Presenter Introduction

Vaughan Bassett **BSc MBA**
Senior Vice President of Biomass Sales & Logistics

Responsible for sales and delivery of biomass to existing and potential third party customers globally.
Based in London, with teams in Vancouver, London and Tokyo.

An introduction to Drax

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Who we are

Our Purpose

To enable a zero carbon,
lower cost energy future

Our People

Valued members of a winning team
with a worthwhile mission

Our Vitals

- Total revenue in FY 2023: **£8,125M**
- Adjusted EBITDA: **£1,214M**
- Jobs supported: **35,300** across our own employees and our supply chain
- Where we operate: **North America, Europe & Asia**
- Wood pellets produced: **5.0 Mt**

A carbon removals giant pursuing negative emissions with sustainable biomass, renewable generation, BECCS and CDR's.

The Drax business in 2024

Our business is focussed into 4 main areas:

1 Flexible generation & energy solutions

- **c.0.4GW Pumped storage**
- **c.0.1GW Hydro**
- **c.0.9GW OCGTs**
- **Drax Energy Solutions (Electricity customers)**

2 Pellet production and sales

c.5Mtpa of wood pellet capacity
- 17 plants in Canada & USA
- High quality, sustainable fibre

Diversified global customer base
- Europe, UK, Japan, Korea
- Anchored by long term third party offtake & own-use

Purpose built pellet logistics
- 4 existing ports, 1 in development
- Low carbon rail and barge to port
- Innovative and flexible marine logistics solutions

Potential new capacity to c.8Mtpa

3 Biomass generation

c.2.6GW of flexible renewable generation
- Largest source of UK renewables by output
- Third party and own pellet supply

Strong forward power hedges (2024–2026)

Key asset to deliver BECCS in UK.

12% of UK renewable power.

4 Carbon Removals

c.£4bn investments by 2030
- 4Mt of BECCS in UK
- 3Mt of BECCS in US

Additional investment post 2030
- Ambition for >20Mtpa of carbon removals, mainly through BECCS

Where we produce wood pellets

Largest integrated biomass business globally

Strategically located in highly sustainable fibre baskets

- Ports
- Developments
- Operational Plants

18 operational and development sites, with nameplate capacity of around 5Mt once expansions are complete.

Five deep water ports, accessing Asian and European markets.

Our sustainable biomass business

Established, credible and sustainable wood pellet supply chain

- 18 operational pellet plants and developments
- 5Mt of operational production capacity and 0.6Mt in development
- Access to major Canadian and US fibre baskets
- Multiple ports geographically advantaged to service both Asia and Europe
- Best in class manufacturing, handling and logistics

Scaleable for growth to capture new biomass opportunities

- Biomass power generation
- Biomass co-firing generation
- BECCS projects
- SAF and gasification opportunities
- Industrial process heat applications

Value added proposition

- Technical knowledge on co-firing and biomass conversions
- BECCS knowledge
- Renewable liquid fuel technical understanding

Diversified North American supply chain

Decarbonisation opportunities in Japan

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Japan Power Generators at a glance in 2022

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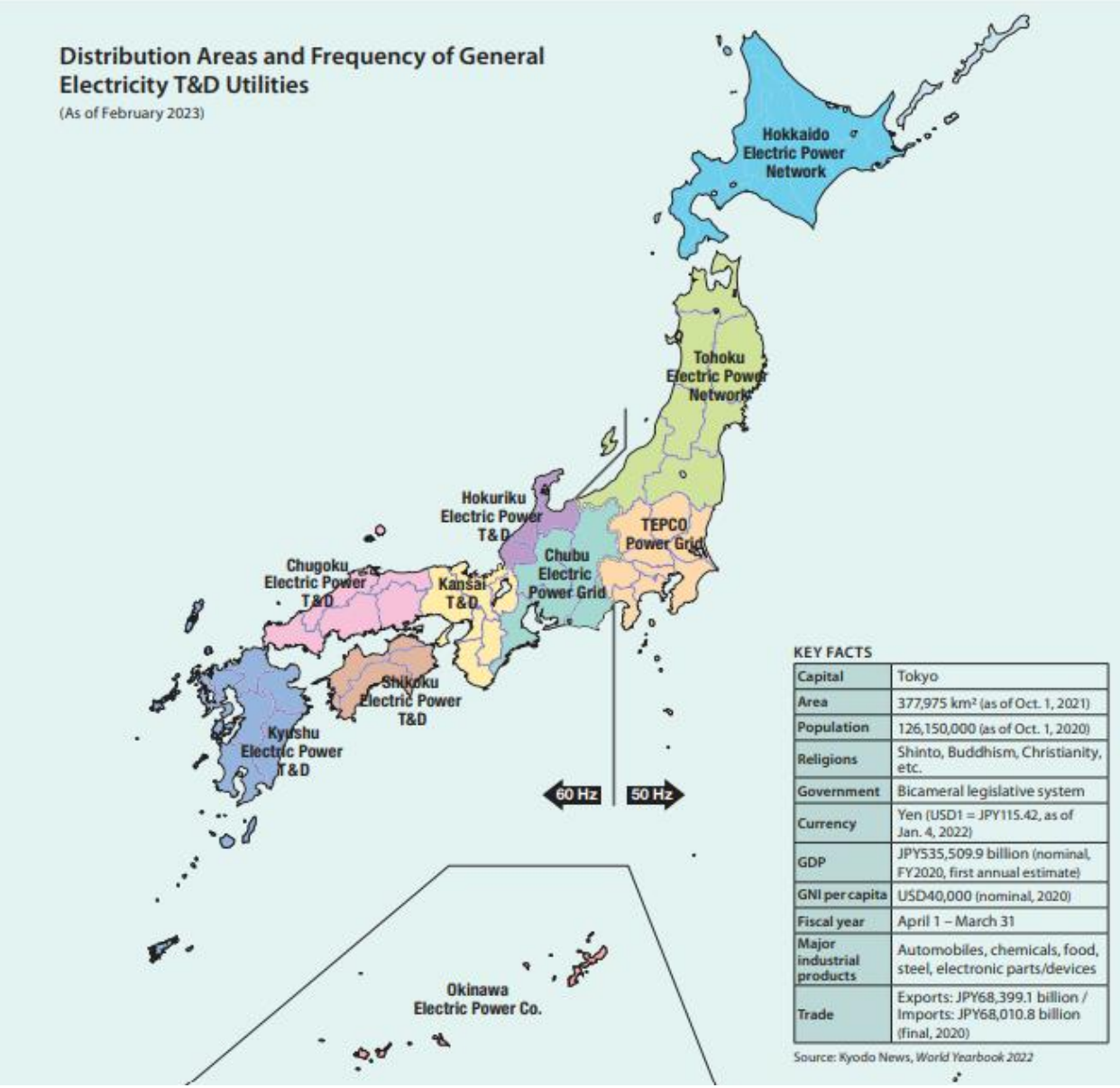


KEY FACTS

Capital	Tokyo
Area	377,975 km² (as of Oct. 1, 2021)
Population	126,150,000 (as of Oct. 1, 2020)
Religions	Shinto, Buddhism, Christianity, etc.
Government	Bicameral legislative system
Currency	Yen (USD1 = JPY115.42, as of Jan. 4, 2022)
GDP	JPY535,509.9 billion (nominal, FY2020, first annual estimate)
GNI per capita	USD40,000 (nominal, 2020)
Fiscal year	April 1 – March 31
Major industrial products	Automobiles, chemicals, food, steel, electronic parts/devices
Trade	Exports: JPY68,399.1 billion / Imports: JPY68,010.8 billion (final, 2020)

Source: Kyodo News, *World Yearbook 2022*

	FY 2022			Approved maximum output of power facilities (MW)**				
	Capital (¥m) Non-consolidated	Sales (¥m) Consolidated	Electricity sold retail (GWh)	Hydro	Thermal	Nuclear	Renewable (excl. hydro)	Total
Hokkaido EPCo	114,291	888,874	23,932	1,656	4,649	2,070	–	8,375
Tohoku EPCo	251,441	3,007,204	65,940	2,571	11,871	2,750	193	17,386
TEPCO HD	1,400,975	7,798,696	184,825	9,991	–	8,212	51	18,254
Chubu EPCo	430,777	3,986,681	101,658	5,467	–	3,617	89	9,173
Hokuriku EPCo	117,641	817,601	26,273	1,964	4,565	1,746	–	8,274
Kansai EPCo	489,320	3,951,884	111,565	8,248	13,711	6,578	11	28,548
Chugoku EPCo	197,024	1,694,602	45,328	2,907	7,354	820	6	11,087
Shikoku EPCo	145,551	833,203	23,413	1,153	3,235	890	2	5,280
Kyushu EPCo	237,304	2,221,300	76,546	3,589	8,035	4,140	214	15,978
Okinawa EPCo	7,586	223,517	7,073	–	1,629	–	2	1,631
J-POWER	180,502	1,841,922	0	8,577	8,412	–	555	17,544
JAPC	120,000	92,185	–	–	–	2,260	–	2,260

*Some consolidated data contains non-consolidated data.
**Calculated based on figures contained in the "key facilities" sections of financial statements.
Source: Compiled based on companies' financial statements (Japan Atomic Power Company data are from summary statement of business)

Note: The existing thermal power generation businesses of Tepco Fuel & Power, Inc. (a subsidiary of TEPCO HD) and Chubu Electric Power Co., Ltd. were integrated into JERA Co., Inc. on April 1, 2019.

JERA	100,000	7,945	–	–	54,843	–	–	54,843

Source: Financial statement

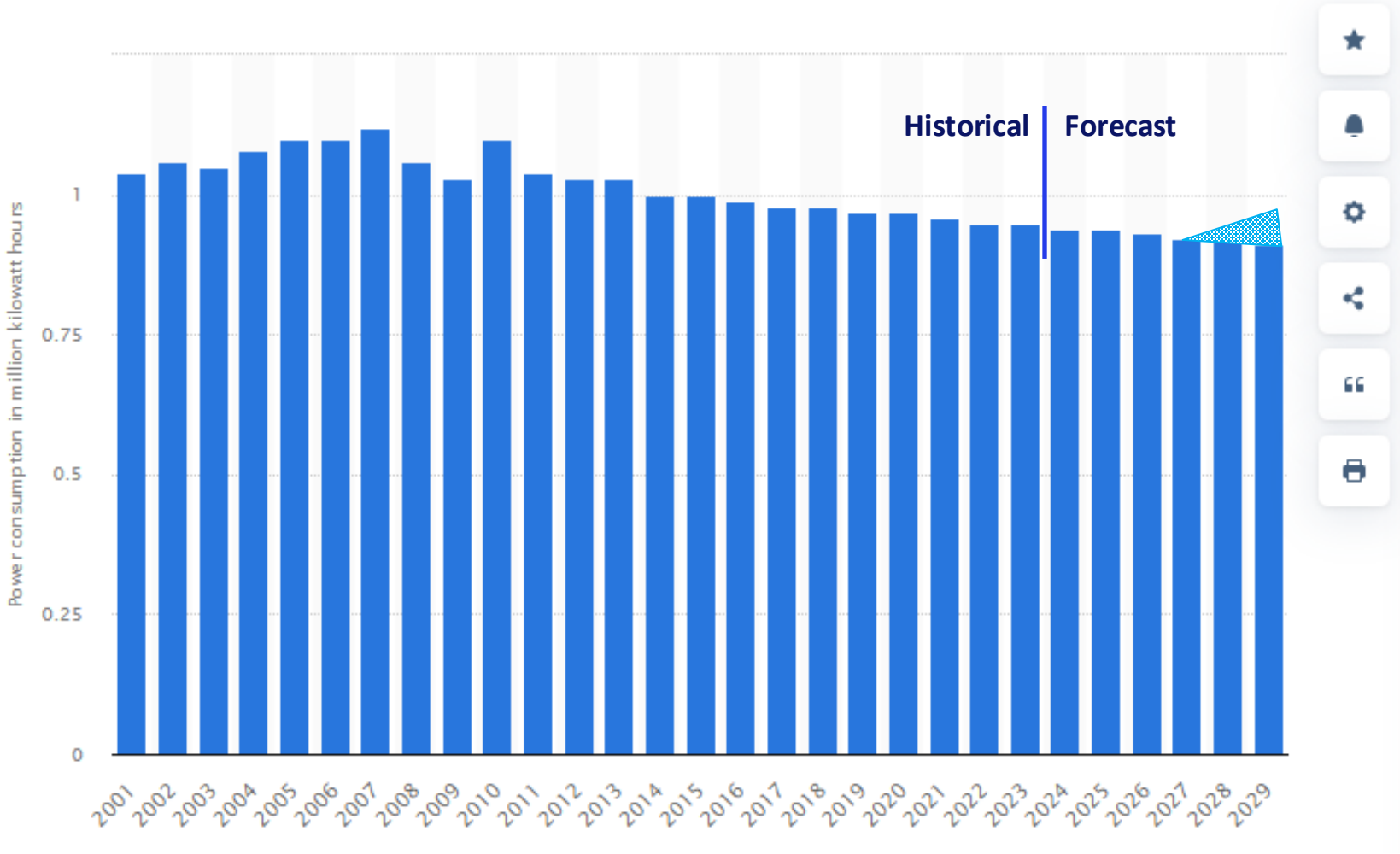
Totals per category by capacity 23% 60% 17% 1% 100%

Source : https://www.jepic.or.jp/en/data/pdf/epjJepic2023.pdf

Japan Electric Power Demand Trend

Total consumption of electric power in Japan from 2001 to 2029

(in million kWh)



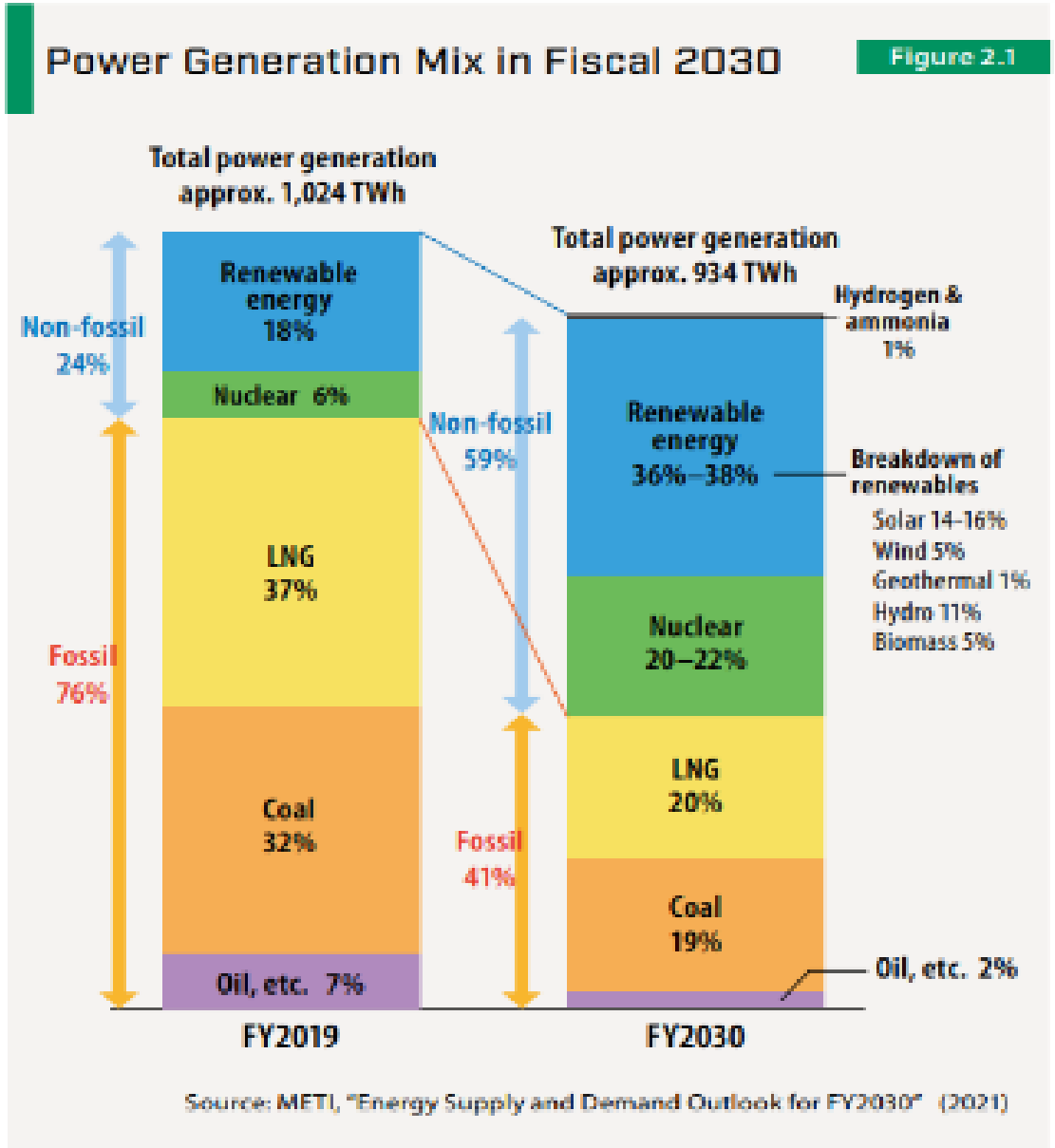
Various factors, including:
- Reduced manufacturing demand
- Declining population
- Increasing electricity prices
- Warmer weather
- General adjustment post Fukushima

Despite:
- increased consumption in the transportation sector

Giving rise to:
- Improved energy efficiency
- Higher levels of energy conservation
- Increased energy independence

With recent revisions (light blue) due to:
- Semi-conductor manufacturing growth
- Data center growth

Japan Energy Mix



Source : https://www.jepic.or.jp/en/data/pdf/epijJepic2024.pdf

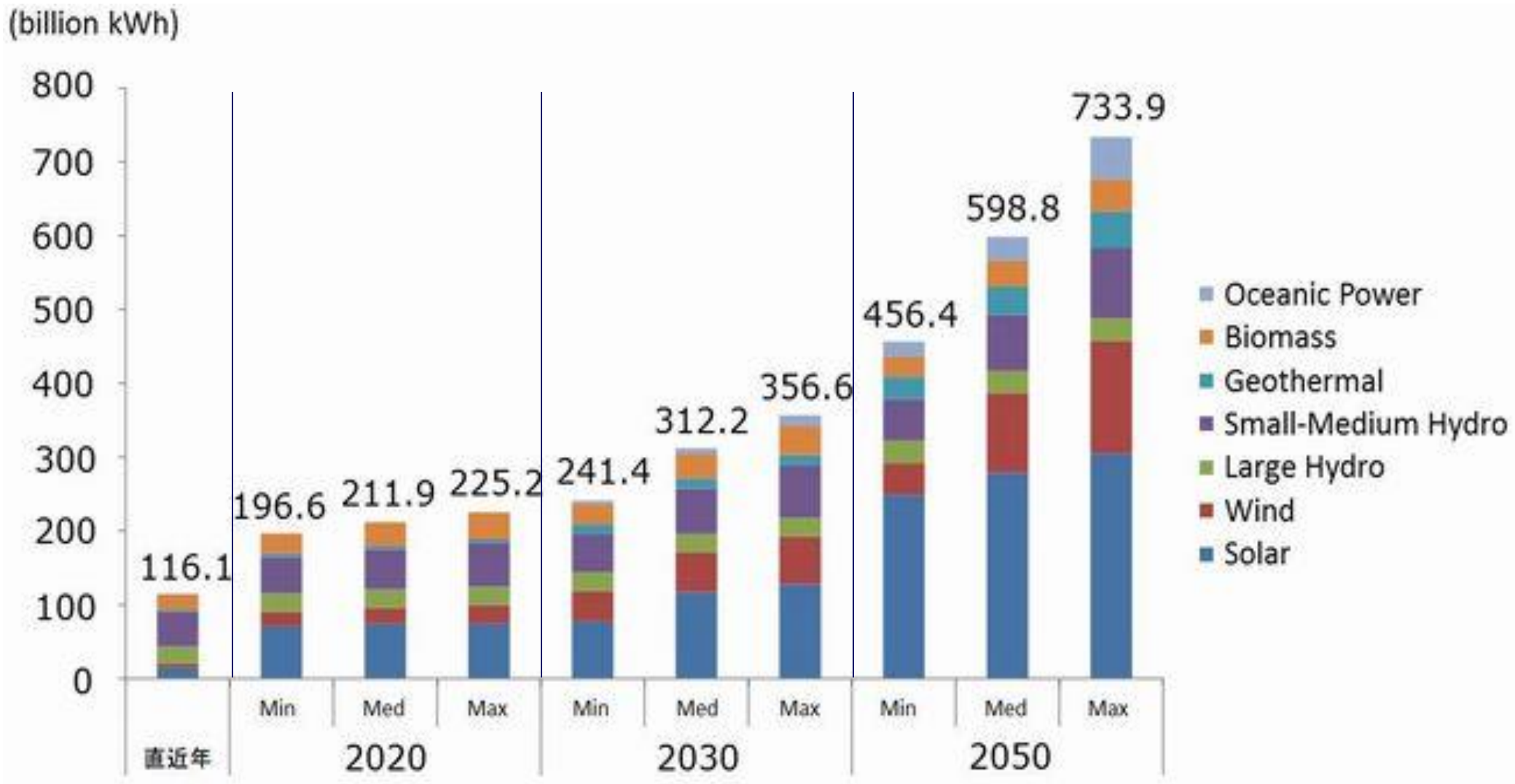
METI released in 2020 its intended Power Generation Mix for Fiscal 2030, of which Renewable energy is to take up 36 – 38%.

Japan Electric Power Information Center, Inc. (established in 1958) has announced in its 2024 report that at the end of fiscal 2022 total generating capacity in Japan was 318.6GW, of which Biomass and Waste generating capacity came to 6.7GW, which was 2.1%.

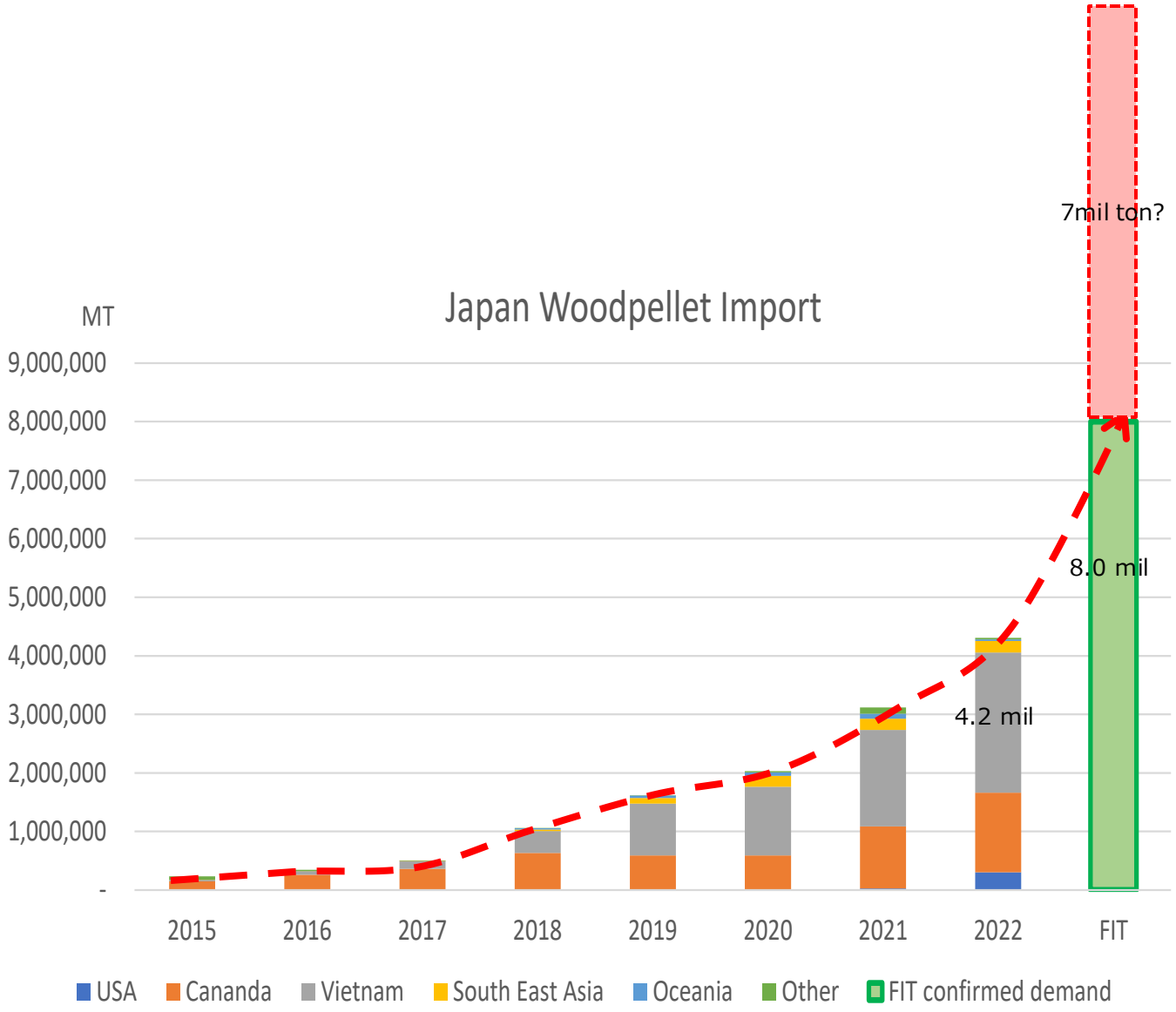
The report says "Biomass is being increasingly introduced as a power source that can help to strengthen disaster resilience, even when compared with other variable renewable energies (Solar and Wind)".

The target for biomass remains 5% of the total mix by 2030, roughly 47 TWh, or the equivalent of 25 million tons of Canadian wood pellets.

Renewable energy growth projection by demand scenario, next 10 years



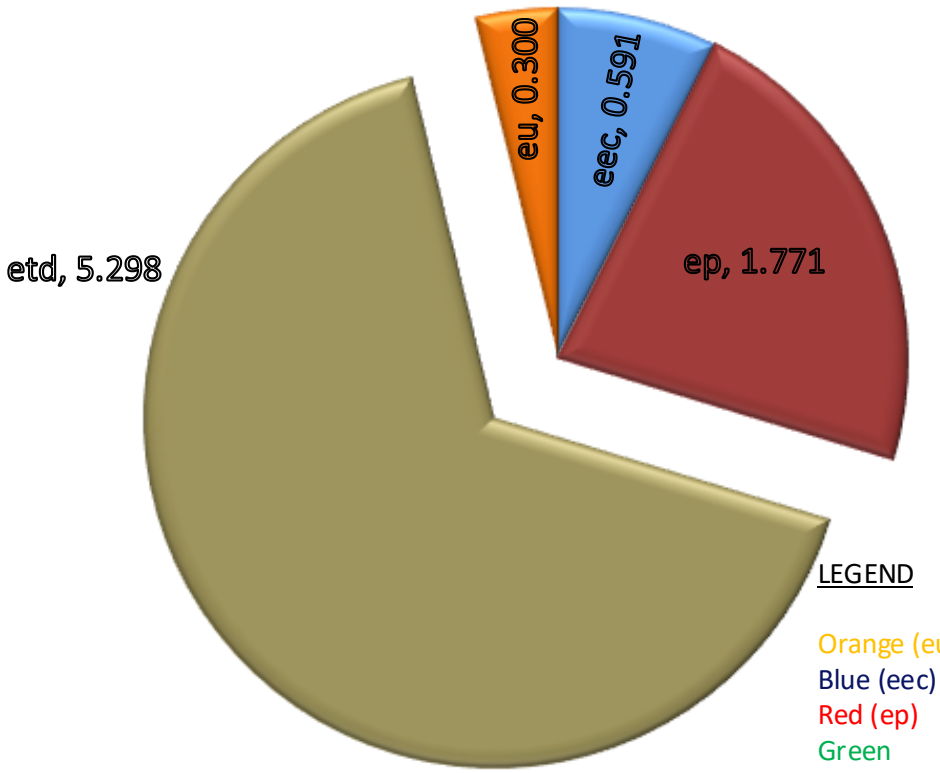
De-carbonisation driven demand for biomass in Japan



- Contracted FIT demand should require 8Mtpa of biomass.
- Non-FIT demand to reach 43% efficiency could add a further 7Mtpa on top of this.
- Long term de-carbonized power source auctions to be held (first bid in Jan 2024).
- 20 year support of fixed costs, including fuel supply chain.
- Evolving policy and support mechanism.

Understanding GHG in the wood pellet supply chain

WPAC STUDY IN 2022 (17 pellet plants in Western Canada)



LEGEND

Orange (eu)	Emissions from biomass fuel in use (utility)
Blue (eec)	Emissions from extraction or cultivation of raw materials (fibre)
Red (ep)	Emissions from processing (pellet plant)
Green	Emissions from transport (entire supply chain)

KEY FINDINGS:

- Western Canada Provides Exceptional GHG Results for Japan.
- High quality wood pellets producing a weighted average of 18.045 GJ/MT.
- One of the shortest voyages from a globally significant pellet producing region.
- Canadian wood pellets burned in Japan produced 8.37% of the GHG emissions from equivalent coal.
- Alabama wood pellets burned in Japan produced 20.08% of the GHG emissions from equivalent coal.
- Ocean transportation by vessel is the single largest GHG contributor.

etd	default value gCO2/MJ	gCO2/MJpellets SGS
diesel	95.1	1.409
power	3.6	0.000
HFO	94.2	3.890
total emissions transport		**5.298**

So, what can we do?

Physical properties of the wood pellets
- Bulk density
- Calorific value

Vessel size (handy to panamax)
- Remove the CO2 fitted fire retardation system (panamax)
- Lift port restrictions in Japan (larger handy's)

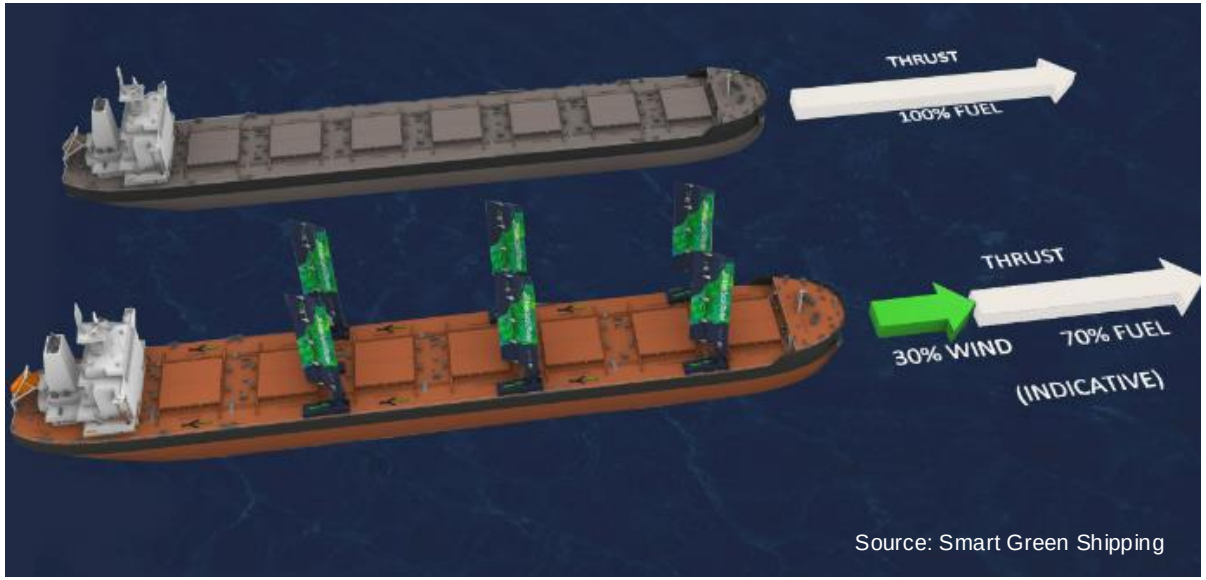
Vessel performance
- Loading and unloading metrics
- Stowage factor (hold configuration, trimming)
- Fuel consumption metrics

Renewable fuels
- Methanol
- Ammonia

Propulsion assistance
- Wind
- Pellets

Wind Assisted Shipping

- Wind has powered ships globally for many centuries, and provides a totally free, zero carbon, means of propelling vessels
- Technology has moved on from the tall ships of the Spanish Armada, to offer modern technological sail systems that assist in propelling the large bulk carrying vessels of the classes we use to transport sustainable wood pellets globally
- Trials have shown that wind assistance can reduce fuel consumption by as much as 30% at any time, and more typically 5-8% across long term voyages #
- Drax have worked with a start up “Smart Green Shipping” on FastRig sails, as well as larger freight providers such as MOL who we have an MOU in place with, to bring wind assisted shipping to the market, and crucially to vessels of the classes we charter



Fuel savings are route dependent and vary with wind strength but ultimately weather routing will optimise passages to best utilise the natural strength of the wind

Initial designs for SGS Fastrig – a project Drax has supported since 2014

1st full size prototype in Hunterston before deployment to seagoing trial vessel late 2024

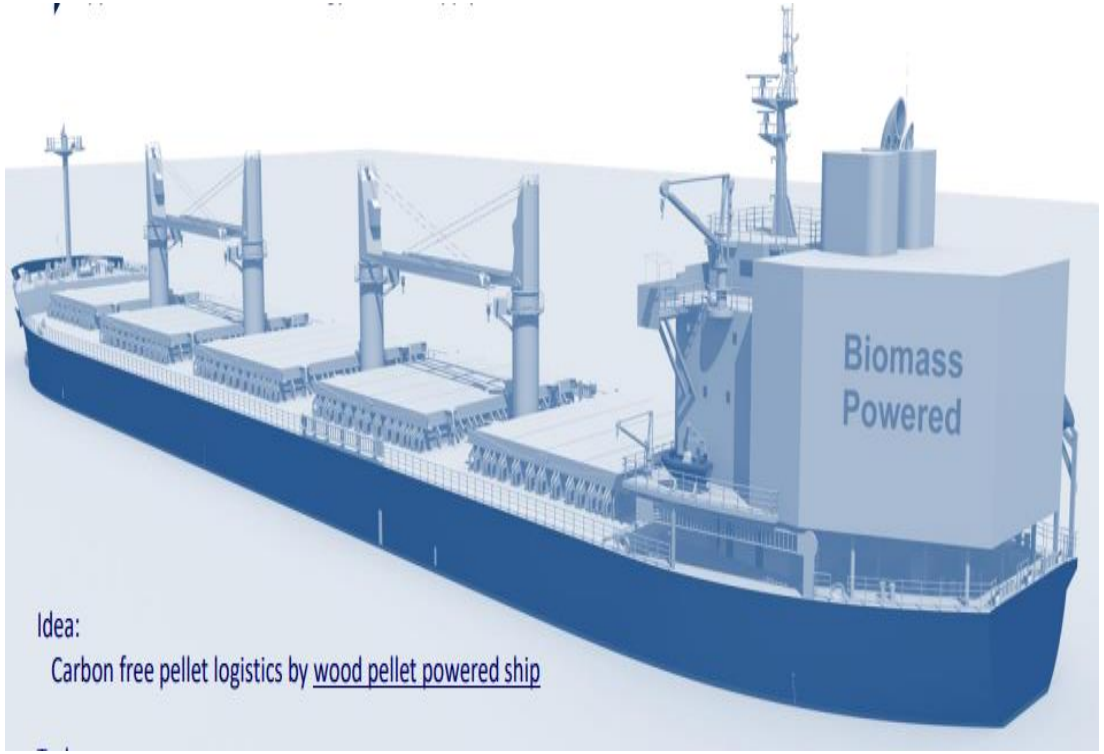
MOL’s second Wind Challenger deployment July 2024

In future wind propulsion can reduce consumption of expensive alternative fuels

MOL: World's first Wind Challenger-equipped coal carrier achieves fuel savings of 17% - Offshore Energy (offshore-energy.biz)

Pellet Power Propulsion

- With the passing of time, the energy used to power ships changed from manpower and wind power to coal in the 19th century, and then to oil in the 20th century which increased global greenhouse gas (GHG) emissions.
- The International Maritime Organization (IMO) have challenged the International Maritime Sector to reduce GHG emissions from vessels by 30% by 2030 and by 80% by 2040 (in comparison with 2008 emissions)
- As part of the solution, DRAX have challenged Vessel Owners to develop a wood pellet fuelled vessel that would utilize gasified biomass to produce the energy required to run the generator which will ultimately propel the vessel. Thus reducing GHG emissions by approx. 22% while burning a carbon neutral fuel.
- Drax are working with Japanese Shipowner NYK Global Bulk to develop a vessel to trade in the Pacific Basin to deliver biomass from North America to Japan.
- The project is within development stage, with designs to be finalized by the end of 2024.
- 2025 will see prototype testing and modifications
- 2028 is target delivery for the first Pellet Power Propulsion Vessel.



Thank you

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