

# COAL IN AOTEAROA

**Coal is ancient vegetation compressed over millions of years. In quality it ranges from bituminous/coking (old, hard, hot-burning), to sub-bituminous/thermal (softer, younger), to lignite/brown coal (wettest, slow-burning, most polluting). All current working coal mines in NZ are open-cast, not underground.**

## The major customers for NZ coal

1. Half NZ's coal is exported to India, China & elsewhere - mostly for steelmaking -- bituminous/coking.
2. NZ Steel Glenbrook mill - steel-making - sub-bituminous/thermal
3. Fonterra & other dairy plants - drying milk - sub-bituminous/thermal & lignite
4. Huntly power station - electricity generation - sub-bituminous/thermal
5. Other industrial users (eg cement, meat processing) - sub-bituminous/thermal & lignite
6. Heating commercial and public buildings - sub-bituminous/thermal & lignite

Some coal is imported from Indonesia because it is cheap.

## Coking coal – exported for steel-making

Bituminous coal suitable for coking and use in steel-making is found on the West Coast and exported, mostly to India & China. BT Mining's Stockton Mine (beside Denniston) on the Buller plateau is NZ's largest mine. NZ Coal & Carbon's Roa mine (Blackball) produces high-grade coking coal.

**The coal, China and jobs roller-coaster** – production of high-grade export coal rises and falls with the global coal price, which is linked to China's energy policy. High coal prices a decade ago played a part in Pike River and other mines opening. Dropping coal prices then led to State-owned Solid Energy (once NZ's largest coal company) going into liquidation. SE's mines were mostly bought by Bathurst/Talleys, who have major plans for several new mines on the Buller Plateau.

**Jobs after coal** – West Coasters live on a jobs roller-coaster as companies boom and bust and mines open and close. There must be a just transition to alternatives to a coal industry that kills the planet, wrecks the local environment and contributes to the West Coast's higher than average respiratory disease rates. See CANA "Jobs After Coal" 2015

[https://coalactionnetworkaotearoa.files.wordpress.com/2015/05/jac\\_2015\\_final-low-res2.pdf](https://coalactionnetworkaotearoa.files.wordpress.com/2015/05/jac_2015_final-low-res2.pdf)

## Alternatives to coal for steel-making

Steel is made using coal/coke as part of the process and it is less easy to find alternatives. But technologies are being developed. For example a Swedish company has made steel without coal using hydrogen and renewable electricity.

Steel could be recycled much more, and could be replaced by other materials eg strengthened wood for building. A carbon tax would shift the incentives towards investing in alternative technologies. See CANA website:

<https://coalaction.org.nz/carbon-emissions/can-we-make-steel-without-coal>

## **Thermal coal - for electricity generation, industrial processing and heating**

Sub-bituminous coal & lignite are used for electricity generation, steel making (in NZ) and to fuel boilers that heat buildings and provide steam and heat for manufacturing processes.

Lignite is a cheap wet slow-burning coal that's particularly polluting in the atmosphere, as well as less efficient for heating. Its low value makes it uneconomic to transport far.

Most organisations using coal for these purposes are in the South Island - North Island boilers are more often fueled by piped natural gas, unavailable in the south.

**Major users are -**

**NZ Steel's Glenbrook Steel Mill** (South Auckland) – unlike steel mills elsewhere, Glenbrook was uniquely designed to burn thermal (sub-bituminous) coal, so does not need the coking coal that is exported, and was built near the Waikato coalfields. Glenbrook is the single biggest user of NZ coal.

**Dairy companies** - coal-fired boilers dry milk into milk powder and other products.

**Fonterra** is the 2nd biggest single coal user in NZ, most of its South Island plants using coal. Its big Edendale plant (Southland) uses lignite from Greenbriar's New Vale mine (near Gore); Clendeboye plant (mid-Canterbury) uses sub-bituminous coal from Bathurst's Takitimu mine (at Nightcaps) and Darfield plant uses sub-bituminous coal from Bathurst's Coalgate mine in the Malvern Hills. Fonterra's Waikato plants use local Waikato sub-bituminous coal.

**Synlait** dairy company (Dunsandel) uses Coalgate coal, but has plans to move to electricity.

**The coal, cows & climate connection** - cheap local coal enables/prolongs Fonterra's intensive farming model based on maximising cow numbers and high volume/low value commodity production. In turn Big Dairy provides a local buffer for Bathurst and other coal companies who would otherwise be dependent on volatile export coal prices.

Fonterra planned to expand its Studholme plant (South Canterbury) with more coal-fired boilers to service the planned big MacKenzie Basin dairy conversion. These plans are now on hold. Public opinion is reacting to the climate and ecological impact of coal - its carbon emissions and contribution to cow overstocking, degraded waterways and air pollution.

**Huntly Power Station** (Waikato) is the third<sup>d</sup> largest user of NZ's coal – mostly sub-bituminous from Bathurst's Rotowaro and Maramarua mines (Waikato). Huntly is the only NZ power station burning coal - ostensibly only to supplement hydro when the southern lakes are low. In fact Huntly uses coal when the price is right, whatever the weather.

**Other industrial users** - meat processing plants, hot-house horticulture etc, especially in South Island, use coal rather than electricity to power boilers for heat and steam because it is cheaper and available locally. New Vale and Takitimu mines (Southland) and Coalgate mine (Canterbury), as well as smaller mines around the South Island, service this market.

**Heating buildings** - schools, hospitals, universities, swimming pools, museums etc. Many South Island commercial and public buildings are still heated by coal-fired boilers, again because it is locally available and currently cheaper than electricity, users are unfamiliar with wood chips and boilers are a large long-term investment.

### **What are the alternatives to thermal coal for these uses?**

- Wood waste – currently most slash from plantation forestry is left to waste, or is burnt
- Electricity generated from renewable sources

### **What needs to be done to reduce demand for coal for these uses?**

- Stop any new investment in coal mines or coal-fired boilers
- Shift the incentive to use coal by a carbon price of at least \$50/tonne, raised at regular and pre-announced intervals to reach \$100 within a couple of years,
- Legislative and regulatory changes to ensure that, as existing heat plant reaches the end of its economic life, (or if it has an economic life beyond 2030) it is replaced by heating plant that is powered from renewable energy sources.
- Close Huntly, as was earlier intended, and move to renewable sources of energy – solar, wind, as well as reducing electricity demand by insulation and vastly improved energy efficiency.
- If hydrogen is used as an energy source for process heat, it must be generated by renewable means, not derived from fossil fuels
- Natural gas is NOT a “transition fuel” away from coal. It is fossil methane, much of which leaks out in its production and processing, with a very high carbon footprint.

### **Note on this fact sheet and table**

This fact sheet and the following table outline the larger mines currently in production, with their owners and customers. This is a snapshot in time (mid 2019), as mines open, close and change owners and customers over time.

*Main source: New Zealand Petroleum and Minerals (NZPAM), part of the Ministry of Business, Innovation and Employment [www.nzpam.govt.nz](http://www.nzpam.govt.nz)*

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Coalfield/location	Mine	Operator	coal type **	Production 2017 (tonnes)	Main customer
<b>WEST COAST</b>					
Buller/Denniston	Stockton + Cypress (Happy valley)	BT Mining	B	1,016,314	export
Greymouth/Blackball	Rajah (Roa)	Roa Mining	B	156,750	export
Reefton Inangahua	Giles Creek	Birchfield Coal	SB	104,339	Sth Is companies, incl Synlait, Ch Hosp
Reefton	Reddale Valley	Moore Mining	SB	20,627	boiler heating
Inangahua	Berlins Creek	Heaphy Mining	SB	20,372	boiler heating
<b>CANTERBURY</b>					
Coalgate	Malvern Hills / Canterbury Coal	Bathurst Resources	SB	117,255	Fonterra at Darfield
<b>SOUTHLAND</b>					
Waimumu	New Vale	Greenbriar	L	315,370	Fonterra at Edendale
Nightcaps	Takitimu	Bathurst Resources	SB	250,386	Fonterra at Clandeboye
Ohai	Ohai	Greenbriar	SB	?	?
<b>WAIKATO</b>					
Rotowaro	Awaroa	BT Mining	SB	658,818	Fonterra, Huntly, NZ Steel
Maramarua	Kopuku	BT Mining	SB	86,833	Fonterra, Huntly, NZ Steel
Huntly	O'Reilly's	O'Reilly's	SB	24,632	Huntly
<b>IN THE PIPELINE - new or may be reopened once prices rise</b>					
Near Geraldine South Canterbury	Albury	BT Mining	SB	plans to reopen small mine - for Fonterra at Studholme	
Buller Plateau	Escarpment project	BT Mining	B	"exploration & mining permits over 10,000 hectares" *	
Greymouth	Strongman & Liverpool	Birchfield	B	bought by local family from Solid Energy, may reopen	

\* <https://bathurst.co.nz/our-operations/escarpment/>

\*\* Coal Type: B = bituminous, SB = sub-bituminous, L= lignite