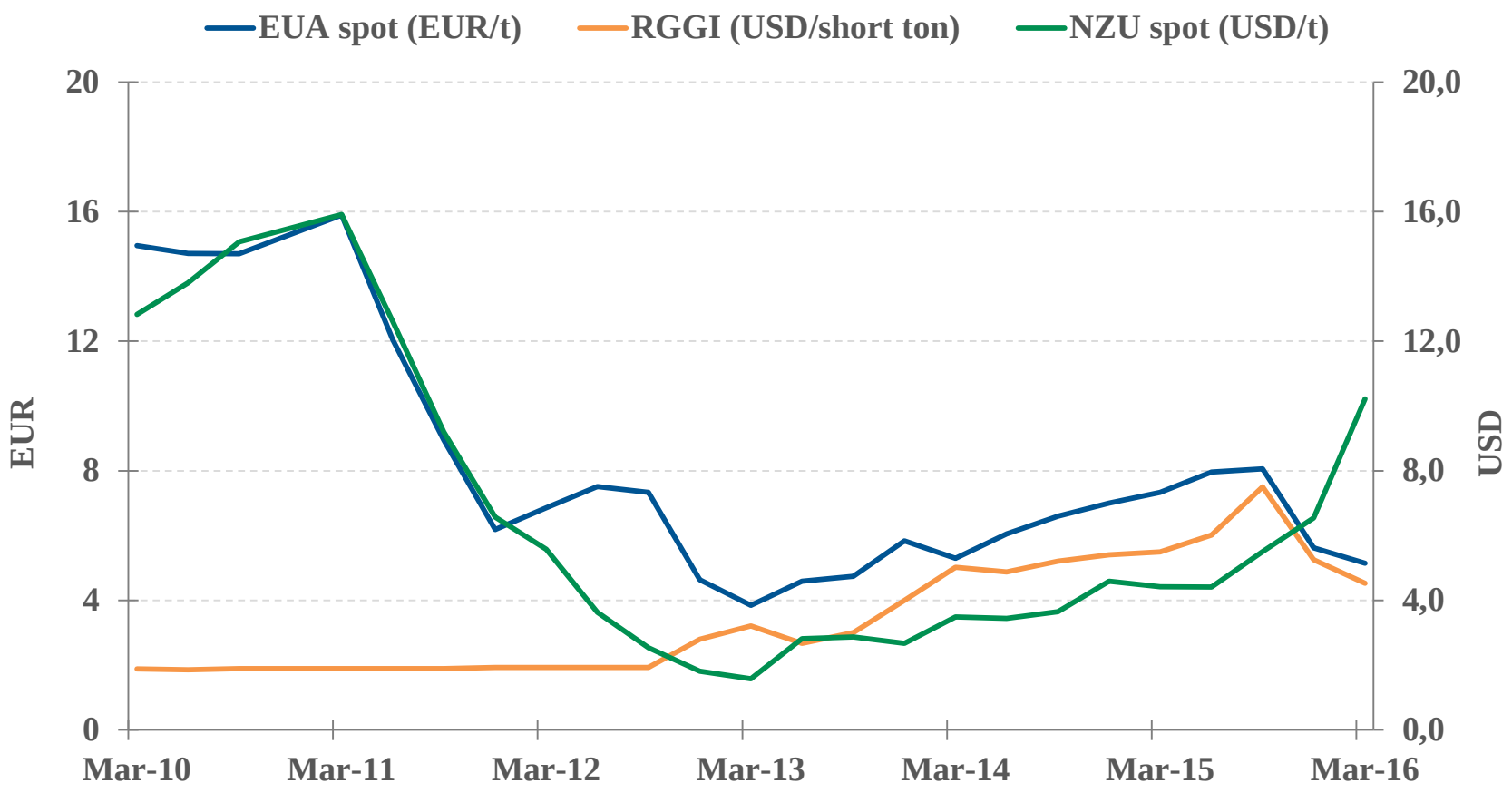
Dynamic cost effectiveness in emissions trading

Dynamic cost effectiveness: Allowance price path optimal to reach goal at least cost over time.

How? Marginal abatement costs are equated across entities ➔ clear allowance price, increasing at social discount rate



Allowance price development



Not all reasons for low prices are dysfunctional

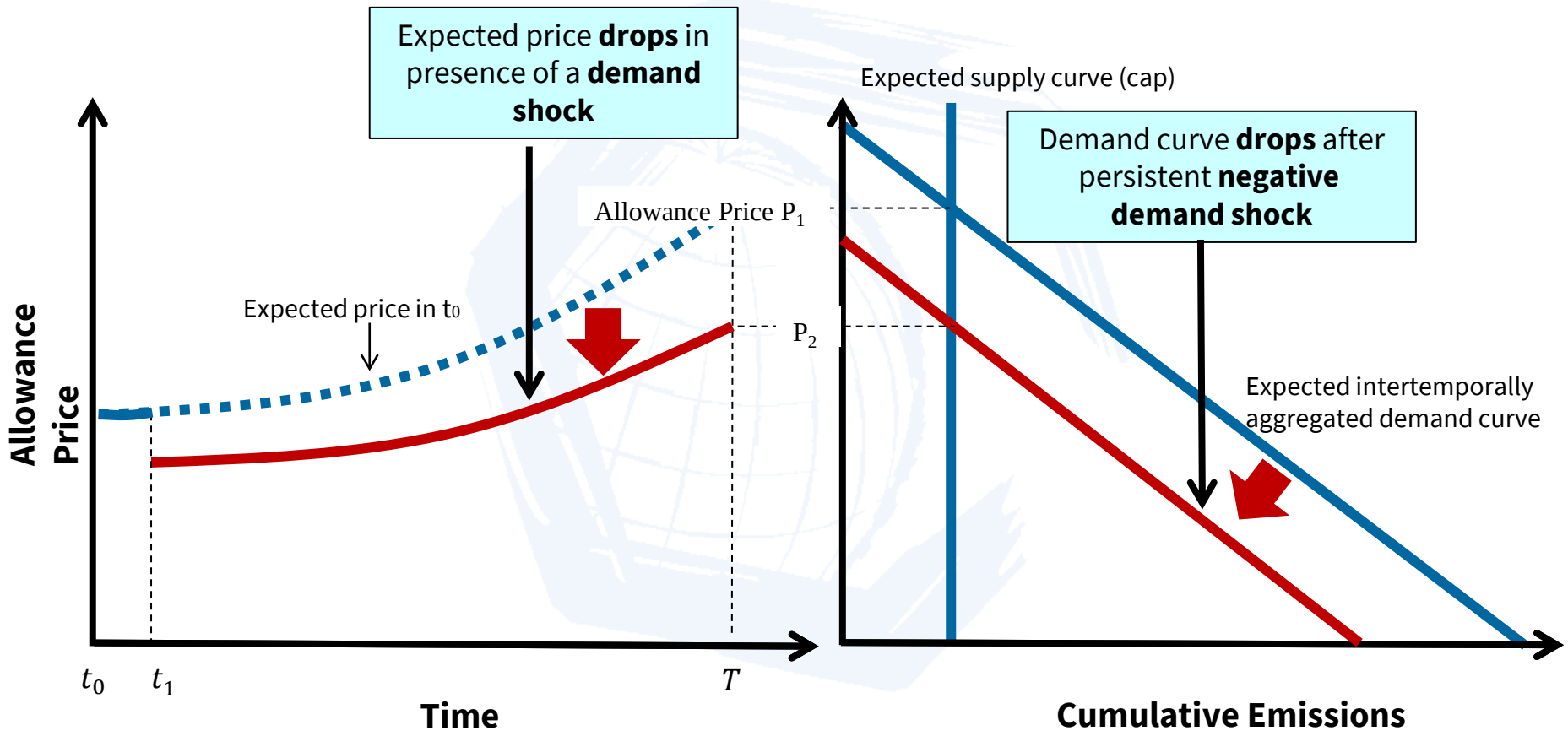
Low allowance prices due to…

Economic Recession / Demand side shocks

Technological Development

Overachieving additional policies

Conceptual framework: Explaining ETS price developments



Source: Fuss et al. (under review)

What could disrupt the dynamic cost effectiveness of an ETS?

1. **Myopia** – excessive focus on the short term

2. **Excessive Discounting** – discounting much above that which would be applied by a social planner

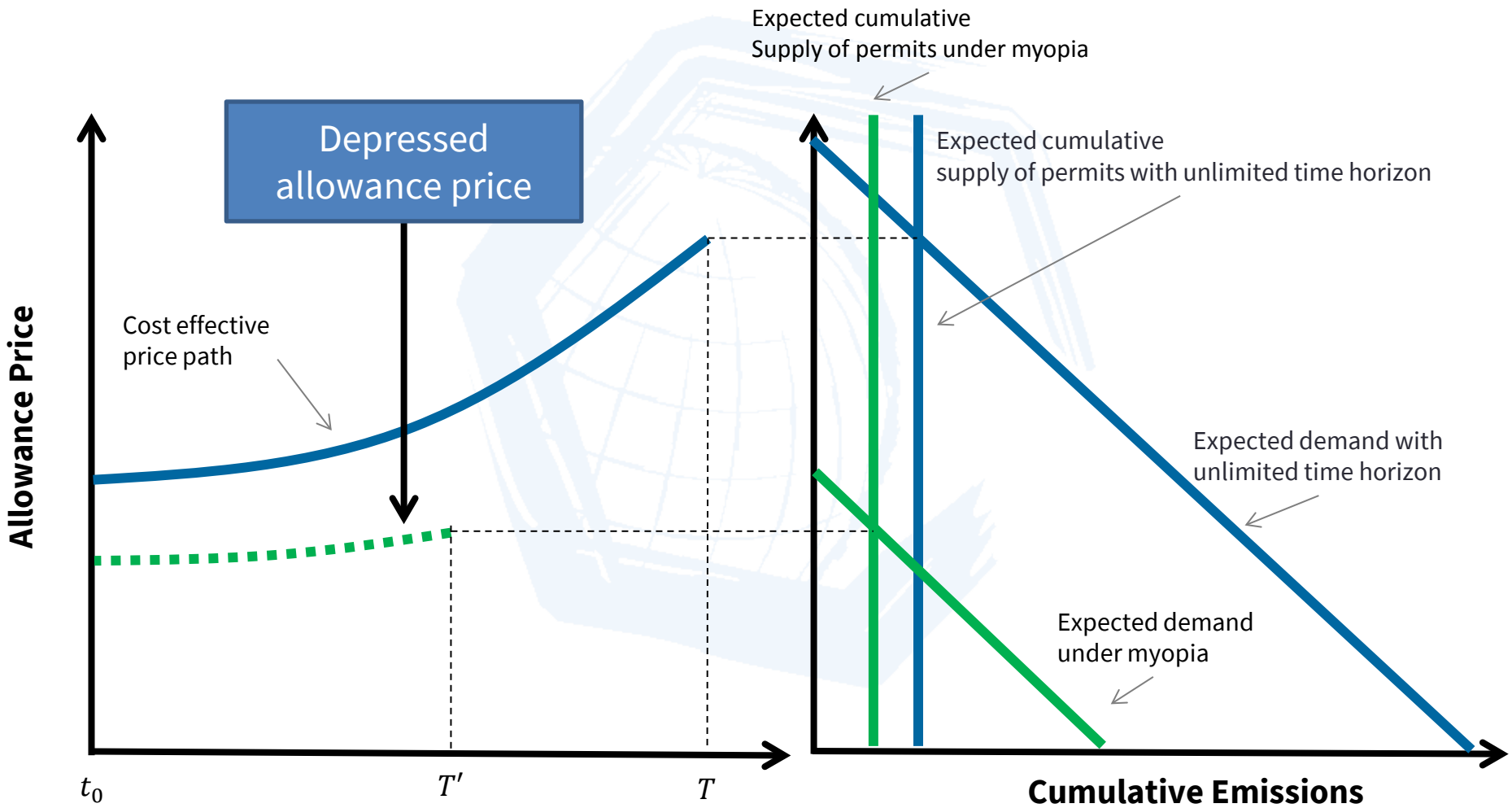
3. **Regulatory Uncertainty and lack of policy credibility** – little belief in the long term credibility of the system

All result in:

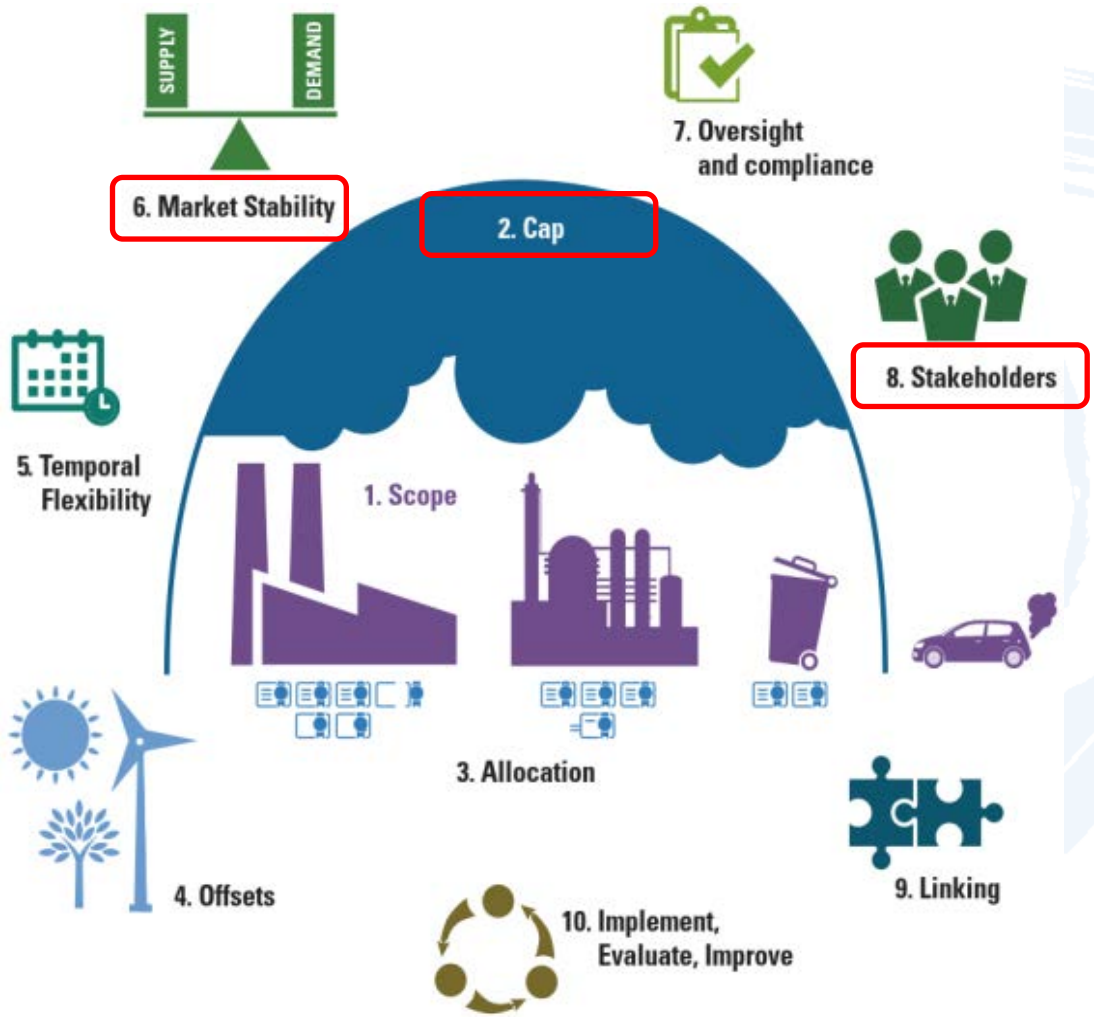
Prices that are too low in the short term, but too high in the long term to be cost effective

- Carbon lock-in
- Delayed technological learning and
- Insufficient regard for long-term strategies.

Myopia vs dynamic cost effectiveness

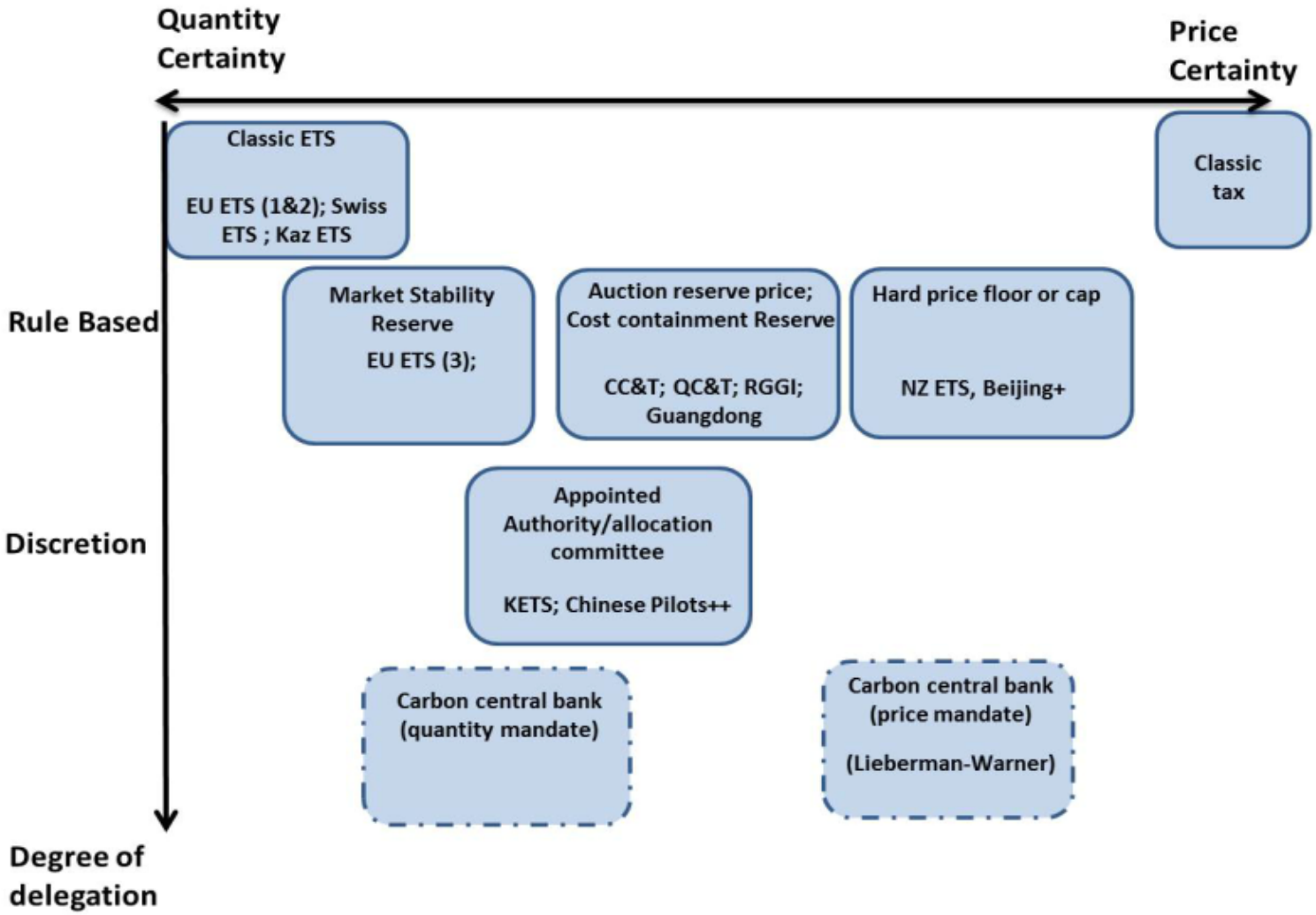


Ensuring a long term policy framework



- **1.Market Stability**
- **2. Setting the cap**
- **3. Building constituencies in support of ETS**

1. Introduce market stability measures



3.1. Build constituents in support of climate policy – engage key stakeholders

Engaging relevant stakeholders in initiation and improvement processes will enhance political support and collaboration on the ETS.

Key considerations

What role will they play in ETS implementation?

How significantly will they be affected by the ETS?

What are their priority issues or concerns regarding an ETS?

What will they expect from the government?

How might they interact with other stakeholders?

3.2 Build constituents in support of climate policy - Distributing Climate Rents

Setting a limit on GHG emissions creates climate rents. Distribution of these rents has a large impact on the winners and losers of climate policy

1. **Compensate adversely affected groups**
2. **For low carbon research and development**
3. **For green growth low carbon deployment**
4. **To energy intensive trade exposed sectors**
5. **Tax or fiscal reform.**

3.3 Build constituents in support of climate policy - Account for and communicate co-benefits

Political acceptability of the ETS will also depend on how the economic, social and environmental co-benefits are accounted for and communicated.

Types of co-benefits – public health, energy security, green jobs, natural resource (habitat) protection.

RGGI – very active and visible display of the benefits of revenue spending as well as related co-benefits.

Conclusions

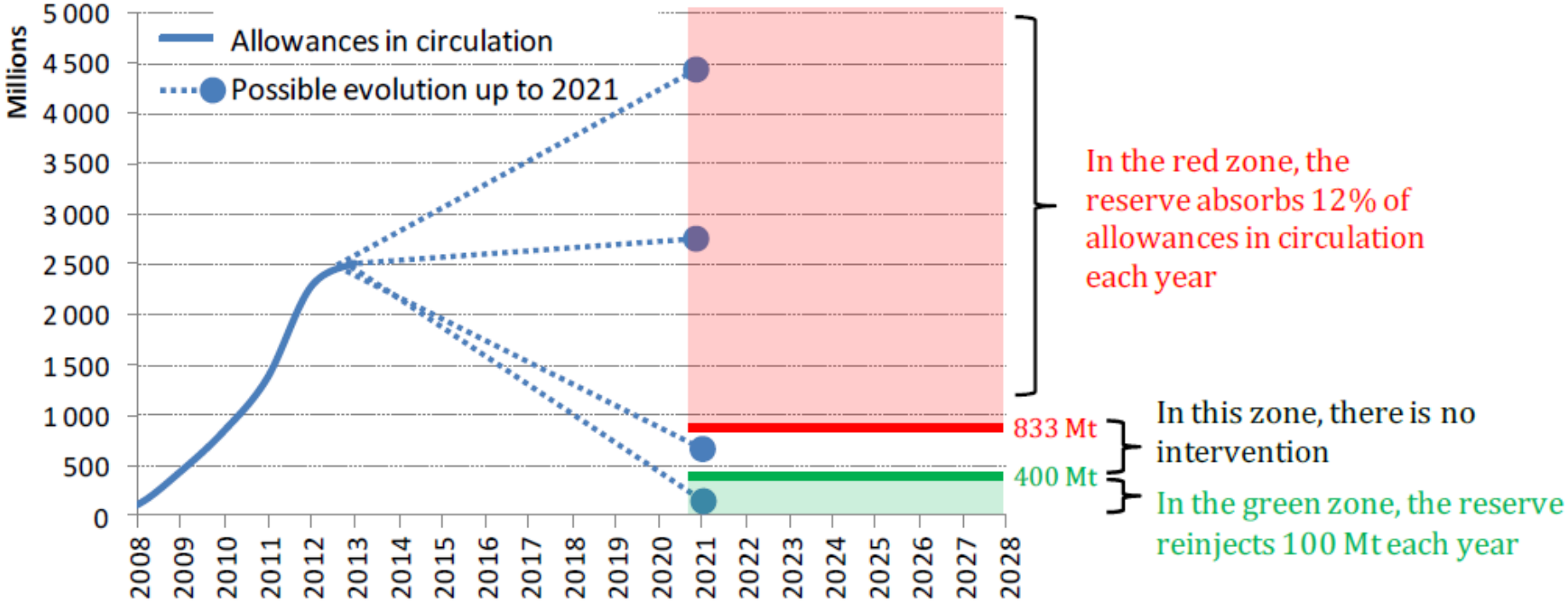
- ETS do not operate under text-book economic conditions.
- Market and regulatory failures might be at play: myopia, excessive discounting, political uncertainty.
- Yet the exact impact of these factors and their overlap with other drivers is difficult to assess.
- A long term policy framework can in part be provided by market management approaches that reduce uncertainty.
- Uncertainty can further be reduced by embedding the ETS in a long-term climate change policy and building constituents in support of ambitious climate policy.

Background slides

Quantity-based controls (EU)

- **Instead of regulating the price directly, one can target the price indirectly by adjusting the quantity.**

Functioning of the Market Stability Reserve

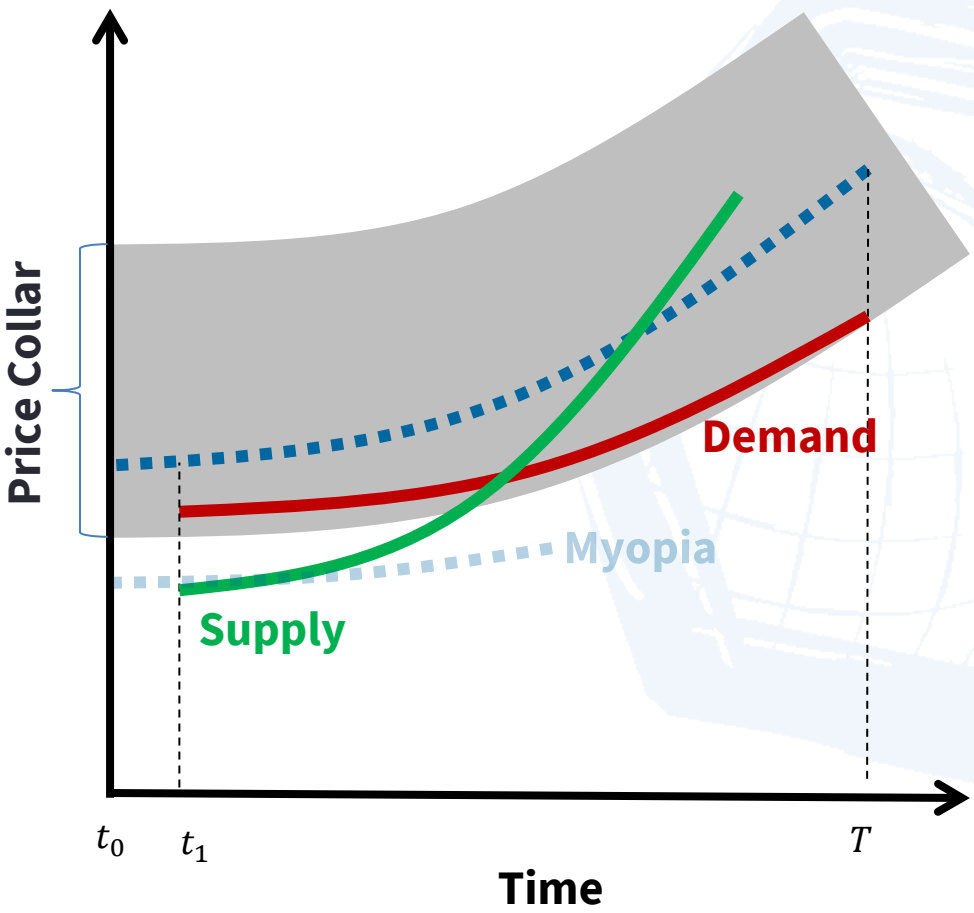


Impacts and challenges of quantity based controls

- Temporarily adjusting supply would have no (or possibly negative) impact in the absence of market failures.
- Corrects myopia and excessive discounting by reducing short term supply.
- Thresholds matter:
  - Set too high: ineffective
  - Set too low: may not be cost-effective
  - Increased volatility due to 2 year delay?

-> Data on market participants‘ hedging strategies will be important, need to recalibrate MSR as power sector evolves.

Price-based controls (California, Québec and RGGI)



- **Price collar can maintain lower and upper bound on prices.**
- **Therefore, respond to demand side shock, myopia, discounting .**
- **Can also ensure net mitigation in linked markets or with unilateral action.**
- **However, might not solve the lack of credibility.**

How to set and manage the price collar?

- **At what levels should the minimum price be set:**
  - Induce fuel switch?
  - Social cost of carbon?
  - Role of modeling community?
- **Learn from RGGI, California, Australia**
  - E.g. Market Simulation Group under CARB: Scenario analysis to determine probability that market outcome will fall in certain price ranges (Borenstein et al. 2014)
- **Political feasibility & the role of revenue recycling**
- **Updating price thresholds? Fixed over cap period with clear rules for annual increases (California, Quebec)**

Delegation (e.g. South Korea, Chinese pilots)

- **Insulating ETS decision-making from policy makers to independent institutions – as in monetary policy - might be helpful to reduce political pressures and increase political credibility.**

- **Strongest form would be a Carbon Central Bank (as proposed in the US in 2007); as of now not implemented.**

- **Experience to date with delegated institutional frameworks is limited.**

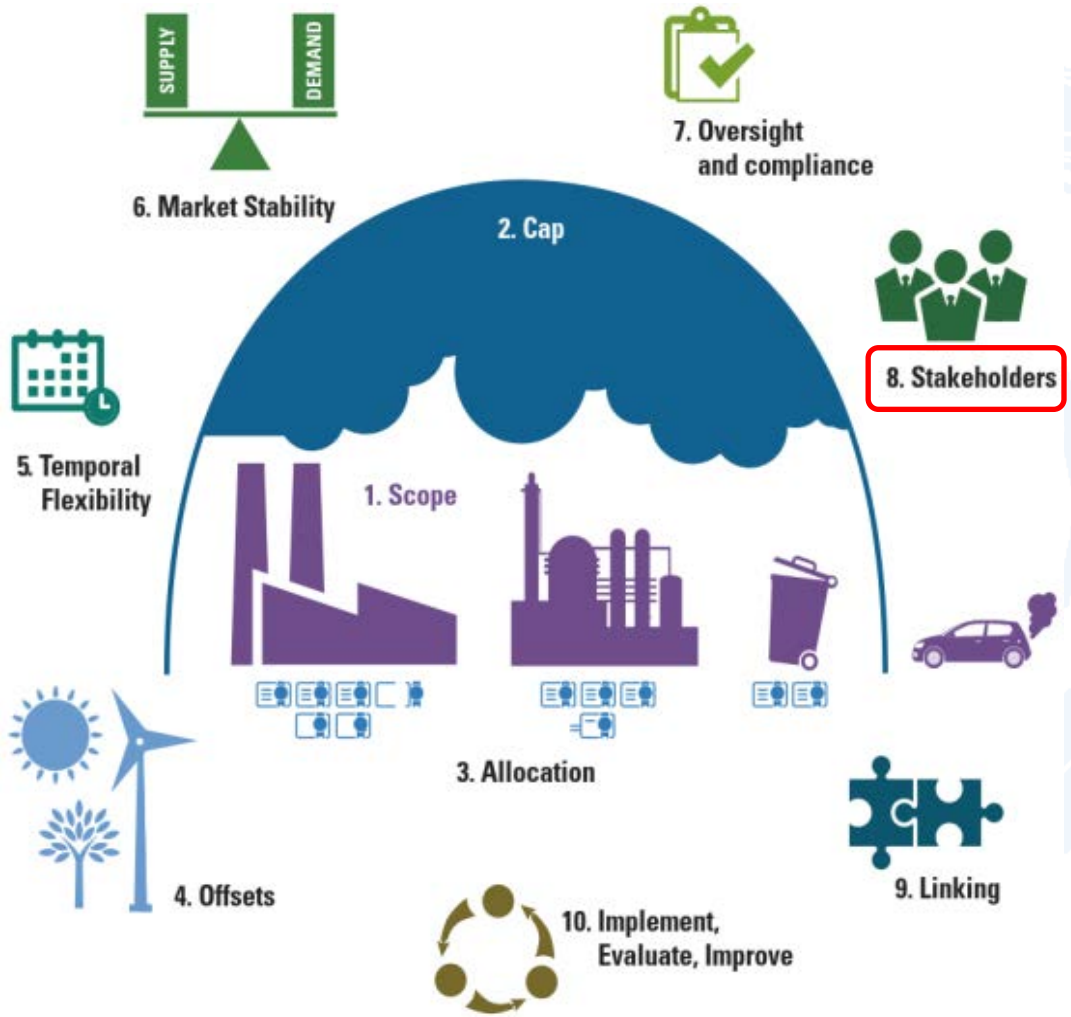
Time periods for cap setting

- **Cap period – number of years that the cap is set in advance**
- **Transition between cap periods – where major changes to the ETS are introduced (expanded sectoral coverage, new targets, reviews etc)**
- **Typically caps have been set 3-10 years in advance.**
- **Other approaches:**
  - Waxman-Markey Bill would have established annual caps from 2012 to 2050, providing certainty regarding the allowance supply for 34 years in advance.
  - Australian Rolling Cap Mechanism

Alignment with long-term targets

- **Providing certainty beyond the cap period through long term economy wide targets**
- **Linear reduction factors are a common mechanism across ETS.**
- **LRF determines the pathway for the ETS Cap and hence the expected future ambition of the ETS.**
- **Flexibility to update the long-term trajectory, however, some certainty beyond the current cap.**

Embed the ETS within a long term policy framework



- 1. Setting the cap
- **2. Building constituencies in support of ETS**
- Engage with key stakeholders
- Distribute Climate Rents
- Account for and communicate co-benefits

Australia's rolling cap mechanism

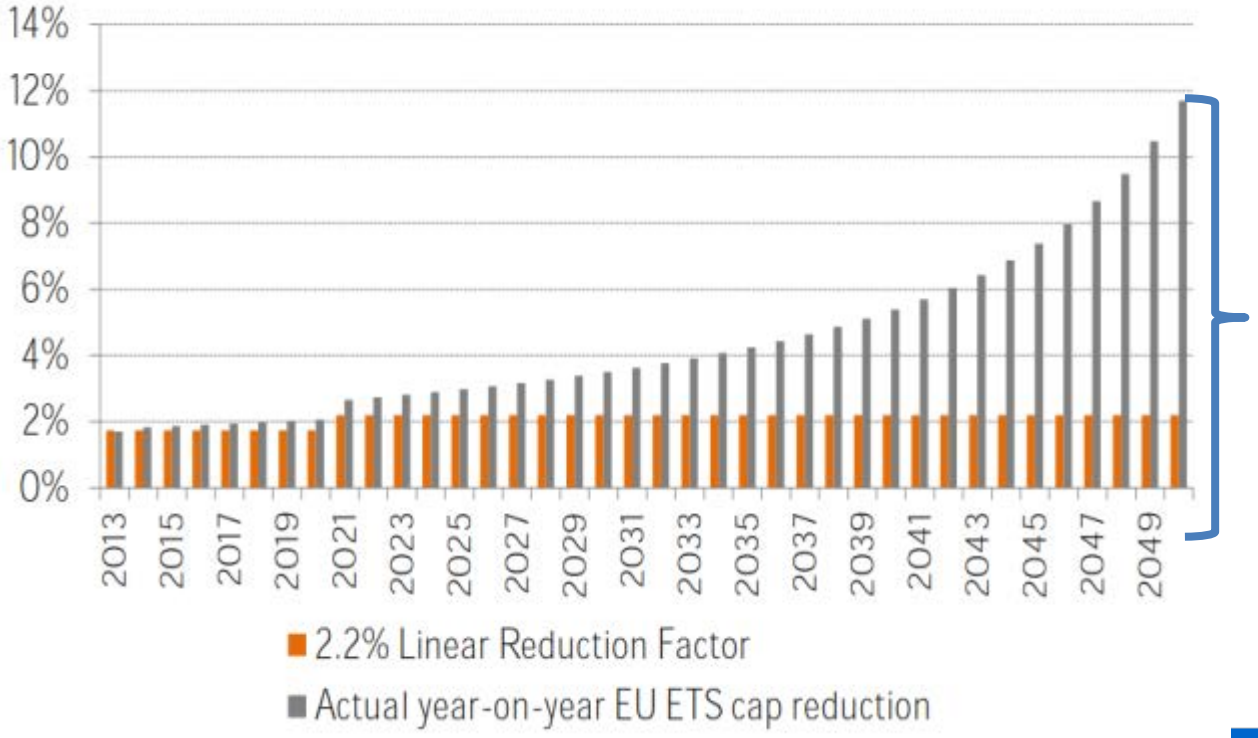
Rolling cap mechanism

- 5-year caps extended annually by 1 year by the government with advice from independent Climate Change Authority
- If no decision reached: default cap would align with government's 2020 national emissions reduction target
- Intended to provide some certainty over cap setting

A side note on LRFs

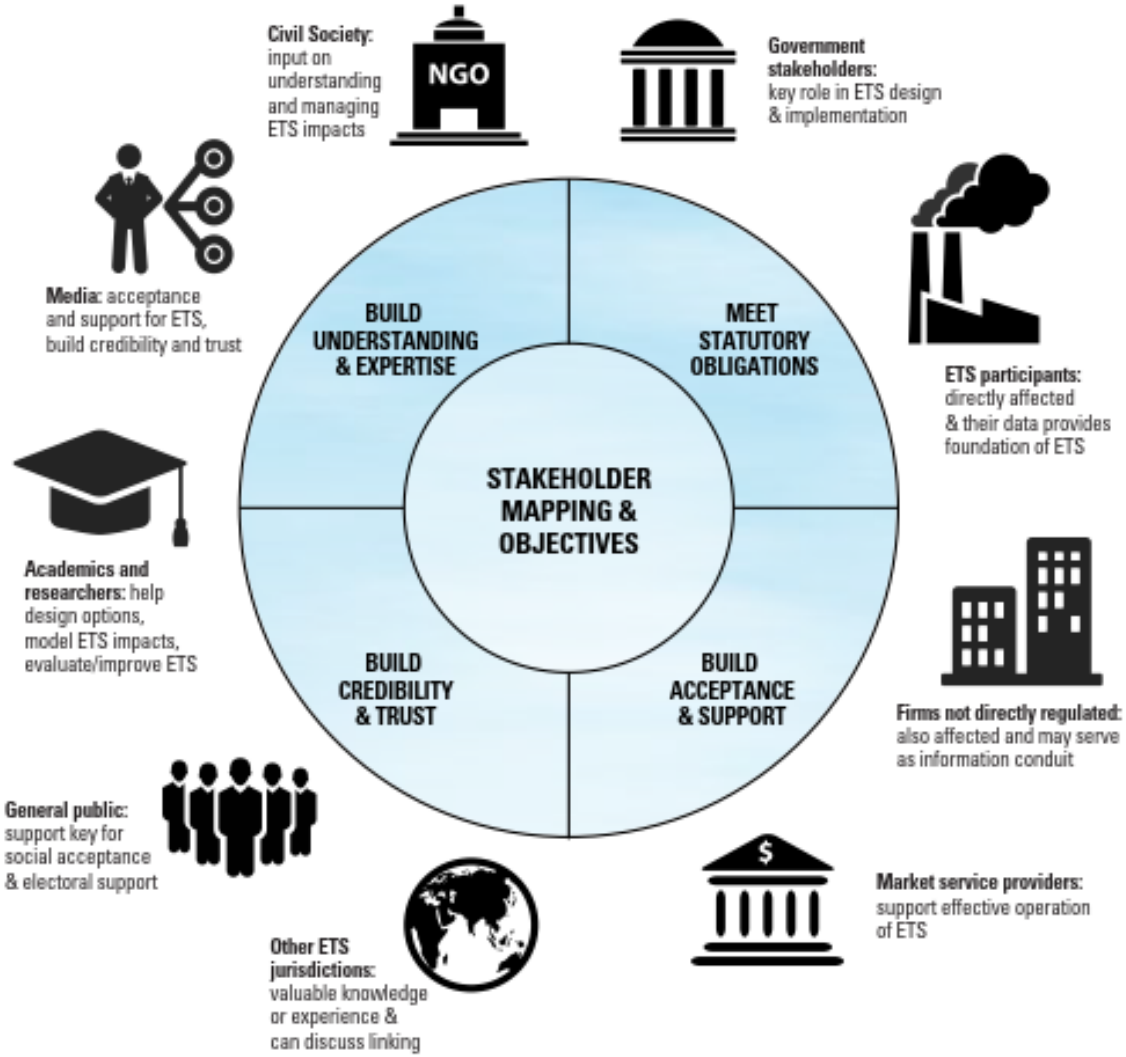
- The LRF is **not** a percentage change in the cap but rather represents a fixed percentage of the average annual cap.
- In the EU ETS, it is currently 1,74% of the 2010 cap (about 38 Mt at 1.74%).

Hence…….



The percentage reduction in the cap is increasing towards 2050.

ETS stakeholders

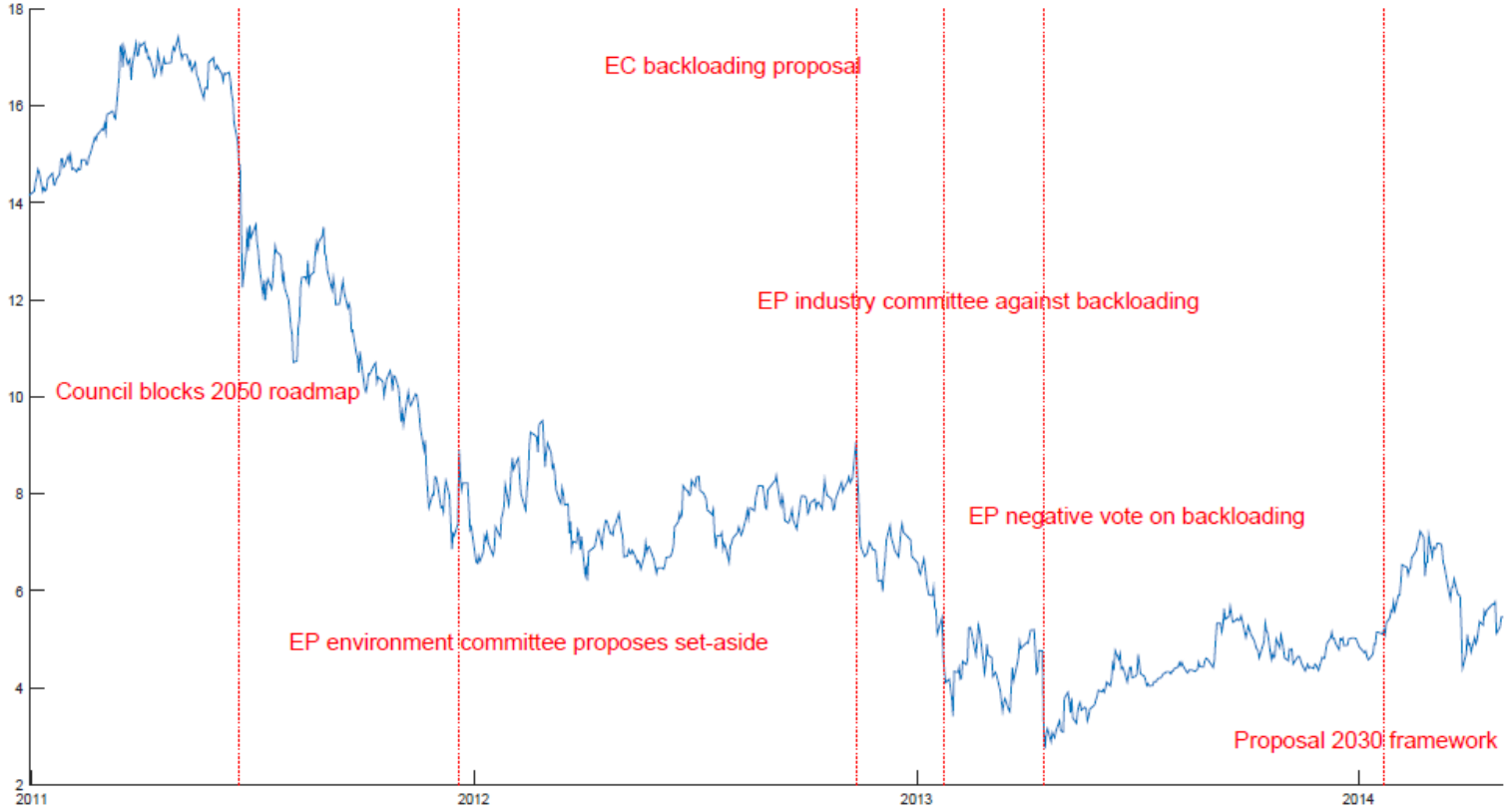


Engagement with key stakeholders con't

- Provide a **voice** to stakeholders in favor of ETS
- Mobilize **'ETS champions'** outside of government
- Develop a **communication strategy** for the media and public
- Build political support **across core Ministries**
- Build **cross-partisan cooperation** on climate policy to ensure the policy survives electoral cycles.
- Design ETS to in a way that builds stakeholders with a vested interest in the integrity of the program **(banking, rebates, etc)**

Case Study: EU ETS

EUA price developments



- Focus on backloading: short-term intervention involving temporary withdrawal of EUAs
- Auctioning of 900 million allowances postponed from 2013-2015 until 2019-2020

Source: Koch et al. 2016

EU ETS: dynamic ineffectiveness?

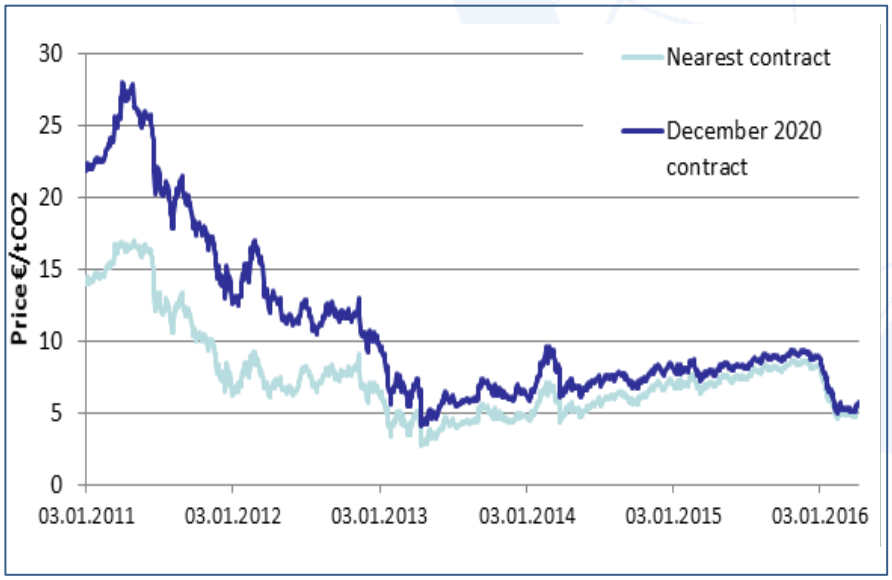
- **Large consensus that the EU ETS had only a limited impact on investment and innovation**
- **Most comprehensive empirical estimate: EU ETS is responsible for a 1% increase in low-carbon patenting at EPO (*Calel/Dechezleprêtre 2015*)**
  - The impact is concentrated at the beginning of Phase II (when carbon price was still around 15€)
  - Effect on small-scale investments with short amortization times, but not on R&D efforts (*Hoffmann 2007*)
  - Positive effect of the expected future stringency of EU ETS on innovation (*Martin et al. 2011*)

Evidence patchy, but suggests EU ETS suffers from dynamic ineffectiveness; i.e. the current price does not trigger the necessary investments.

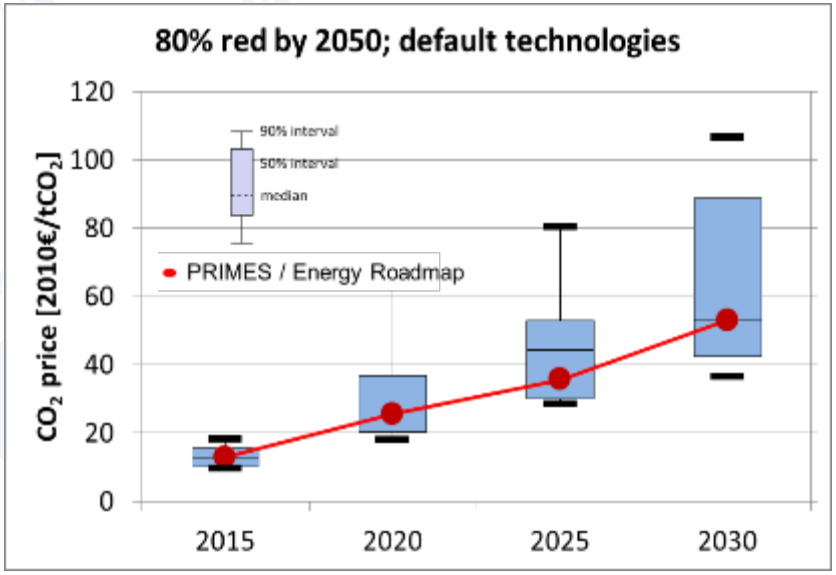
EU ETS: dynamic cost-ineffectiveness?

- 2020 EUA price: benchmark
- Cost-effectove price path with increasing prices of more than 20€/tCO_2 by 2020
  - Gap between expectations and socially optimal prices in models

EUA nearest contract and Futures 2020



Cost-effective CO_2 price from modeling



Sources: ICE 2016 (left panel) and Knopf et al. 2013 (right panel)