
Carbon markets

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Objectives of presentation

- Why a carbon market?
 - How do we expect that the New Zealand ETS carbon market will work
 - NZ and international prices for carbon
 - Managing risk that carbon prices will change
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Why a carbon market?

- Emissions Trading Scheme put in place as a result of New Zealand signing the Kyoto Protocol.
 - Under Kyoto, New Zealand has undertaken to keep emissions at or below 309,564,733 units (tonnes) for the 5 year period 2008 to 2012. This is a “cap”.
 - If at the end of the period New Zealand has emitted more, we would need to buy credits from a country that had emitted less than it’s cap. If we needed to do this we would undertake a “trade”.
 - The New Zealand Emissions Trading Scheme uses the same concept of cap and trade at the industry level. The ETS establishes a market to buy and sell carbon credits.
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Government objectives of ETS

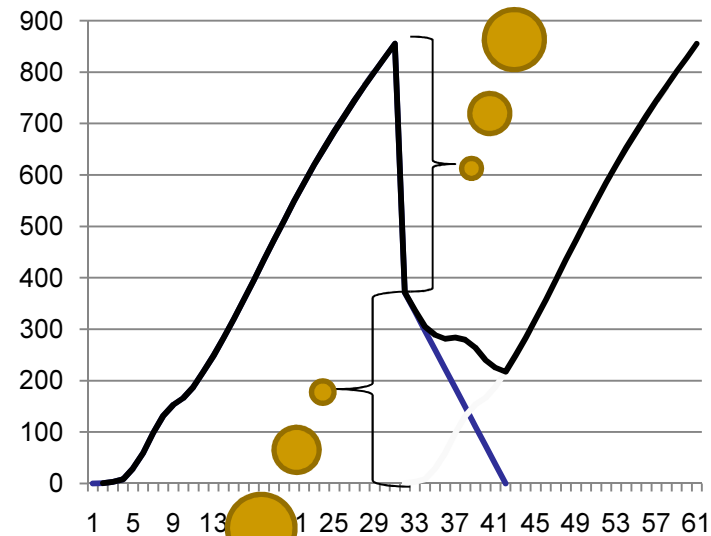
- “...providing a way for the New Zealand economy to meet our Kyoto obligations at the least possible cost...”
- “...to position our economy for probably deeper emission obligations in the future...”
- “...to influence near-term long-lived investment decisions through adopting the international market price for emission units...”

How does it work?

- Emitters must surrender credits
 - Sequesterers of C earn credits
 - which they can sell.
 - Sequesterers are paid for C fixed
 - price of C times quantity stored
 - Emitters surrender credits for “deemed emissions”
 - Price of C determined by supply & demand for carbon credits
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Deemed emissions

- Forestry deemed emissions
 - any harvest
 - damage to the forest resulting in tree mortality
- Forestry is
 - both a storer of carbon and an emitter,
 - at different times in the growing cycle



“Deemed emission” at harvest

“Deemed emission” from residual material left after harvest

“Point of obligation”

- Person who is liable for emissions returns (the “Participant”)
 - Post-1989 forest land owners ultimately responsible for:
 - decision on whether to enter the ETS
 - emissions returns, if participating in ETS
 - If there is a legal arrangement such as a forestry right, then the liability may be transferred, with the agreement of both parties. At the termination of the agreement, liability reverts to the land owner
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Types of carbon credits

- NZU – defined by New Zealand ETS
- AAU – defined by Kyoto Protocol
 - Limited number of AAUs
- New Zealand forest owners participating in the ETS will receive NZUs.
 - NZUs can be converted by the registry (NZEUR)
 - NZ government will restrict issuance of AAUs
 - Only forestry NZUs can be exported during the transition period

Units provided by the Kyoto Protocol

- Assigned Amount Units (AAUs). The initial assigned amount of each party to the Kyoto Protocol.
- Removal Units (RMUs). Given for net removal from land use, land use change and forestry. NZ will receive these at completion of the first commitment period
- Emission Reduction Units (ERUs) are issued to developed countries paying for emission reduction projects in other developed countries.
- Certified Emissions Reduction Units (CERs) are issued to developed countries paying for emission reduction projects or sequestering carbon in sinks in developing countries.

Market participants



The New Zealand Emission Unit Register <http://www.eur.govt.nz/>

Accounting, reporting and reconciliation of emissions, and unit holdings and transactions.



Trading platforms

Marketplace for buyers and sellers



Brokers / Aggregators

Putting buyers and sellers together. Aggregating credits for sale to a large buyer



Consultants

Advice on setting up and managing carbon forests



Financial sector

Financial mechanisms for managing carbon credit price risk



Forest owners

Entering ETS, selling credits as trees grow, surrendering credits at time of harvest



Emitters

New Zealand emission-intensive and trade-exposed companies still being identified



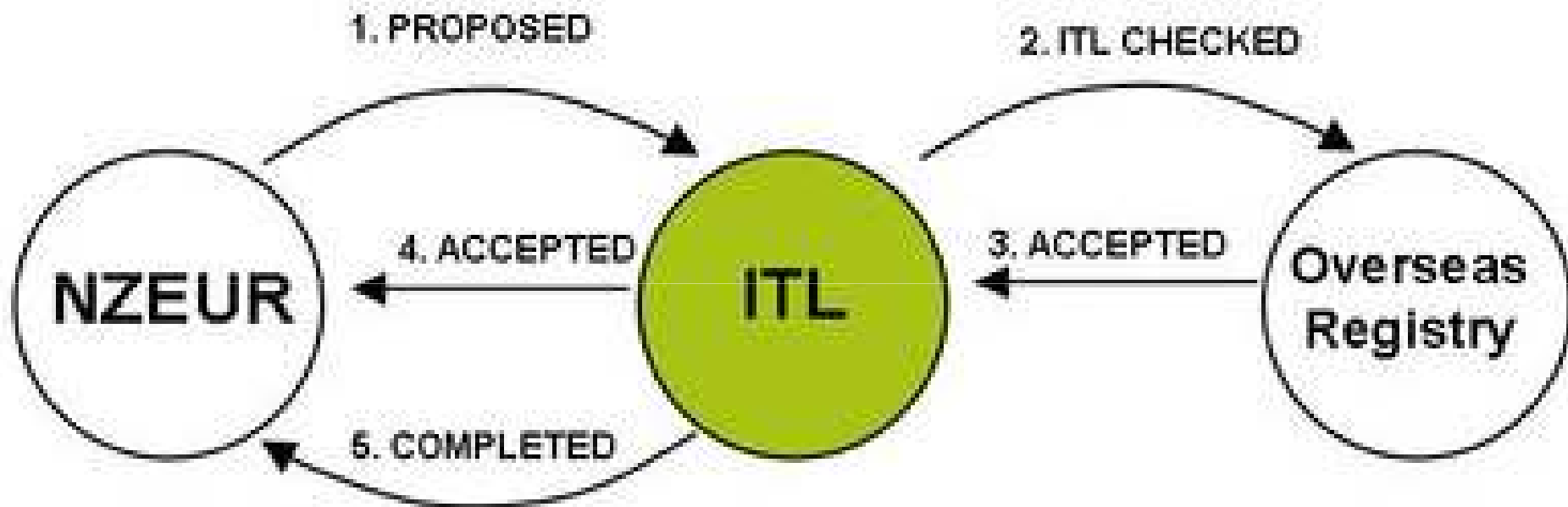
Traders

Traders looking to take advantage of market opportunities will also participate

Function of EUR

- Opening of holding accounts
- Holdings of both Kyoto units and New Zealand's domestic unit of trade, commonly known as New Zealand units or NZUs
- Transfer of Kyoto units and other information between the NZEUR and other official overseas registries under the Kyoto Protocol
- Transfer units between holding accounts in the NZEUR
- Registration of participants' activities under the NZ ETS

New Zealand Emissions Unit Registry



The International Transaction Log (ITL) will validate your transaction before passing to the relevant acquiring overseas registry, who will undertake their own validation checks before accepting the transaction

Limits on selling credits overseas

NEW ZEALAND
EMISSION UNIT REGISTER

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/ HOME / COMMITMENT PERIOD RESERVE (CPR)

Commitment Period Reserve (CPR) Report

16/05/2010



Commitment Period	CPR Limit	Units Held	CPR Level	CPR Level as a % of Assigned Amount
1	278,608,260	307,607,667	307,607,667	99.37%

During the first commitment period of 1 January 2008 to 31 December 2012, the CPR requires New Zealand to hold Kyoto units (AAUs, CERs, ERUs or RMUs) in its Registry totalling no less than 90% of its initial assigned amount of 309,564,733 units. This gives a CPR limit of 278,608,260 units. If this limit is reached, the Registry would be closed to outgoing international transfers until more Kyoto units are transferred into the Registry. The CPR level above has also been expressed as % of the initial assigned amount. Units held and CPR Level are the same. This is because New Zealand does not engage in Track 2 Joint Implementation Projects.

The data displayed in the report above is produced the previous day at 9 pm.

CPR Limit	278,608,260
Units held (16/05/2010)	307,607,667
Available for international trading	28,999,407

Source: eur.govt.nz

How is the market developing?

- Demand tends to be “chunky” so there is a requirement for aggregation
 - Some large emitters are doing this themselves by initiating deals with foresters for a future stream of NZUs at a negotiated price
 - Westpac Bank has announced that it has approached foresters to buy their credits which they will then onsell
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Development of the market for NZUs

- Some large emitters are doing deals directly with land owners with existing post-1989 forest, or landowners with land that could be planted
- This allows large emitters to buy a tranche of credits “forward” to meet future obligations at a known price
- Allows forest owners to fix price for credits in future

Marie Taylor
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Nitrogen and carbon have been sold in a new precedent-setting deal to convert pastoral land in the Lake Taupo catchment back to forestry.

In the next four years 550ha of pastoral land will be planted in radiata pine says Puketapu 3A Incorporation chairman John Hura, but he expects this to climb to 800ha.

The sale also involves the Lake Taupo Protection Trust buying 22 tonnes of nitrogen back from the farm as part of its moves to reduce nitrate levels in the lake.

Currently the trust is paying around \$400/kg for nitrogen and this price makes the nitrogen component of the deal worth around \$8.8million to Puketapu 3A.

Hura would not comment on the value of the deal, but said the committee has not made decisions about investing the proceeds yet.

The incorporation has also sold the carbon credits from the new 550ha forest to state owned enterprise Mighty River Power for an undisclosed price, likely to be around \$25/tonne.

Development of the market for NZUs

- Westpac Bank has announced that it has approached foresters to buy their NZUs which they will then on-sell to emitters
- No price disclosure for deals done so far

Westpac targets NZ foresters for carbon trading market

Westpac says it has begun buying carbon offsets from New Zealand forest owners with the aim of selling them to big polluting firms as part of New Zealand's emissions trading scheme.

The bank has approached about 600 foresters to pool carbon offsets issued to them to sell in large lots to firms such as refiners and cement makers that will have to meet carbon costs under the scheme.

New Zealand's ETS, only the second national scheme outside Europe, starts on July 1 with the entry of power generators, transport and steel and cement makers, which emit about half of the nation's greenhouse gas pollution.

"We've done some deals," Lloyd Cartwright, head of New Zealand financial markets for Westpac Institutional Bank, said. He declined to give specific details.

"You can see the deals in the market and nothing is going through near \$25," Cartwright said, referring to the scheme's initial capped price.

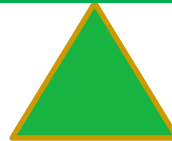
Market participants

Supply

1. Post 1989 forest owners who chose to participate in the ETS (less credits exported)
2. Units allocated to pre-1990 forest owners (less credits exported)
3. Imported CER credits from other countries

Demand

1. Emitters in New Zealand
 - Stationary Energy
 - Industry
 - Transport fuels
 - Forestry
 - post-1989 forests (not yet)
 - land-use change away from forestry
2. Other countries (AAUs, governments only)



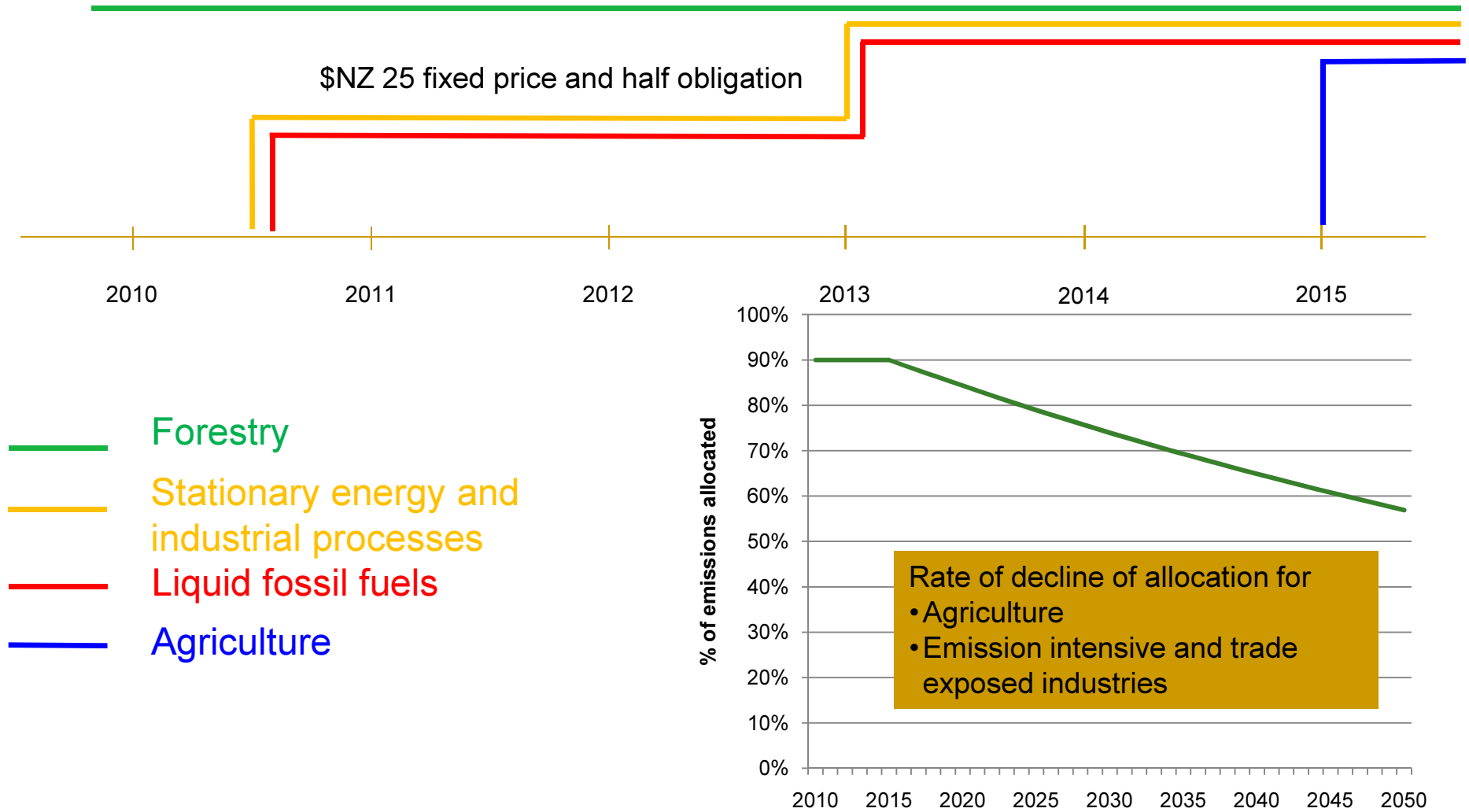
CO₂ emissions, 2008

Sector	million tonnes CO₂-equivalent
Energy	33.84
Industrial processes	4.29
Solvent and other product use	0.03
Agriculture	34.83
Waste	1.67
Post-1989 forests	-17.33
Conversion from forest to grassland	2.85

Drivers of demand

- ❑ Economic activity by emitters
 - New Zealand emissions increased significantly from 1990 – because the economy was expanding relatively rapidly
 - ❑ Change in technology in industry
 - New technology will emit less carbon
 - Emitters can choose to upgrade technology, or pay for emissions
 - ❑ Reducing the cap
 - If the requirement for reducing emissions becomes more severe (as might be expected), then government will reduce the cap
 - This is achieved by allocating fewer free units to emitters
 - There is a programme to gradually reduce allocations
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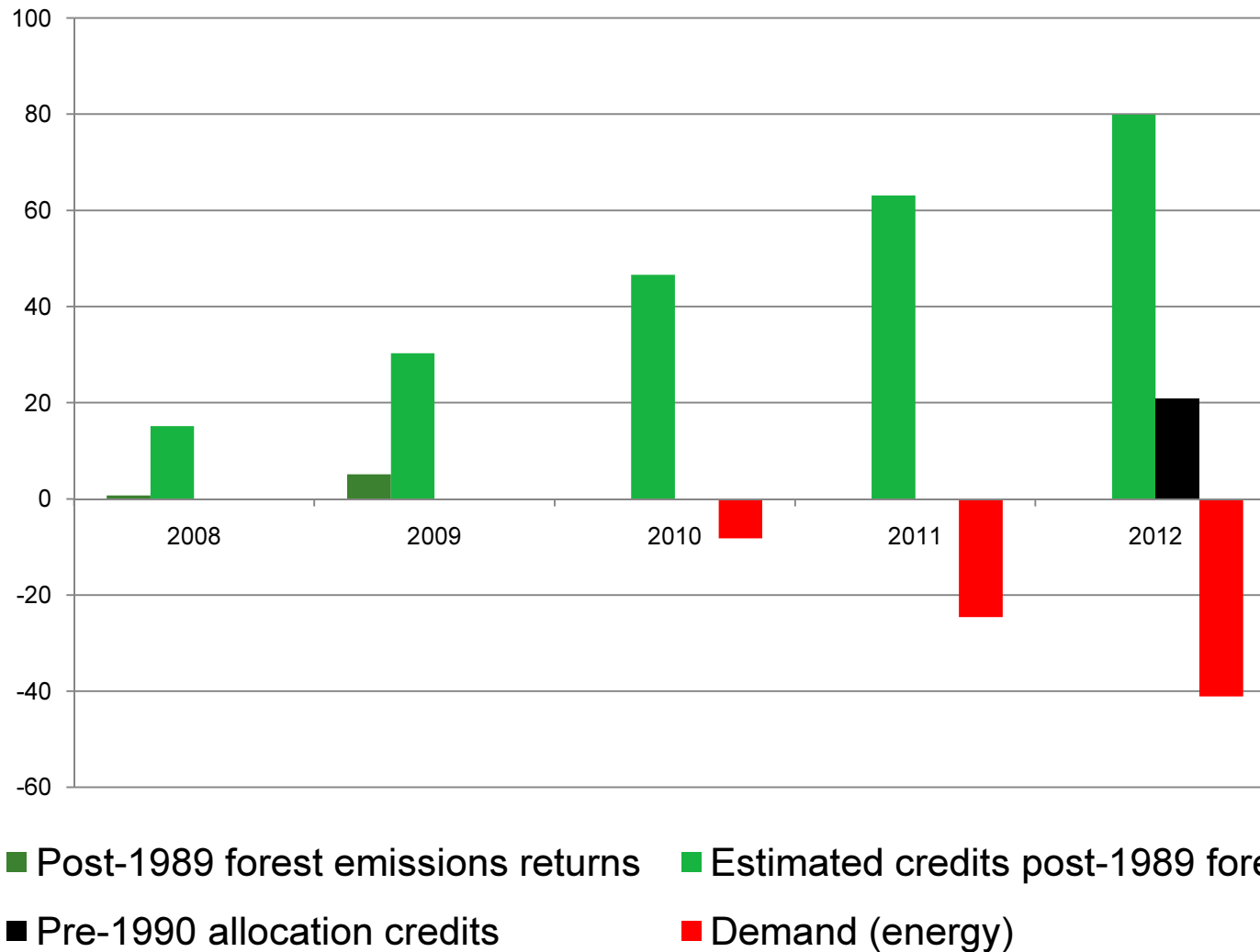
ETS – timing of entry of emitting sectors



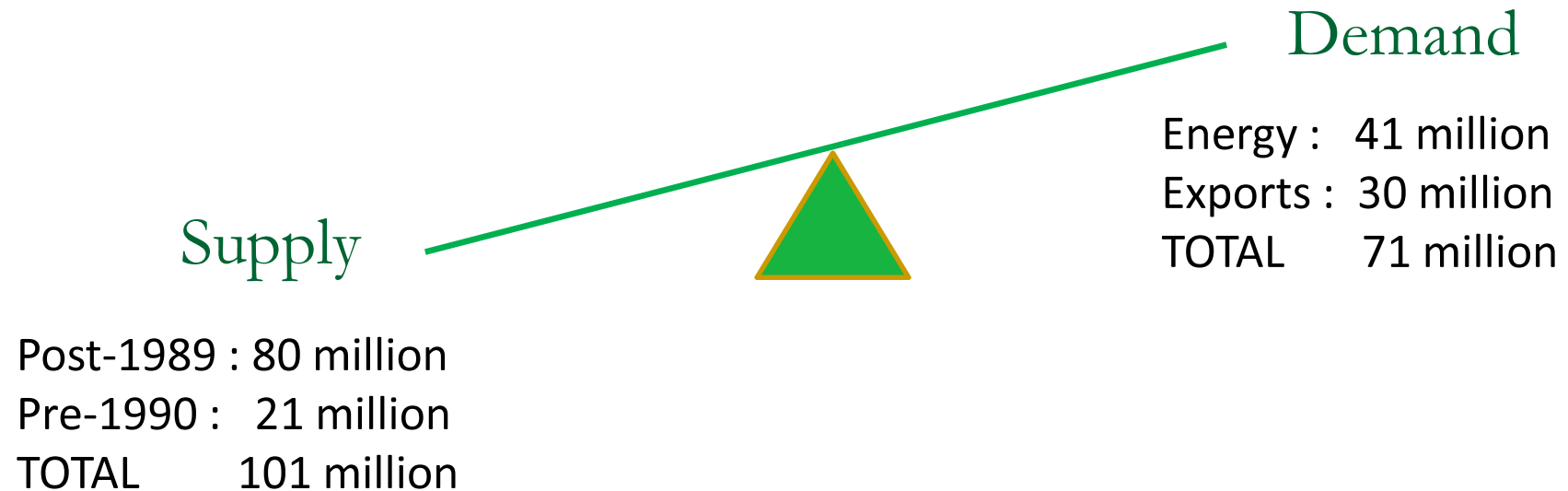
Forestry supply of NZUs

- Total potential to sequester is 17.33 million tonnes per year (based on 2008 data).
 - From 568,775 ha of post-1989 forest
 - At this stage, 109,000 ha or about 20% of the eligible (post-1989) forest land has entered the ETS.
 - Pre-1990 forest owners will be allocated 20.9 million NZUs before end of 2012
 - Forestry credits can be exported
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Potential supply and projected demand



If all post-1989 foresters participate,
and all NZUs (incl pre-1990) are sold...



- Currently 20% of post 1989 forest land is participating and submitting returns
 - If 70% participated, and sold credits, the market would balance at end of 2012
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Financial risk with carbon credits

- Why does price risk exist?
 - Change in supply or demand will influence price.
 - Prices fell with the general economic downturn in 2009. Quantities of credits sold were also expected to drop
 - Carbon credit prices will also be affected by other factors, like energy prices
 - Type of credit that you own (liquidity and price)
 - NZUs
 - AAUs
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What is “hedging”

- Hedging is making an investment to reduce the risk of adverse price movements.
- For example, an exporter who is receiving payment in a foreign currency at a known time in the future can “buy the currency forward”, at a known price, therefore avoiding fluctuations in returns due to exchange rate changes.
- Investors use this strategy when they are unsure of what the market will do. A perfect hedge removes your risk entirely (but there is a cost for the hedge).

What problem will hedging solve?

- A gradual increase or decrease in price of credits will only have a small influence on the profitability of a carbon forest.
 - The cash-flow risk of a increase in the price of credits at time of harvest
 - If price increases then the forest owner will be paying back significantly more than they have earned. May cause cash flow problems.
 - If carbon price decreases significantly at time of harvest then the forest owner will have a windfall gain.
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Hedging options

- “Bank” some credits (i.e. do not sell)
 - Negotiate directly with emitter to sell credits forward (project based)
 - Use timber returns to offset carbon liability
 - Hedge using derivatives – forwards, futures and options
 - Natural hedge from normal forest (estate level)
 - Pooling (same as normal forest)
 - Continuous cover forestry
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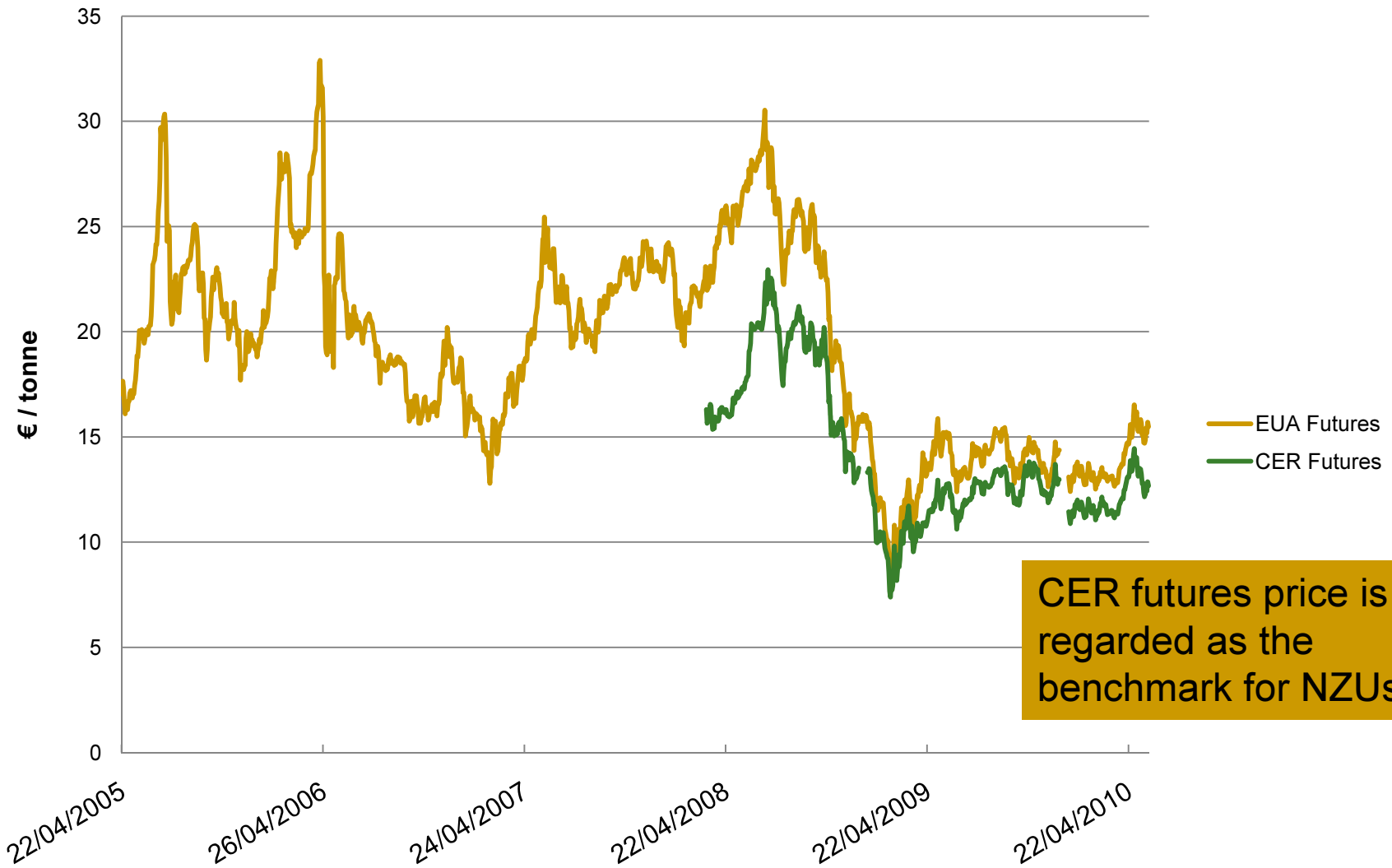
Carbon pricing

- Price trends in European market
 - Price cap in New Zealand market
 - Treasury price
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European Market

- “...Successful in its mission of reducing emissions through internal abatement at home...”
- “...The EU ETS is the major market for greenhouse gas emission allowances...”
- “...It helps to discover the price to emit GHG in Europe...”

European market carbon prices

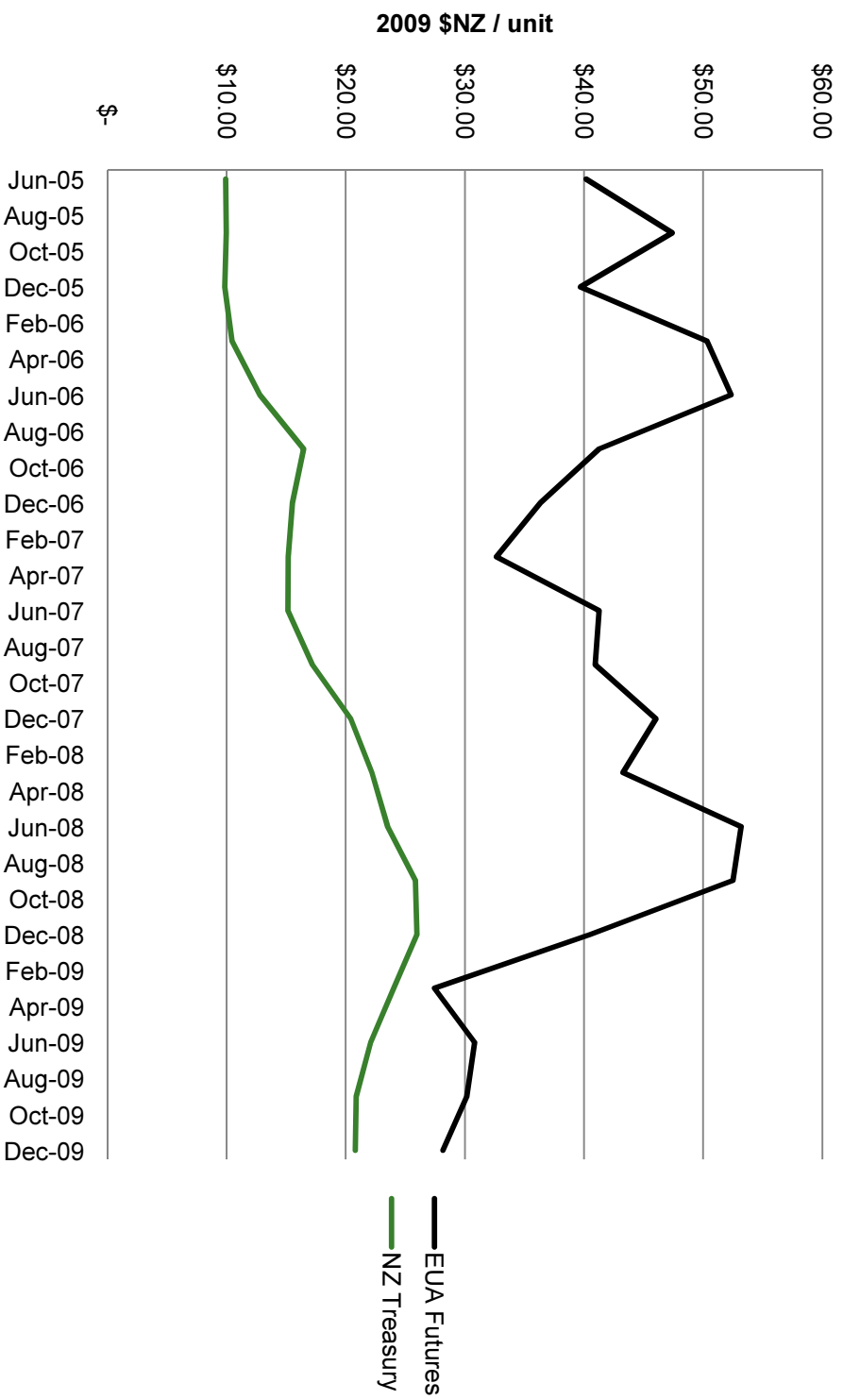


Source: ecx.com.eu

28 May 2010 Exchange rate = 0.5521 €/NZD

Carbon prices

Carbon prices



Recent transactions

- Ernslaw One sold 50,000 NZUs for \$20/NZU in April 2009 to a New Zealand energy company
 - 522,235 NZUs were converted to AAUs and sold to a European government in July 2009 for €10 / AAU
 - Ernslaw One and City Forests have made further sales since this time
 - Puketapu 3A Incorporation has announced that it will establish 550 ha of pastoral land in the Lake Taupo area in radiata pine, and the carbon credits from this forest have been sold to Mighty River Power, for an undisclosed price.
 - Prices in the New Zealand market are available from www.nzcarbonmarket.com (login required)
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NZ carbon price – transition arrangements

- The New Zealand government has agreed to offer a \$NZ 25 fixed price option to all those market participants who need to buy credits to meet their obligations under the NZ ETS
- This fixed price option is available for the transition period (i.e. until Dec 2012)
- Will tend to put an upper limit on prices for the transition period

Price for scenarios

- \$NZ 20 / unit
- Sensitivity of results to prices between \$0 and \$30 per unit



Summary

- Understand how a carbon market works
 - Brings together buyers and sellers
 - At project inception as well as at time of exchange of credits
 - Emitters can find the best choice for reducing emissions
 - Market is “under development”
 - Who are the market participants?
 - What’s happened to prices, and why?
 - Reducing price risk
 - A number of options to “self-hedge”
 - Financial markets will also be developed
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