

# Adaptive emission pricing for the energy transition under deep uncertainty

*Productivity Hub 'Financial and technological prerequisites of the energy transition'*

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# Objectives for emissions pricing

## Environmental effectiveness

- Domestic transition to low emissions
- Global contribution

The key emissions 'price' is the long-term investment signal

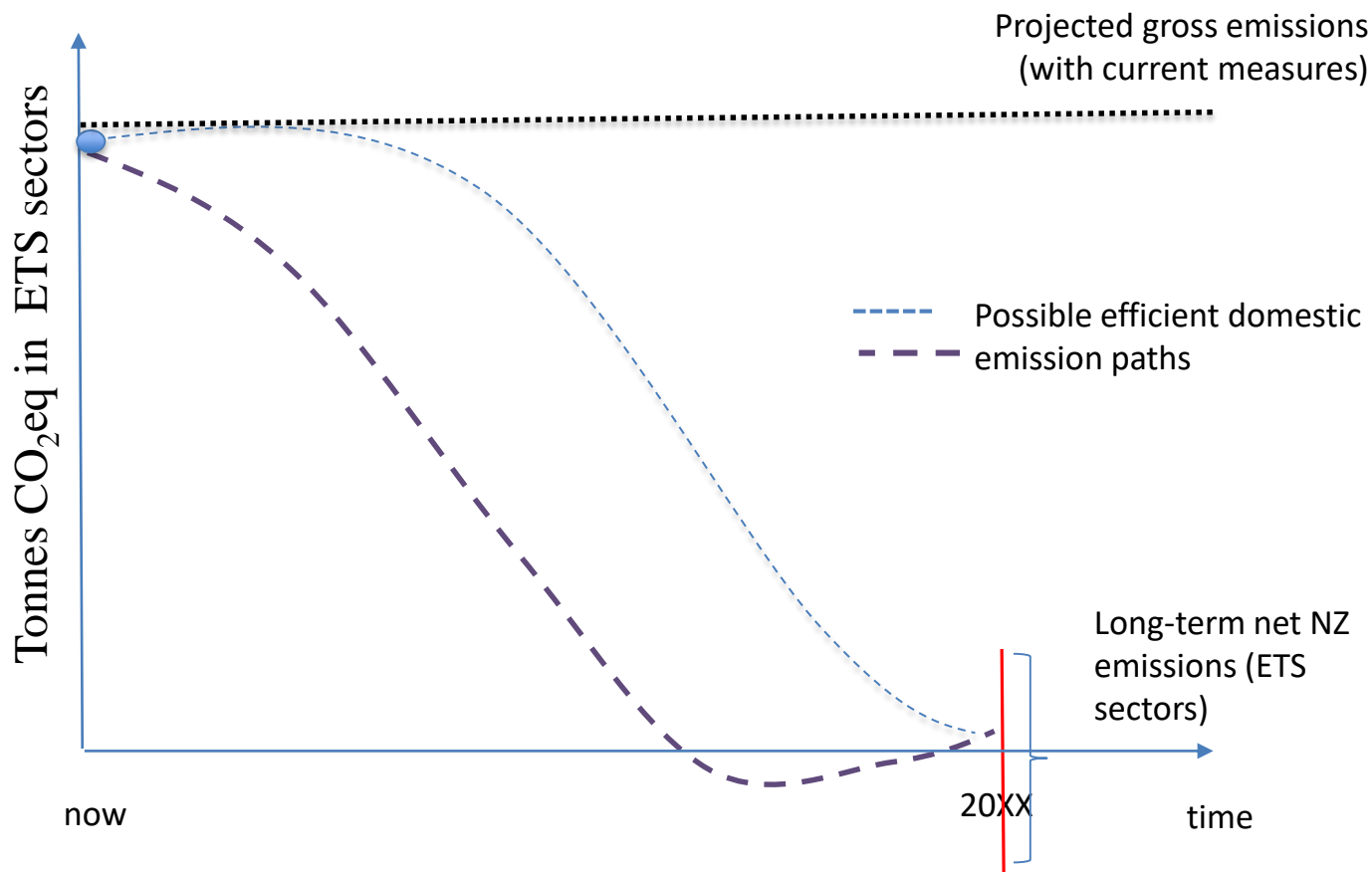
## Policy and price predictability

- Efficient and cost-effective transition
- Balance between certainty and flexibility

For the NZ energy sector this is a signal for the final steps in the transition to renewable electricity and, critically, the decarbonisation of transport and industrial energy.



# What is an efficient emissions path for NZ?



Conceptual - Not drawn to scale



# How do we manage prices under deep uncertainty?

## Going too slow

possible need for rapid adjustment later

- convex adjustment costs
- long-lived capital stocks
- path dependence of entire sectors

## Going too fast

- lock-in of inefficient green capital and paths of sectors
- short-term costs that are unnecessarily high



# Effective levers for adaptive price control in the Emissions Trading System

## 1. Cap is one determinant

- Large bank allows market to smooth prices for transitory economic shocks

## 2. Good information to market

- on Emissions Trading System demand
- on Emissions Trading System supply

Political process for signalling decisions that affect prices well in advance and stable, time-consistent governance

## 3. Price band

- gives price signal even if price is always at one margin

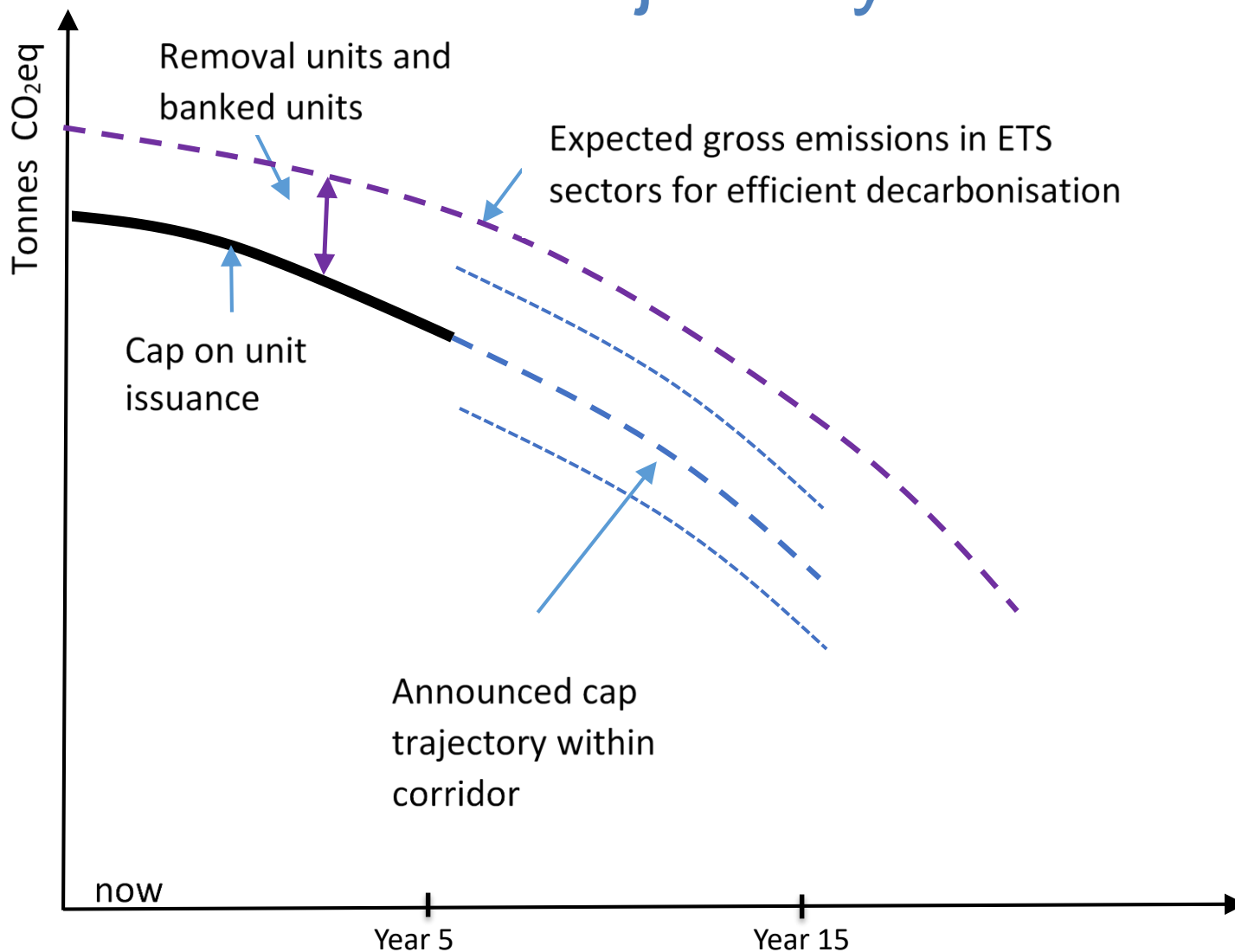


# Collaborative core proposal for NZ ETS

1. The **NZUs** enter the market through auctioning, free allocation, removals, and banking (**not** international offsets)
2. Government manages ETS supply through an annual **Cap** on auctioning and free allocation with a **Unit Reserve**
3. The market sets the price with **Price Band** safeguards, managed through the Unit Reserve
4. The Cap and Price Band are set in advance for 5 years, extended by 1 year each year, and guided by 10-year **Cap and Price Band Trajectories**; review is triggered when the Unit Reserve nears depletion or by a *force majeure* event
5. An **independent body** provides advice to government on ETS supply and price



# 5 year fixed cap and 10-year Cap Trajectory



# Introduce a Price Band

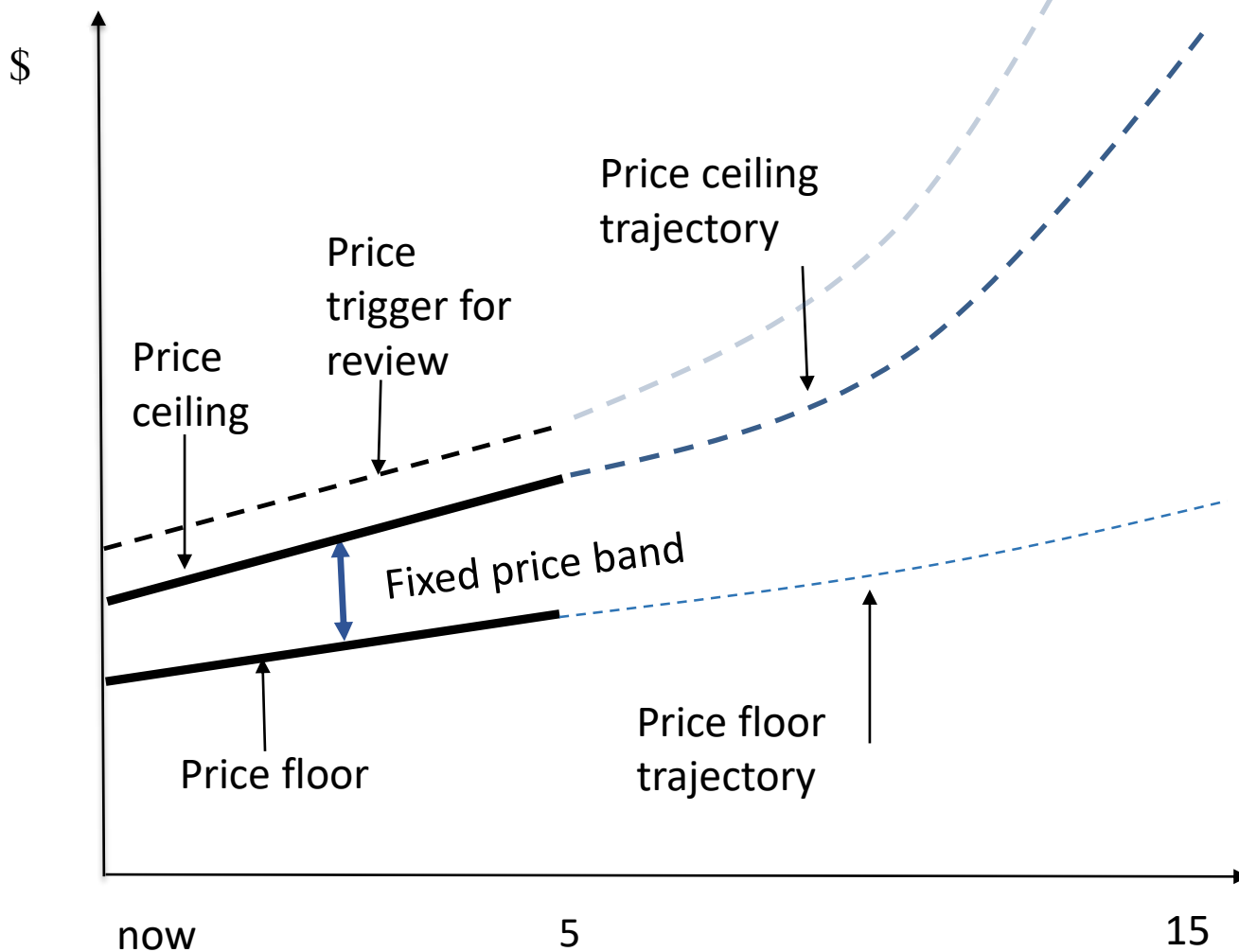
**Price Floor:** Reserve price at auction

**Price Ceiling:** Triggers for releasing more auction volume from the Unit Reserve at increasing prices + trigger for review





# Price Band and Trajectories



# Free allocation

For emissions-intensive trade-exposed activities (e.g. methanol, steel, aluminium, clinker) that receive output-based allocation the rate of free allocation also affects the effective price

Adaptive pricing must send clear signals also on any changes in free allocation



# Summary: Effective levers for adaptive price management in ETS

1. **Cap** - large bank allows market to smooth prices for transitory economic shocks
2. **Good information to market** on demand and supply for ETS
3. **Price band** provides some protection against instability while providing a long term price signal to inform investment and policy
4. **Political process** for signalling decisions that affect price well in advance: cap, price band, metrics, free allocation

Clear price signals for investment are critical but are unlikely to be sufficient for an efficient energy transition.

