Our Electricity System, the Emissions Trading Scheme and the Climate Change Commission Proposals

presentation to Our Climate Declaration

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17 February 2021

Outline

- Electricity sector “reform” – promise versus outcomes
- Emissions Trading Scheme as a market-mechanism-based way of pricing carbon: promise versus outcomes
- Interaction of the broken electricity market with the corporate-captured ETS
- Some comments on the Climate Change Commission draft report

The big promise of electricity reform

- Back in the 1980s the proposition was that corporatizing, reorganising, and where possible privatising electricity, would bring gains for consumers because
  - Commercial, profit-driven management would (1) raise efficiency and (2) cut costs
  - Competition (or appropriate regulation) would (3) force efficiency and productivity gains to be passed through to prices
  - Consumers would therefore enjoy better service and lower prices, while profits could rise under an SOE or private model – sharing the gains from more productive use of resources

The outcome 1986-2018

- A greed-driven uncompetitive oligopoly/cartel has been entrenched in control of our most strategic sector
- Productivity is down 30% over three decades, gross profits are up 80%
- Construction of renewable generation has been slowed down and new entrants to generation are being blocked by anti-competitive practices supported by the “regulators” (Electricity Authority and Commerce Commission)
- Prices for residential consumers have doubled in real terms
- Prices for industry are up just a couple of percent while prices for commercial users are down by a quarter
- The industry’s strategic goals are now hostile to equitable climate-change policy

The big promise of the Emissions Trading Scheme

- Market forces would be harnessed to trigger the most cost-effective options for emission reduction
- We would have a “cap and trade” system as a viable alternative to a carbon tax, given that the tax route was judged politically impossible
- All sectors/all gases would be covered by 2013 (including agriculture)
- New Zealand/Aotearoa would have a credible record to hold up for scrutiny at international gatherings

The outcome 2008-2021

- The Emissions Trading Scheme to date was from the start a massive scam designed primarily to enrich corporate insiders – including the electricity gentailer cartel
- There was no cap placed on emissions so it was never “cap-and-trade”
- The door was left wide open for using “offsets” – both forests and often-dodgy overseas carbon credits - as a substitute for mitigation effort
- It could have worked only if the Kyoto Protocol had been a success in establishing global carbon prices and markets, but the Protocol never flew
- Either price certainty or quantity certainty is required to incentivise behavioural changes. The ETS provided neither
- The 2020 ETS “reforms” have left the scam intact and the uncertainty unchecked

My interpretation of these outcomes

High profits in electricity have come not from efficiency gains but from price-gouging residential consumers, under cover of entrenched market power, while the countervailing power of big business has protected industrial and commercial users.

Meantime, our electricity sector has become a major roadblock to dealing with climate change imperatives

The Emissions Trading Scheme is a scam that tarnishes NZ internationally and blocks genuine progress on decarbonisation

We would do better with a carbon tax, supplementary regulatory measures, and border adjustments

In a nutshell, the big promises were hollow.

Outline of my discussion of electricity

1. Quick history
2. Some macro numbers: productivity, prices, and profits
3. Where do generators' excess profits arise under the current industry structure?
4. How does a carbon price affect the wholesale electricity market?

Before 1984

- An “essential service” collectively provided
- Priced as cheaply as possible to households: wellbeing the goal
- Run by civil engineers committed to optimal planned outcomes
- Integrated monopoly with non-profit objectives

Since 1984

- A commodity allegedly like any other supplied by corporates
- Priced to recover the full cost of the marginal generator plus the monopoly price for each lines-network operator plus a fat margin for dominant retailers
- Run by corporate managers and financial engineers maximising profit and “shareholder value”
- Multiple players in a complicated institutional landscape of some [allegedly] “competitive” and some [allegedly] “regulated” markets

1987 Corporatisation => profit-driven SOE (ECNZ)

1988 Transpower grid separated from generation stations (finally divested 1994)

1989 Taskforce recommends privatisation, “light handed regulation”

1994 Local electricity supply authorities expropriated, corporatised, and stripped of their retail franchise monopolies

1996 Wholesale “energy-only” spot market set up, Contact Energy spun off from ECNZ

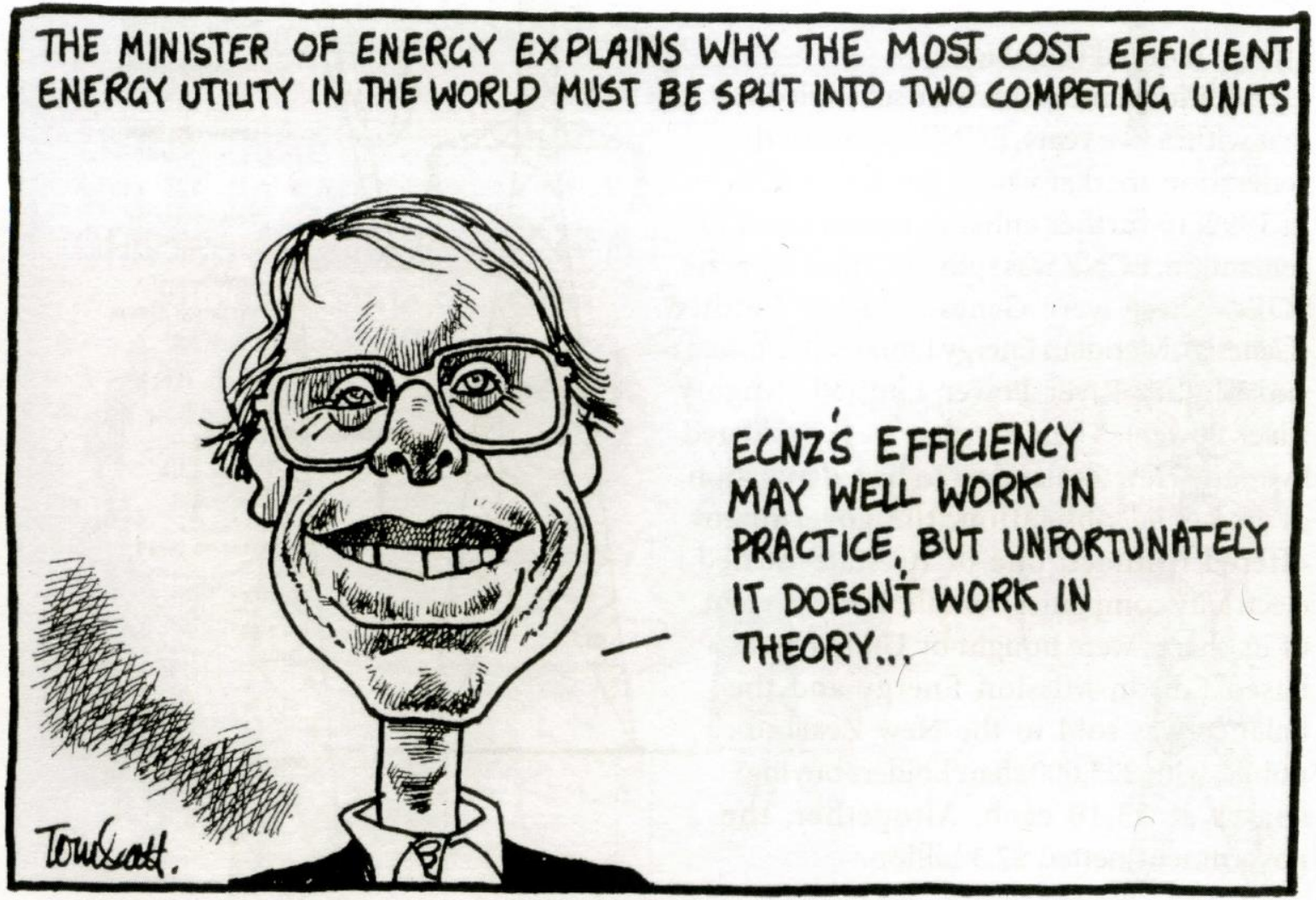
1999 ECNZ broken up => SOEs Meridian, Genesis, Mighty River and private Trustpower and Todd

1999 Local lines/energy split enforced and generators allowed to buy up retail businesses

2008 Commerce Commission begins “regulating” lines companies

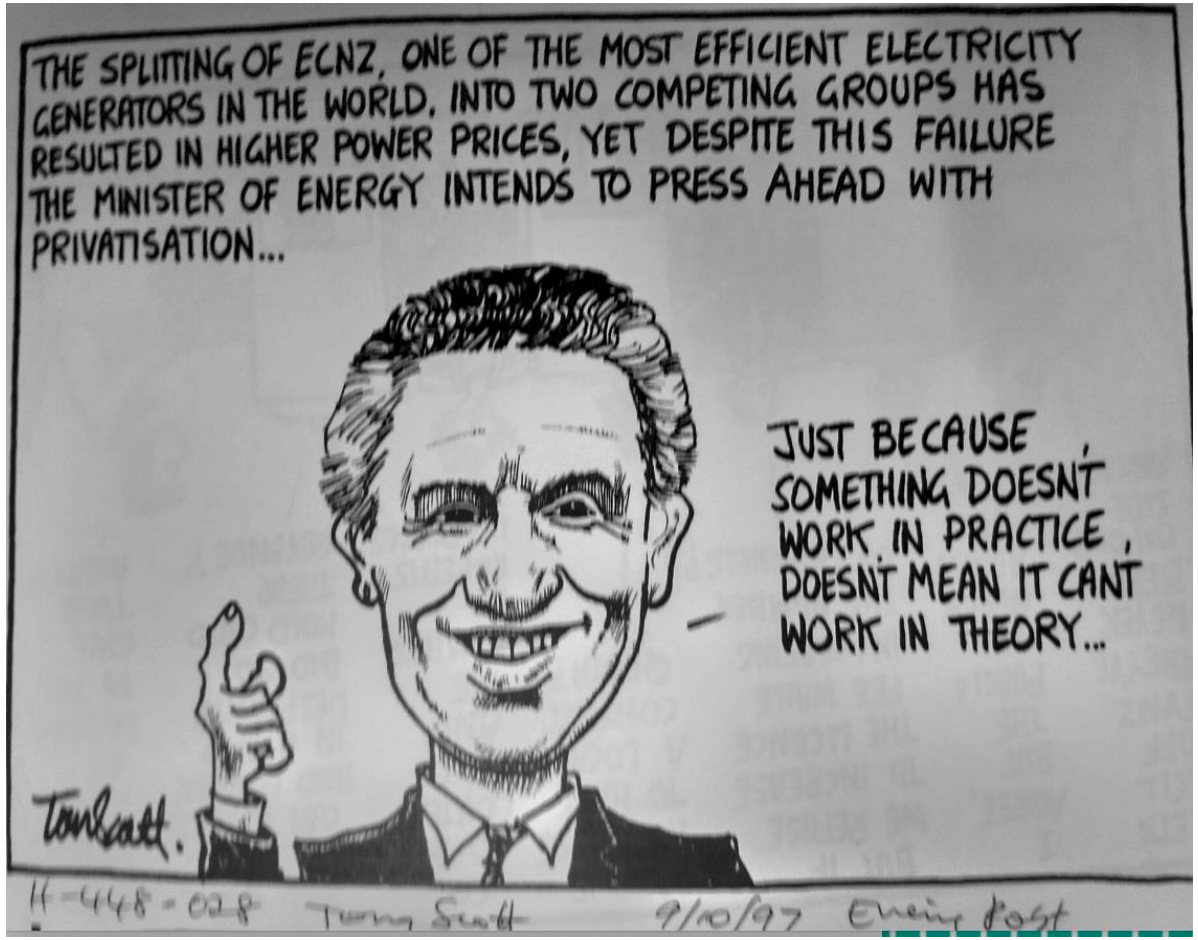
2013-14 Part-privatisation of the SOE gentailers

1995: Contact Energy split off from ECNZ



Tom Scott 9 March 1995

1997-99 ECNZ broken up as a prelude to privatisation



Tom Scott 9 October 1997

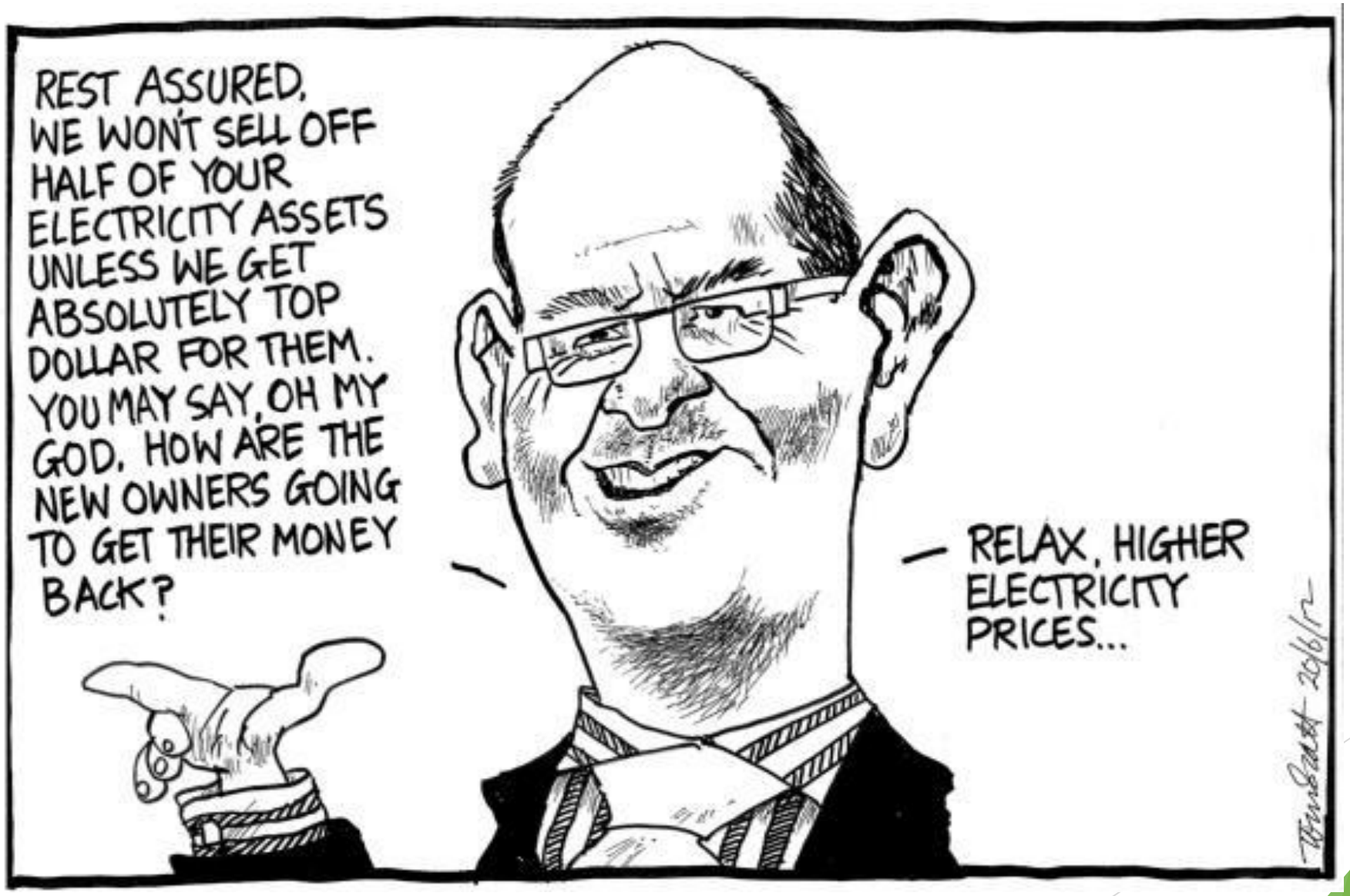
Jim Hubbard 8 April 1998

2012: the cartel securely entrenched

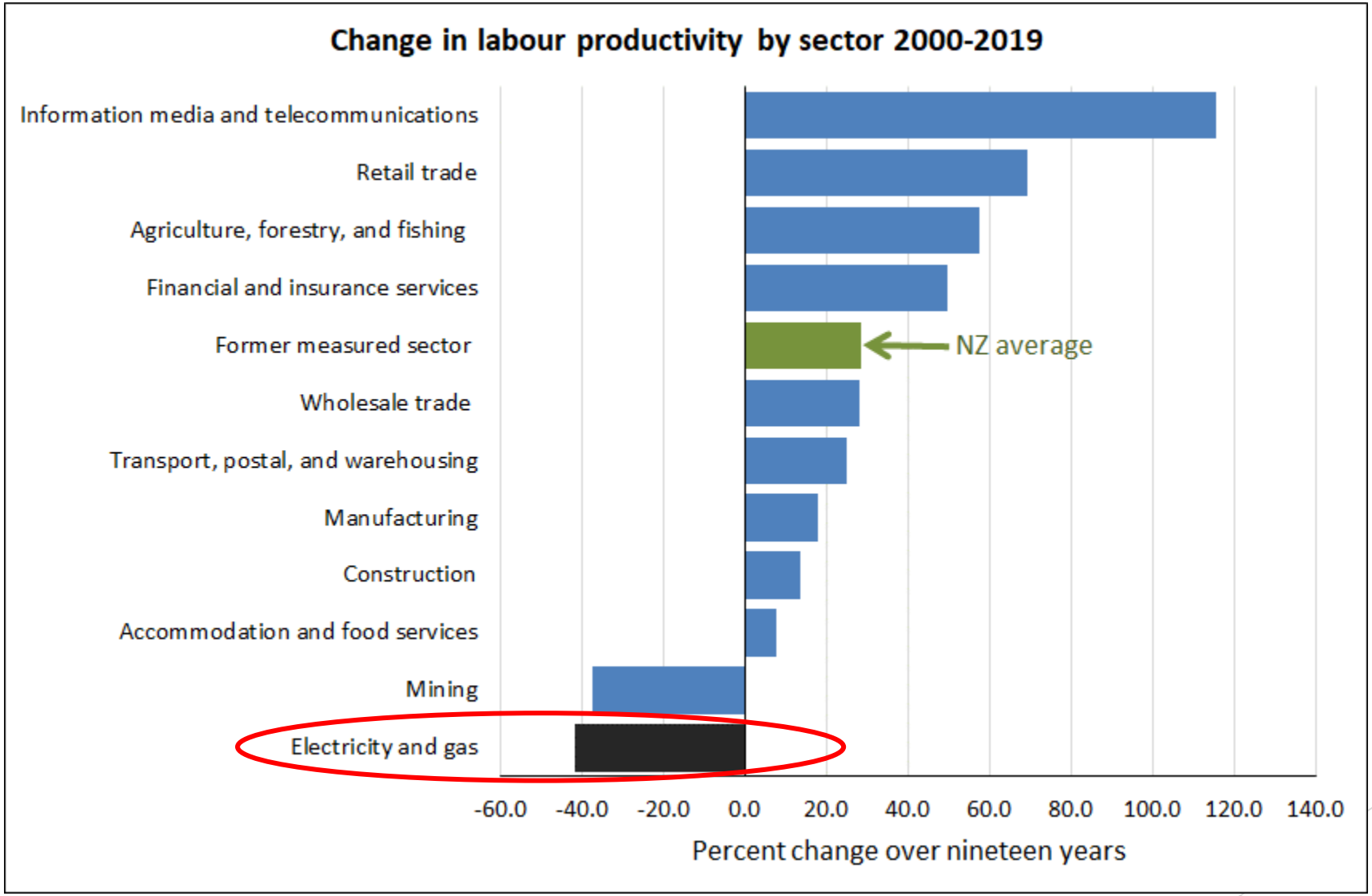
Tom Scott March 30 2012

Tom Scott 30 May 2012

2012-2014 Part-privatization of generation



Raise efficiency?



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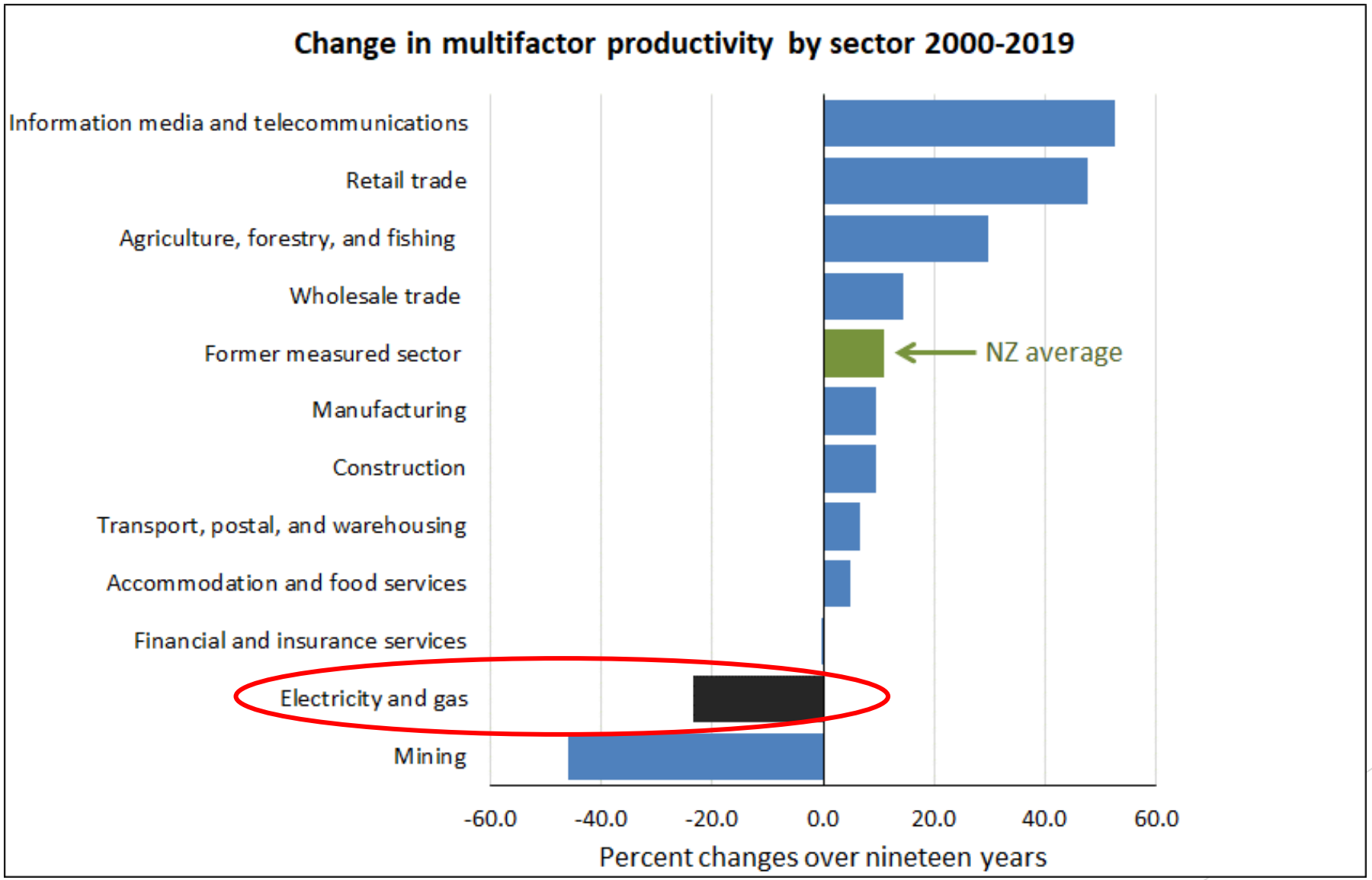
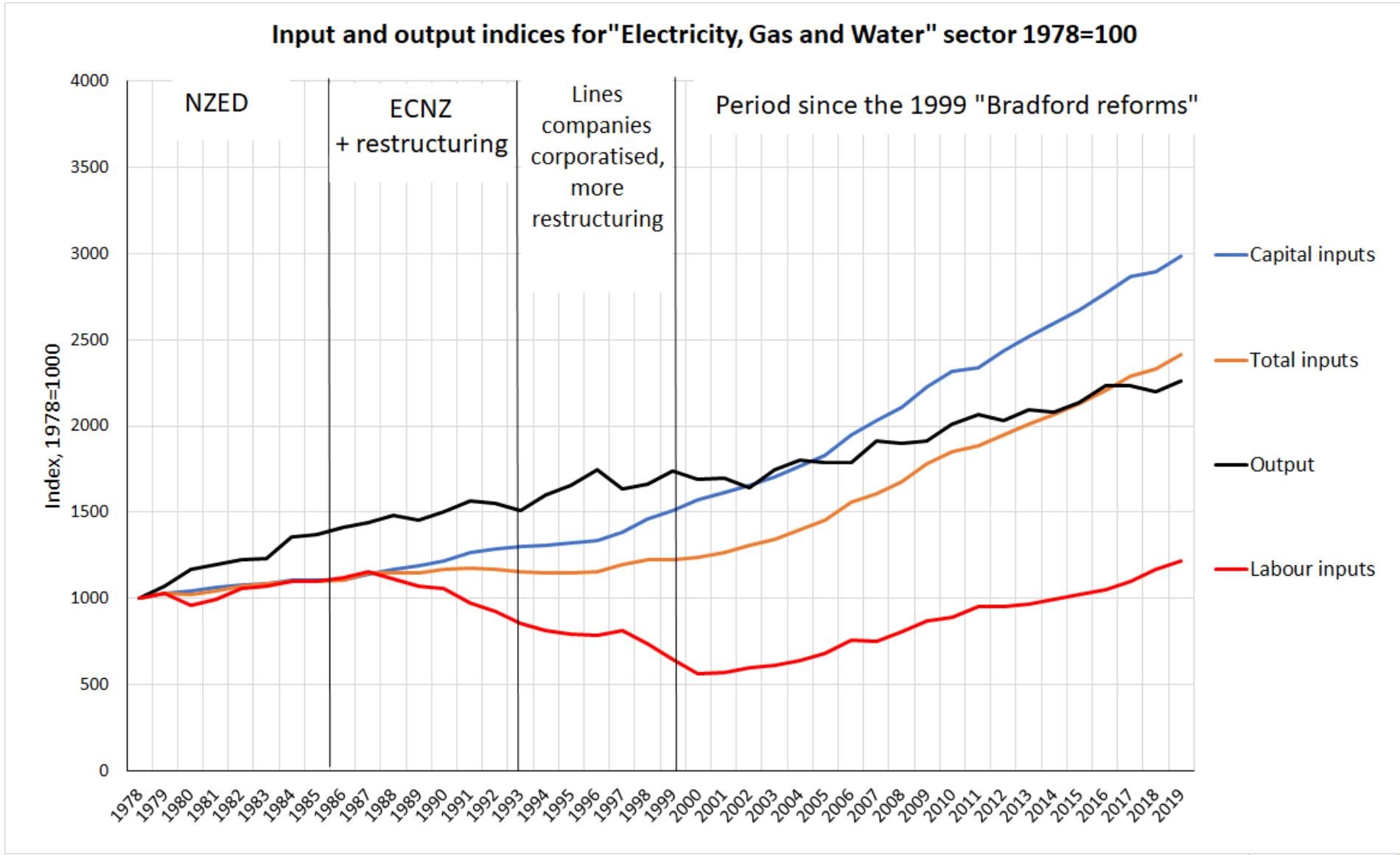
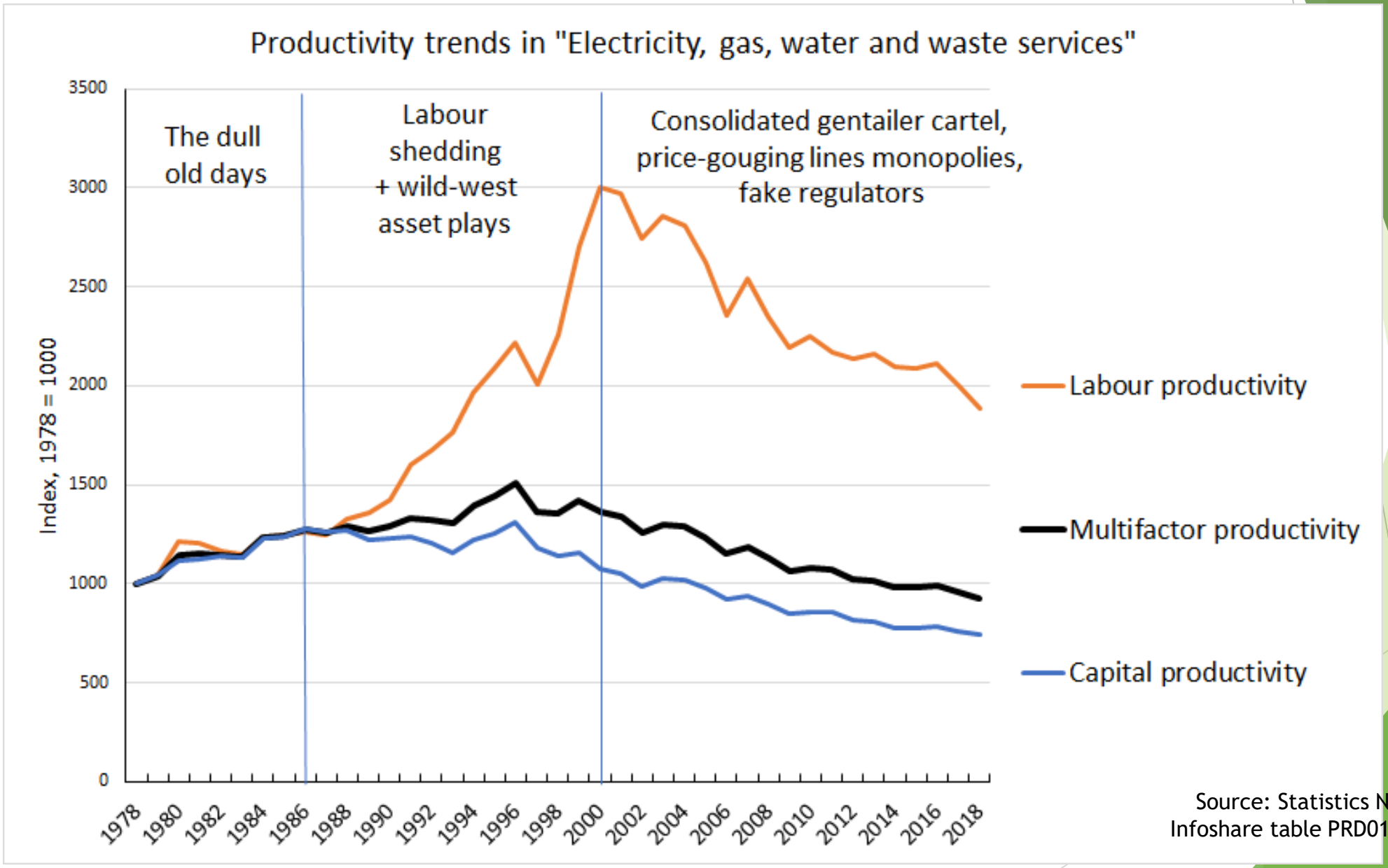
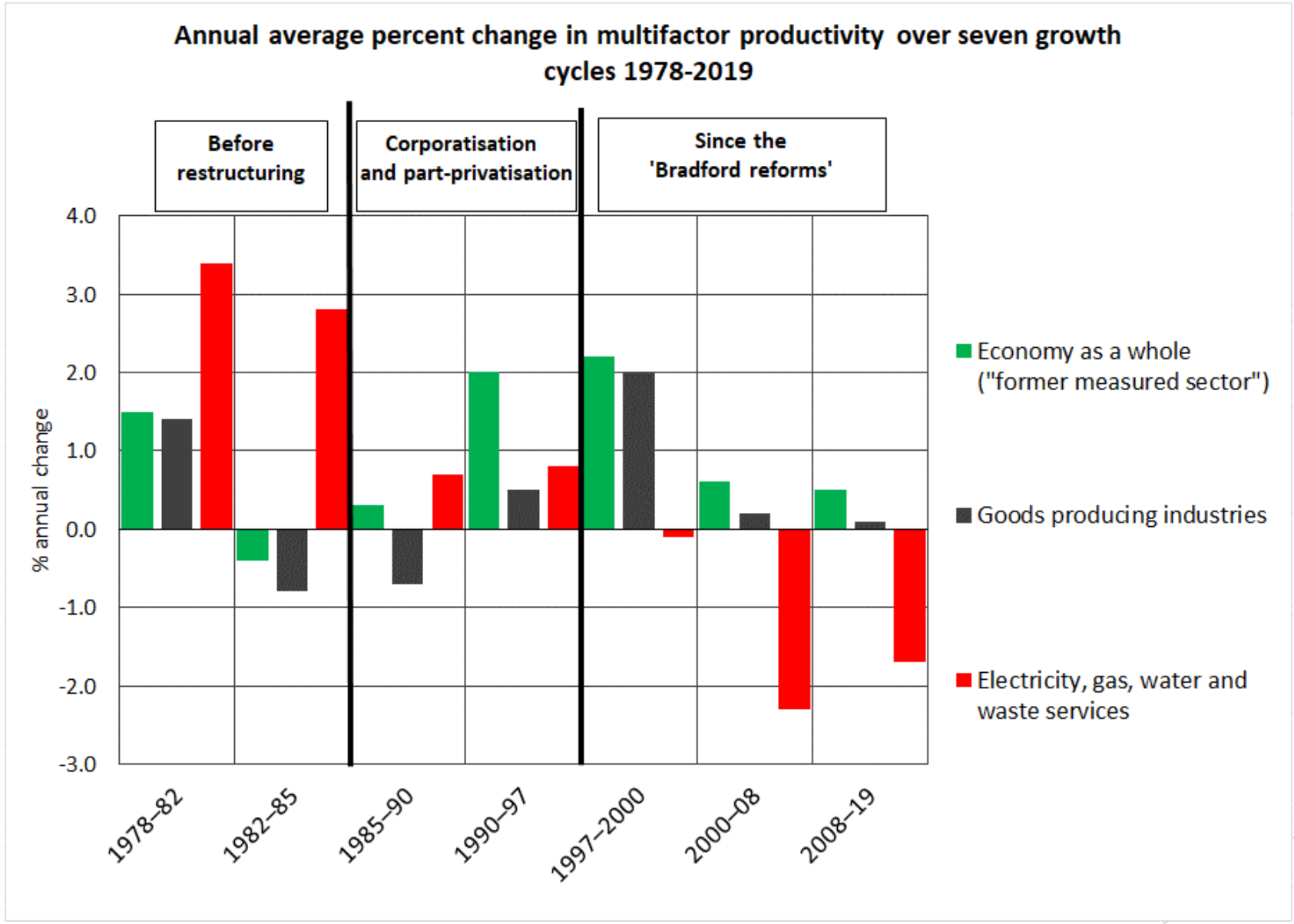



Input and output indices for"Electricity, Gas and Water" sector 1978=100
NZED
ECNZ + restructuring
Lines companies corporatised, more restructuring
Period since the 1999 "Bradford reforms"
Index, 1978=1000
4000
3500
3000
2500
2000
1500
1000
500
0
1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Capital inputs
Total inputs
Output
Labour inputs



Source: Statistics NZ
Infoshare table PRD014AA


Annual average percent change in multifactor productivity over seven growth cycles 1978-2019
Before restructuring
Corporatisation and part-privatisation
Since the 'Bradford reforms'
% annual change
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
1978–82
1982–85
1985–90
1990–97
1997–2000
2000–08
2008–19
Economy as a whole ("former measured sector")
Goods producing industries
Electricity, gas, water and waste services

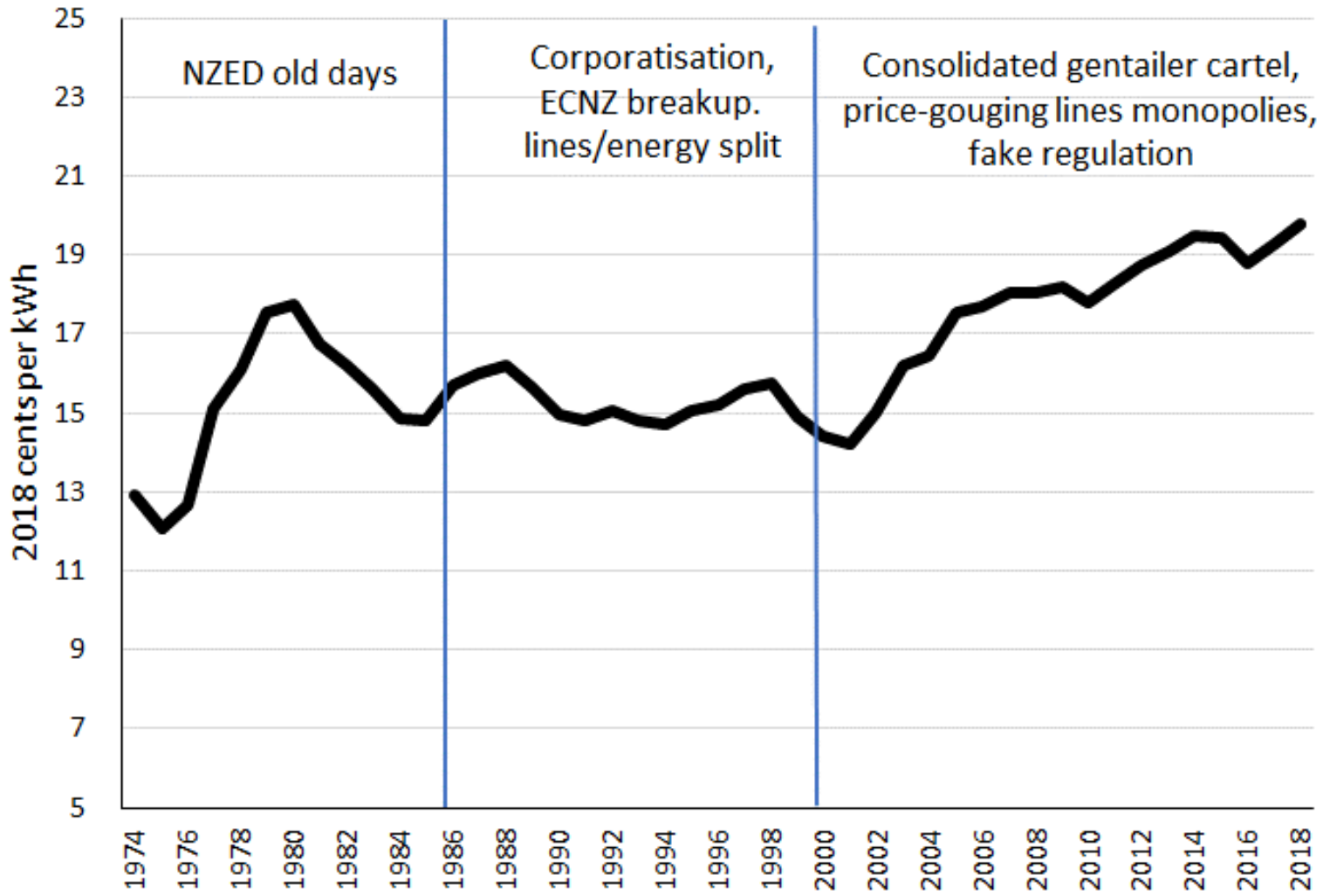
Bottom line: over the past two decades this sector has been loaded up with labour and capital engaged in unproductive activities

- Pursuit of profit combined with complicated “competition” games and financial engineering has meant that increasing amounts of labour and capital have been allocated to high-paid sales, marketing, financial management and administrative work that adds nothing to the volume or quality of the electricity reaching consumers

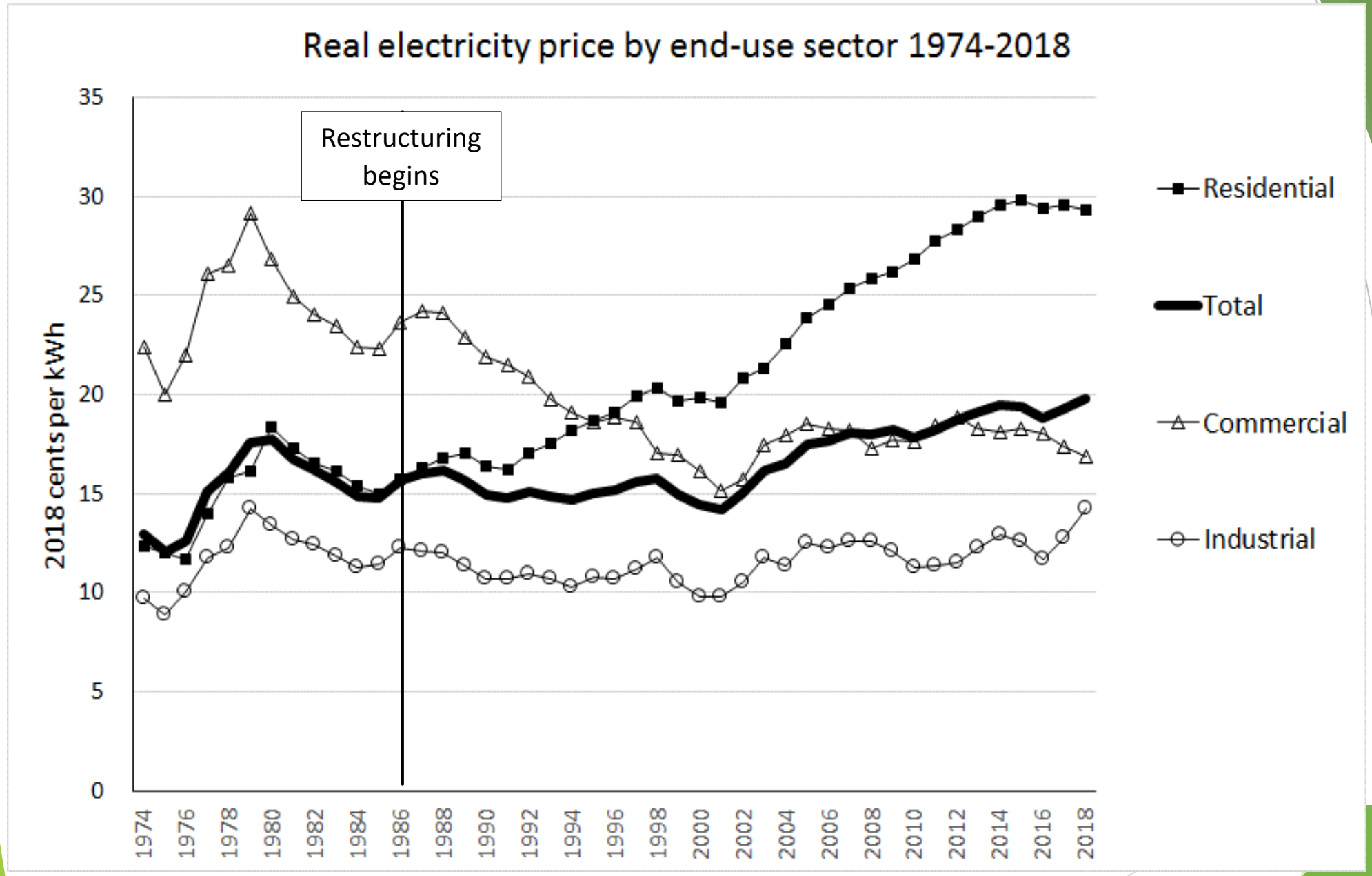
- Corporatisation and privatisation have culminated in a gigantic exercise in rent-seeking waste

Turn now to price

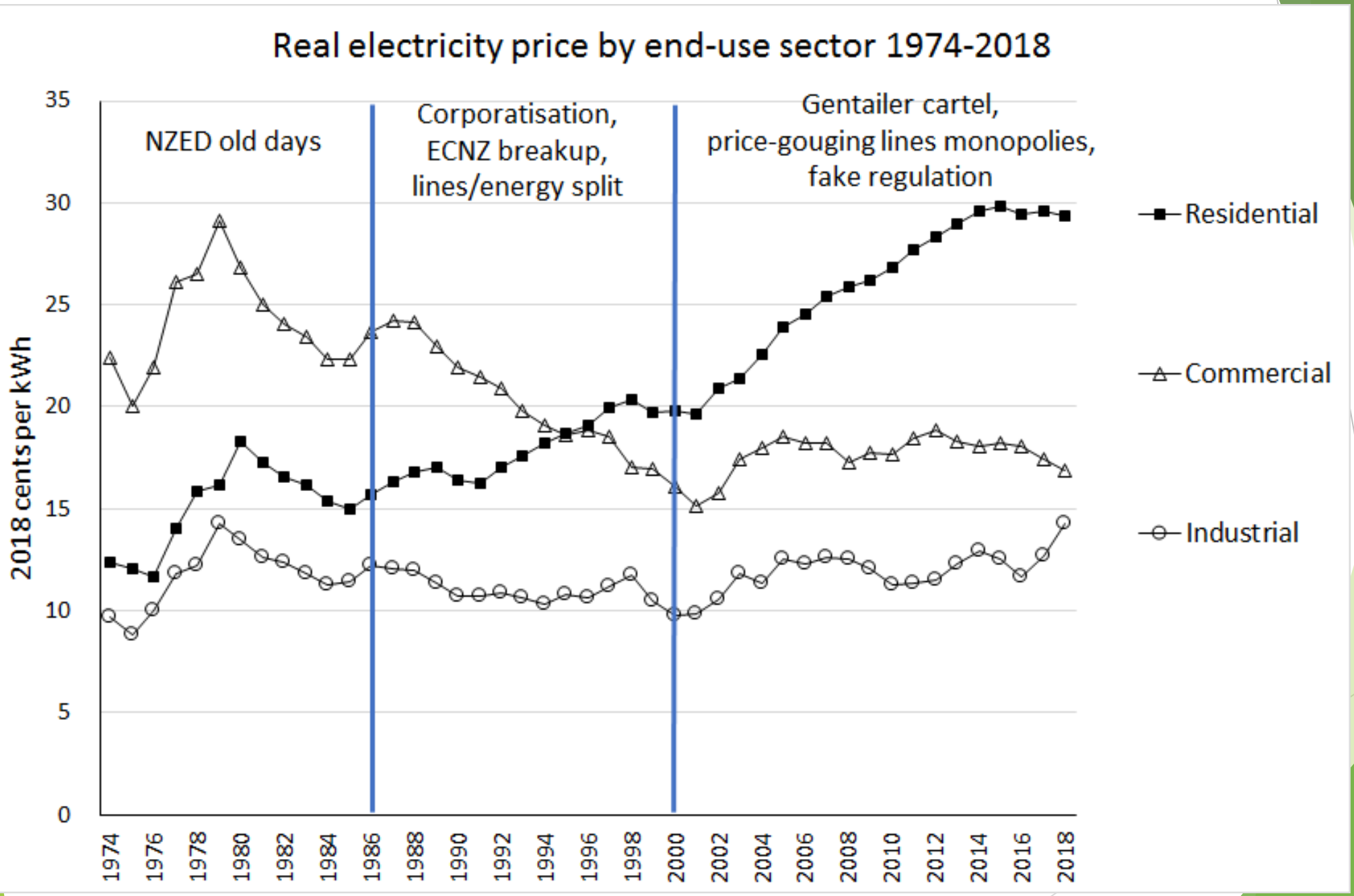
- First the average across all users
- Then the specific changes by sector



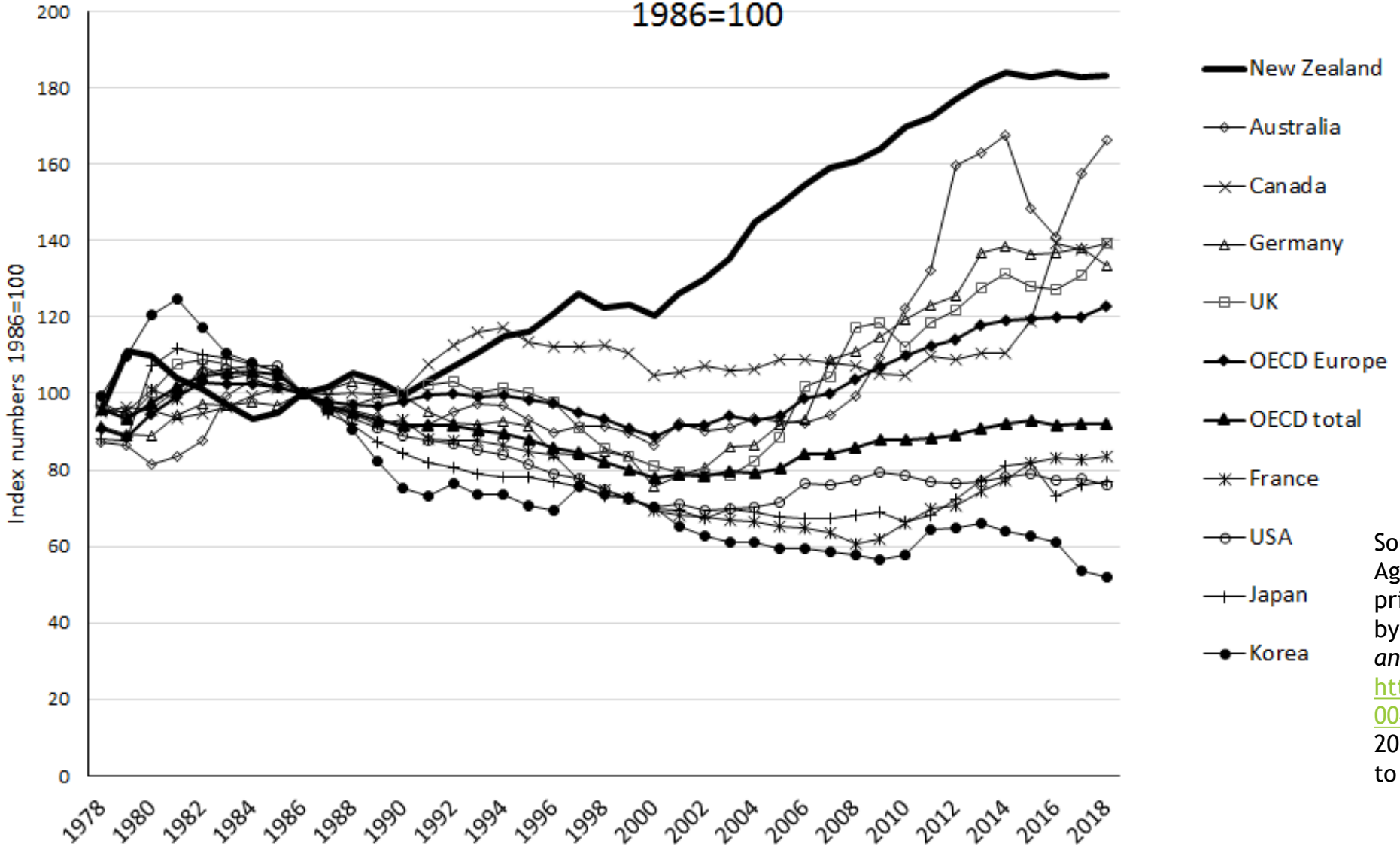
Calculated from MBIE 'Data tables for electricity" and "energy price tables" at https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/electricity-statistics/ and https://www.mbie.govt.nz/assets/Data-Files/Energy/energy-quarterly-statistics/q1-march-2019/f0208a8a33/Prices.xlsx accessed June 2019.



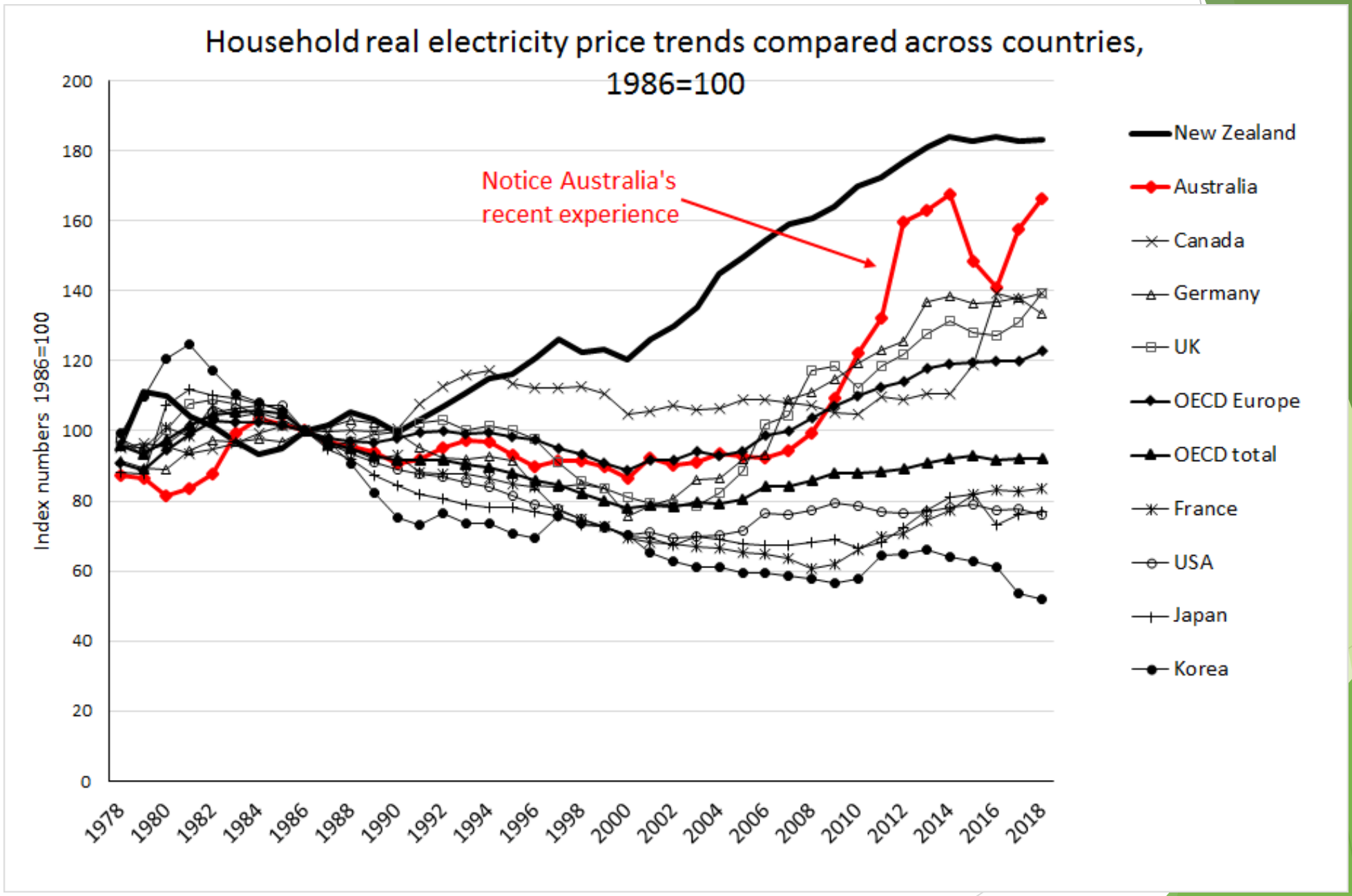
Source: MBIE data from https://www.mbie.govt.nz/assets/Data-Files/Energy/energy-quarterly-statistics/a0285022ed/prices-statistics.xlsx downloaded 20 May 2019, deflated to 2018 values using CPI for residential and PPI Inputs for commercial and industrial.


Real electricity price by end-use sector 1974-2018
NZED old days
Corporatisation, ECNZ breakup, lines/energy split
Gentailer cartel, price-gouging lines monopolies, fake regulation
2018 cents per kWh
35
30
25
20
15
10
5
0
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
Residential
Commercial
Industrial

and comparing with other OECD countries



Source: International Energy Agency (2019), "End-use prices: Indices of energy prices by sector", *IEA Energy Prices and Taxes Statistics* (database) https://doi.org/10.1787/data-00444-en (accessed on 20 May 2019). Series rebased by author to 1986=100.


Household real electricity price trends compared across countries, 1986=100
Index numbers 1986=100
Notice Australia's recent experience
New Zealand
Australia
Canada
Germany
UK
OECD Europe
OECD total
France
USA
Japan
Korea
200
180
160
140
120
100
80
60
40
20
0
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018

Moving on from index numbers, compare different countries' residential prices

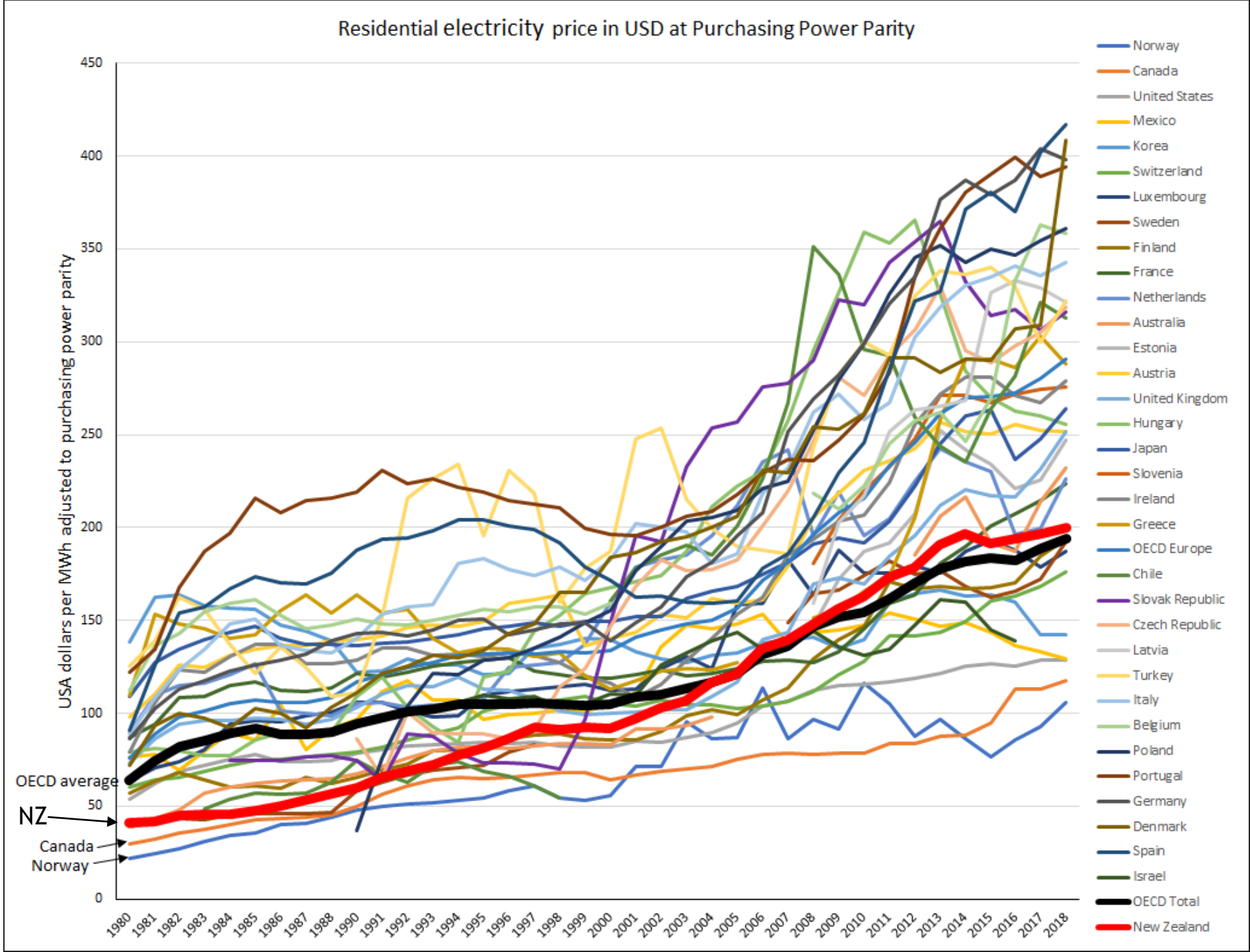
OECD data show residential prices in US dollars per MWh at purchasing power parity

This is of interest because industry spokespeople and MBIE talk proudly about "11th lowest residential prices in the OECD".

New Zealand used to be the third lowest, at 64% of the OECD average price.

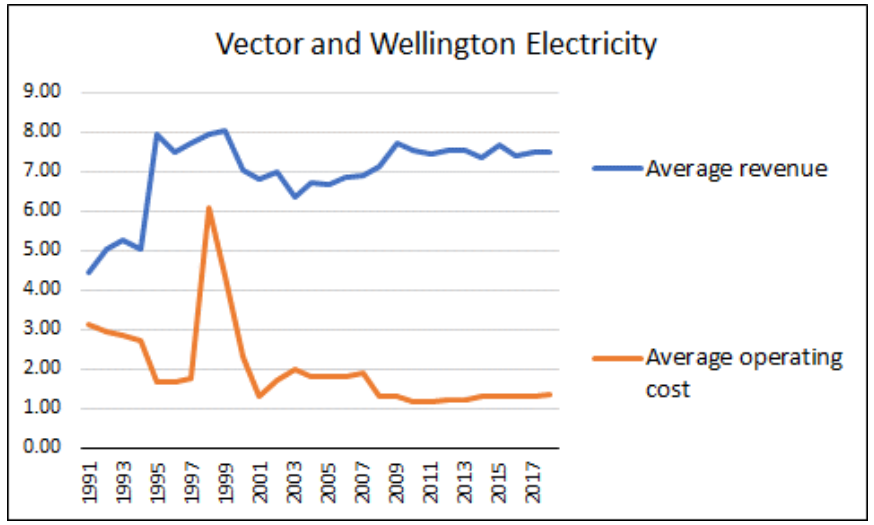
In 2018 NZ was eleventh lowest, at 103% of the OECD average.

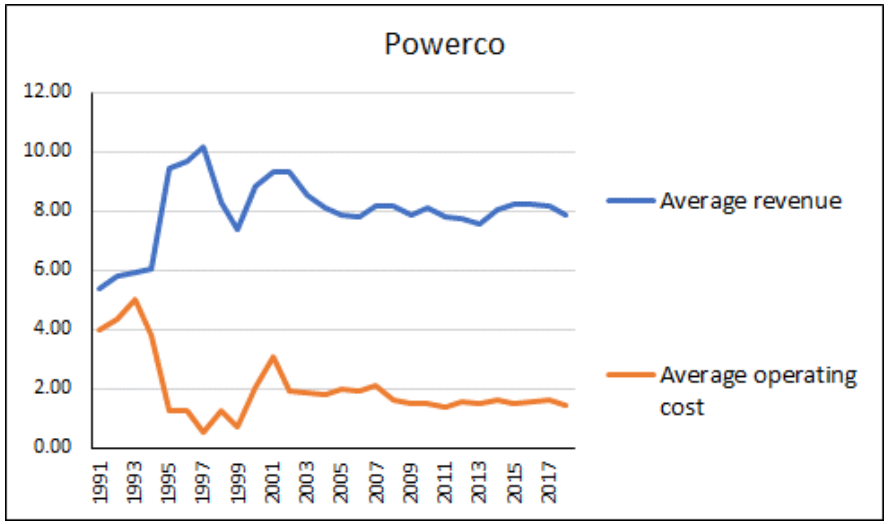
Source: International Energy Agency database accessed 3 October 2019.

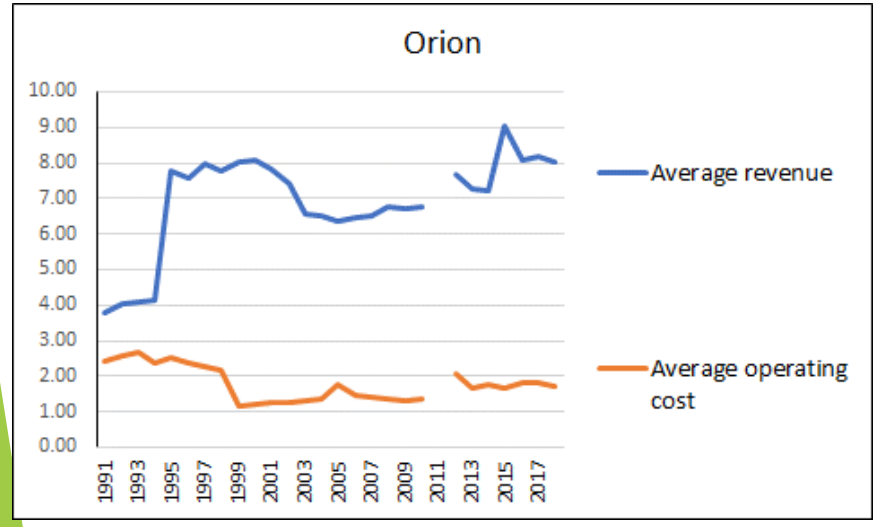


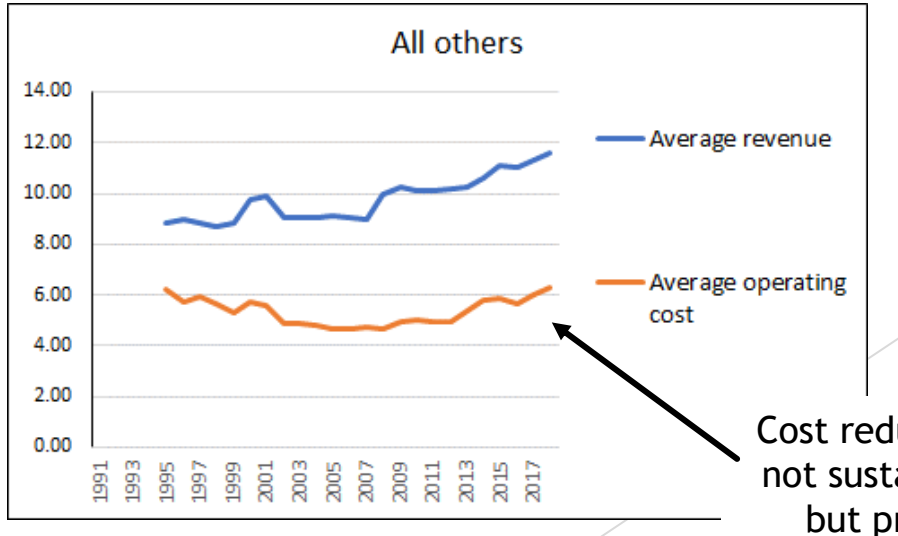
Cut costs and pass the gains through to prices?

Lines networks, real values in 2018 cents per kWh



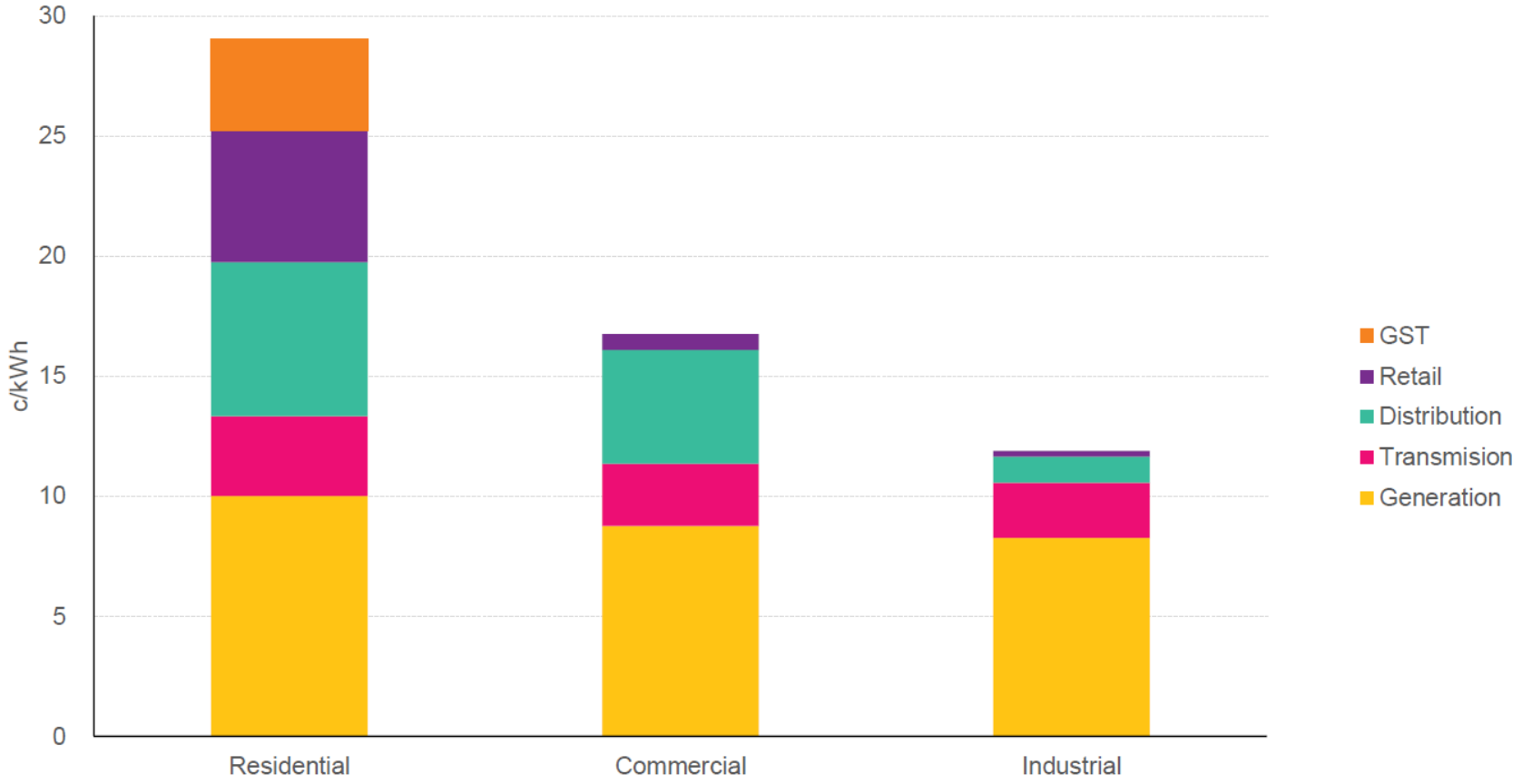






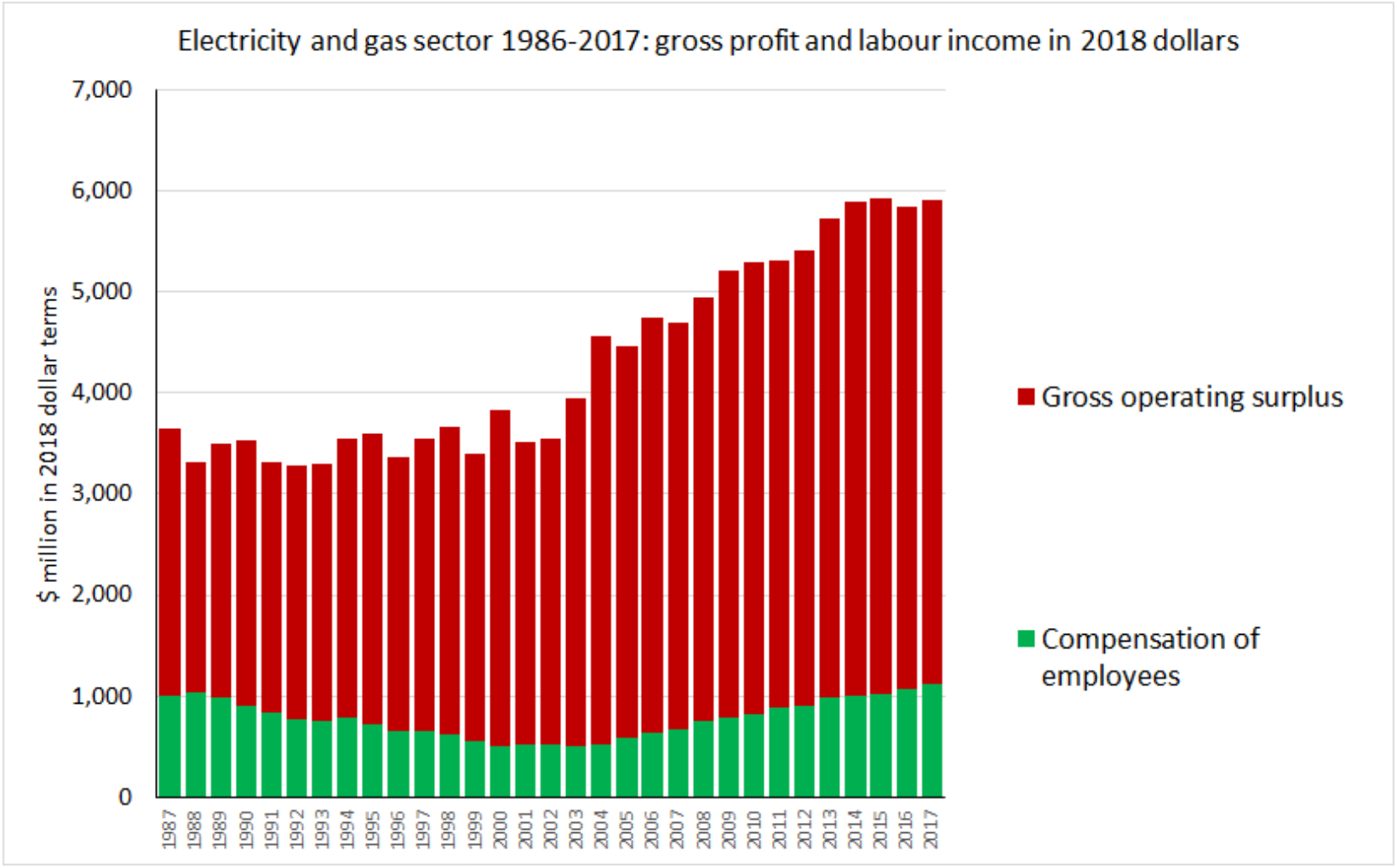
Cost reductions not sustained - but profit margins stayed

Figure 8: Estimated breakdown of charges by consumer type



Electricity Price Review/Hikohiko te Uira, *First Report* August 2018 p.23.

Finally, profits



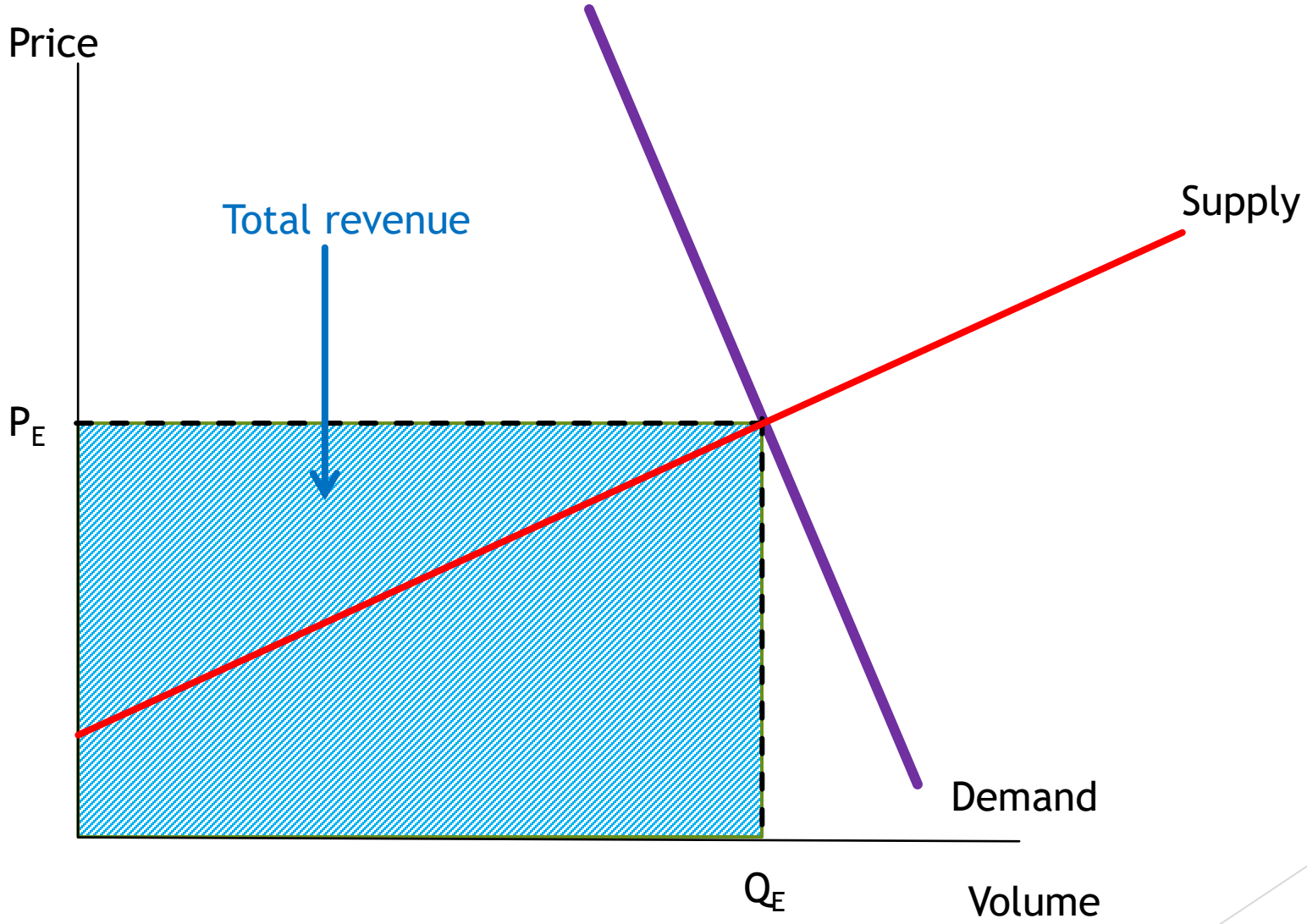
Source: Statistics NZ https://www.stats.govt.nz/assets/Uploads/National-accounts-industry-production-and-investment/National-accounts-industry-production-and-investment-Year-ended-March-2017/Download-data/national-accounts-industry-production-investment-year-ended-march-2017.xlsx downloaded 20 May 2019.

Summary

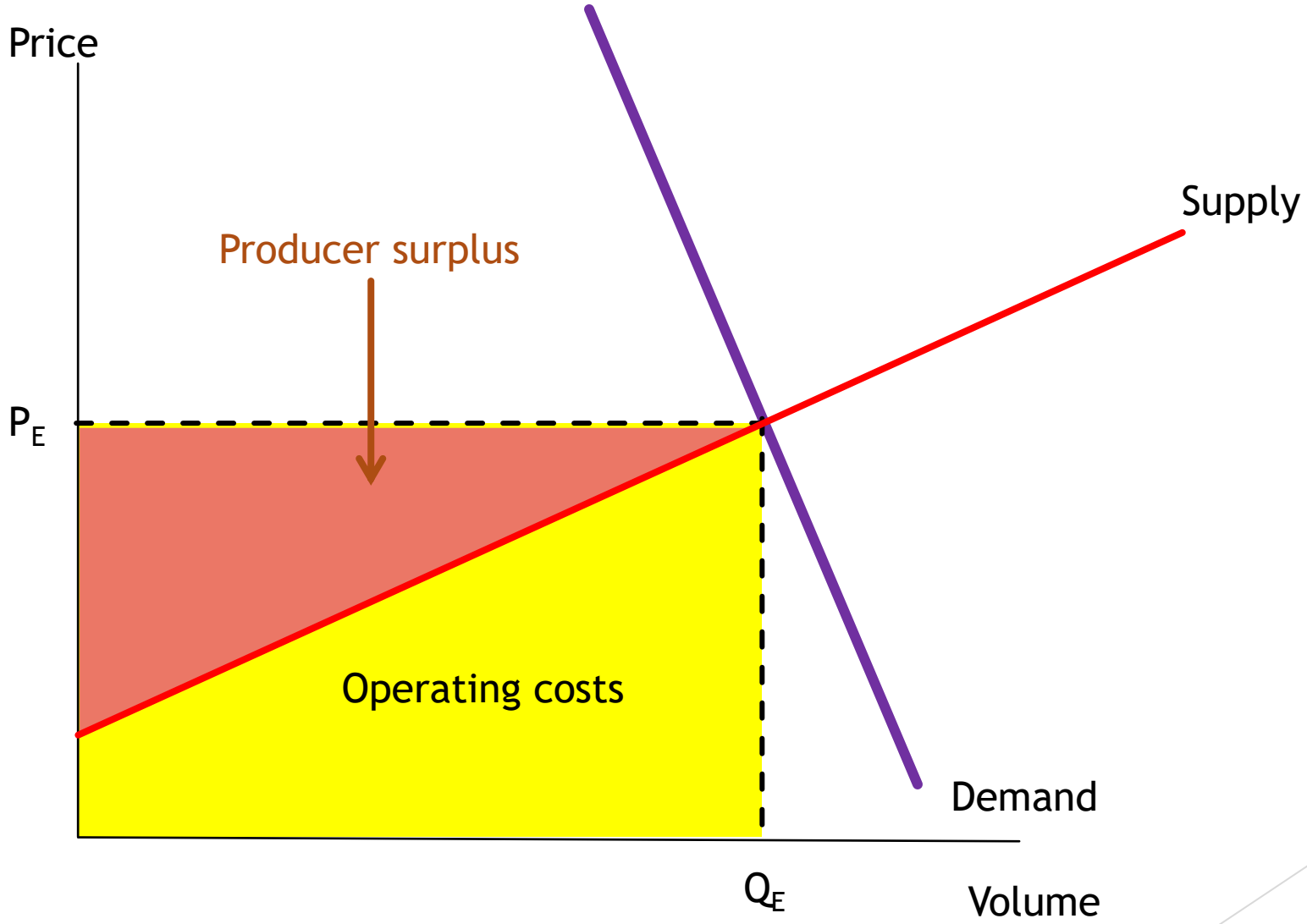
- Multifactor productivity has gone down 30% (and capital productivity down 42%) since 1986
- Residential prices have gone up 90% since 1986 (while industrial prices hardly changed, and commercial prices fell 25%)
- Operating surplus has gone up 81% in real dollars since 1986 (compared with a 12% real increase in labour income)
- Redistribution of wealth from residential consumers to electricity asset owners and commercial users has been massive => increasing inequality and poverty (both child poverty and energy poverty in general)
- Residential consumers have gone from having no choice in a low-priced market to having lots of so-called “choice” [but no voice] in a high-priced market

Economics of the wholesale market

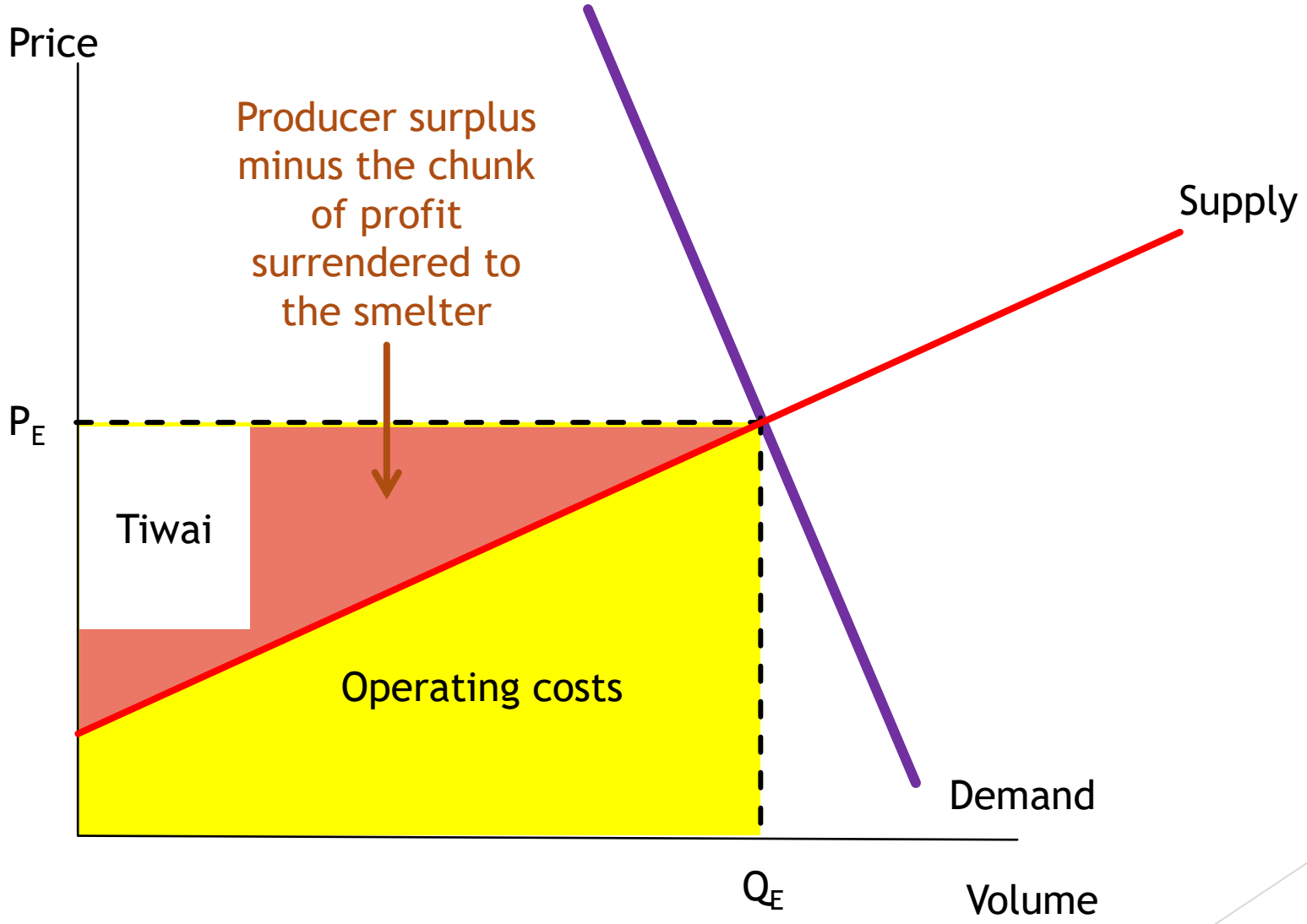
Supply and demand in an unregulated market



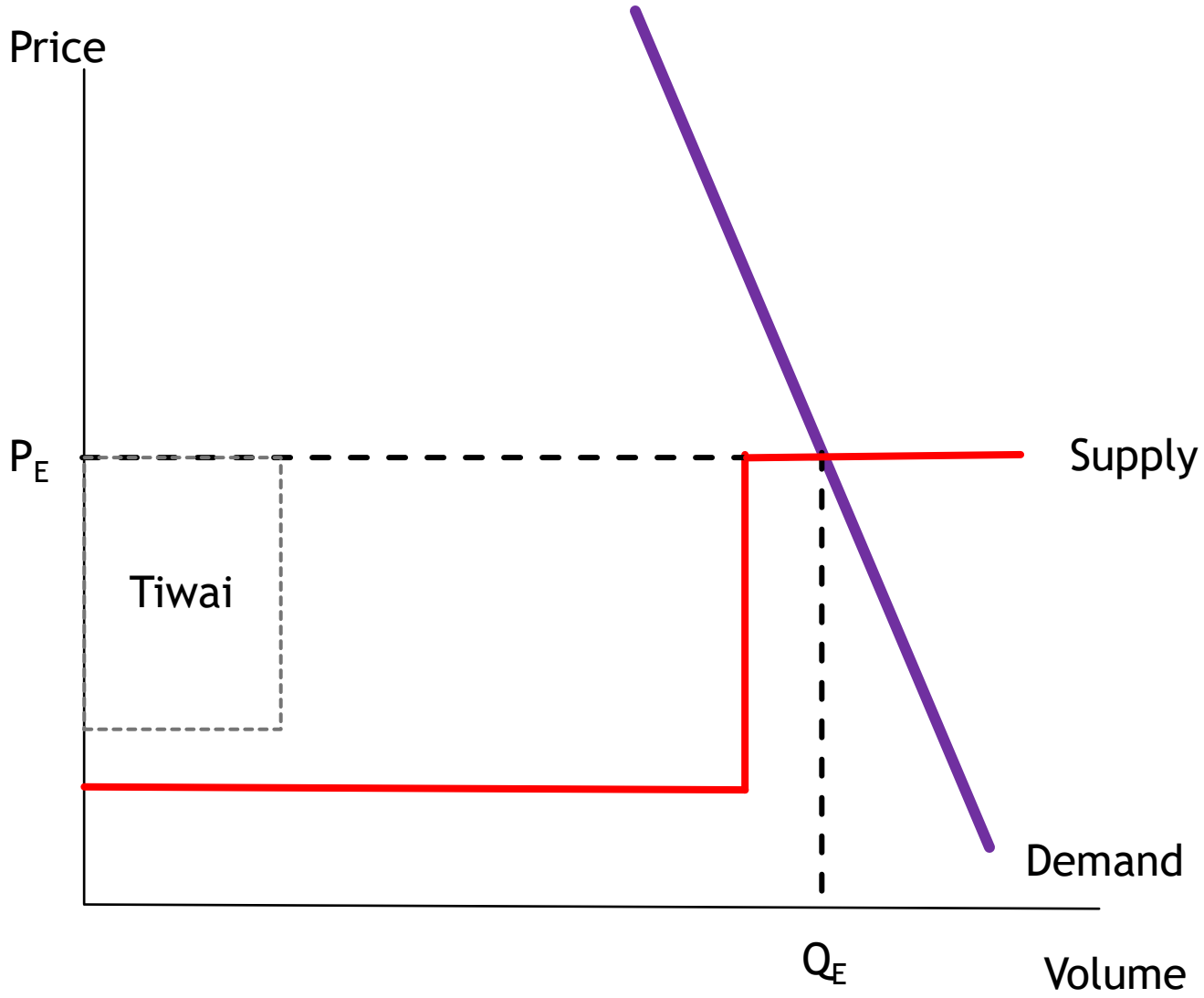
Revenue has two components



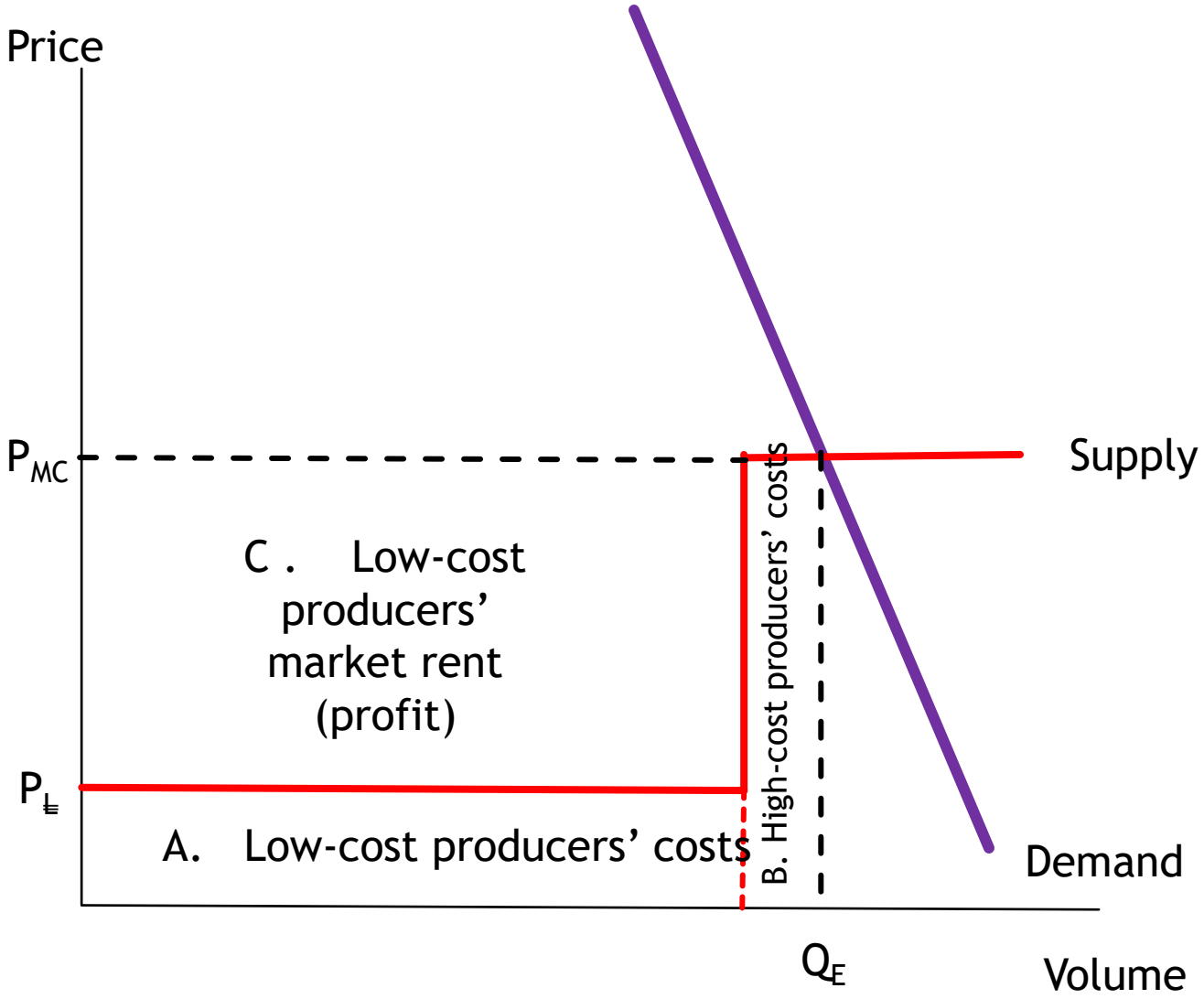
The Tiwai Point smelter can take 14% of the electricity at a cheap contract price while leaving the supply/demand balance unchanged



Actually the NZ wholesale electricity market looks more like this



So here's the supply/demand diagram for an increasing-cost industry with low-cost and high-cost producers:



- The total cost of supplying quantity Q_E is (A + B)
- The total revenue from selling this quantity at the marginal-cost price P_{MC} is (A + B + C)
- Area C is pure rent collected by the owners of the low cost plant (some transferred to Tiwai Point's owners)
- So which is the "true cost" - (A+B) or (A+B+C)?

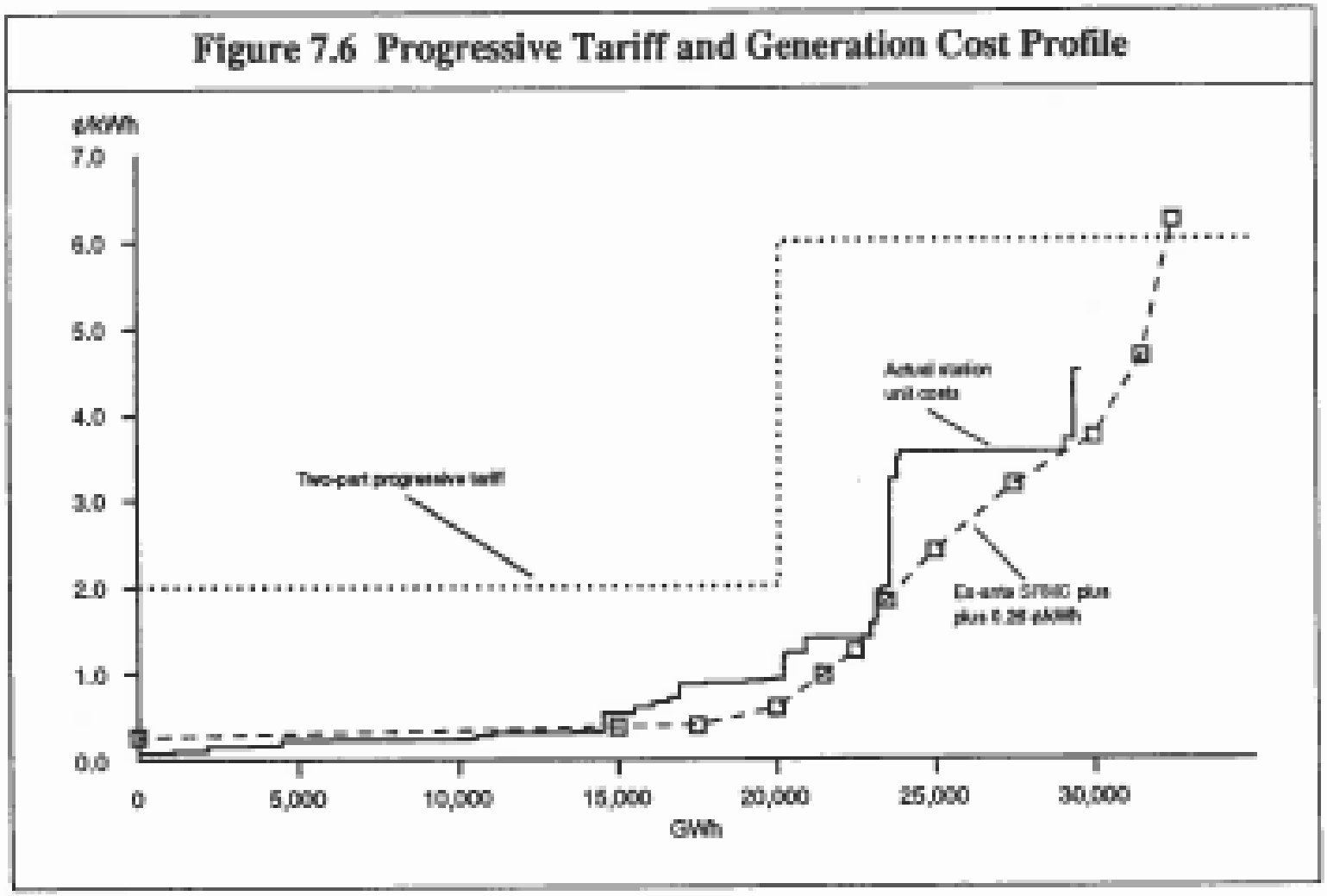
Marginal-cost pricing (Treasury)

Less happy consumers

Average-cost pricing (NZED)

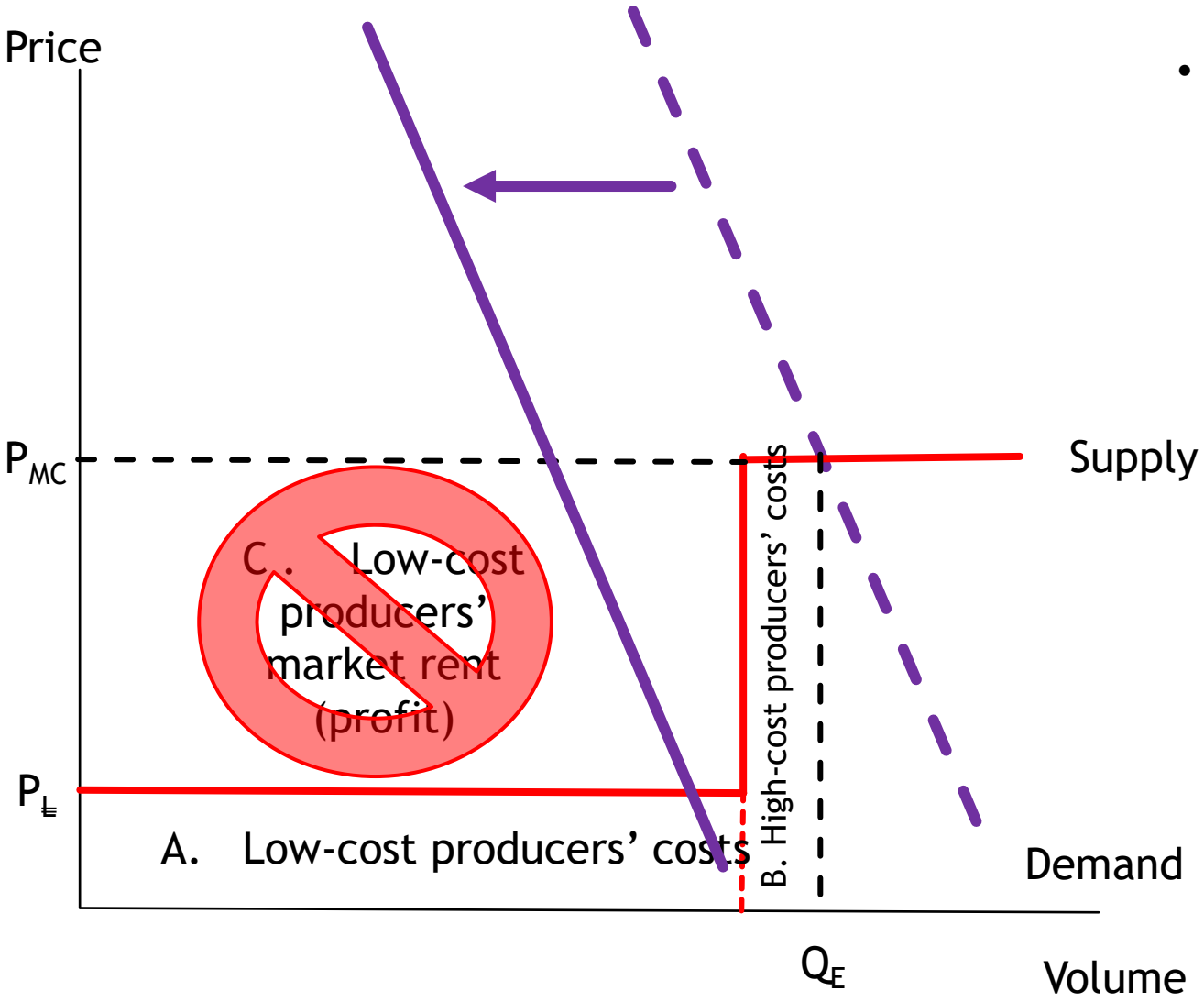
Happier consumers

The other pricing option (casting our minds back twenty-nine years….)



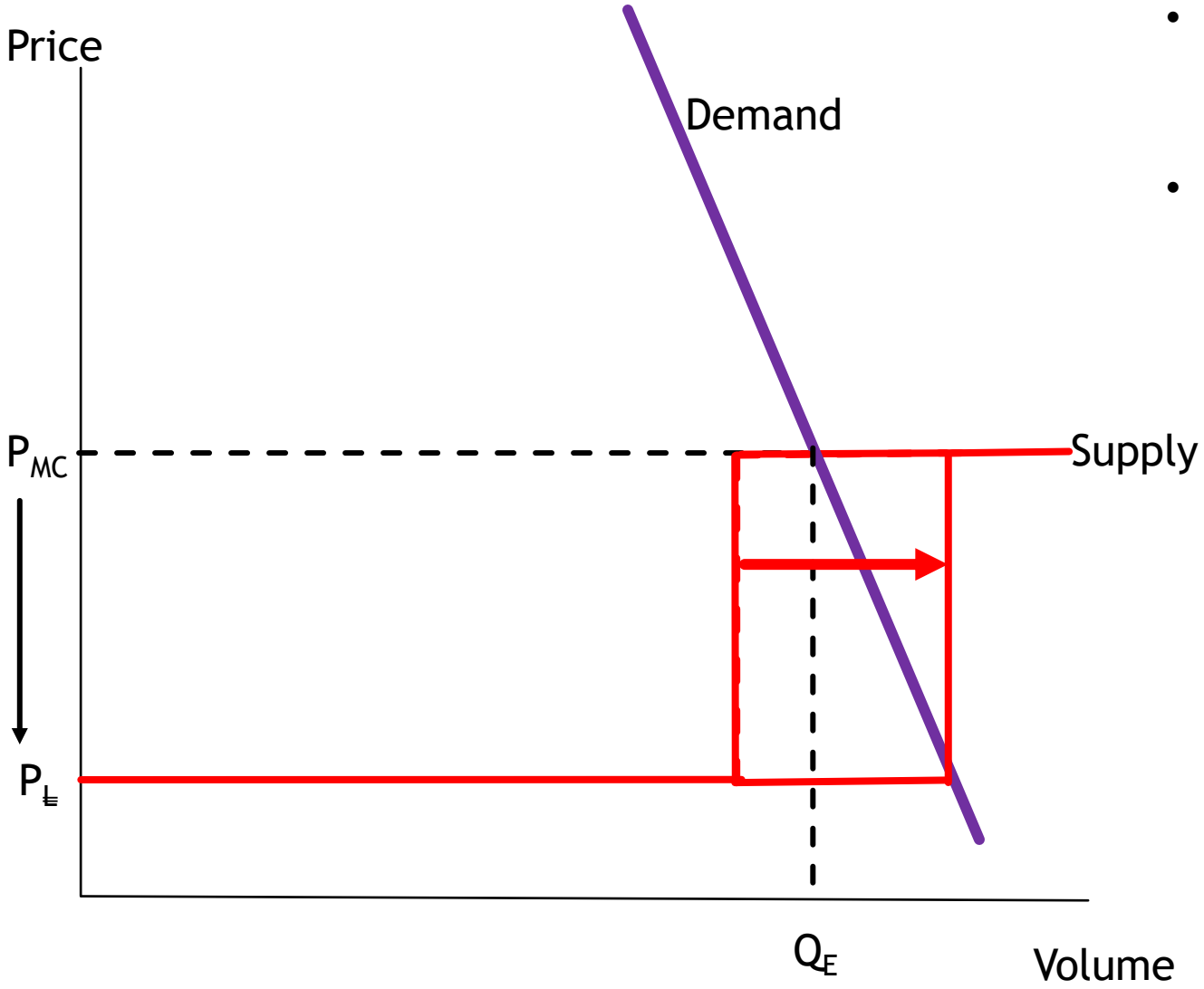
Source: Geoff Bertram, Ian Dempster, Stephen Gale and Simon Terry, *Hydro New Zealand: Providing for Progressive Pricing of Electricity*, 1992, p.51.

Vulnerability of price and rents to a demand shift in an energy-only market (e.g. Tiwai Point closes):



- Those big profits C rely entirely on having high-cost supply at the margin
- Shift the demand curve left (e.g. close the Tiwai Point smelter) and the price drops radically to P_L – and so do profits

How about entry of new low-operating cost renewables? (Rooftop solar e.g.)

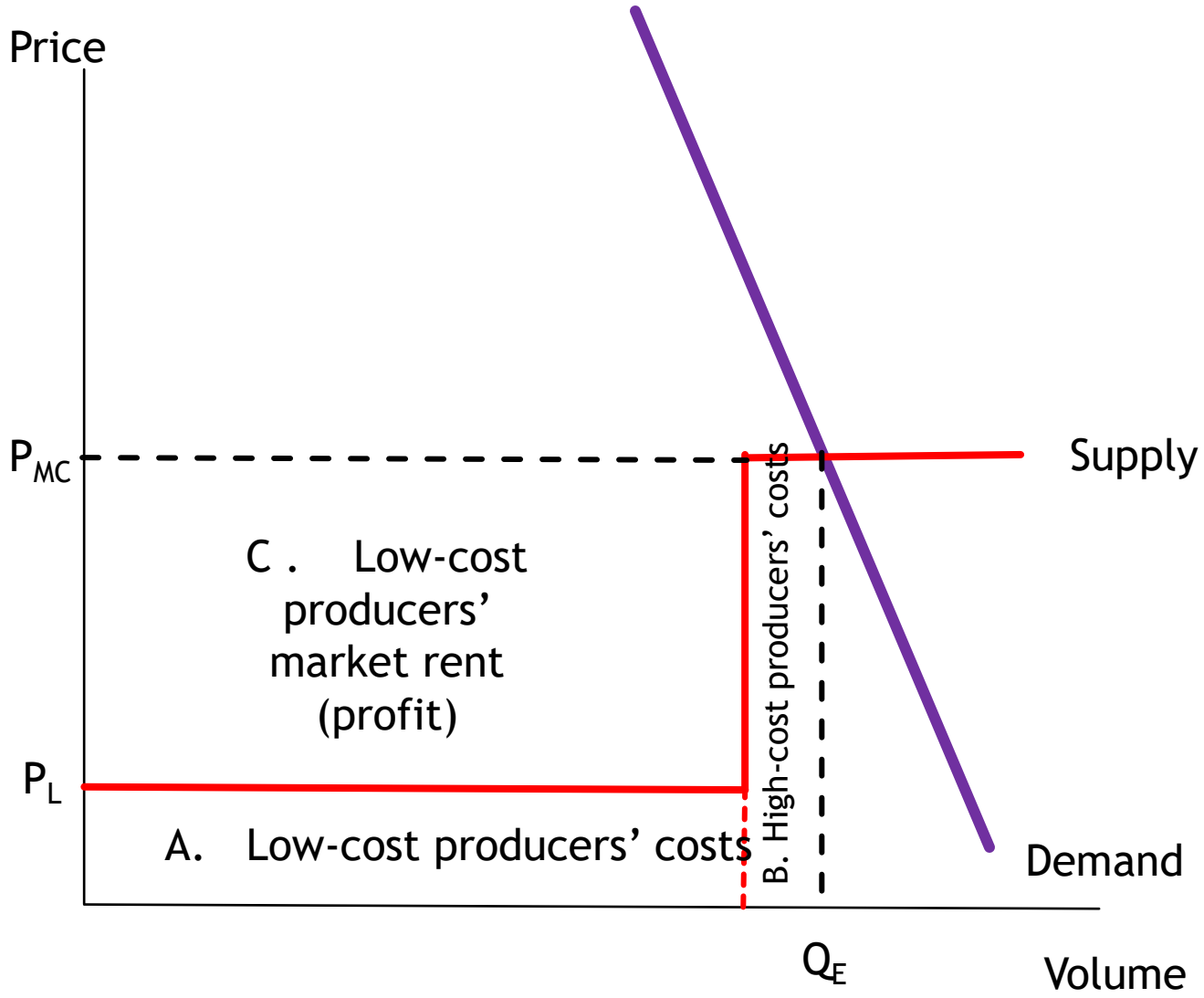


- Start with the high-price high-rent equilibrium
- Add more low-cost supply, pushing the high-cost suppliers out (off the margin) and the price drops radically – and so do profits
- So core strategy for Contact, Meridian, Mercury and Genesis is:

Keep demand up (keep the Tiwai Point smelter open!)

Keep supply constrained (don't build too many windfarms, and block rooftop solar if possible

Now, another wrinkle: carbon rents if a price on carbon applies



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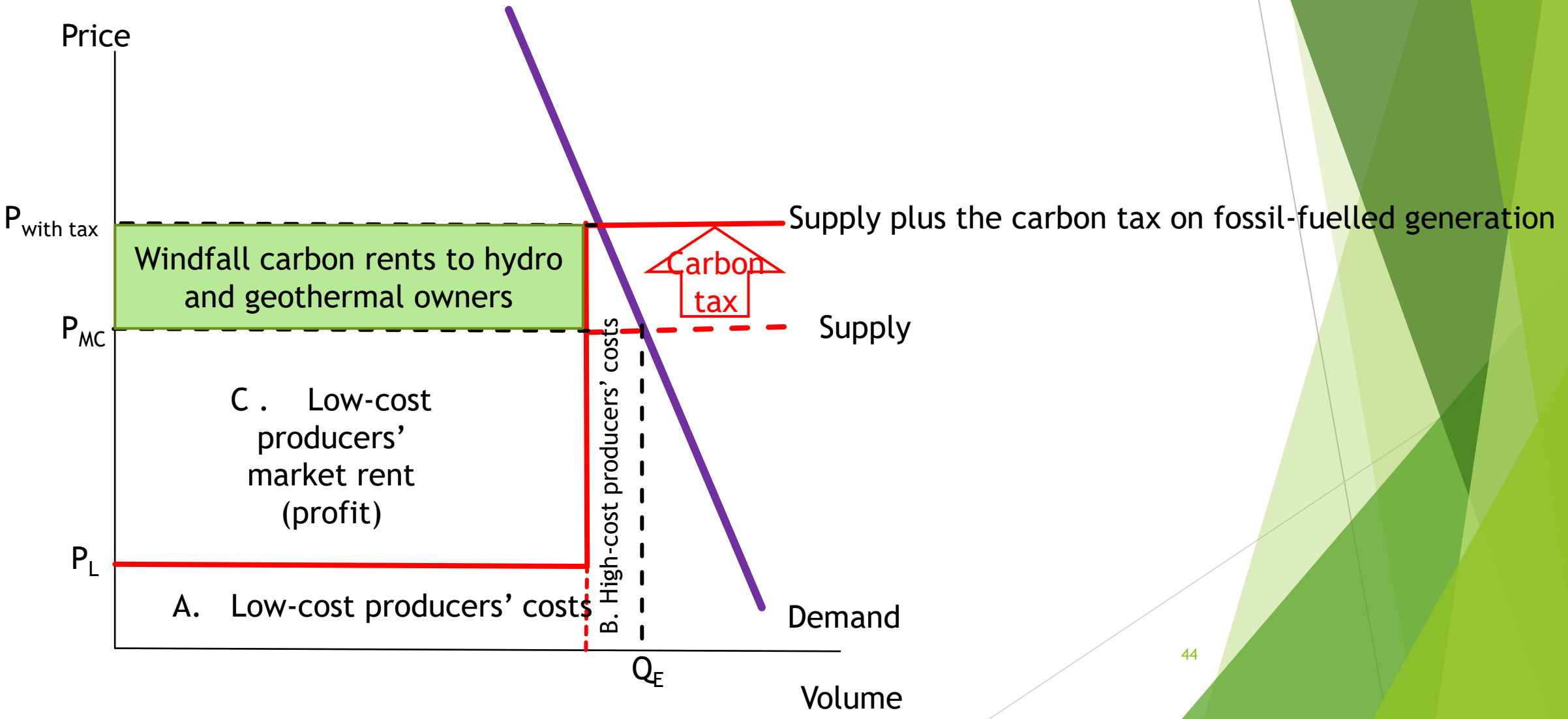


There are two key problems preventing a well-being-focused policy response

1. The electricity industry structure is firmly entrenched by legislation passed by our Parliament over the three decades:
   - Commerce Act 1986
   - SOE Act 1986
   - Energy Companies Act 1992
   - Energy Industry Reform Act 1998
   - Commerce Amendment Act 2008
   - Electricity Act 2010

2. The Government's fiscal surplus depends heavily on a continued flow of profits and taxes from the electricity industry

What is to be done? Part 1

- Reclaim electricity as an essential service and a "commanding height" of the economy, to be controlled by the people for the people and given a central role in driving the economy to zero carbon
- Scrap the profit-driven market model, re-nationalise the big assets, re-integrate the generation and transmission sectors under efficient planning, return local networks to local control and take the shackles off their ability to build and operate distributed generation, drop the charade of "what's my number" retail "competition"
- Establish a mechanism to install reserve generating capacity on the market margin without requiring all prices to rise to long-run marginal cost. E.g. contract for reserve capacity as such, or build (or buy up) reserve capacity owned by the state to backstop predominantly low-priced renewable supply
- Instantly get rid of the perverse flow-through from carbon price to renewable price and rents
- At retail level, rebalance prices so that household prices come back down from their current heights, as
    1. rents and excess profits are stripped out of the supply chain;
    2. industrial and commercial users pick up a bigger share of whatever supply-cost burden remains

    ⇒ Either regulate household prices down, or have a state-owned retailer competing with the other retailers and providing a low-priced option, or go back to community-owned local not-for-profit retailers alongside independents, all with access to bulk contracted supplies of cheap hydro
- Make net metering mandatory to allow small independent suppliers of distributed renewable electricity such as rooftop solar a share of the market and a role as disruptor of incumbents' market power
- But can you un-scramble an egg?

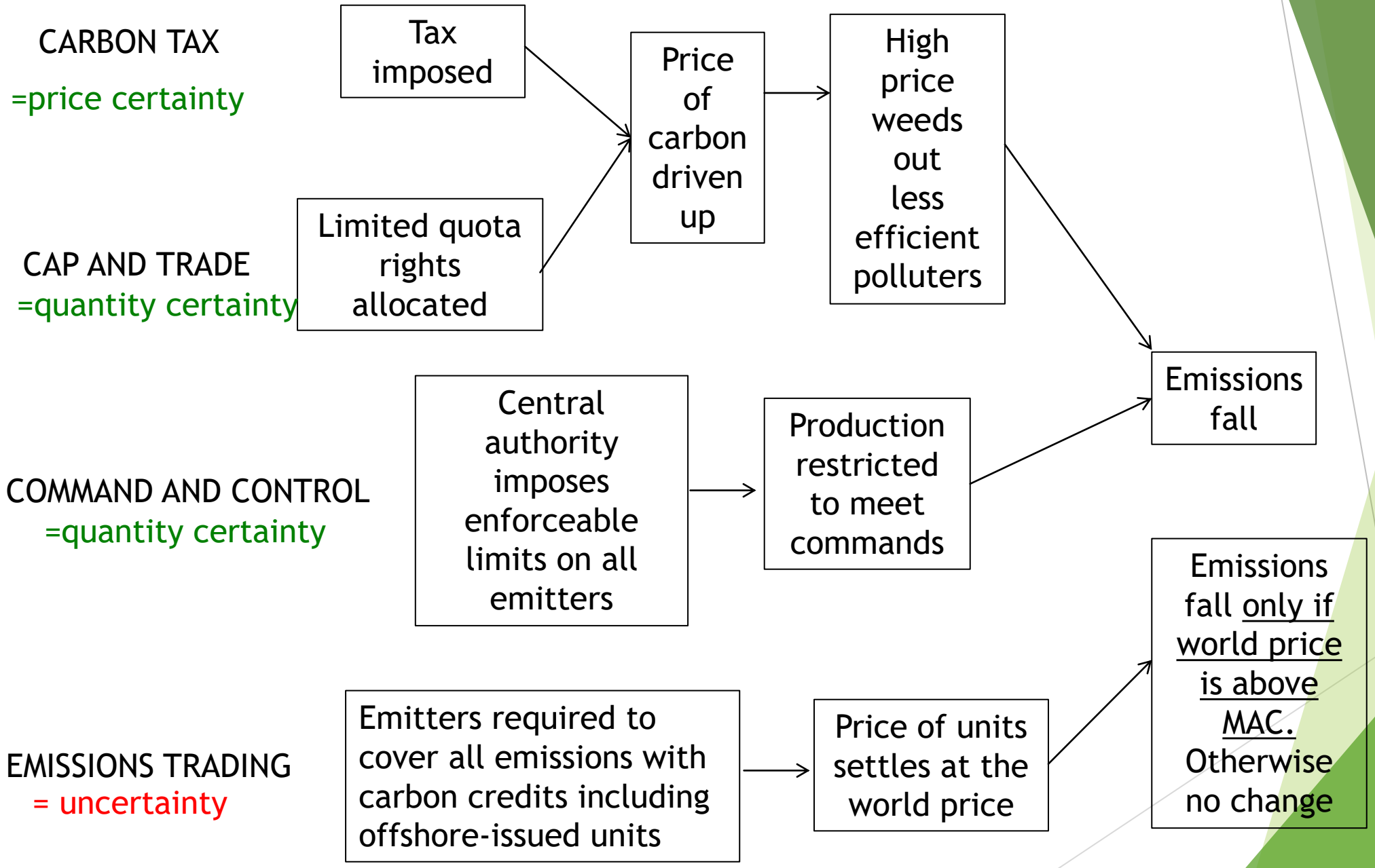
What is to be done? Part 2

- Break up the gentailers by forcing divestment of their retail operations
- Abolish the lines/energy split at distribution level to allow local community-focused energy operations to emerge with secure access to distribution networks and retail customers
- Augment or abolish the limits on local lines operators' investment in generation
- Amend the ETS to allow renewables to bring down the electricity price
- Massively overhaul the Commerce Commission's approach to lines company regulation by switching it from a floor price to a ceiling price, and with a ruthlessly sinking ceiling
- Amend Part 4 of the Commerce Act to prescribe elimination, not just token "limitation", of excess profits
- Give the Electricity Authority explicit instructions to genuinely advance the interests of consumers and make sure it gets cracking
- Install a single buyer or similar mechanism in the wholesale market and compel generators to offer arms-length hedge contracts
- Open the way for local electricity pooling (e.g. rooftop solar with battery backup on a community scale) with a workable boundary interface with grid supply including net metering
- ….. and plenty more…….

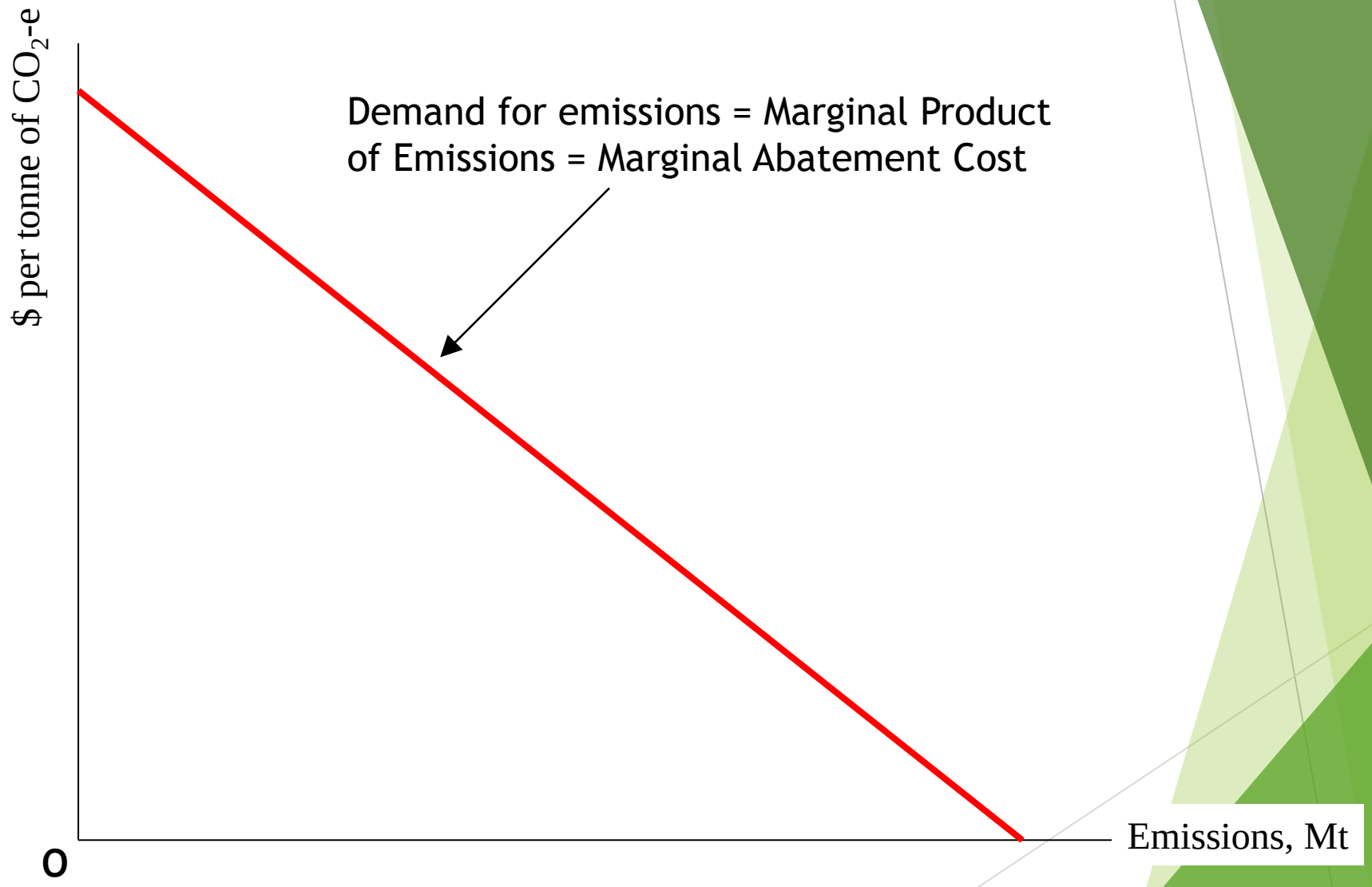
Outline for discussion of emissions trading

1. Economics of carbon tax and cap-and-trade
2. ‘Cap-and-trade’ without a cap
3. Interaction with electricity market and the Electricity Adjustment Factor
4. The “Cost Containment Reserve” is economic nonsense
5. Conclusion: policy options?

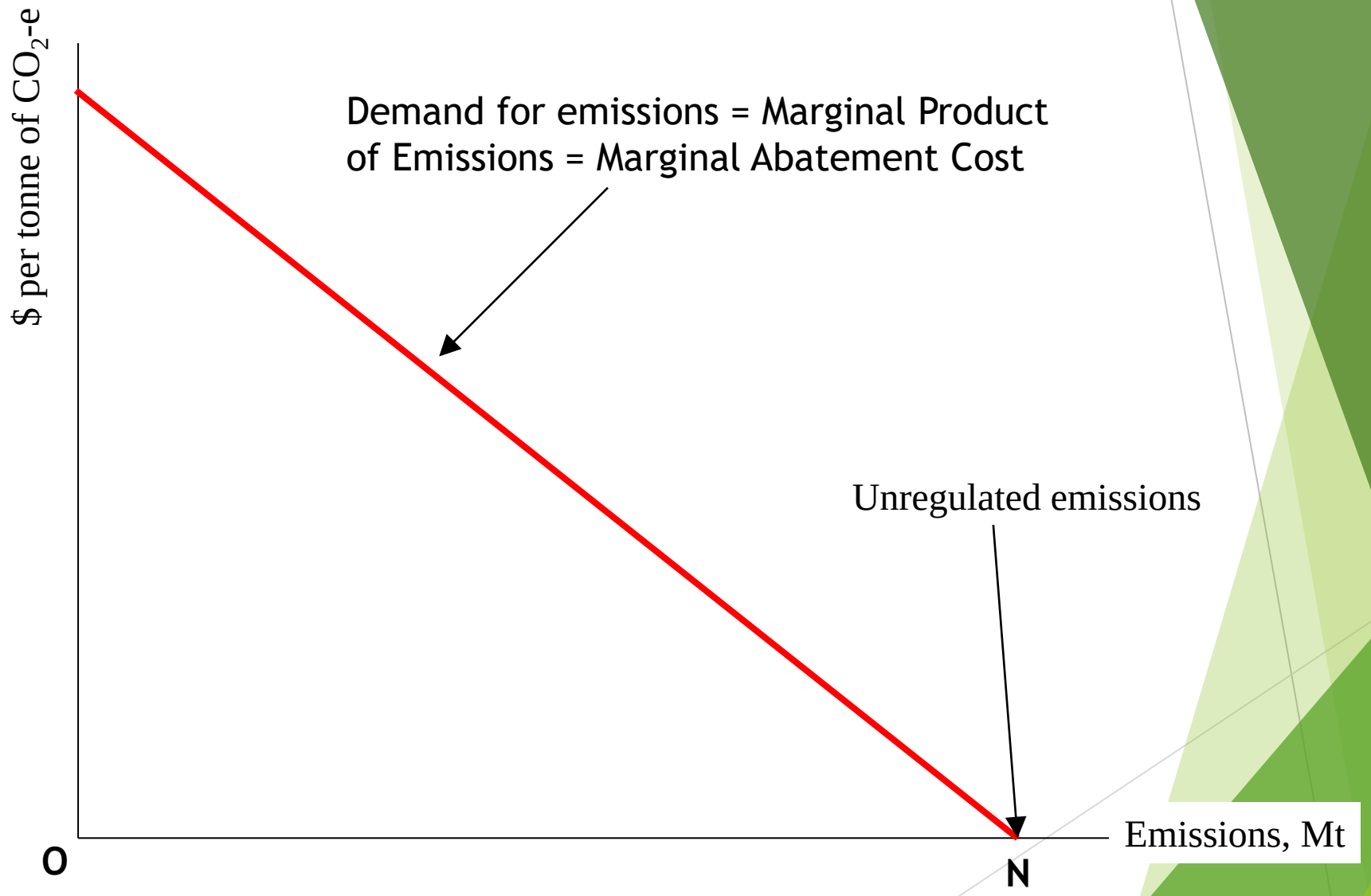
Economics of emissions reduction


CARBON TAX
=price certainty
Tax imposed
Price of carbon driven up
High price weeds out less efficient polluters
CAP AND TRADE
=quantity certainty
Limited quota rights allocated
Emissions fall
COMMAND AND CONTROL
=quantity certainty
Central authority imposes enforceable limits on all emitters
Production restricted to meet commands
EMISSIONS TRADING
= uncertainty
Emitters required to cover all emissions with carbon credits including offshore-issued units
Price of units settles at the world price
Emissions fall only if world price is above MAC. Otherwise no change

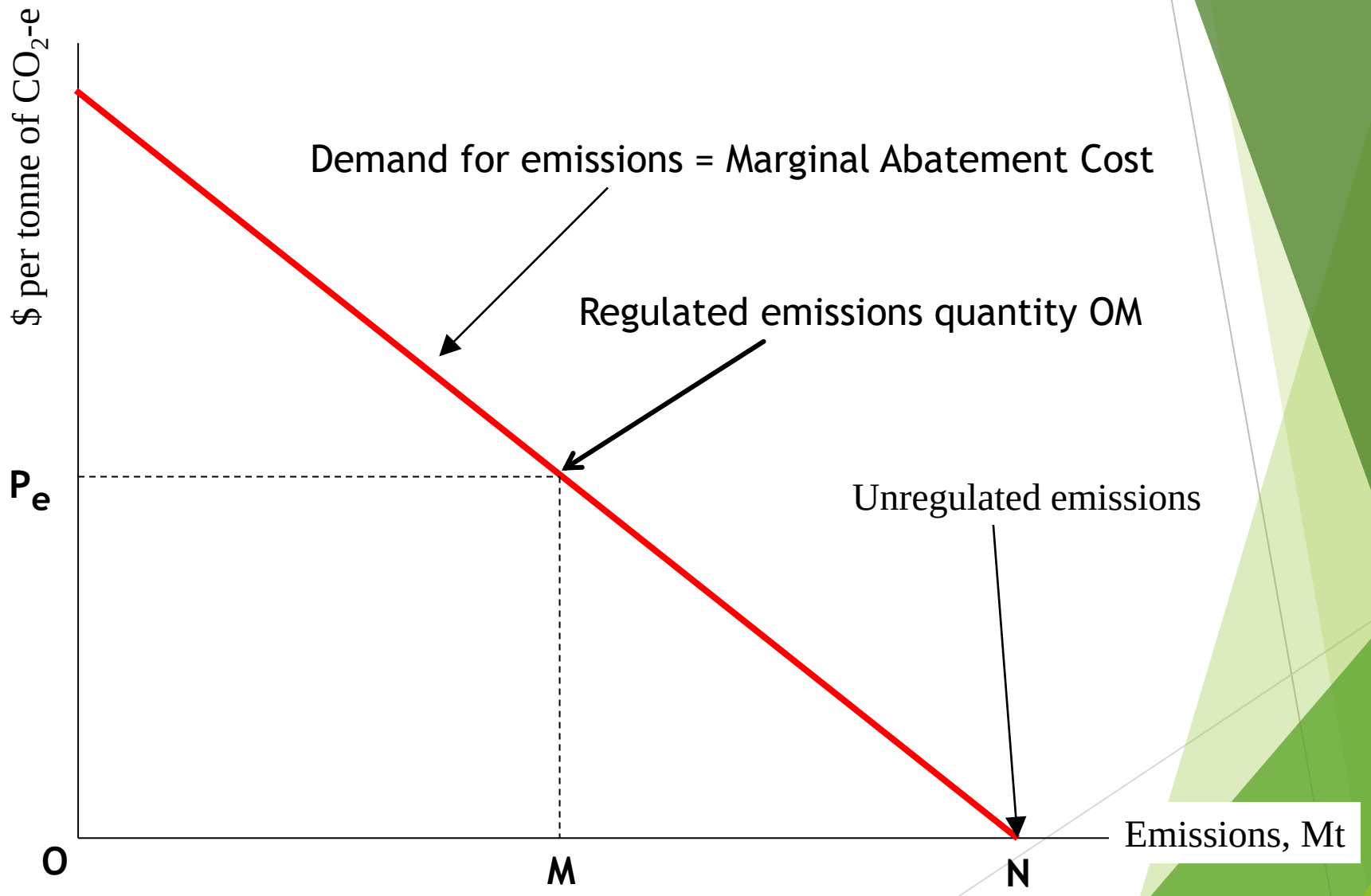
The “carbon market”



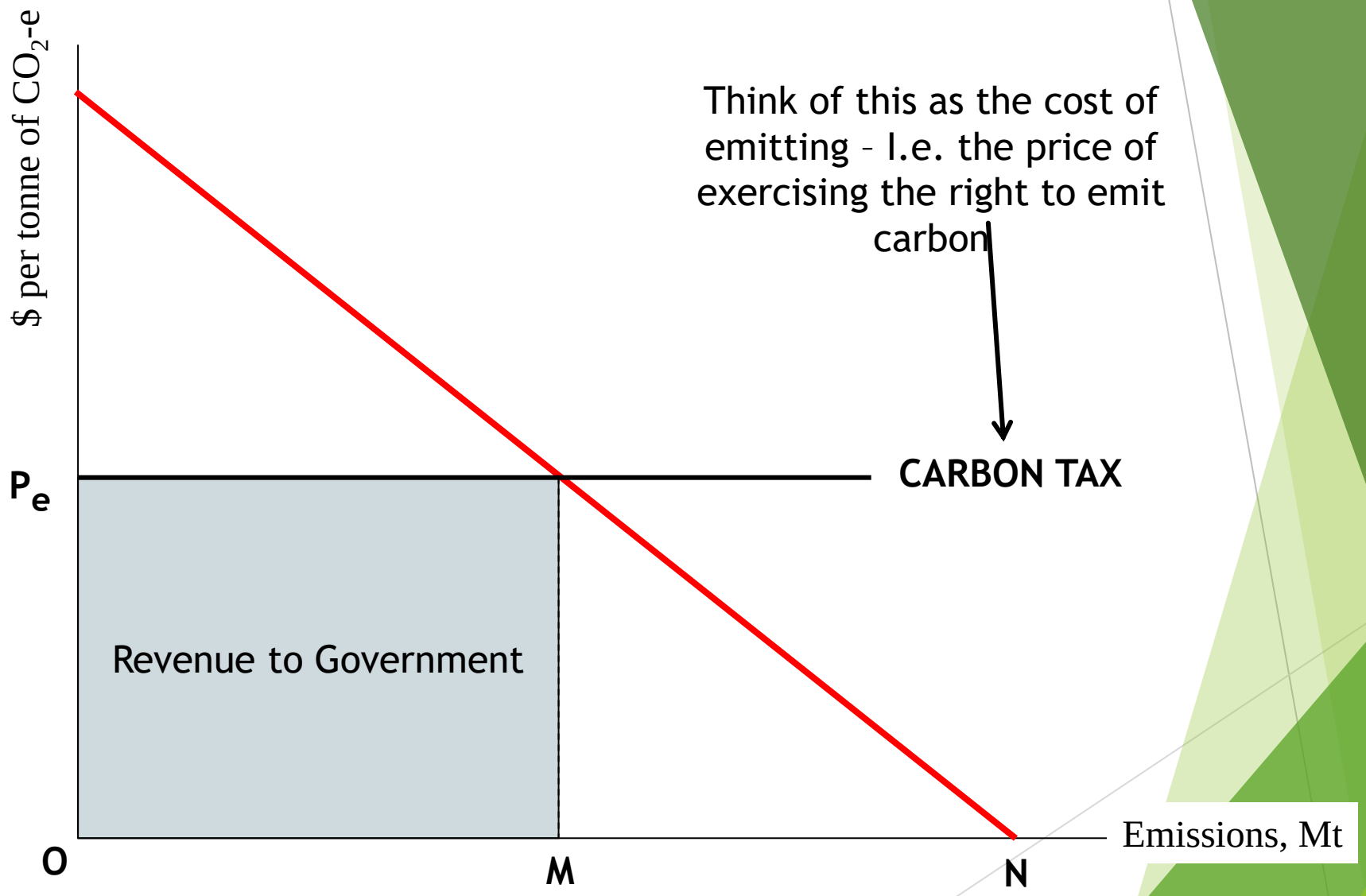
With emissions unpriced, the economy emits ON



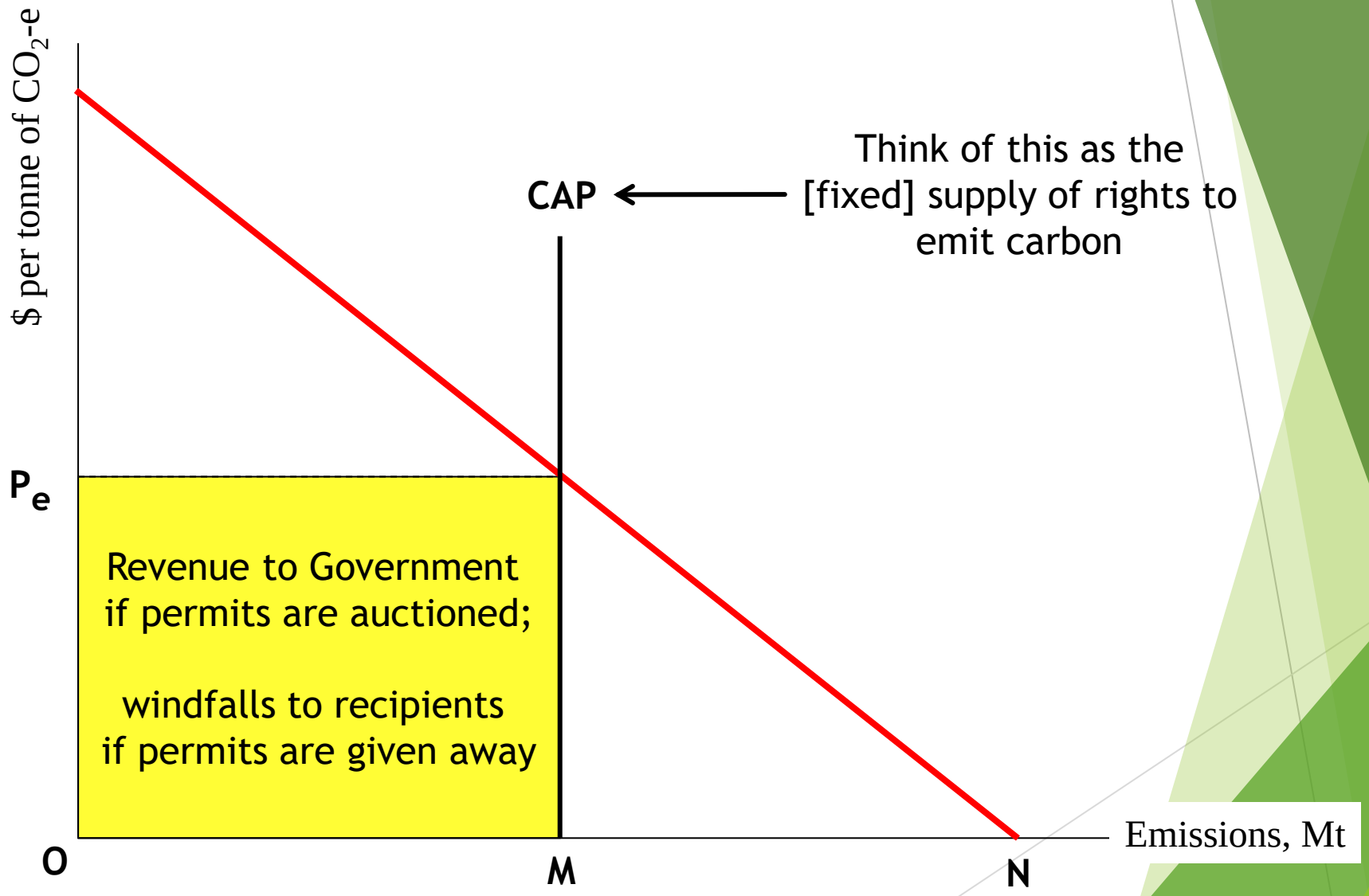
If the price of emissions rises to P_e then the quantity falls to OM and the emissions reduction ("abatement" or "mitigation") is MN



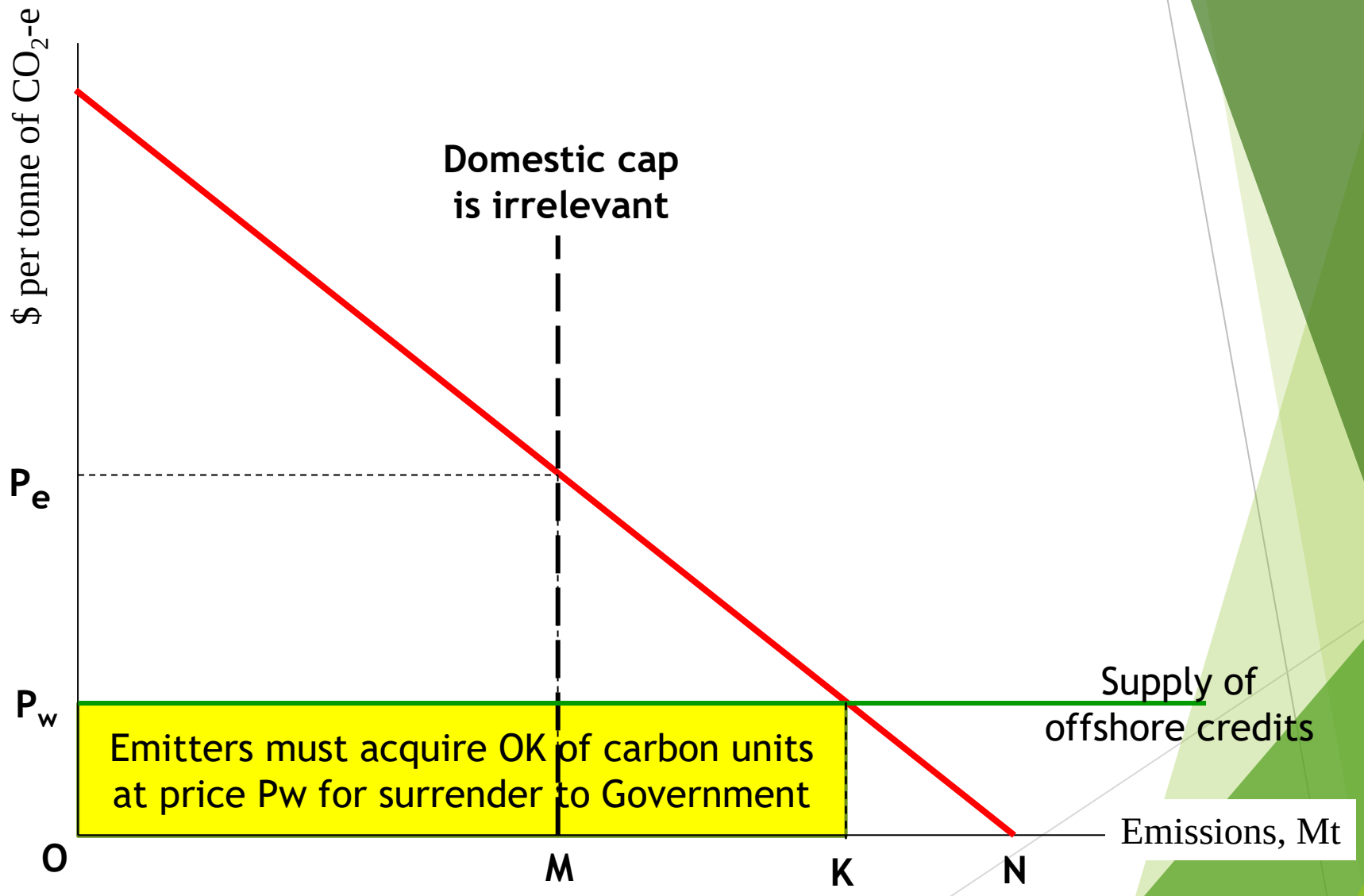
One way of doing it: a carbon tax of P_e would lead to MN of abatement



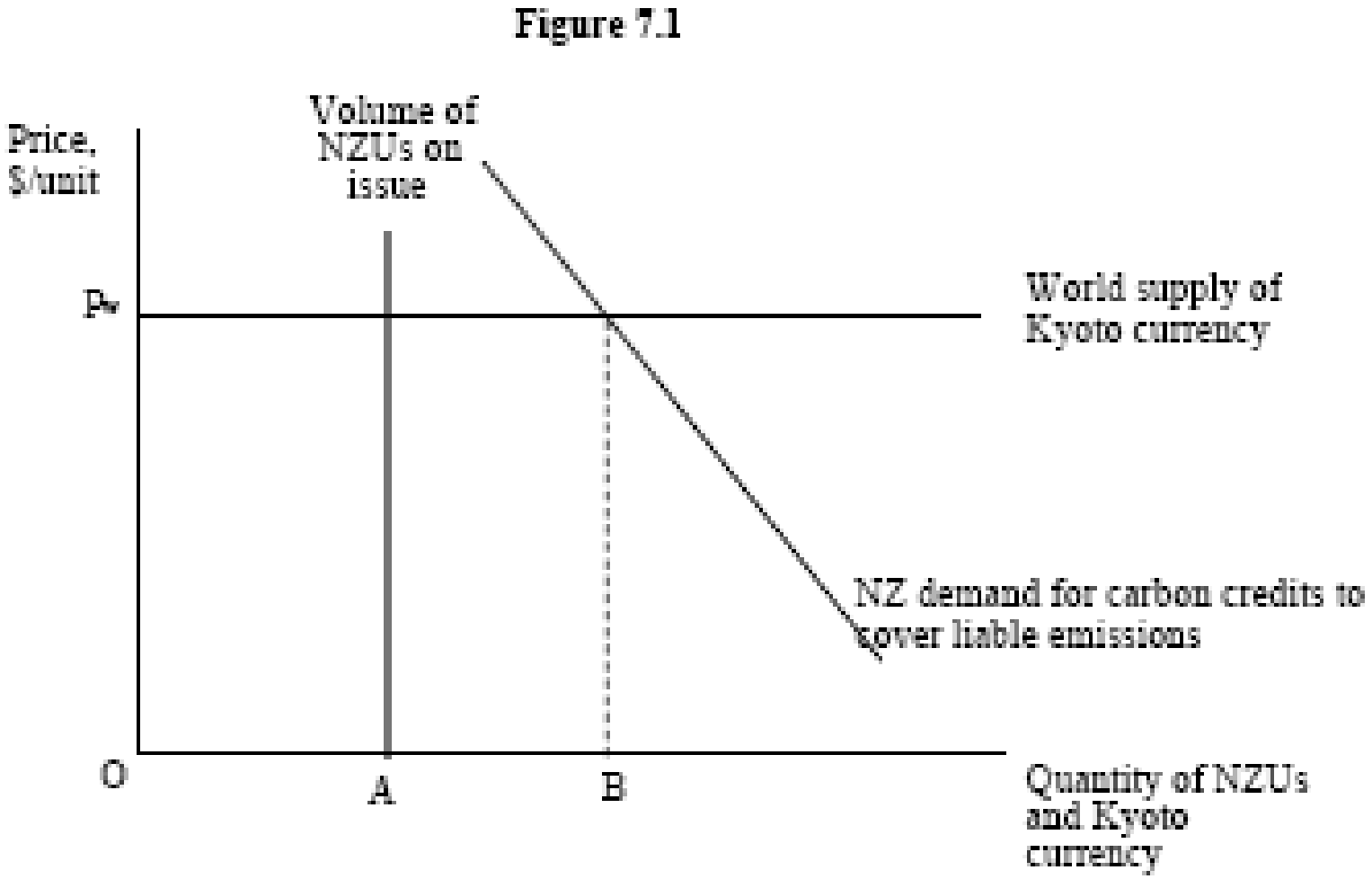
Or the Government could impose a cap at M, issue permits, allow trading, and the carbon price would be bid up to P_e



With international emissions trading there is neither a cap nor a locally-set price



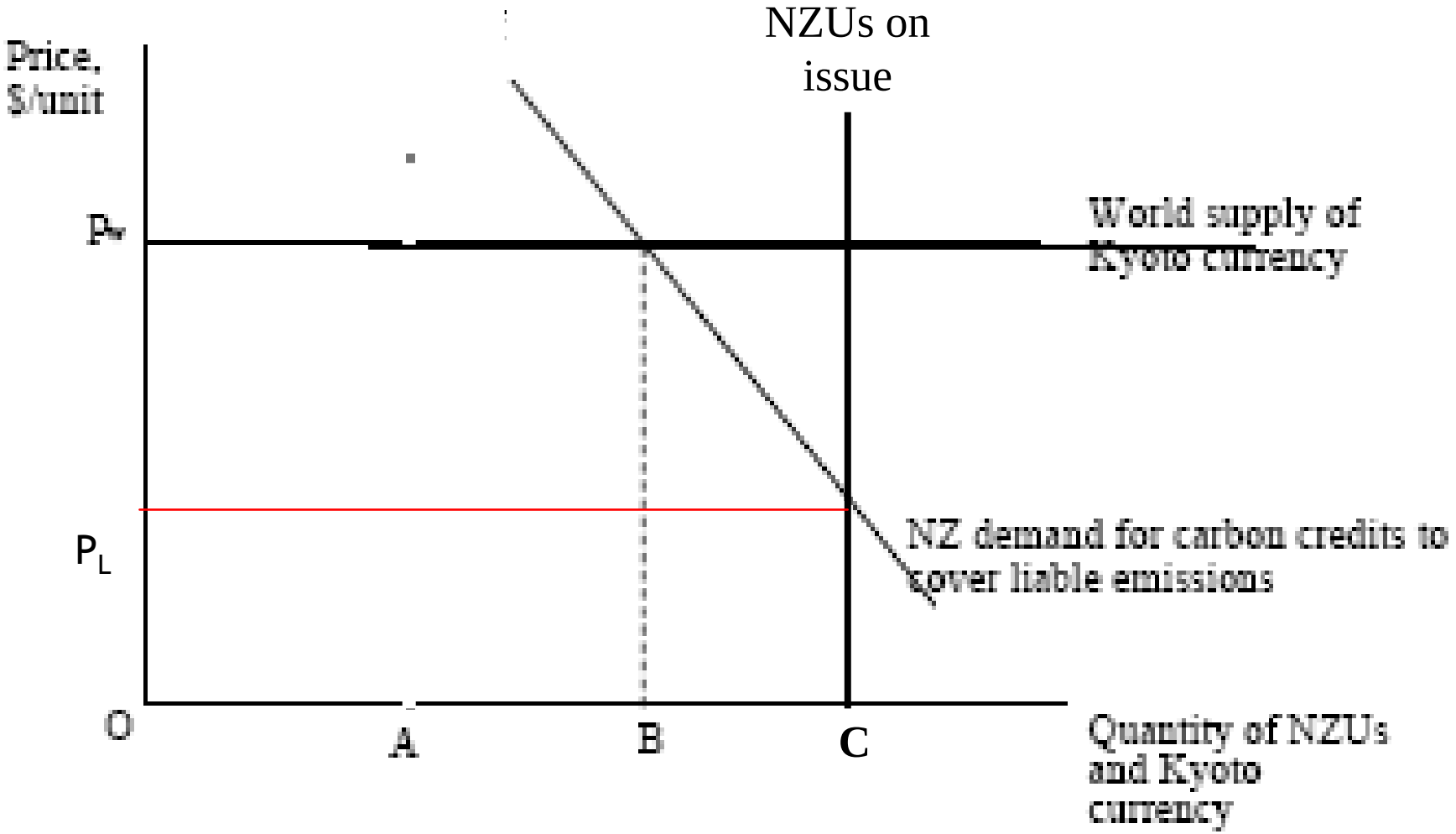
The ETS: If open to imported units, the NZU price can't go above the world price of credits



From Geoff Bertram and Simon Terry *The Carbon Challenge*, 2010, p.122.

But the carbon price could go lower if enough NZUs are issued: like any paper currency, the NZU is subject to inflation/devaluation if over-issued

Figure 7.1 with over-issue



Under the NZETS

- NZUs are issued free to corporate insiders (a) to prevent carbon leakage and (b) to compensate for any effect the ETS may have on the electricity price
- NZUs can be earned by forestry operations if the forest owner opts in, and these units can be sold into the market if the owner chooses not to bank them
- Banked NZUs can be used to cover current emissions (there is currently a big overhang of banked units)
- Offshore carbon credits can be imported and used to cover local emissions if and when the Minister authorises this (by getting an Order in Council)
- The quantity of NZUs released for auction by Government is at the whim of politicians subject to corporate capture

The Electricity Allocation Factor (EAF)

- The EAF is an estimate of the future impact of the New Zealand Emissions Trading Scheme (NZ ETS) on wholesale electricity prices passed through to consumers. Its expression is tonnes of carbon dioxide equivalent per megawatt hour (tCO2e/MWh). It is part of the rates of allocation prescribed to industries considered 'emissions intensive and trade exposed'.
- Initial setting 0.52 tCO2e/MWh.
- The 2011 review of the EAF resulted in an EAF value of 0.537 tCO2e/MWh applied from 2013.
- 2019 MfE review suggested 0.1-0.48 tCO2e/MWh would be closer (https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/modelling-eaf-issues-paper.pdf)
- 2020 modelling produced estimates of -0.1 to 1.9 tCO2e/MWh (https://www.mfe.govt.nz/sites/default/files/media/Energy/electricity-allocation-factor-methodology-options.pdf)
- But the beneficiaries are still getting 0.537 while discussion, consultation, modelling etc roll on….

The crucial missing ingredient is certainty

- Section 30GB of the Climate Change Response Act covers the making of regulations about the quantity of NZUs on issue and the price at which they can trade
- Until you know the regulations you won't know how many NZUs and offshore units will be circulating, so the market price will be uncertain
- Until regulations about imported units are known, the total allowed emissions quantity is unknown
- The regulations are to set a price ceiling ("trigger price") at which a "cost control reserve" amount of NZUs will be dumped into the market – but the present $50 ceiling lacks credibility
- There is no enforcement mechanism for the trigger price apart from flooding the market with extra units, which means the NZU issue volume is uncertain
- From my submission a year ago: "The amended ETS legislation "leaves uncertain the extent to which domestic emission targets can be overridden at any stage by allowing the importing of emission credits. It fails to clarify whether the carbon price in the local market is to be (i) the marginal cost of domestic abatement [at the emission budget], or (ii) determined by some external carbon price in a process of arbitrage via cross-border trading, or (iii) just some politically determined "trigger" price. …
- "The mere existence of the "cost containment reserve" provisions in the Bill destroys at one stroke the credibility of both notional emission targets and expectations of linkage between local and overseas carbon prices. The only "certainty" that is conferred by clause 30GB of the Bill is the certainty for large and powerful vested interests that the NZETS will continue to be subject to political manipulation, and hence to capture by those same rent-seeking large corporate interests, which have hitherto held the scheme captive to their interests."

And some more from last year's submission:

"The NZU is basically a voucher that entitles its holder to cover, by surrender to the Government, whatever the implicit per-unit emission tax turns out to be in each period. By issuing large numbers of these vouchers free of charge to politically-influential insiders, the New Zealand Government in effect pays them to pollute. By allowing the vouchers to be carried over to future periods in an environment of price uncertainty, the Government makes them objects of financial speculation and market manipulation for capital gain. Having allowed NZU vouchers to be accumulated while emissions were covered by imported junk units, the Government is now faced with a large stock of 'banked' NZUs overhanging the market for the next few years."

Ineffectual attempts to create certainty

- The ‘trigger price’ reflects Government’s terror of a high carbon price – but may not be sustainable in the face of market developments (cf current discussion of the housing market)
- Promises to not allow too much importing of units can be broken at any time – e.g. after a change of government
- Leaving agriculture out is of uncertain credibility
- Forestry decisions and hence claims to earn NZUs are inherently hard to predict
- The future world price and availability of offshore credits is unknowable
- The Climate Change Commission recommends a budget which theoretically could be the quantity limit, but
  - It’s advisory only
  - Non-ETA policy measures can cut across the market mechanism

The Climate Change Commission draft report

- Says (politely)(pp.131-134) that the ETS as it stands is not fit for purpose and that (p.133) under the present governance arrangements "some [market] risks are potentially catastrophic for the scheme's effectiveness."

- On the price issue:

"The Commission's recommended emissions budgets differ from the provisional emissions budget that was used to inform NZ ETS unit supply and price control settings for 2021-2025. In 2021, these settings must be updated to cover the 2022-2026 period. They include the volume of units to be auctioned in the NZ ETS as well as the auction reserve and cost containment reserve trigger prices, which start at $20 and $50 respectively in 2021.

The Commission's modelling indicates that meeting the 2050 target will involve marginal abatement costs higher than these NZ ETS auction price control settings, at around $140 in 2030. In addition to this indicative upper value, our evidence suggests that in process heat, a sector where an emissions price can be expected to play an important role in driving decarbonisation, significant opportunities exist at costs from around $50 upwards."

- On limiting the cost-containment reserve mechanism:

"The NZ ETS cost containment reserve trigger price should be set well above expected market prices. An initial step up in value, to mitigate risks that it will be triggered and add to the NZU stockpile, should be followed by annual increases to give a trajectory that allows for prices of at least $140 in 2030."

- On forestry:

"The current framework for incentivising forests through the NZ ETS also does not align with our recommended focus on driving gross emissions reductions and a change in the balance of exotic versus native afforestation."

- On the scam record to date:

"The Government has recognised that the regulatory framework governing conduct in the NZ ETS market is patchy and incomplete. It has established a work programme to address the lack of good governance and associated risks, which include insider trading, market manipulation, false or misleading advice to participants, potential lack of transparency and oversight of trades in the secondary market, money laundering, credit and counter-party risks and conflicts of interest."

- On free industry allocation, Commission recommends

"Undertaking a first principles review of industrial allocation policy, considering the fundamental design of the current policy as well as overallocation risks, eligibility rules, updates to the Electricity Allocation Factor and allocative baselines.

Continuing to phase out industrial allocation.

Exploring alternative policy instruments that could address the risk of emissions leakage, such as product standards, consumption taxes and border carbon adjustments. "

- On the political non-credibility at present:

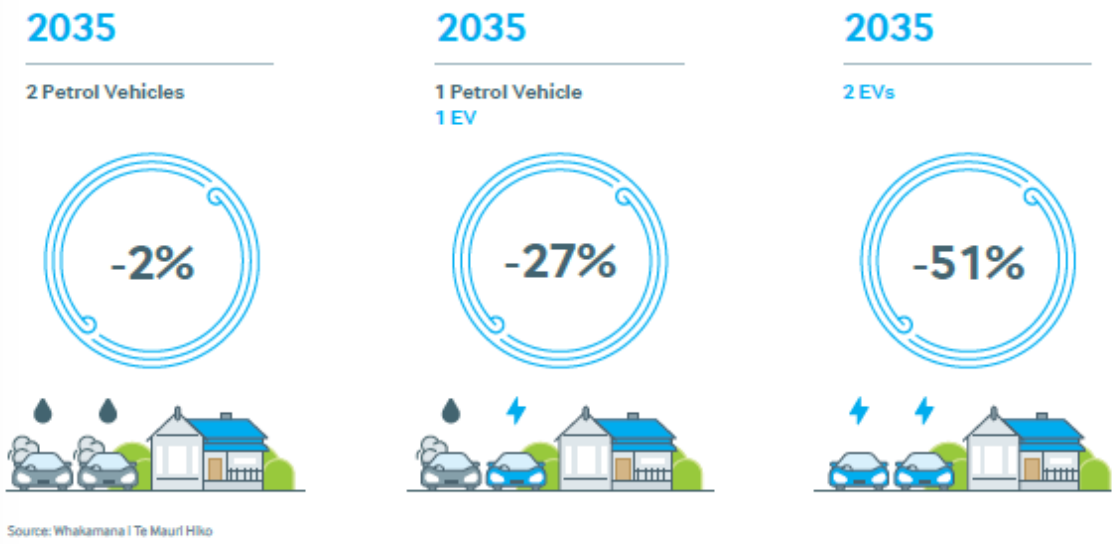
"it would be useful for the Government to clarify how it intends to manage NZ ETS unit volumes in light of the split-gas 2050 target and the planned inclusion of biogenic agricultural emissions in a separate pricing mechanism. One option the Government could consider would be to outline its approach to making adjustments over time in a published document or policy. "

Beyond this the Commission foreshadows masses of non-market interventions

- Accelerated EV uptake and banning new ICE vehicles (pp.107-109)
- Banning new gas connections to buildings from 2025 (p.117)
- Tighten emnission-control regulations (p.110)
- Actively push strategic shirt in transport off road and onto rail and shipping (p.110)
- Ban new coal-fired boilers (p.115)
- Mandatory energy performance standards for buildings (p.17)
- Mandatory reporting of climate-related risks (p.128)
- Payments to industry to retire emission-intensive plant (p.129)

A final word about electrification and decarbonisation

Figure 10: Forecast change in annual 2035 energy bill for household with two vehicles



Source: Whakamana i Te Mauri Hiko

The electricity industry corporates want just to transform the energy inputs to a relatively untransformed economy and society

- So their call is for Government to force the pace on electricity demand by incentivizing EV uptake and process heat retrofitting
- And of course they want “certainty” and RMA reform to encourage profitable generation construction on a large scale
- Also, of course, they suggest no change to the current electricity market set-up, where their profits improve with
  - increased demand
  - reduced costs of consenting and construction
  - preservation of enough fossil fuels at the margin to keep the price up way above the near-zero operating cost of renewable generation
  - an ETS written by and for rent-seekers

To its credit, the Commission does hope for more independent entry into generation, including lots of solar, and

- it pushes biomass as well as electricity for process heat
- it notes that energy efficiency is a substitute for increased electricity supply: "electricity is part of a broader energy transition. Alternative options for reducing emissions should be considered, as other actions may have a larger impact for the same cost." (p.112)
- it argues explicitly for "more independent generation and distributed generation, especially for remote rural and Māori communities, and ensure access to capital for this purpose

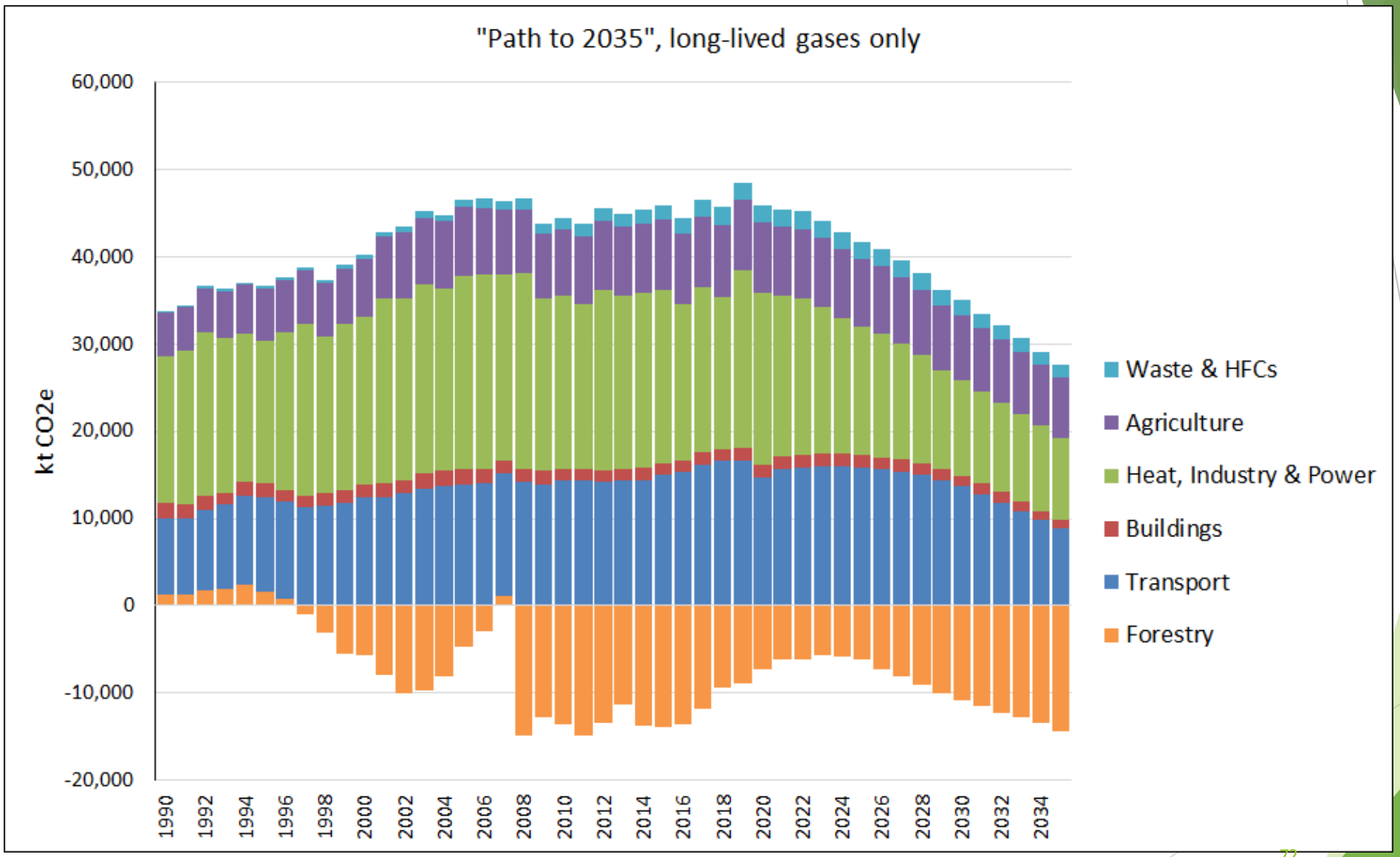
- **<u>BUT</u>** it never ever suggests any transformation of the electricity market's institutional set-up

The electricity industry's central strategic goal: maximize electricity demand while blocking the path to 100% renewables

- So long as fossil fuels stay in the mix, they are at the wholesale market margin and so set the spot price way above the supply cost of hydro, geothermal and wind
- So long as fossil fuels are on the margin, every increase in the carbon price - whether via the ETS or otherwise - pushes up the price of all electricity, including renewables
- The viability of small-scale distributed generation such as rooftop solar is very sensitive to the price structure facing households: removing the low-fixed-charge regulation is a quick way to kill rooftop solar for a decade. As Chapter 12 of the book says (p.135) "only about half to two-thirds of the number of households that would currently be able to pay off a retrofit in under 10 years would be able pay it off in that timeframe under the CFC regimen."
- The big threat to industry profit is the huge wind resource, but the gentailer cartel has locked up and "banked" the best sites (plus several hydro options)

- Without institutional change, Government policy is hostage to the cartel's stranglehold

The Commission's proposed "path to 2035"



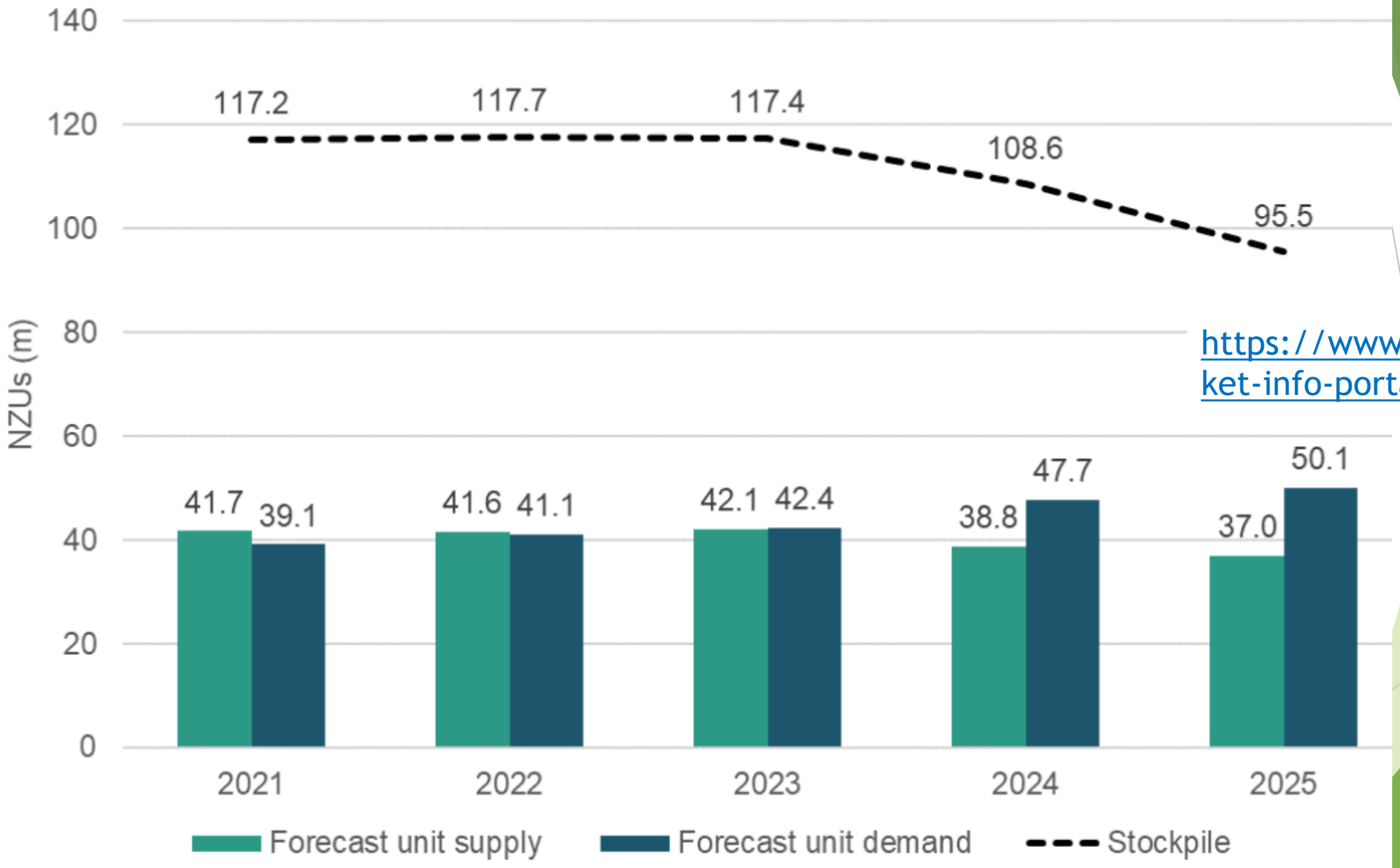
Source: constructed from dataset at https://ccc-production-media.s3.ap-southeast-2.amazonaws.com/public/2021-Draft-Advice-Report-charts-and-data-v3.xlsx

Forecast supply and demand breakdown for 2021 to 2025 (NZU millions)

CALENDAR YEAR		2021	2022	2023	2024	2025
Unit supply issued within the cap	Auction volume	19.0	19.3	18.6	17.2	15.5
	Forecast industrial allocation	8.4	8.2	8.9	8.7	8.7
Unit supply earned from removals	Forecast post-1989 forestry entitlements	11.7	11.4	12.5	10.8	10.6
	Forecast other removal activities	2.6	2.7	2.1	2.2	2.2
Total forecast NZU supply		**41.7**	**41.6**	**42.1**	**38.8**	**37.0**
Unit demand from gross emissions	Liquid fossil fuels	19.8	19.7	19.6	19.5	19.5
	Stationary energy and industrial processes	15.1	15.0	14.8	14.6	14.6
	Waste and synthetic gases	2.5	2.4	2.3	2.2	2.1
Unit demand from forestry	Deforestation/harvesting and deregistration	1.7	4.0	5.7	11.3	13.8
Total forecast NZU demand		**39.1**	**41.1**	**42.4**	**47.7**	**50.1**
Supply versus demand net difference		**2.6**	**0.5**	**-0.2**	**-8.9**	**-13.1**
NZU stockpile		**117.2**	**117.7**	**117.4**	**108.6**	**95.5**

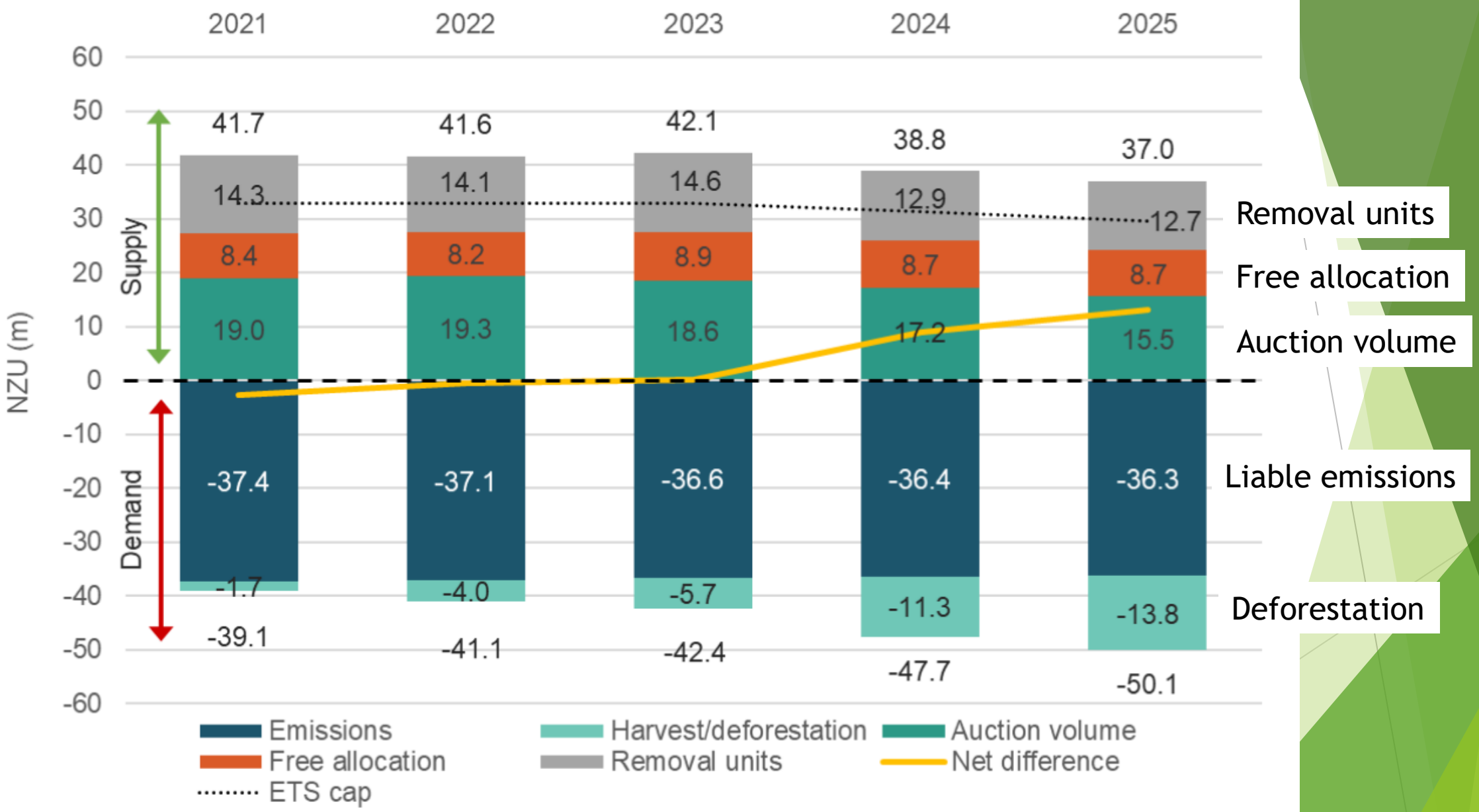
https://www.mfe.govt.nz/ets/market-info-portal

Forecast overall NZU supply and demand and NZU stockpile



https://www.mfe.govt.nz/ets/market-info-portal

Breakdown of forecast NZU supply and demand



https://www.mfe.govt.nz/ets/market-info-portal