




From Wood to Watts

The Power of Wood Pellets



Abbey Roberts-Li





What are
wood
pellets?

Why do we
care?

What are
the
barriers?

So, what's
next?

What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?

What Are Wood Pellets?



What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?

White Wood Pellets



Source: NSW Climate Change Research Strategy – Biomass for Bioenergy – Pellets Factsheet



What are
wood pellets?

Why do we
care?

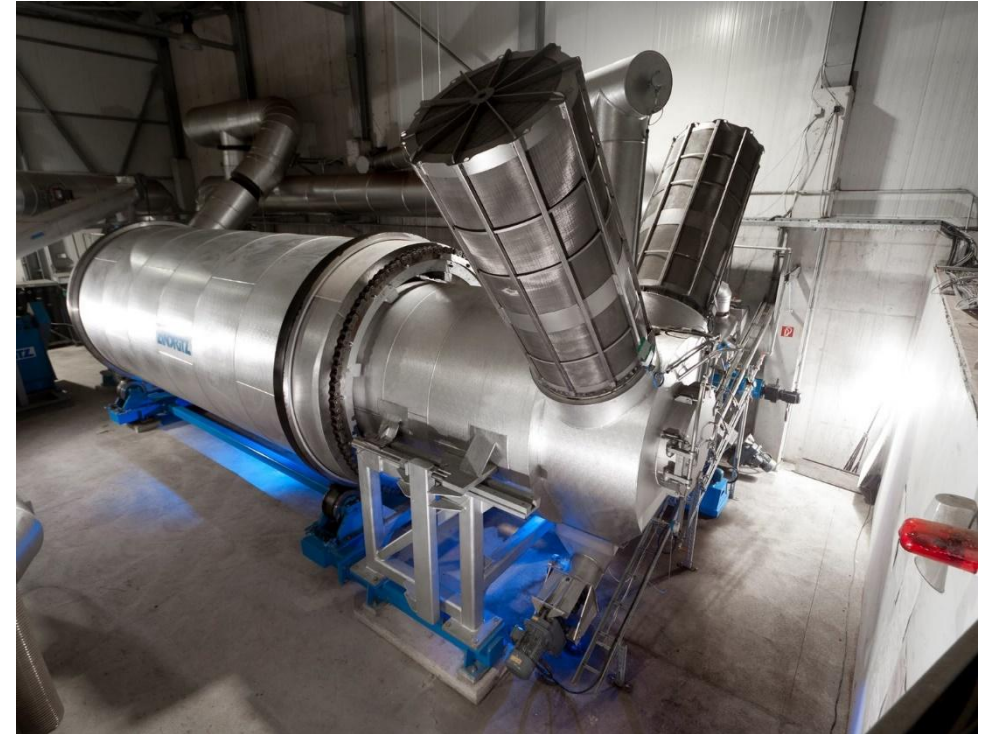
What are the
barriers?

So, what's
next?

Torrefied Black Wood Pellets



Source: <https://bioenergyinternational.com/airex-scaling-up-and-rolling-out-carbonfx/>



Source: <https://nextfuel.com/torrefaction-technology>



What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?

Steam-Exploded / Steam-Treated Black Wood Pellets



Source: <https://www.valmet.com/insights/articles/biofuels-and-biomaterials/black-pellets--a-replacement-for-fossil-coal-in-power-plants/>



Source: <https://www.arbaflame.no/technology-1>



What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?

What is the Difference?



	Wood chips	White pellets	Torrefied pellets	Steam Exploded pellets	Coal
Moisture content (wt%)	30-55	7-10	1-5	4-6	10-15
Calorific value (LHV, MJ/kg)	7-12	15-17	18-22	19-20	23-28
Volatile matter (wt%,db)	75-84	75-84	55-80	70-80	15-30
Fixed carbon (wt%, db)	16-25	16-25	22-35	23-30	50-55
Bulk density (kg/L)	0.20-0.30	0.55-0.65	0.65-0.80	0.75-0.80	0.80-0.85
Vol. energy density (GJ/m ³)	1.4-3.6	8-11	12-19	12-15	18-24
Hygroscopic properties	Hydrophilic	Hydrophilic	Moderately Hydrophobic	Hydrophobic	Hydrophobic
Biological degradation	Fast	Moderate	Slow	None	None
Product consistency	Limited	High	High	High	High
Transport cost	High	Medium	Low	Low	Low
Relative cost per GJ	Low	Medium	High	High	Low

Table 1: Key characteristics of fuels for power generation

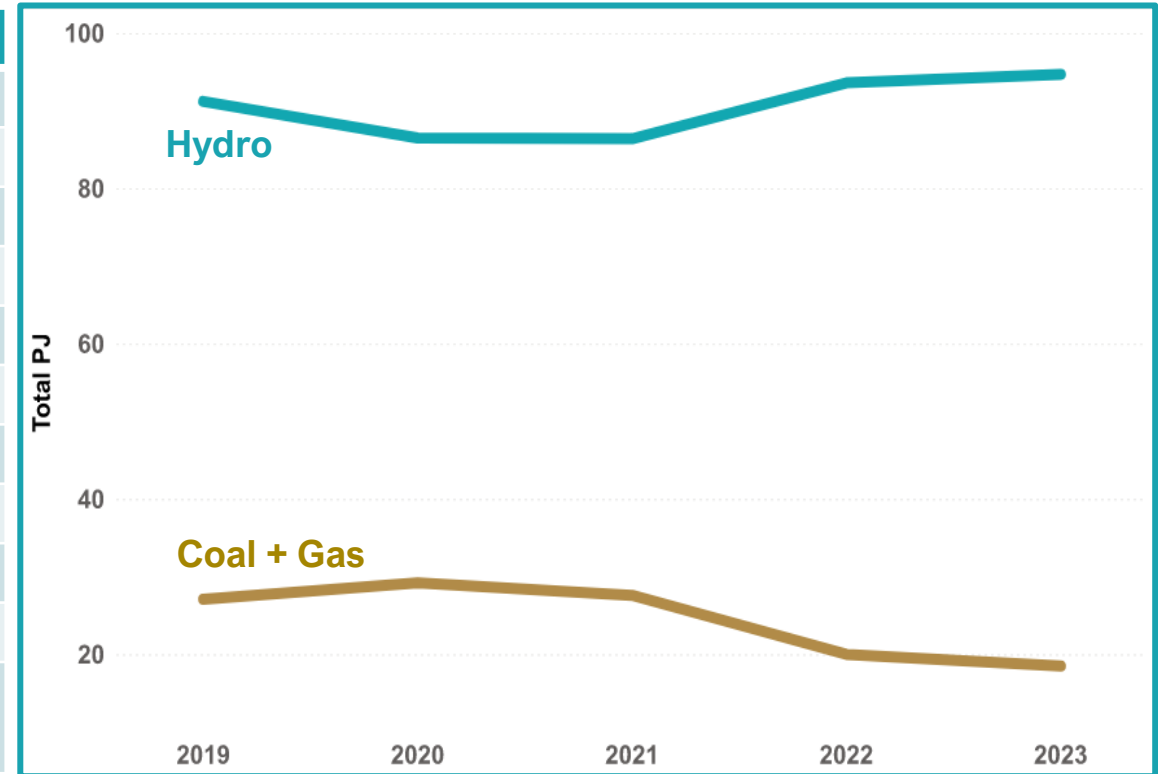
What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?

PJ, HHV	2019	2020	2021	2022	2023
Hydro	91.2	86.5	86.4	93.6	94.7
Geothermal	28.1	28.2	28.7	28.9	27.9
Biogas	1.0	1.0	1.0	1.0	1.0
Wood	1.7	1.7	1.7	1.6	1.5
Wind	8.0	8.2	9.4	10.2	11.5
Solar	0.5	0.6	0.8	1.0	1.3
Oil	0.0	0.0	0.1	0.0	0.0
Coal	7.6	7.8	10.9	4.5	3.7
Gas	19.5	21.4	16.7	15.5	14.8
Waste Heat	0.2	0.1	0.2	0.1	0.1
Net Generation	157.7	155.4	155.8	156.5	156.6



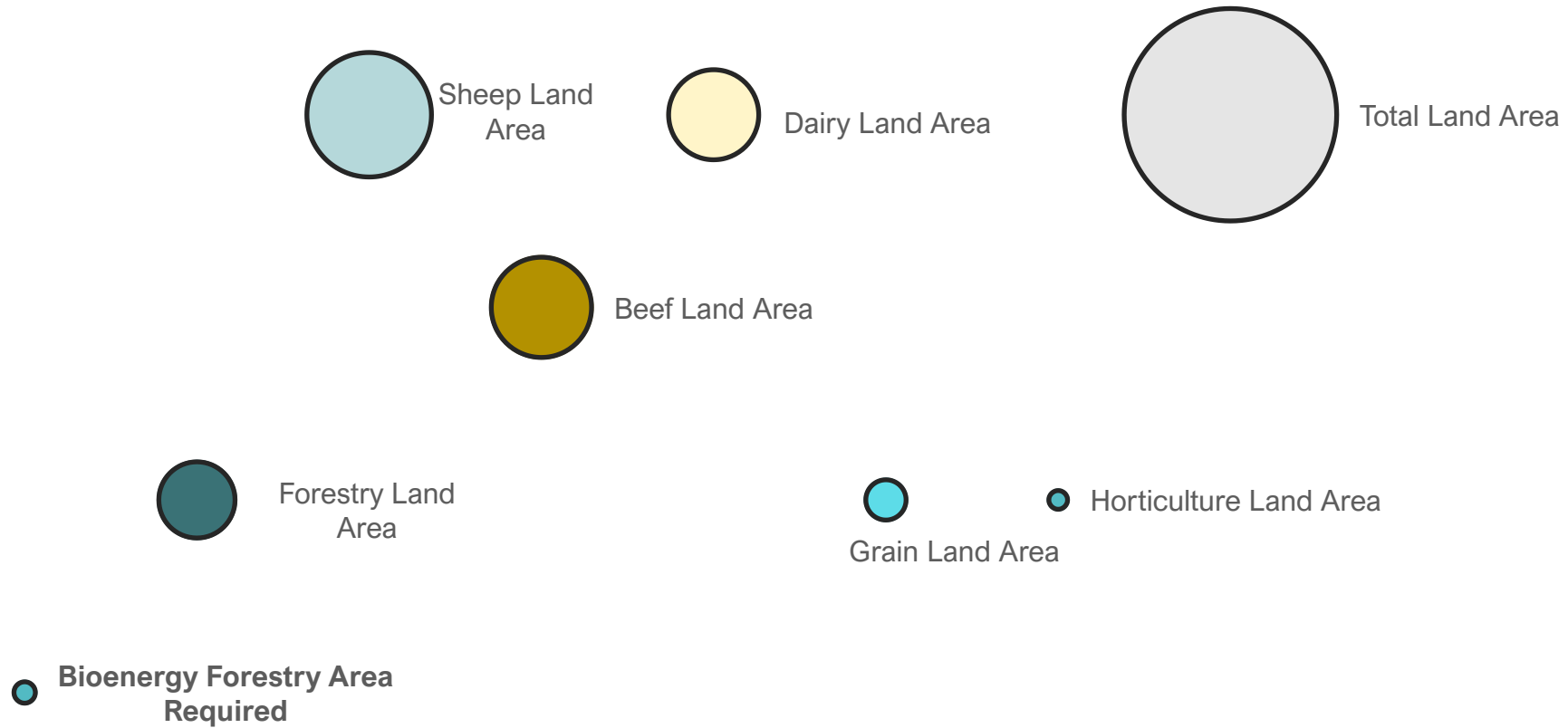
What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?

Relative Land Use Area in New Zealand



What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?



What are
wood pellets?

Why do we
care?

What are the
barriers?

So, what's
next?

Our clients & partners

Follow our progress..

Ministry for Primary Industries
Manatū Ahu Matua



Oji Fibre Solutions



Ignite your thinking

Our latest thought leadership

<https://www.beca.com/ignite-your-thinking/ignite-your-thinking>

wood+beca
global expertise local understanding

QUESTIONS?

