Market Stability Measures

LIFE DICET workshop

November 2019

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All major ETS now have some form of market stability measure

Mechanism	Market stability measures
EU ETS	— Market Stability Reserve (MSR)
New Zealand ETS	— 1-for-2 allowance price discount — Allowance price ceiling
California-Quebec ETS	— Auction reserve price — Allowance price containment reserve (APCR)
Chinese regional pilots	— Mixed: auction price floors/ceilings and allowance reserves
RGGI	— Auction reserve price — Cost containment reserve (CCR) — Emissions containment reserve (ECR) [from 2021]

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Well-designed market stability mechanisms can provide three desired services
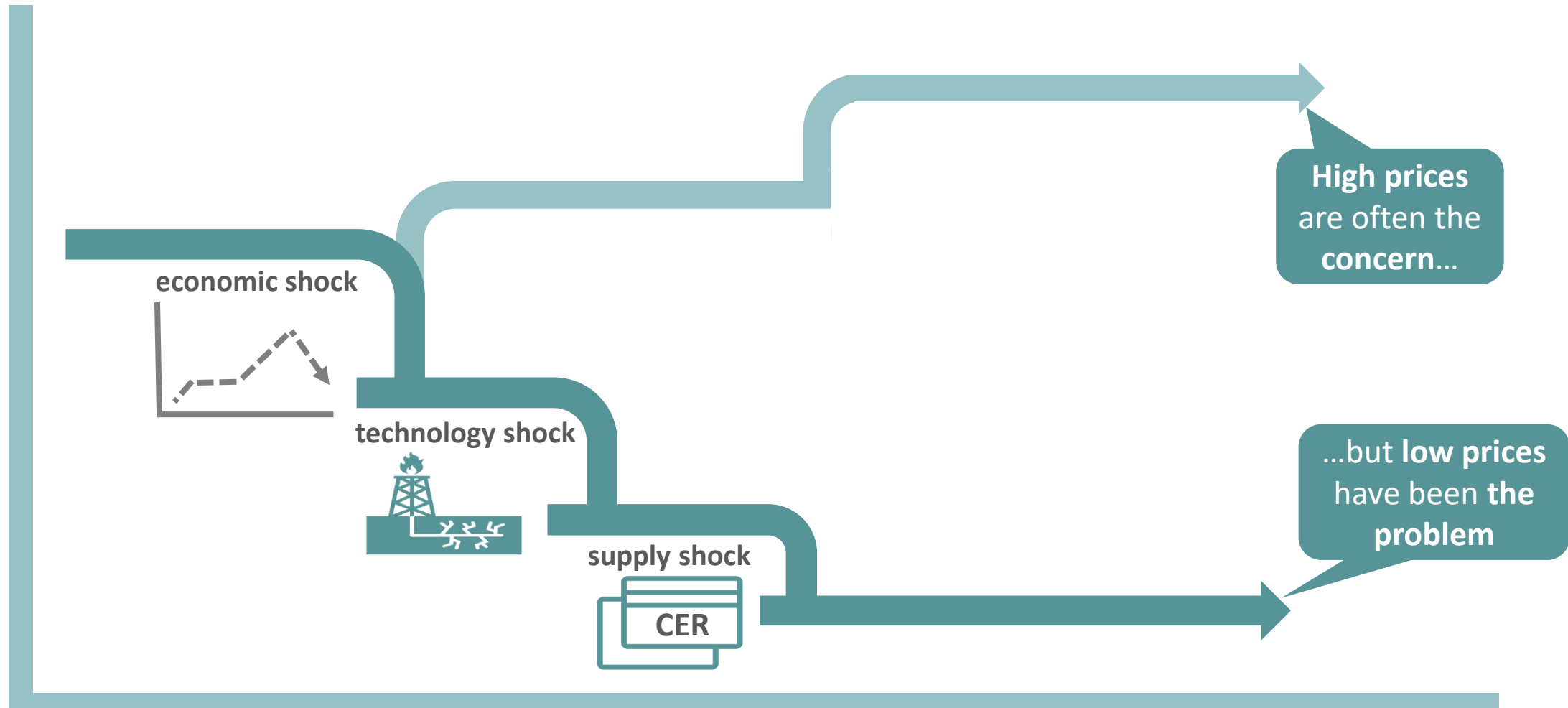
Resilience

Investment
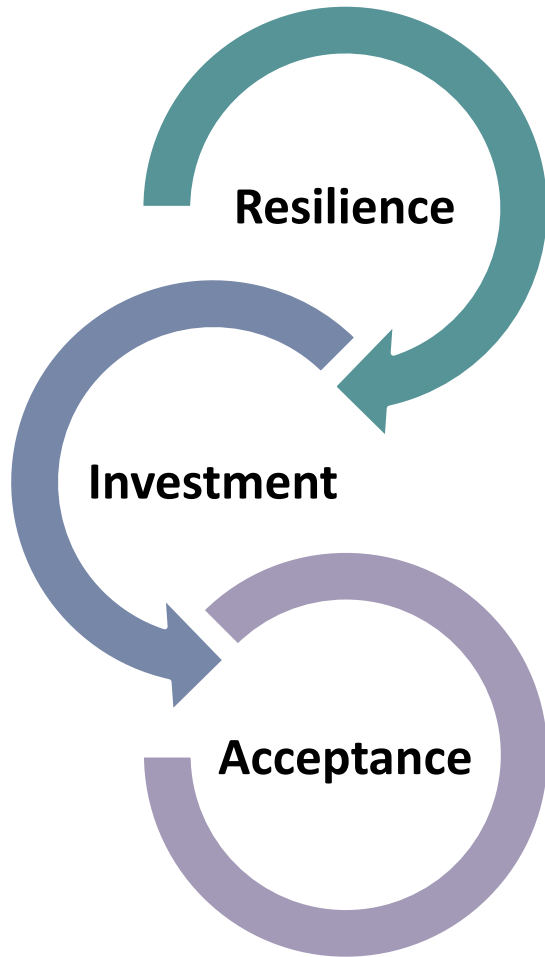
Acceptance

1 **increase ETS resilience** to unexpected shocks

2 **support low carbon investments** by constraining the lower bound of price expectations

3 **increase ETS acceptance** by avoiding excessive costs

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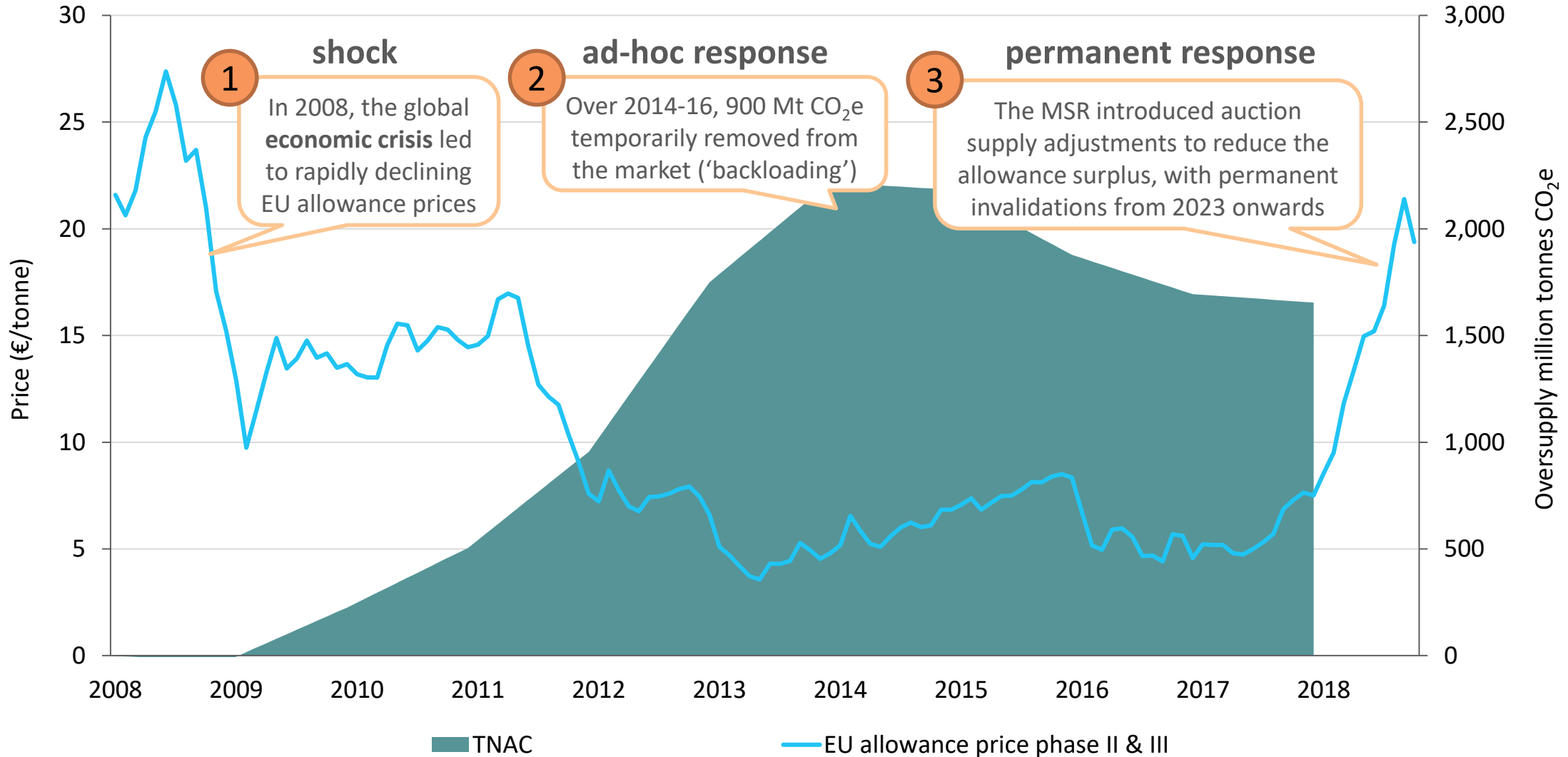# Unexpected demand and supply shocks can result in low prices that undermine investment

economic shock

technology shock

supply shock

CER

High prices are often the **concern**...

...but **low prices** have been **the problem**

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To address unexpected demand shocks major carbon markets implemented MSMs

Prices in major international carbon markets

1. **Demand shocks** from economic downturn and technological change, and **supply glut** of **Kyoto credits** contributed to **low prices**

2. Jurisdictions respond with the **expansion of MSMs**

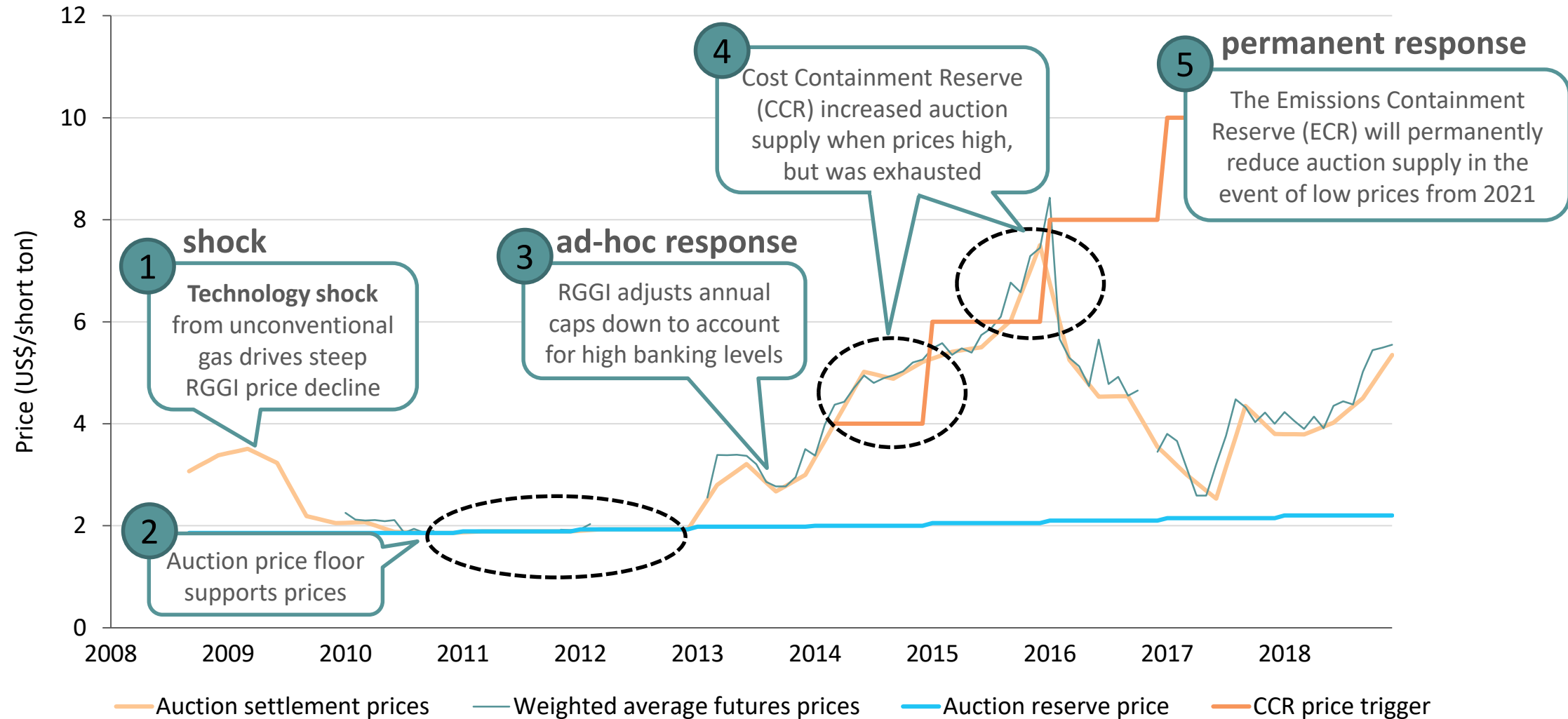Legend: EU ETS Phase 2-3 — California — RGGI — NZ ETS — Korea ETS
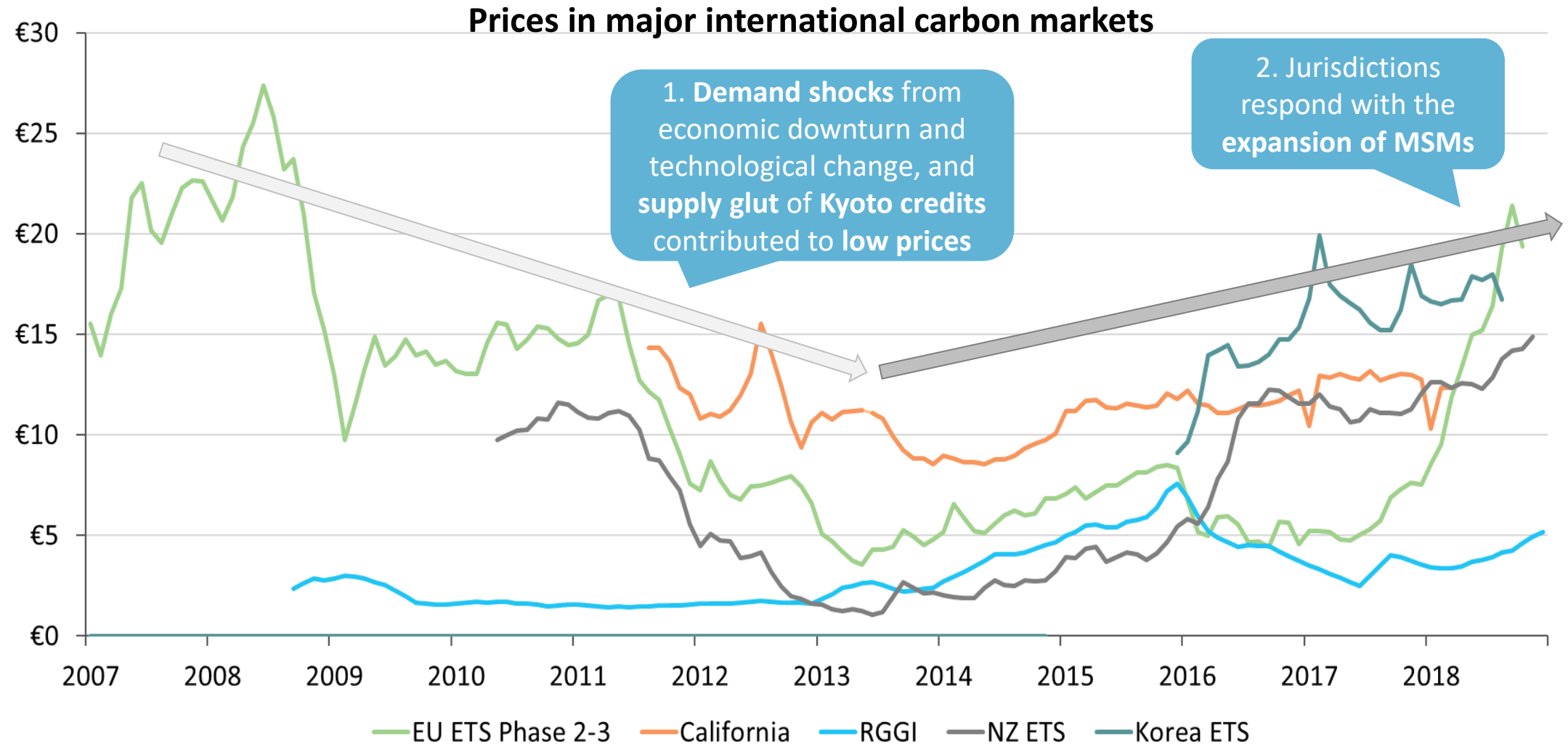
USD/EUR exchange rates from OECD, Monthly Monetary and Financial Statistics, extracted January 2019

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The EU ETS first mitigated unexpected economic shock through backloading before implementing the market stability reserve (MSR)

shock

1 In 2008, the global **economic crisis** led to rapidly declining EU allowance prices

ad-hoc response

2 Over 2014-16, 900 Mt CO_2e temporarily removed from the market ('backloading')

permanent response

3 The MSR introduced auction supply adjustments to reduce the allowance surplus, with permanent invalidations from 2023 onwards

Price (€/tonne)

Oversupply million tonnes CO_2e

TNAC — EU allowance price phase II & III

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RGGI learned lessons from the EU ETS, first by introducing with a price floor and CCR and now with the planned mechanism for a permanent supply response

1 shock

Technology shock from unconventional gas drives steep RGGI price decline

2 Auction price floor supports prices

3 ad-hoc response

RGGI adjusts annual caps down to account for high banking levels

4 Cost Containment Reserve (CCR) increased auction supply when prices high, but was exhausted

5 permanent response

The Emissions Containment Reserve (ECR) will permanently reduce auction supply in the event of low prices from 2021

Price (US$/short ton)

— Auction settlement prices   — Weighted average futures prices   — Auction reserve price   — CCR price trigger

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1. **The purpose** of market stability measures

2. **Experiences** with market stability measures

3. **The design** of market stability measures

4. **Implications** of market stability mechanisms for **linking**

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The design of a market stability measures can vary along six key characteristics

Feature	Market stability measures
Policy intent	— Support or contain prices, or both
Decision criteria	— Discretionary or rules-based?
Intervention triggers	— Price based or quantity-based
Bounds of intervention	— Unlimited (hard impact on prices) or limited (soft impact on prices)
Breadth of intervention	— All or just some emissions (and units)
Impact on emissions budget	— Temporary or permanent?

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These features can be used to define the key stability mechanisms across the different systems (selection only)

Feature	EU ETS – MSR	NZ ETS – Fixed price ceiling	CAL – Quebec, Auction Reserve Price	CAL – Quebec, APCR	RGGI – Auction reserve price	RGGI – CCR	RGGI - ECR
Policy intent	Support and contain price	Contain price	Support price	Contain price	Support price	Contain price	Support price
Decision criteria	Rules based	Rules based	Rules based	Rules based	Rules based	Rules based	Rules based
Intervention triggers	Quantity	Price	Price	Price	Price	Price	Price
Bounds of intervention	Bound	Unbound	Unbound	Bounded	Unbound	Bounded	Bounded
Breadth of intervention	All	All	Limited (only auctioned allowances)	All	Limited (only auctioned allowances)	All	All
Impact on emissions budget	Permanent (from 2023)	N/A	Temporary	Temporary	Permanent	Permanent	Permanent

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International experiences reveal three main insights on the design of MSMs

Implementing measures through allowance auctions is the most common and simple approach

Designing measures with a permanent supply response provides a more robust long term signal

Rule-based interventions may prove superior to discretionary interventions in influencing long term price expectations

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The interaction between linking and market stability mechanisms depends on a range of factors

The implications of linking markets where one or both have market stability

measures depends on a number of factors:

- Whether the market stability mechanism is bounded or unbounded
- The relative size of the jurisdictions linking
- Whether the different jurisdictions have price based thresholds or quantity-based threshold

Even if a robust linking regime between two or more jurisdictions can be identified, it can have implications for other aspects of system design

When market stability mechanisms are bounded, linking of two similar sized ETSs can result in a 'well-behaved' stepped supply curve

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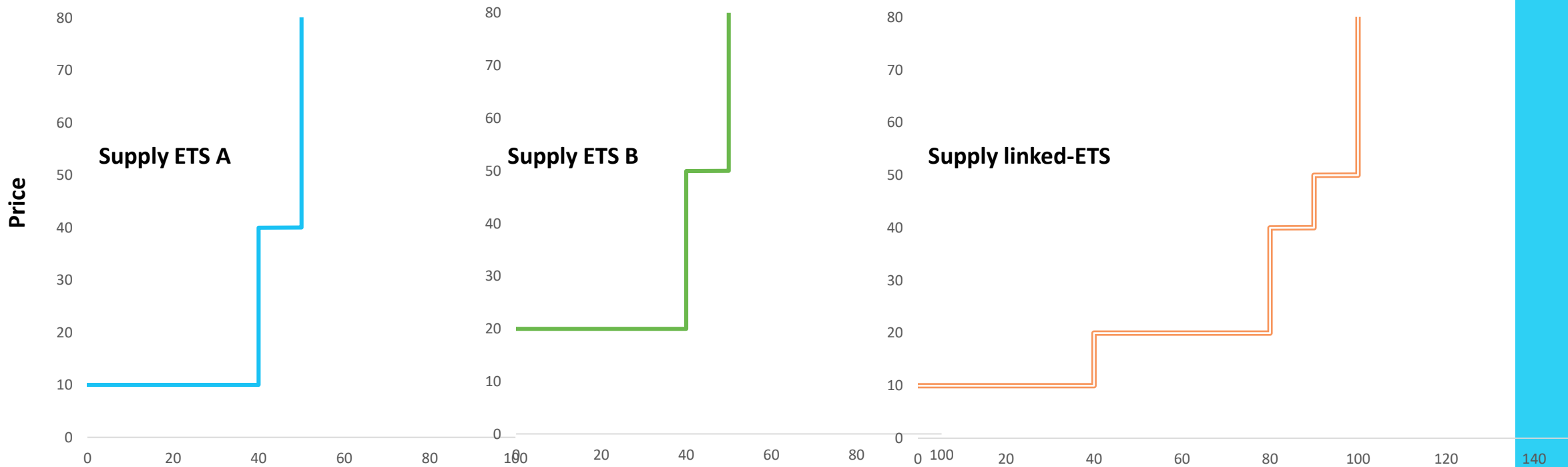
But when market stability mechanisms are unbounded then this will 'spillover' to the linked market, making mechanisms in the other jurisdictions obsolete

Supply ETS A

Supply ETS B

Supply Linked ETS

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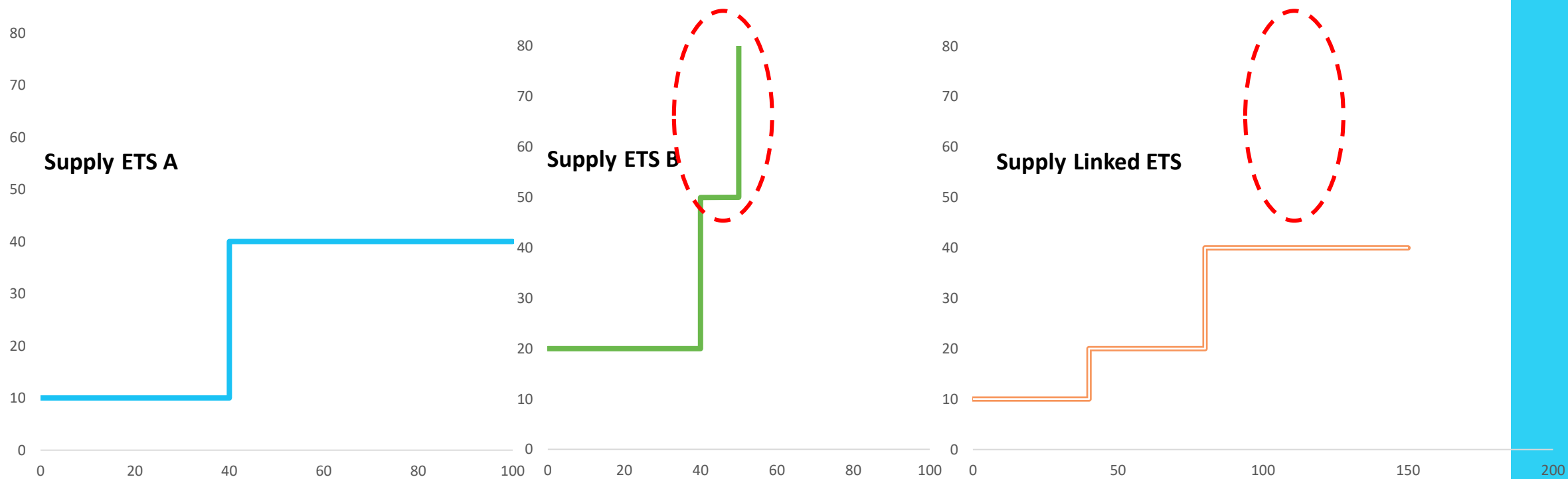
Bounded and unbounded market stability measures have various interactions

	Bounded	Unbounded	No stability mechanism
Bounded	Bounded mechanisms in some or all linking jurisdictions can co-exist.	If bounded mechanism activates before unbounded mechanism then can co-exist. If unbounded mechanism activates first, bounded mechanism is obsolete	Bounded mechanism continues to operate but without re-calibration will be less effective
Unbounded		Whichever mechanism activates first renders the other mechanism obsolete. Need to make sure min $p_{ceiling}$ > max p_{floor}	Unbounded mechanism influences both schemes (but could be expensive!)
No stability mechanism			Normal linking

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# Size matters when considering linking with market stability mechanisms

It is generally more challenging for a small system to maintain its stability mechanism when linking to a large system:

- If unbounded, then it could become very expensive or otherwise difficult (e.g. for NDC compliance) to implement
- If bounded, then much less likely to have a decisive impact on market prices and outcomes

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Linking systems that contain price and quantity mechanisms is more difficult than linking systems that both use the same type of system

High prices

— If ETS A has a hard price ceiling and the linked price hits the ceiling, then it's MSM will injects allowances

P-MSM

Linked ETS ← Injects Allowances

— However, if it is linked to ETS B with a Q-MSM expectations of continued high future prices might increase banking significantly and its MSM will remove allowances
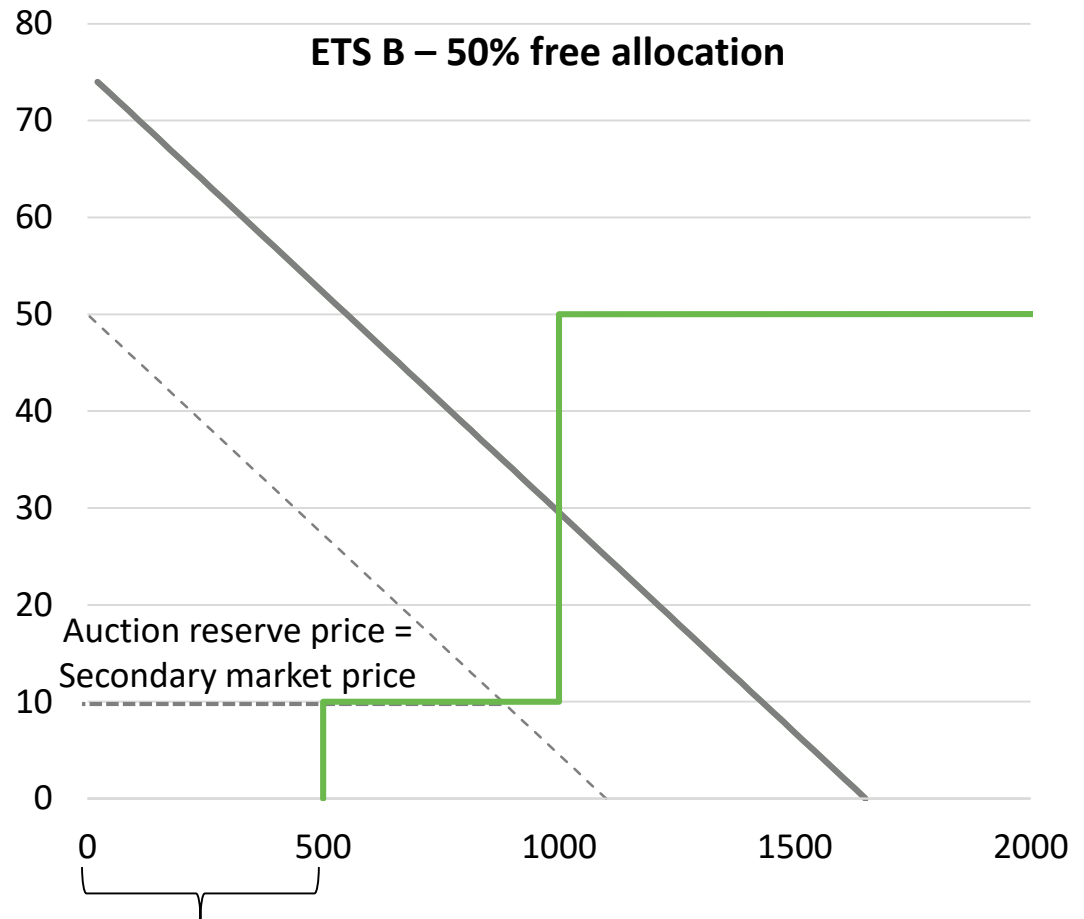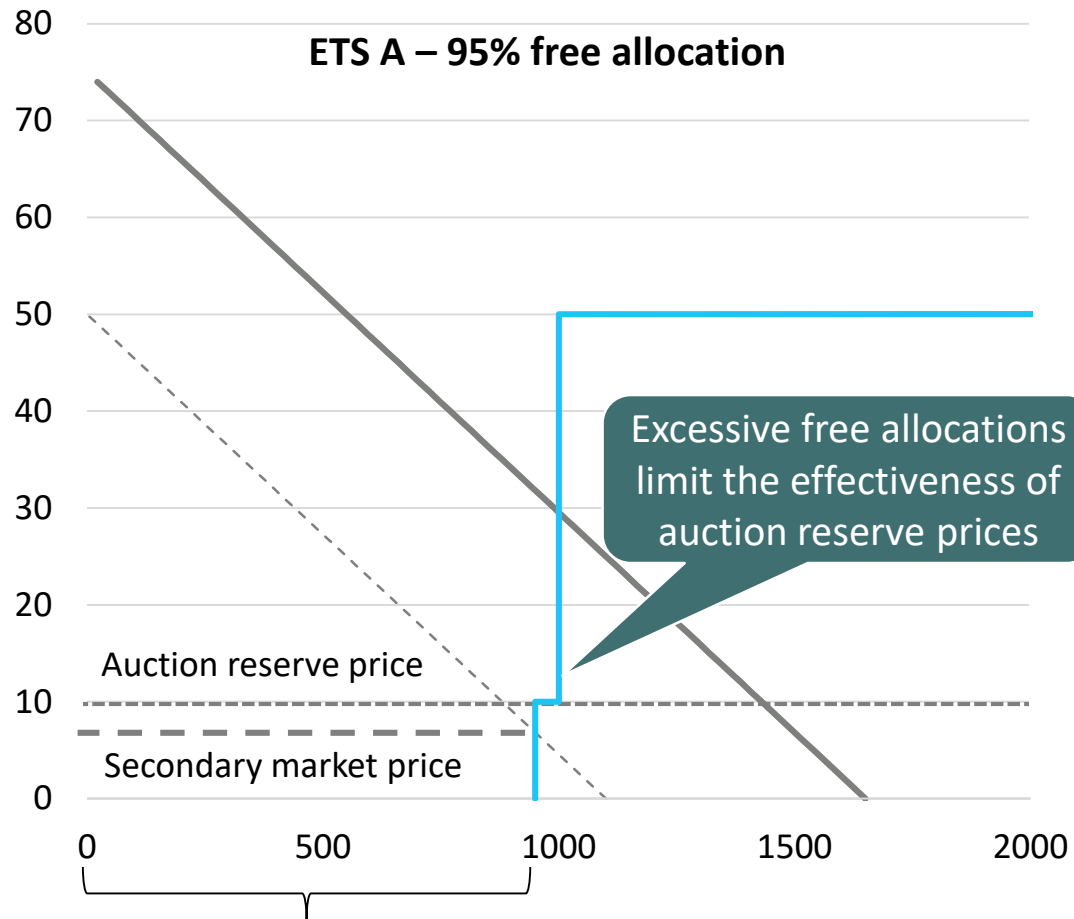
Q-MSM

Linked ETS → Removes Allowances

Low prices

P-MSM
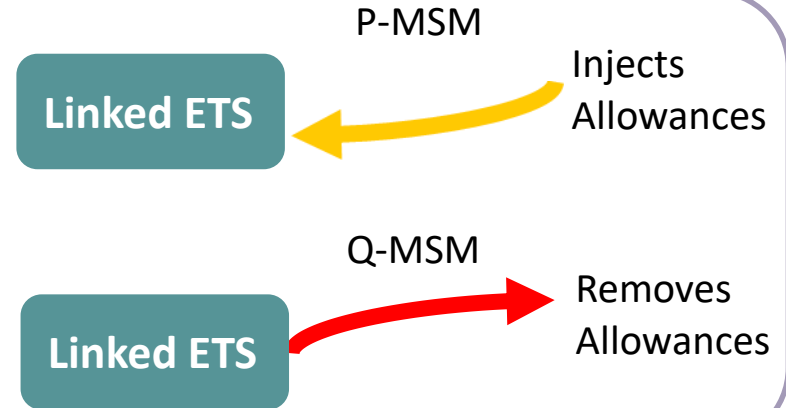
Linked ETS → Removes Allowances

— If ETS A has a P-MSM and the linked price hits its price floor, it's MSM will withhold/remove allowances

Q-MSM

Linked ETS ← Injects Allowances

— However, if it is linked to ETS B with a Q-MSM expectations of continued low future price might limit banking and its Q-MSM will inject allowances into the market

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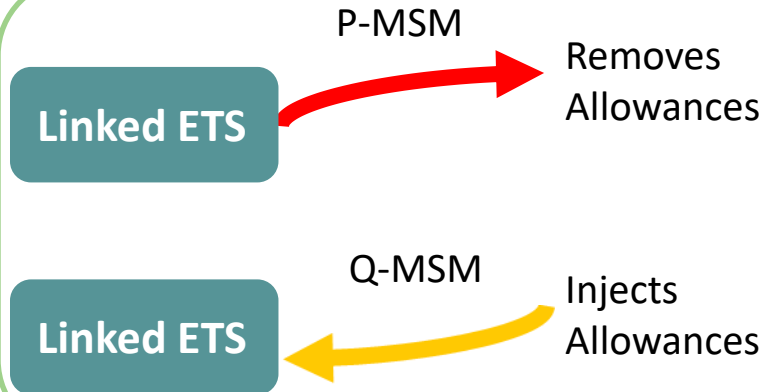
Linking systems may market stability mechanisms may require coordination on other design features to ensure they continue to be effective

ETS A – 95% free allocation

Excessive free allocations limit the effectiveness of auction reserve prices

Auction reserve price

Secondary market price

ETS B – 50% free allocation

Auction reserve price = Secondary market price

If systems A and B link, the high share of free allocation in system A could undermine the auction reserve price mechanism in system B

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An alternative to bounding the market stability mechanism is to bound the extent of linking

Options might include:

– one-way linking,

– taxes on international transfers,

– quantitative restrictions,

– exchange rates,

– discounts

More work is required in understanding how these mechanisms might interact with

different forms of market stability mechanism

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Company Profile

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We are a premier consultant in the policy-commerce interface and resource and environment-intensive sectors, where we advise on the most critical and complex policy and commercial questions facing clients around the world.

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Market stability measures worldwide can be categorised using this structure

	Price Floors			Allowance reserve						Price Ceilings				Other measures			
	Auction reserve price		**Top-up charge**	**Limited withdrawals**		**Limited injections**				**Fixed-price option**			**Price discount**	**Exchange volatility control**	**Discretionary interventions**		
Trigger (P or Q)	P		P	P	Q	Q		P		P			P	Price volatility	P&Q		
Supply adjustment (Permanent, Temporary)	P	T	NA	P	T	P	T	P	T	P	T	P	NA	NA	T&P		
Examples*	RGGI	WCI	UK CPF; Aus. CPM	RGGI - ECR	(hatched)	EU ETS - MSR	EU ETS - MSR	EU ETS - MSR	EU ETS - MSR	RGGI - CCR	WCI APCR	NZ ETS; Aus. CPM	NZ ETS	China Pilots	China pilots	K-ETS	Tokyo-Saitama ETS

Notes: Colour of Examples' cells illustrates policy intent of MSM – Green: support prices; Red – Contain prices; Yellow: both;

All MSMS can be implemented across all covered or only a subset of emissions

Purpose

Experience

Design

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