

A Minerals and Petroleum Resource Strategy for Aotearoa New Zealand: 2019–2029

Vision

1. Draft vision:

“A world-leading minerals and petroleum sector that delivers value for New Zealanders, both now and in the future, in an environmentally and socially responsible way.”

We would like to see this Vision strengthened in the following way:

VISION “A world leading, transformational natural resource sector that maximizes well-being across the four capital for New Zealanders, both now and in the future.”

“Transformational” signifies the need to transition the natural resource sector to :

- a. dramatically improve the mining sector’s environmental and social impacts
- b. minimize the need for mining, and
- c. eventually abandon mining as an activity.

NZ’s strategy would benefit from a transformation of our thinking about natural resources. Part of the longer term strategy should be a move away from mining which is inherently destructive to a focus on the functions mineral resources provide for our well being and how these functions can continue meeting our needs.

With a refocus on the functions natural resources provide for our well-being (rather than merely how they are mined), our resource strategy should be broadened to encompass understanding what these functions are, prioritizing those that are critical to our well-being, and determining how we manage the process of ensuring these functions continue to meet our needs, initially with improved mining, and eventually without it. Recycling and materials substitution should be central parts of this strategy.

Substituting “resource sector” for “minerals and petroleum” signals that petroleum needs to be phased out soon, and the emphasis placed on minerals. We need to abandon business as usual regarding fossil fuels and remove it from the resource sector to avoid climate catastrophe.

Replacing “delivers value” with “maximizes well being across the four capitals” clarifies and emphasizes that value lies not only in financial assets but also across the other three capitals encompassing well-being.

Given the prominence the new budget framework has given to the well being concept, it would seem appropriate to apply this concept in the new vision for the petroleum and mineral area. Such an inclusion not only provides consistency across sectors, if applied routinely, but also emphasizes the importance of this concept for all that we do as a nation.

Current methods of extracting petroleum and minerals are inherently destructive processes, consuming large quantities of energy, releasing wastes into the air, soil and waterways that are often toxic, and disturbing large areas of land containing biodiversity and providing ecosystem services. While best mining practices are improving on all these fronts¹ the process continues to harm the environment, and is likely to do so for the foreseeable future.² Especially as mineral concentrations in the earth are declining due to mining, more land is disturbed to obtain the same amount of desired material than previously. Doing less harm is clearly desirable, but doing no harm should still be the goal.

A transformational vision is one which focuses on providing society with the critical functions to our well-being currently provided by petroleum and minerals, but without relying solely on mining as currently practiced. The traditional mining sector needs to undergo a transition that:

1. Continues to provide materials that society values for essential needs
2. Continuously improves current practices in terms of minimizing land disturbance and related biodiversity and ecosystem services
3. Continuously uses less energy and biologically harmful agents
4. Continuously produces less waste

¹ https://www.ilo.org/empent/Publications/WCMS_592317/lang--en/index.htm
<https://web.mit.edu/12.000/www/m2016/finalwebsite/elements/ree.html>
https://www.undp.org/content/dam/undp/library/Sustainable%20Development/Environmental-Governance-Project/Extracting_Good_Practices_Report.pdf

² <https://web.mit.edu/12.000/www/m2016/finalwebsite/problems/environment.html>
https://en.wikipedia.org/wiki/Environmental_impact_of_mining

5. Continuously increases the amount of minerals that are recycled
6. Develops substitutes for materials currently provided by traditional mining techniques, so that mining can be minimized and eventually eliminated.

The first five items above seek to demonstrably (as opposed to merely aspirationally) improve current mining practices.

It is the sixth item that refocuses the strategy and moves the activity toward a genuinely transformational and sustainable future.

Petroleum and minerals should be treated separately.

Fossil fuel use must end soon, within a decade at most. Renewable energies are now cost competitive with fossil fuels for transport and heating³. Natural gas is not a transition fuel as it is as polluting as coal due to leakages all along its supply chain.⁴

Many of the functions currently provided by petroleum are already being displaced by more sustainable approaches: carbohydrate based plastics, for example, and renewable energy technologies. The Strategy should accelerate this process which is already evident in the investor community as it moves away from fossil fuels⁵. Even major oil producing nations such as Abu Dhabi and Saudi Arabia realize oil is losing the cost war to renewables and see the end of oil production in the near future.⁶

If NZ does not move away from our dependence on oil soon we may find it difficult to obtain oil in the near future. Exponential growth of the renewable sector, stimulated by rapidly declining costs, is moving many industries in this direction⁷.

³ <https://about.bnef.com/new-energy-outlook/#toc-download>

⁴ <https://www.climaterealityproject.org/blog/3-big-myths-about-natural-gas-and-our-climate>

⁵ <https://www.theguardian.com/commentisfree/2018/dec/16/divestment-fossil-fuel-industry-trillions-dollars-investments-carbon>

<https://about.bnef.com/blog/solar-wind-batteries-attract-10-trillion-2050-curbing-emissions-long-term-will-require-technologies/>

<https://gofossilfree.org/major-milestone-1000-divestment-commitments/>

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The Winning of the Carbon War: Power and Politics on the Front Line of Climate and Clean Energy
by [Jeremy Leggett](#), Crux Publishing, 2018

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Another reason for eliminating fossil fuels as soon as possible is that to manage global warming it is likely we will have to draw down from the atmosphere greenhouse gases previously emitted. We do not know how to do this at the scale required, and the costs of promising alternatives is exceedingly high. The more greenhouse gases future generations have to remove due to our continued use will be a grave intergenerational injustice⁸.

Regarding minerals, several new technologies are emerging that should inform the transition for the NZ mining industry, such as nanotechnologies, polymers from organic materials that can substitute for abiotic materials, 3-D printing, and simply finding organic substitutes that can serve the same function as mineral based materials (e.g. carbohydrate rather than petroleum based plastics⁹; engineered wood rather than structural steel¹⁰).

The ideal to work toward is an economy based on harvesting materials, or building them from molecular structures, rather than mining them. While such an ideal may seem far-fetched, not so long ago the notion that wind and solar technologies could replace fossil fuels over a few decades also seemed radically naive. If we are creating a new vision for petroleum and minerals the focus should be on the functions these materials provide, rather than solely on the materials themselves and the current methods of providing them.

The draft Strategy has some positive elements to manage traditional mining practices, but could and should be expanded to anticipate the opportunities to transform the sector to an ecologically sustainable process. Considerations for achieving this goal are included in the following comments.

How can New Zealand sustainably derive value from its petroleum and minerals resources?

Since petroleum and minerals are non-renewable resources it is impossible to “sustainably” derive value from them. Furthermore, there is a fundamental difference between fossil fuels and minerals, in that the energy from fossil fuels cannot be recycled, whereas minerals can be

⁸ <https://royalsociety.org/-/media/policy/projects/greenhouse-gas-removal/royal-society-greenhouse-gas-removal-executive-summary-2018.pdf>

⁹ <https://prospect.org/article/once-and-future-carbohydrate-economy>

¹⁰ https://en.wikipedia.org/wiki/Engineered_wood

almost indestructible and at least partially recycled. This is an important distinction that needs to be considered in any resource strategy.

Fossil Fuels

Because fossil fuels are exhaustible, and because they do so much damage to global climate systems, they need to be phased out as soon as possible. The government's initial steps in this direction are important and welcomed. The sooner NZ abandons fossil fuels the sooner it will reap many of the co-benefits associated with a transition to renewable energies¹¹.

However, if NZ is to achieve its commitments regarding the Paris Climate Agreement then it is critical that we stay within the carbon budget necessary to achieve those goals. The world already has more proved recoverable fossil fuel reserves than the global carbon budget would allow⁽¹²⁾. Hence it is a waste of resources, financial, technical and human, to engage in further exploration and development of fossil fuels. These will become stranded assets for the companies involved. Will these companies seek legal redress from governments that encourage further exploration and development on the one hand, and on the other, plan to eliminate fossil fuels use to meet its international obligations?

The fossil fuel divestment movement has resulted in at least \$8 trillions being withdrawn from this industry¹³. The financial, technical and human resources of this industry would best be reapplied to the transition to renewable energy sources. NZ's resource strategy should support this transition.

In addition to minimizing climate damages, moving away from fossil fuel use will also have several co-benefits: the approximately \$5 billions¹⁴ currently spent on importing fossil fuels to NZ (almost 10% of all imports) will be redirected to an evolving low emissions economy (these billions of dollars can be redirected to expenditures within NZ, creating employment and moving toward a low emission economy); air quality will improve, leading to reduced morbidity and lower health costs; biodiversity harm will be reduced.

¹¹ <https://www.sciencedirect.com/science/article/pii/S0306261918303830>
<https://unfccc.int/sites/default/files/resource/3.43%20IRENA%20Nagata.pdf>

¹² https://www.researchgate.net/figure/Potential-emissions-from-reserves-vs-IPCC-remaining-carbon-budget-IOCs-SOEs-and_fig1_284786136

¹³ <https://gofossilfree.org/major-milestone-1000-divestment-commitments/>

¹⁴ <http://www.worldstopexports.com/new-zealands-top-10-imports>

Minerals

As the discussion document indicates, there will be many minerals required for the transition to a renewable energy economy. It is desirable for NZ to supply as many of these minerals for itself as possible. Use of these minerals should be prioritized to assist this transition, as opposed to other uses that may not contribute as much to the well-being of New Zealanders (critical vs frivolous uses). For example, gold mining can be very environmentally destructive and the world already has enough gold for industrial and medical purposes. Such mining should be discouraged because of the damage it does and its lack of contribution to critical services.

Ideally, export of key minerals required for the transition should also be directed to critical uses in other countries to assist with the energy transition.

Many minerals can be recycled. But even items like steel, which is the most recycled product, are lost in use or recycling and the total amount available will gradually decline.

Improving the recycling process is important for several reasons: it can reduce energy use; do less environmental harm; is generally more efficient than mining; maintains the value of the mined mineral (avoids waste). But even the most recycled minerals do not currently supply increasing demands. So improving the recycling process is an important aspect of the vision.

To supplement the recycling effort, attention should also be given to deriving non-mined substitutes for currently mined minerals. For example, despite steel being the most recycled material on the planet, supply cannot keep up with demand. But rather than mining more minerals to produce steel, engineered wood can now be used in place of structural steel even in multi-story buildings (¹⁵). Such use of wood also has the advantage of sequestering carbon for long periods of time.

“Materials by design” is the term used to describe one of the approaches to having access to desired materials without mining¹⁶

¹⁵ <https://cdn.auckland.ac.nz/assets/auckland/creative/our-research/doc/transforming-cities/chapman-presentation.pdf>

¹⁶ <https://science.sciencemag.org/content/288/5468/995>
<https://iopscience.iop.org/article/10.1088/1361-6463/aad926>

More R&D support is required to exploit the opportunities of such a transformation. Resource extraction companies should be required to provide 10% of their pre-tax profits to such activities. Government can also incentivize industry to conduct R&D on such processes.

Objectives for the minerals and petroleum sector

Objective for a sector that: “Responsibly delivers value for New Zealand (a) Supporting a productive, sustainable and inclusive economy (b) Supporting New Zealand's transition to a carbon neutral economy”.

- (a) Supporting a productive, sustainable and inclusive economy

The economy, as well as the environment and social cohesion, will only be sustainable if mineral use is based on non- mining activities as discussed above. Mining of non-renewable resources is by definition unsustainable. Finding non-mined substitutes for minerals could lead to genuine sustainability across all the well- being areas.

(b) Supporting New Zealand's transition to a carbon neutral economy”. **STRONGLY AGREE AND ASAP – by 2050 at the latest.**

Note: Allowing continued mining of fossil fuels is not compatible with this more important national priority of carbon neutrality soon.

Objective for a sector that: “Is productive and innovative”.

- Strongly agree

Why?

Strongly agree if, and only if, the innovation does not only include significantly and continuously improving current mining practices, but also includes the evolution to a non-mining approach to providing the functions of the materials currently mined.

Objective for a sector that: “Is effectively regulated”.

<https://spectrum.ieee.org/nanoclast/semiconductors/nanotechnology/can-nanotechnology-provide-relief-in-rare-earth-resource-squeeze>

Strongly agree

Why?

Traditional mining, even with current best practices, remains inherently harmful to the environment. Requiring continuous improvements should be mandatory, with target reductions in waste and toxic emissions, and energy use (which is likely to involve fossil fuels), and set timelines for continuous improvements. The Strategy should require that continuous improvements not be merely aspirational but meet established targets over explicit timelines.

Are there any other objectives for the minerals and petroleum sector that you would like us to consider in the strategy?

Yes, as above: transition to non-mining approaches to providing the services currently provided by mined materials.

Guiding principles

Principle: The environment, ecosystems, and biodiversity are respected now and in the long term.

Strongly disagree

“respecting” the environment, ecosystems and biodiversity is much too weak a principle. The principle should be something like: “Continuous improvement demonstrated in reducing harm to the environment, ecosystems and biodiversity”

We should acknowledge we are doing harm in the process of mining, and work toward both improving the mining process, and moving away from it entirely over time.

Principle: Māori cultural interests are understood and respected.

Strongly agree

Why?

We assume it will be the Maori community that will determine if it is being adequately respected.

Principle: Support the transition to a carbon neutral economy by 2050.

Strongly agree

Why?

It is essential we do this to avert runaway global heating. Earlier than 2050 would be better. Continued petroleum extraction is incompatible with this goal. Natural gas is not an acceptable transition fuel¹⁷. Fracking is unacceptable because of its harmful effects. Fossil fuel extraction and use produces multiple unacceptable externalities that need to be stopped.

Principle: The impact on people, communities and regions are managed in a just and inclusive way.

Strongly agree

Why?

Since mining is inherently destructive this must be acknowledged and managed in a way acceptable to those impacted both directly and indirectly. Consideration should be given to utilizing a Citizen's Assembly¹⁸ approach to determining what level of disruption is acceptable to an affected community.

The mining community itself has to deal with the challenges of a transition away from mining. Support for this transition should be available in terms of job training and relocation assistance. Coordination with other ministries will be important for this transition.

Principle: Support a circular economy by meeting resource needs through resource efficiency, recycling and reuse.

Strongly agree

¹⁷ <https://www.climaterealityproject.org/blog/3-big-myths-about-natural-gas-and-our-climate>

¹⁸ https://en.wikipedia.org/wiki/Citizens%27_assembly
<https://rebellion.earth/act-now/resources/citizens-assembly/>

Why?

Please note that the circular economy notion emphasizes resource efficiency as much as recycling and reuse. Resource efficiency can be achieved by developing non-mined substitutes for minerals currently mined. If the circular economy concept is to be a guiding principle then the entire concept needs to be implemented¹⁹.

Principle: Actions taken within the mineral and petroleum sector should align with the strategic direction of other related sectors and Government strategies.

Strongly agree

Why?

Currently this sector focuses on mining activities rather than on materials which provide the functions of the resources mined. Alignment with other strategic directions and sectors is important because the various goals are often in conflict – e.g. resource extraction and environmental protection. With a transformed vision for this sector alignment should be easier as the different sectors and areas involved can be synergistic rather than antagonistic.

It is not minerals and petroleum themselves that are needed but the services they provide. Consequently, it is the essential services they provide that should be maintained and developed. Alignment with other government strategies and directions is essential for the overall goal of ensuring the well-being of all New Zealanders. This must include those adversely affected by a transition away from mining.

Principle: The Crown honours its duty towards Māori as a Treaty partner, adheres to the Principles of the Treaty of Waitangi and its duty to meet settlement commitments.

Strongly agree

Why?

It is simply the right thing to do.

Principle: The Crown receives a fair financial return for its minerals and petroleum.

¹⁹ <http://reports.weforum.org/toward-the-circular-economy-accelerating-the-scale-up-across-global-supply-chains/from-linear-to-circular-accelerating-a-proven-concept/>

Strongly agree.

Natural resources and the land they occupy, and the ecosystem services the lands provide, are assets that belong to all citizens, current and future. As this Strategy deals with non-renewable resources it is imperative that their financial value be realized by citizens to an extent that is durable. The government revenue of approximately 10% of industry income would seem to be at the low end of a fair return.

In addition, consideration should be given to how much the government spends on both supporting and managing this sector, and paying for the externalized costs created by the sector. Government revenue should exceed government expenditures on this sector, where both direct and indirect (i.e. externalized environmental and social costs²⁰) expenditures are considered.

A “fair financial return” should include both payments and costs to government that are otherwise unintended subsidies (e.g. externalized costs of fossil fuel and mineral use). A 2015 IMF study found that global externalized costs of fossil fuel use alone (not considering mineral extraction) was in excess of \$5 TRILLION per year.²¹

A financial study should be undertaken to calculate these externalized costs for NZ, for both fossil fuels and minerals, as part of the Strategy to manage this sector. Without such data it is not possible to determine if NZ is receiving a fair financial return.

Principle: The Crown regulates in a way that is fair, transparent, reasonable and proportionate.

Strongly agree

Why?

Strongly agree. It is important that the fairness, transparency and proportionality be considered from the perspective of those directly and indirectly affected as well as from the perspective of the companies involved. A Citizen’s Assembly²² would be very useful to set standards to be regulated. Monitoring and reporting activities should be easily available

²⁰ <https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/hidden-cost-of-fossils>
<https://environmentamerica.org/reports/ame/high-cost-fossil-fuels>
https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA_REmap_externality_brief_2016.pdf

²¹ <https://www.imf.org/external/pubs/ft/wp/2015/wp15105.pdf>

²² https://en.wikipedia.org/wiki/Citizens%27_assembly
<https://rebellion.earth/act-now/resources/citizens-assembly/>

to the public. Externalized costs should also be monitored and reported on so that citizens understand the genuine costs for the benefits the resource sector provides.

Principle: The Crown honours the rights of current permit holders to continue production or exploration activities under existing permits.

Strongly disagree

Why?

Many of these permits will endure for decades and contribute to generating more greenhouse gases than the global carbon budget will allow. Efforts should be made to retire the permits, perhaps by incentivizing the affected companies to transition to activities compatible with a low emissions economy.

There are already financial mechanisms in place to assist companies who relinquish permits²³. In 2005, the NZ government made changes to the rules on exploration and development expenditures. Development expenditures allocated to future income years became deductible in full in the income year in which a permit is relinquished or disposed of for consideration. Costs relating to failed production wells became deductible in the year of abandonment, instead of deductions being spread over seven year. Perhaps such mechanisms could be expanded to manage the relinquishment of existing permits.

The sooner petroleum companies make this transition the sooner they will benefit from the new economy, and society in general will benefit from the more appropriate application of the skills and talents in this sector. Investors are eager for opportunities to contribute to the new economy and perhaps government can broker and support arrangements with investors to encourage companies to relinquish their permits and transition to a renewable energy economy.

Principle: The Crown makes policy decisions based on the best evidence, and accounting for the foreseeable need for minerals and petroleum, both now and for future generations.

Strongly disagree

²³ <https://www.mbie.govt.nz/assets/7250f5135f/peer-review-fossil-fuel-subsidy-reforms-nz.pdf> pg 34

Why?

The Crown, on behalf of all New Zealanders, should make policy decisions based on transforming this sector to ensure the critical functions it serves, without mining.

Obviously, the best evidence and a future orientation, should be utilized. But comprehensive well-being considerations should also be a critical part of the decision making process. A transformed natural resource sector would make this easier. The Principle should be expanded to include decisions based on the well-being of New Zealanders now and in the future, and include all four types of capital.

Principle: The Crown proactively engages and consults with relevant stakeholders and decisions are communicated in a clear and transparent way.

Strongly agree

Why?

The only way an inherently destructive activity like mining can retain a social licence to operate is if all relevant stakeholders understand how it operates, what its positive and negative impacts are, and are involved in determining acceptable trade-offs among conflicting needs. Again, a Citizen's Assembly²⁴ approach to managing these trade offs would transcend the special interests of those usually consulted.

Principle: Pursue continuous improvements in health and safety.

Strongly disagree

Why?

We agree that continuous improvements in health and safety should be pursued, but not only for workers in this sector. The health and safety of all New Zealanders must be taken into account. Many of the externalities created by the sector, especially fossil fuels, have many negative health effects. Surely the health of every citizen, not just workers in this sector,

²⁴ https://en.wikipedia.org/wiki/Citizens%27_assembly
<https://rebellion.earth/act-now/resources/citizens-assembly/>

must be considered. Again, the well-being notion provides us with a comprehensive framework that is meaningful to all parties.

Principle: Strive to implement industry best practice in operations.

Strongly disagree

Why

Best practices should be required.

Best practice should also include continuous improvements with specific targets and timelines. Again, the improvements should be demonstrable and not just aspirational. And equally important the vision for a transformed sector should be adopted and implemented, as a sustainable alternative to mining is the best practice imaginable.

Principle: Seek innovative ways to improve the resource efficiency of extraction operations; and minimise the negative impacts of these operations.

Strongly agree

Why?

As above, best practice operations should not only include continuous improvement targets, but also dedicated efforts to finding non-mined substitutes which can provide the same or similar functions as the extracted resources. Simply making harmful processes less harmful is clearly desirable, but our goals should be cessation of harm, which a transformational vision would allow.

Principle: Engage with stakeholders and implement management systems to understand and manage impacts, and realise opportunities for redress where needed.

Strongly agree

Why?

Such processes are essential to minimizing harm and contributing to the well being of New Zealanders. All New Zealanders are stakeholders regarding natural resources. Again, managing impacts means being aware of externalities. Use of a Citizen's Assembly to manage the impacts and transformation of this sector would be a uniquely participatory process.

Are there any other principles you would like us to consider in the strategy?

We believe that transforming the mining sector is essential to our well being. Developing substitutes for materials currently provided by traditional mining techniques is a critical principle to transition resource use away from mining, which is an inherently destructive process. We have the skills and knowledge to support this transition and it will reap many benefits for the well-being of future generations.

"It always seems impossible until it is done." Nelson Mandela