

Six Unique Years

why did Think Big happen?

Abstract

This article addresses the question of what caused the 1980 growth strategy which led to investment in major energy projects in New Zealand. It argues that it was a rational policy response at the time. However, the political goal of self-sufficiency in transport fuels was costly and inefficient. Pressure on construction resources and inflation led to unacceptable cost overruns and the forecasting of future prices was astray. As a result, the ventures needed financial restructuring. Some lessons for the imminent investments to combat climate change are drawn.

Keywords energy, economics, investment, climate change

New Zealand is now confronting the challenge of climate change and the need to adopt carbon-free energy. A previous crisis that faced New Zealand in 1979 and the early 1980s is relevant, when international oil shocks induced the government to embark on a massive investment programme dubbed 'Think Big'. It responded to public pressure to take control of the nation's future.

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Eight world-scale projects were undertaken, the biggest creation of infrastructure since the days of Julius Vogel in the 1870s. A total of \$8.2 billion in Crown and company funds was invested in six years, equivalent to \$29 billion in 2022 dollars, and Cabinet was deeply involved in the decision making.

This was a unique period in New Zealand's history, and the costs and benefits of the initiative are still debated decades afterwards. The Think Big energy projects were part of a wider economic 'growth strategy' which was conceived in 1980 as the main election platform for the National Party in 1981. This article identifies the principal reasons for the strategy.

Several outcomes became evident as the projects were completed. Overruns in capital cost, caused by inflation, industrial disputes and planning delays, plus a later collapse in oil prices, impaired their economic viability. These pressures led to a decision by the fourth Labour government to nationalise the debt of four energy corporations.

This article describes the eight major projects that are generally regarded as Think Big investments:

- ammonia-urea fertiliser, Oaonui, Taranaki;
- chemical methanol for export, Waitara, Taranaki;

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- manufacture of synthetic petrol, Motunui, Taranaki;
- expansion of oil refinery, Marsden Point, Northland;
- expansion of New Zealand Steel plant, Glenbrook, Auckland;
- new potline for aluminium smelter, Bluff, Southland;
- Clyde hydroelectric power station, Clutha, Otago;
- electrification of North Island main trunk railway from Palmerston North to Hamilton.

New Zealand's goal of energy self-sufficiency in transport fuel, previously popular, was abandoned after 1987. This article highlights the difficulty of forecasting

was the first. New Zealand's economic engine stalled in the third quarter of 1976 and restarting it prompted a new strategy for growth. The contagion had started in the world's major trading economies in 1973, when the shock of the Arab oil embargo imposed on Israel's allies sent the US economy into the deepest downturn since the Depression (Appelbaum, 2019, p.70). World oil prices tripled and New Zealand's terms of trade fell 38% in 1974, to the lowest level for 40 years. Inflation of nearly 18% in 1976 fuelled spiralling wage demands. Share prices fell about 47% in real terms (Reddell and Sleeman, 2008, p.11) and the cumulative loss of GDP during the 1976–78 recession was

Common Market (the EEC) in 1973. Britain was one of New Zealand's major export markets and had made clear that traditional access for agricultural products would reduce. New export industries had to be developed. A Task Force on Economic and Social Planning identified the need for a more efficient and flexible economy, more investment and pursuit of new markets (Task Force on Economic and Social Planning, 1976, p.231). One of its recommendations was for the state to provide the foundation for this expansion. The government rapidly implemented the proposals and by 1978 new industries based on energy resources were finding favour.

This led directly to another driver, a promise made during the 1978 election campaign that New Zealand would be made as self-sufficient as possible in transport fuels (Cabinet Economic Committee, 1978). To an electorate recovering from the worst economic recession for decades, worried about rising unemployment and exasperated with high petrol prices, the promise made political sense. It fitted the nation's do-it-yourself culture and aimed to get some control over prices. Precedent existed in the United States with President Richard Nixon's Project Independence in 1973 (Nixon, 1973).

The radical new policy was announced by Muldoon on 1 September 1978. He was satisfied that it had 'a real prospect of worthwhile achievement' (Neville, 1978). The cost of imported oil had become one of the most serious problems facing the nation, he said, costing nearly 4% of gross national product. Editorials called the go-ahead 'timely and forward looking' (Evening Post, 1978), while the Labour opposition observed that it had taken 'too long to reach the obvious conclusion' (Neville, 1978).

The next imperative was a change in priorities for electricity generation. When development of the Maui natural gas field was negotiated in 1973, the developers, Shell, BP and Todd, needed a steady cash flow to pay for the offshore platform to extract the gas and oil. They obtained a 'take-or-pay' obligation, which committed the government as the buyer to either use specified annual quantities of gas or pay

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future prices and the problem this causes for investment appraisal, before drawing some lessons for climate change policy.

Was Think Big rational?

The six years from 1979 seem like a myth when seen from the present day, and it becomes difficult to grasp their real-life consequences. The National government's energy projects were heavily criticised by opponents such as Roger Douglas, who became Labour's finance minister. He believed they were an economic disaster arising from 'faulty decision-making and political opportunism' (Douglas and Callan, 1987, p.151). By contrast, a case can be made that the investments were a rational response to the situation faced in 1979, although some outcomes were undesirable.

Drivers of the energy investments

Eight economic and political drivers led to Think Big. Recovering from recession

12.8%. Unemployment doubled to 1.7%, worrying senior Cabinet ministers who had seen its devastating effects during the Great Depression (Hall and McDermott, 2014, p.36).

Without an upturn likely in the world economy, the National Cabinet decided to take matters into its own hands. Economic stimulus was needed, which it would achieve by initiating state-funded projects. The approach was common in post-war recovery and termed Keynesian. Prime Minister Robert Muldoon tabled a mini-Budget, saying, 'if we don't stimulate now, unemployment will go up' (Gustafson, 2001, p.255). Cabinet minister Hugh Templeton remarked that the 1978 election year Budget 'sought to steer between the whirlpool of reviving inflation and the rocks of recession and higher unemployment' (Templeton, 1995, p.107).

Diversifying the economy was the second driver. The need was underlined by Britain's decision to join the protectionist

regardless. (Freer, 1973, p.236). The amount started at \$22 million a year in 1980, and by 1989 would have reached over \$100 million a year in the absence of gas flow.

The original plan was to use natural gas in three large electricity generators located in Huntly and South Auckland. However, in 1978 the Ministry of Works and Development persuaded Cabinet that the previous programme of building hydroelectric power stations in the South Island should continue, to avoid disbanding the skilled workforce (Electricity Department, 1978, p.3). Part of the logic was that hydroelectricity was a renewable energy resource and gas could be used for petrochemicals. Time has demonstrated the wisdom of this call, but its value in achieving zero-carbon goals was not contemplated in 1978.

This landmark decision led directly to the next driver for the expansion of the energy industries: a surplus of natural gas from 1979. The need for a new strategy for how to use this resource led to the creation of the Liquid Fuels Trust Board, an interdepartmental committee to look at ways to reduce reliance on imported fuels for transport (Liquid Fuels Trust Board, 1980). After extensive research, it recommended keeping the rate of depletion of the Maui gas field at the take-or-pay quantities.

It proposed improving transport fuel self-sufficiency in many different ways. Compressed natural gas (CNG) should be used to power vehicles in the North Island. Liquefied petroleum gas (LPG) could also supply vehicles nationwide. A plant to produce chemical methanol from natural gas could supply transport fuel. A synthetic liquid fuel venture should use a quarter of the natural gas, leaving enough for electricity generation. Gas would be reticulated around the North Island.

The sixth driver for Think Big was an apparent electricity surplus in the South Island. A substantial programme of power station construction had been under way, following previously reliable forecasts of 7% per year growth in demand. But the 1976–78 recession dropped this growth to just 2% for the year ended March 1977 (Electricity Department, 1977, p.5). Power forecasters predicted that surplus electricity

in the South Island was likely throughout the 1980s as new hydroelectricity stations were completed (Electricity Department, 1979, p.12), with surpluses of 2,000 GWh a year. (Each year's surplus would be enough to power Christchurch.) To encourage industry and cut the surplus, South Island power prices were reduced by 25% until 1987.

The next boost to the major energy projects was National's growth strategy of 1980, which was spearheaded by the minister of national development, Bill Birch. It aimed to identify industry sectors which could have a competitive advantage and improve the balance of payments through export-led growth. Birch sent a

with other countries, a shortfall of 18% was imminent. Oil's spot price increased from US\$14.50 per barrel throughout 1978 to \$21.80 in July 1979. Lamb exports to Iran ceased. Templeton recalled that, for Prime Minister Muldoon, 'the oil shock really caught him by the throat when he learned that BP, with its huge stake in Iran, was at risk' (Templeton, 1995, p.117).

Intelligence reports provided under the ANZUS alliance then reached Muldoon with the warning that Iraq was about to invade Iran and bomb its oil export hub. At the same time, insurrection in Saudi Arabia was possible and the world oil price could rise to US\$50 a barrel. The briefing confirmed to Muldoon and the energy

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new publication, *Growth Opportunities in New Zealand* (Birch, 1980), to diplomatic representatives around the world.

This initiative was doing what the New Zealand Planning Council and Treasury were advising: to restructure the economy into more industrial sectors using New Zealand's resources, with a broad span of activity in private enterprise. Its central plank was a policy of import substitution through industrialisation (Easton, 1997, p.155ff). The growth strategy became a clear National Party policy in the 1981 general election. However, the private sector was slow to respond, partly because venture capital was scarce.

The final impetus for self-sufficiency was the most immediate. A second international oil shock was triggered in 1979 by the Iranian revolution, which halved Iran's supply to the world market. New Zealand had imported 40% of its oil from Iran (Birch, 1979, p.16) and, although supply contracts were hastily rearranged

minister, Birch, that energy security and investment was a top priority (Boshier, 2022, p.62).

All these drivers meant that one industry was being delivered to Cabinet on a plate – energy. Attention turned to the best uses for natural gas, electricity and coal.

The birth of Think Big

Bernie Galvin, then head of the Prime Minister's Department, suggested to Muldoon that he 'could take the four or five energy projects and say okay, let's put them as a package to try to restore confidence' (Roberts and Callan, 1984). In this he was supported by business interests such as Fletcher Holdings, which advocated being involved in new industry at world scale.

The prime minister exhorted the 1980 National Party conference:

We've got to say no to negative thinking.
We are going to take the big decisions



Cartoon by Tom Scott, used with permission

and we're going to push them through ... We've got to *think big* and we are going to train the extra skilled men needed to put these projects in place ... Restructuring is the only way out. (Nicolaidi, 1980)

The major energy projects

The first project, based on Maui gas, was to make ammonia-urea fertiliser for local farms and exports. The Environmental Defence Society opposed the plans on the grounds that using nitrogenous fertiliser caused more nitrate pollution than other options, such as superphosphate.

The second project was a stand-alone world-scale methanol plant. Its products would mainly be exported, with some blended into petrol for the domestic market. Cabinet decided on a proposal by state-owned gas company Petrocorp, in association with Canada's Alberta Gas. It could be implemented quickly, and Muldoon also preferred state ownership.

Another project, a world-leading synthetic petrol plant in Taranaki near the

separate methanol plant, was built. It made a third of New Zealand's petrol by converting Maui gas into methanol and then processing it into gasoline using technology developed by Mobil. Synfuel was owned 75% by the Crown and 25% by Mobil, after other oil companies declined to participate (Boshier, 2022, p.72).

The Synfuel plant was controversial, with environment groups and Labour advocating more efficient ways of supplying transport fuel, such as CNG and LPG. Birch's view was that these options were complementary to improving self-sufficiency, and that all should be implemented. Formal objections delayed the planning procedures, and frustrated the Cabinet, which then promoted the controversial National Development Act to streamline projects of national importance. On the other hand, Māori claims to coastal rights at Waitara under the Treaty of Waitangi were given fresh impetus (Waitangi Tribunal, 1989).

The synthetic fuel investment was heavily criticised by Roger Douglas,

Labour's later finance minister, who claimed that 'there had been no detailed economic analysis of all the available ways in which the gas could be used' (Douglas and Callan, 1987, p.155). However, the Cabinet Economic Committee did discuss the economics of three alternative packages on 14 August 1981 before committing to the Synfuel plant. Export of liquefied natural gas (LNG) was examined in detail.

In July 1984 Labour won the general election, after which it discredited the growth strategy. Prices for Saudi light crude oil fell from US\$33.57 a barrel in 1982 to a low of US\$13.93 in 1986 and the Crown made substantial losses at Synfuel. In 1988 the finance minister decided to sell Petrocorp and Synfuel, which Fletcher Challenge then bought, making a substantial windfall gain. Later, Fletcher Challenge had to sell both companies to reduce its own debt (Wallace, 2001, 216ff) and they were bought by Methanex, a Canadian firm. Methanex decided to close the methanol-to-petrol reactors at Synfuel and export pure methanol, which currently earns over \$1 billion per year.

The Marsden Point oil refinery was another Think Big project, aiming to lessen dependence on imported refined fuel. Complementing the production of synthetic petrol, it was expanded with a hydrocracker to make diesel. Construction was dogged by cost escalation due to changes of scope, inflation and industrial strife, during which the entire workforce was sacked. The expansion into diesel was commissioned in 1986. In 2022, after 36 years of successful operation, the board of New Zealand Refining decided to close operations because of competition from more efficient overseas refineries. The site is now a shipping and storage facility for imported refined fuels.

Another project caused major headaches for officials and ministers: the expansion of the steelworks at Glenbrook. It aimed to improve the process of making steel from iron sand, followed by hot and cold rolling mills for flat products (Douglas and Callan, 1987, p.167). Treasury and the Ministry of Energy opposed the expansion, but the board of New Zealand Steel persisted and Cabinet agreed to it. However, faulty cost estimates and industrial strife caused massive cost overruns, later

requiring Cabinet to inject cash and increase its shareholding from 50% to over 90%. The Labour government later sold it in a controversial deal with Equiticorp. It now operates commercially under the ownership of Australia's Blue Scope, which bought it in 1992.

A new high-current potline at the Tiwai Point aluminium smelter was another major project. Opened in 1982, its 1,350 GWh per year demand used up most of the South Island's 2,000 GWh electricity surplus. For 40 years it has benefited the economy, but in 2021 fluctuating aluminium prices caused majority owner Rio Tinto to announce its closure in 2024. (This is now being reviewed.) In 1980 Fletcher Challenge had made a separate bid for another 3,140 GWh/y to supply a new smelter at Aramoana near Dunedin, provoking considerable public outcry. The idea was abandoned after Fletcher Challenge's partners decided to go elsewhere.

The building of the Clyde high dam and power station was another controversial project. Public opposition was fierce and prolonged, because orchards in the Cromwell Gorge would be drowned. While objectors such as Paul van Moeseke linked the need for the dam to the proposed second aluminium smelter, the Crown's case to the Planning Tribunal was that the high dam was the most economical way of supplying power to the national grid (Boshier, 2022, p.99). Special legislation had to be passed to overcome lengthy delays in getting construction started.

Think Big also saw the North Island's main trunk railway electrified between Palmerston North and Hamilton, increasing haulage capacity and cutting diesel usage. Considerable track improvement was also completed. In 2017 the KiwiRail board decided to scrap the electric locomotives, but lobbying to reduce carbon emissions led the Labour–New Zealand First Cabinet to intervene and fund their refurbishment. With this, the option has been created to electrify the track from Pukekohe to Te Rapa near Hamilton and further reduce carbon emissions.

Capital cost overruns

Notable features of Think Big are now explored, some of which are relevant to future investment programmes – for

Table 1: Think Big project cost outcomes

Project	Final cost	Overrun
Ammonia-urea	\$125m	94%
Methanol Waitara	\$262m	102%
Tiwai Point potline	\$237m	35%
Synthetic fuels	\$1,887m	37%
Refinery expansion	\$1,840m	102%
Steel expansion	\$2,250m	61%
Rail electrification	\$250m	150%
Clyde high dam	\$1,400m	142%

example, to reduce carbon emissions.

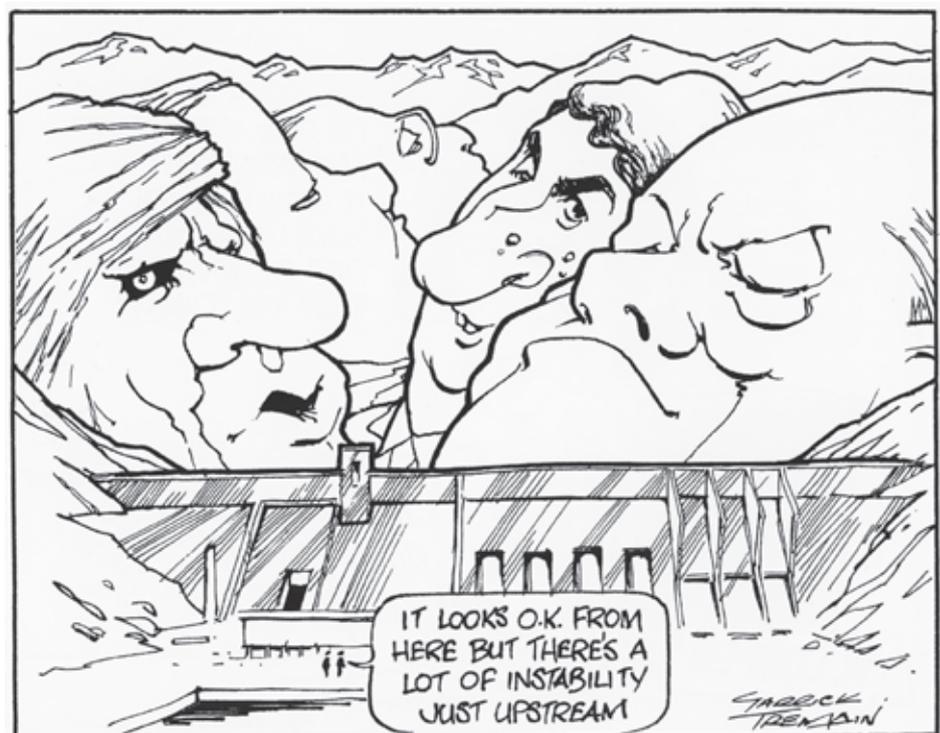
The first is capital cost escalation. Seriously high overruns plagued most of the eight projects built between 1980 and 1985. Table 1 shows that the completion cost of some was double the approved capital cost in dollars of the day (Boshier, 2022, p.260). Chronic inflation, averaging 13% a year from 1978 to 1988, was at the core. It meant that original estimates using real dollars resulted in a misleading and inconsistent cash flow.

Planning appeals delayed the ammonia-urea plant and the Clyde high dam by more than two years. Civil engineering problems and increases in scope raised the costs of electrifying the main trunk railway line and building the Clyde dam, where expensive remediation was needed. Upstream of the dam, artesian water was found in what

were previously considered the dry landslides in the Cromwell Gorge. Industrial disputes increased the costs and severely damaged the economics of New Zealand Steel and the oil refinery.

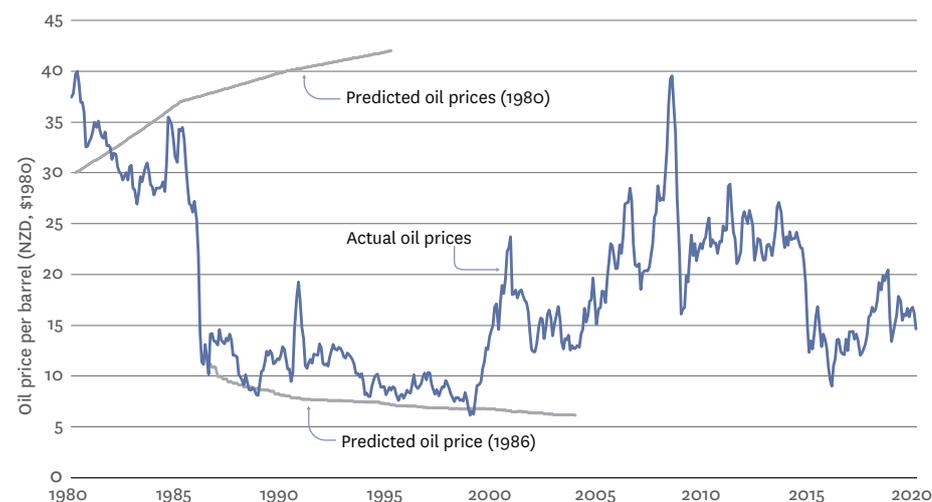
By contrast, cost estimates for the Taranaki synthetic petrol plant and Tiwai Point incorporated inflation and interest during construction, resulting in an increase of only 35–37% from the base cost. They were both funded by international banks and built by Bechtel of the United States.

Overruns in capital cost during the 1980s were highly damaging to the financial performance of these ventures. For some, expectations of proponents were overly optimistic. The culture at the time was that ministers wanted the projects built, so engineers got on and did them. Too many were constructed at the same time, causing



Garrick Tremain / 27 March 1990

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Figure 1: Oil prices, 1980–2020 (NZ\$, 1980)

Source: TDB Advisory Ltd, Wellington, with data courtesy of US Energy Information Administration

pressure on planning approval processes and construction resources such as materials and skilled labour. Costs were forced up and coordination was difficult.

Such problems were not confined to New Zealand: Europe's rail infrastructure cost on average 45% more than projected (Flyvbjerg, Priemus and van Wee, 2008).

Budget support in 1986

Compounding the problem, as if on cue with the synthetic petrol plant and refinery being commissioned, the world oil price suddenly halved from US\$27 per barrel in 1985 to US\$14 in early 1986. The Labour Cabinet was meanwhile deregulating the petroleum market to remove industry protection and encourage competition. Its new Commerce Act 1986 now required Synfuel and the refinery to compete with imports, which had become cheaper, so the Crown's trading account for Synfuel started showing substantial losses.

The new policy also meant removal of the previous protections enjoyed by New Zealand Refining, which had been given assurance in deciding on the expensive hydrocracker. The refinery now had to compete with cheaper imported product and faced financial peril. The Labour Cabinet also removed tariff protection for New Zealand Steel, meaning it had to compete with imports from the fluctuating world market. Cost overrun on the Glenbrook expansion had meant debt repayment was much higher than forecast, causing a big reduction in its economic return.

Finance Minister Roger Douglas recognised that he could not change the regulatory and operating environment without accepting responsibility for four of the Think Big projects' debt, which was secured against previous commitments (Douglas, 1986). In the 1986 Budget, Treasury took responsibility for \$5.6 billion in debts of four energy companies: New Zealand Steel Development Ltd (\$940m); Petroleum Corporation of New Zealand (\$800m); New Zealand Refining Company Ltd (\$2,050m); and New Zealand Synthetic Fuels Corporation (\$1,850m).

For the refinery, the \$2 billion debt was repaid by an excise tax on fuel, which was subsequently converted to a land transport fund for road construction. It continues to this day. The 'bailout' had integrity and the programme of liberalising markets was able to continue unabated. In 1992 the ratio of government net debt to GDP reached an all-time high of 54.8%; it then steadily declined over the next ten years.

The end of self-sufficiency

The National government's grand goal in the early 1980s of domestic self-sufficiency in transport fuels appealed to the public and was politically useful. It drove energy policy, with a focus on developing natural gas for domestic use. But one proposal quickly ruled out was exports of LNG, which would have been financed by the private sector.

For the Synfuel venture, a fallback strategy from the beginning was the potential export of methanol instead of using it to make petrol. This option enabled

it to be funded by international banks without recourse to the Crown. Project analysis should always, where practicable, include fallbacks that are realistic. The creation of such strategies can be viewed as financial options which can have significant value and can be quantified (Grimes, 2010). The benefit of these options could be far-reaching: for example, the Clyde dam helped reduce carbon emissions in electricity, although the value was not properly recognised until decades later.

The goal of self-sufficiency in transport fuels was ultimately seen as a false god, because it was too costly for the benefit it delivered. Another grand goal has now been accepted – net zero carbon emissions – but it carries the policy risk of alienating the public if energy prices rise too much.

Forecasting future prices

Forecasting the future is highly uncertain and exploring the 'unthinkable' is essential. In the 1980s, forecasts of oil prices were needed to evaluate the merits of synthetic fuels. Figure 1 dramatically shows the difference between forecasts and what actually happened. World oil prices are shown in 'real dollars per barrel', excluding inflation, for 40 years.

In 1980 prices were expected to rise as crude oil was depleted. It was thought that unconventional oil from shale and tar sands could cost \$42 a barrel by 1995, and set the marginal world price. But the oil market crashed in 1986. When prices did rise, it was suddenly, and 20 years later.

The importance of this came home in 1986 when the future of the Synfuel plant was in question after the production cost of its petrol exceeded the price of imported fuel. It was then thought oil prices would stay low, as supply was plentiful. The venture was sold in 1990 to Fletcher Challenge at a rock-bottom price, so when oil prices recovered it became very profitable.

Today, forecasting future carbon prices in the emissions trading scheme is needed for the cost–benefit analysis of renewable energy projects. The carbon market could be volatile – like oil – and likely to be influenced by sentiment. A world price does not make it more stable. Investing on the assumption of a high price will result in financial distress if the price drops significantly and for a sustained period.

Conclusions for climate change policy

Another period of substantial investment is in prospect as New Zealand confronts the challenge of climate change, as required by the Climate Change Response (Zero Carbon) Amendment Act 2019. All sectors of society will be affected by this grand goal. If managed well, the transition will not harm the economy and employment (Climate Change Commission, 2021a, p.147), but if prices rise too much there is a risk of alienating the public.

There is a difference between the motivations for Think Big in the 1980s and those relating to the even bigger 'Think Big' of decarbonisation. The new goal is not driven by a quest for energy security, or to reduce the impacts of fluctuations in world oil prices; it is about mitigating climate change. Yet fully decarbonising the New Zealand economy would provide a much greater measure of energy independence, and global fluctuations in fossil fuel prices would be less relevant.

Outcomes from the Think Big era have relevance as the nation embarks on investment in low-carbon energy alternatives. Financial viability is vital, so decisions need to be resilient to unexpected variations in carbon's future price. It is very costly to convert a fossil-fuel energy system to zero-carbon, so a reliable market for offsets is essential. In particular, the strategy and costs of tree planting in New Zealand need to be resolved.

A planning system would be useful to the energy and carbon markets. It would not be a return to central planning, but would aim to provide waypoints to help investors evaluate opportunity and risk. In particular, the biggest industry in New Zealand, agriculture, has yet to fully accept widespread mitigation measures.

This is the logic underpinning the establishment of the independent Climate

Change Commission, which produces regular detailed analyses subject to peer review. The commission recommends proceeding systematically in a fair and sustainable transition, recognising that a 'big bang' approach can be very costly in spending the wrong amount at the wrong time (ibid., p.14). We don't have time or money to waste.

The commission's early work estimated that \$12.5 billion needs to be invested until 2030 to achieve national carbon reduction targets. Some of this investment will be private and decentralised: for example, as the motor vehicle fleet is electrified. From 2031 to 2035, \$4.3 billion a year will be required to decarbonise energy supply – a total of \$33 billion (Climate Change Commission, 2021b, p.87).

In the electricity sector, a separate recent estimate is that \$42 billion needs to be invested over the next ten years. (Boston Consulting Group, 2022). Projects now being investigated include major offshore wind farms in Taranaki, and the Lake Onslow pumped storage scheme, involving a \$4 billion underground power station above Lake Roxburgh on the Clutha River, to solve the 'dry year' problem, which causes electricity prices to spike.

Borrowing will clearly fund much of this new investment, because its benefits are in the future. Power generators will also need to use retained earnings, so electricity prices could rise. The Climate Change Commission warns that moving from 98% renewable electricity to 100% would cost about \$1,280 for every tonne of carbon dioxide abated. Higher electricity prices would result and reduce the attractiveness of electricity as a low-emissions fuel. For this reason, talk of a 100% renewable electricity target should be regarded as aspirational; it is a grand goal (Climate Change Commission, 2021a, p.279).

Excellent cost control (such as the gateway approval process used by Treasury) and improved public-private partnerships must be used to reduce budget blowouts of a type seen in the Think Big era. Major earthworks have a habit of financially biting the constructor. In the private sector, costs are controlled by the discipline of borrowing and cash flow control by a vigilant board. For a proposal such as Lake Onslow power station, risks could be mitigated by a range of measures, including independent governance, expert review of costings, exemplary project management, good industrial relations with skilled labour, and so on.

Other approaches include stockpiling torrefied wood (heated in the absence of oxygen) and burning it at the Huntly power station in dry years. Extending the storage ranges of existing hydro reservoirs can be explored.

Perhaps the biggest problem is to change people's consumption patterns. The Climate Change Commission hopes that reductions in carbon emissions will be achieved by a societal shift in attitude as their costs begin to bite through the emissions trading scheme. Its approach is that no one will be forced to sell their petrol car or install solar electricity, for example. We can but hope this is the case and that deep intervention by government, as seen with Think Big, can be avoided.

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School of Government Brown Bag seminars – open to all

Join lively, topical presentations and discussions in an informal setting at the School of Government.

These Brown Bag sessions are held the first Monday of most months, over lunchtime. Past topics have included:

- Intergenerational wellbeing and public policy
- A visual exploration of video surveillance camera policy and practice
- The role of financial risk in the New Zealand Primary Health Care Strategy

- Strategic public procurement: a research agenda
- What role(s) for Local Government: 'roads, rates and rubbish' or 'partner in governance'?
- Human capital theory: the end of a research programme?
- How do we do things?

We would welcome your attendance and/or guest presentation, if you are interested.

Contact us to go on the mailing list for upcoming sessions at sog-info@vuw.ac.nz