



Pacific BioEnergy

# *Japanese Market for Pellets*

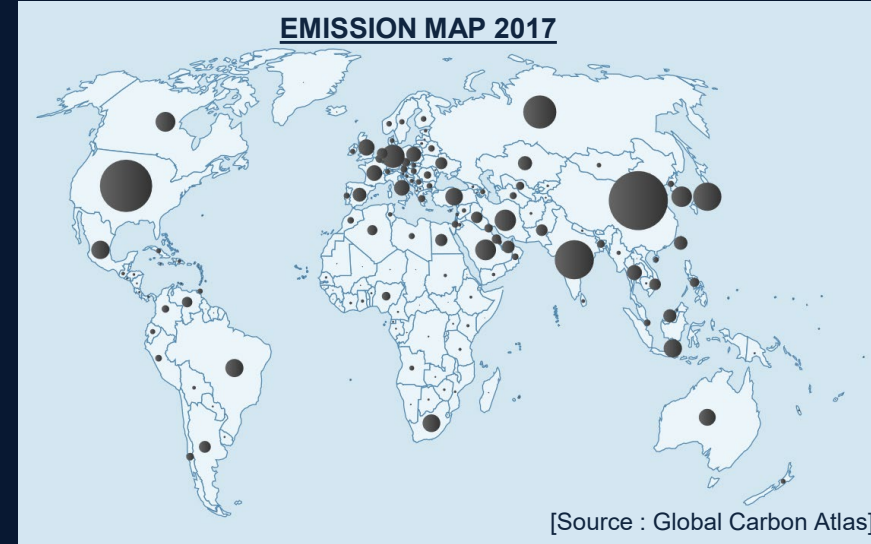
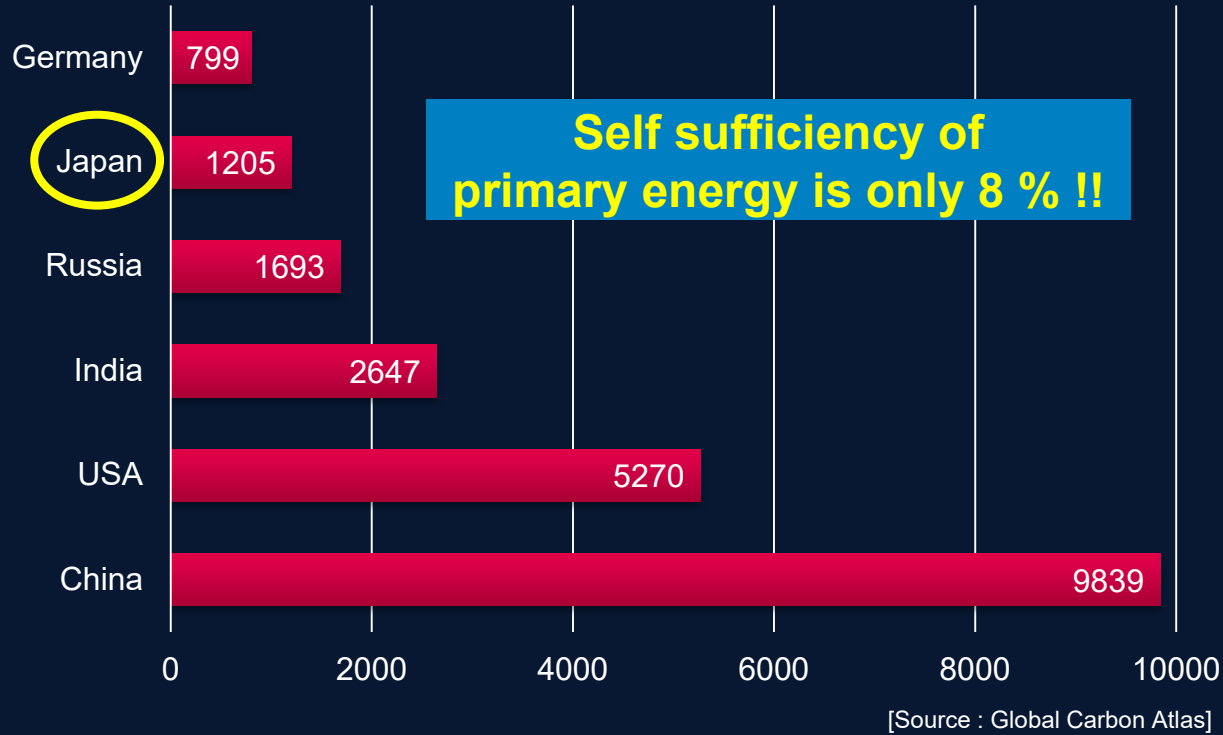
*John Stirling*  
*President*

JANUARY 24, 2019



# CO2 Emission in JAPAN (5<sup>th</sup> in the world) & still heavily dependent on fossil fuel

CO2 Emission World Ranking 2017 (MtCO<sub>2</sub>)

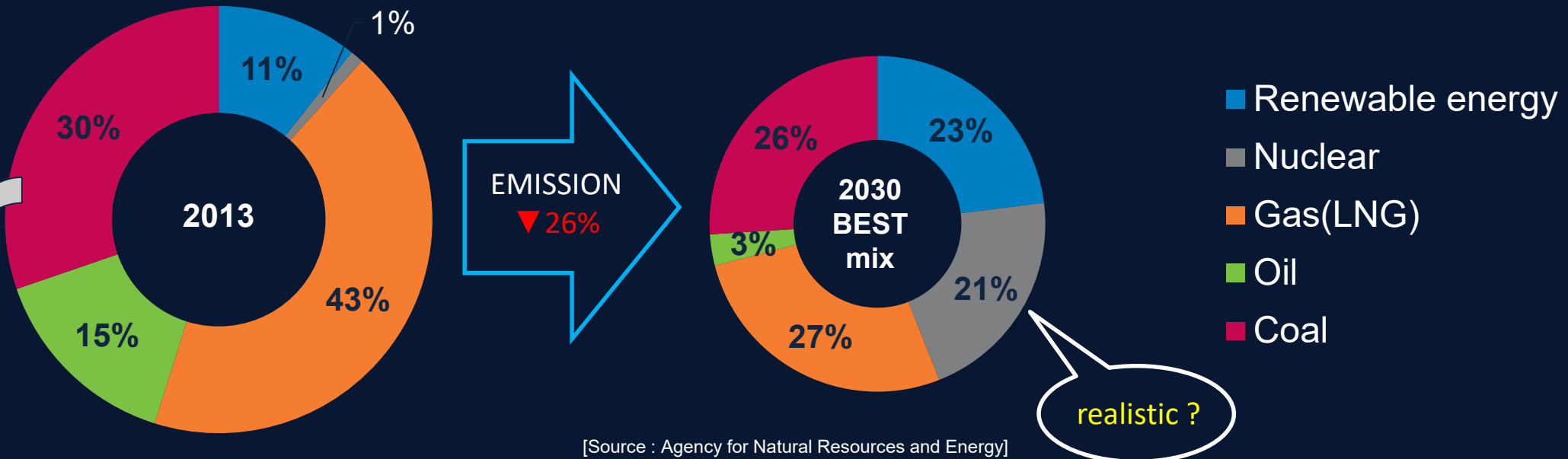


Increased CO<sub>2</sub> emissions after Fukushima (2011)  
No significant reduction has been seen yet

Fuel	2011	2017
Nuclear	29%	2%
Gas (LNG)	29%	42%
Coal	25%	32%
Oil	7%	9%
Renewable	9%	15%

[Source : Agency for Natural Resources and Energy]

# JAPAN's Energy BEST mix in 2030 (to reduce emission down to 0.37kg-CO2/kWh)



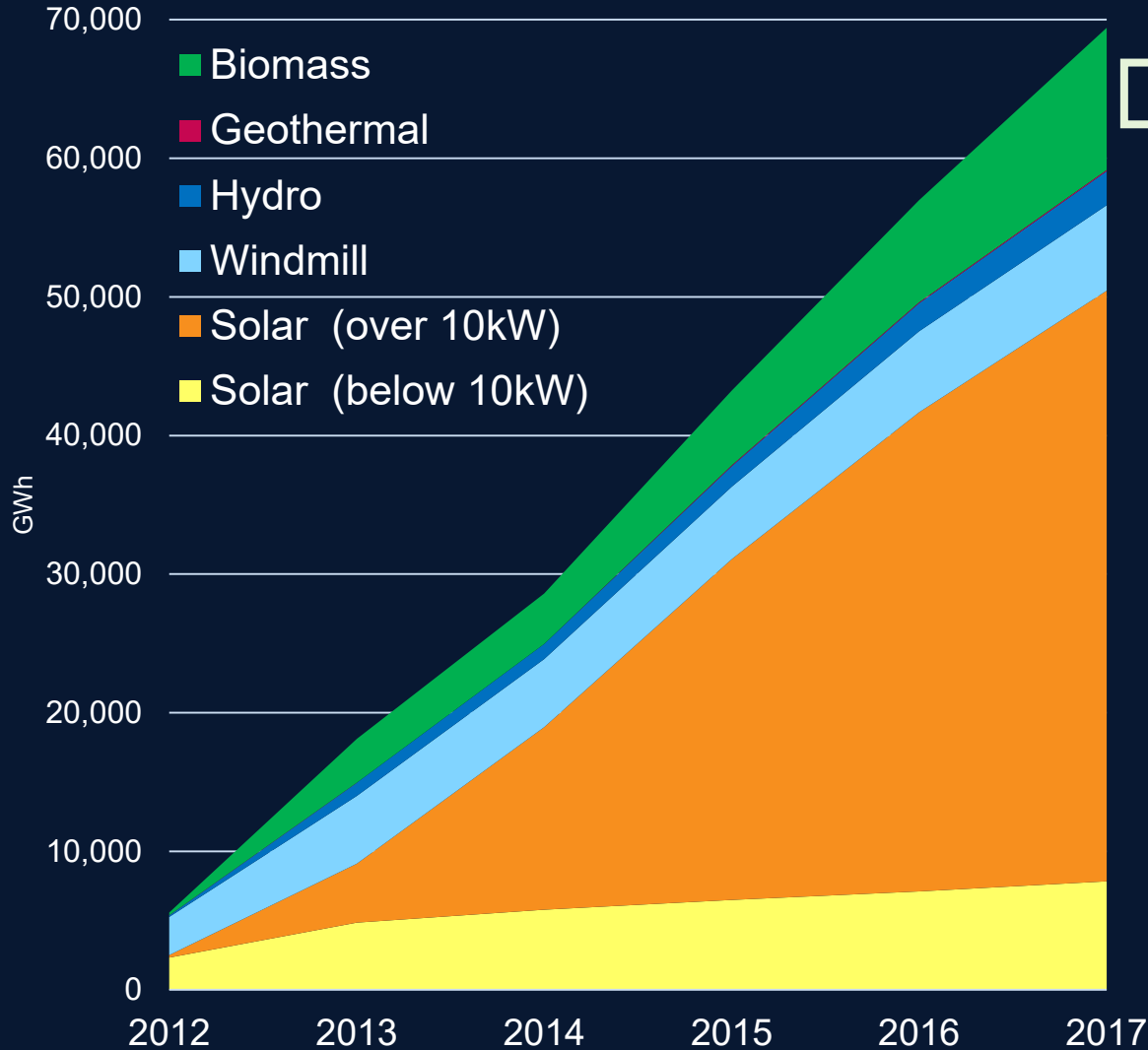
**Coal Thermal Power is required to reduce emission factor**

From 0.887 to 0.82 (kg-CO2 / kWh)

- + Make up with other renewable energy projects
- + Adopt new technology to improve efficiency
- + Biomass co-firing (\*) → demand growth

(\*) To calculate generating efficiency, co-fired biomass can be deducted from all fuel input which mathematically improves efficiency.

# FIT Transaction started soaring with Solar and followed by Biomass



[Source : Agency for Natural Resources and Energy]



**Demand of Woody Biomass is increasing**

**\* e.g. WOODPELLET IMPORT RECORD**

(MT)	2014	2017
British Columbia	90,676	338,896
Vietnam	1,979	67,279
China	0	5,592
Others	4,090	9,578
<b>Total</b>	<b>96,745</b>	<b>421,345</b>

[Source : Sumitomo Corporation]



# Overseas Biomass Demand in Japan is rapidly growing by FIT / Co-firing demand

Potential Demand by 2030

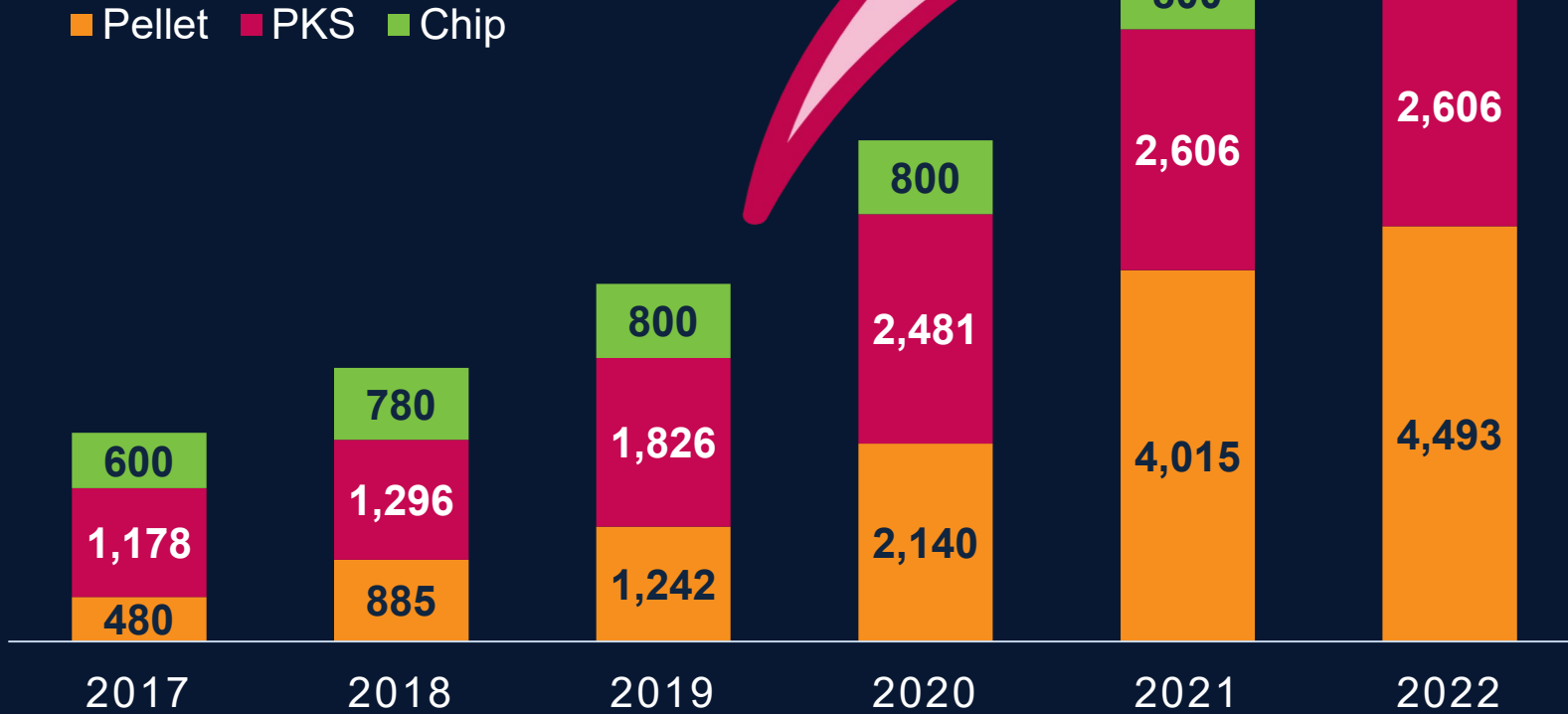
15 – 20 million MT

**Chip** : Not apt for co-firing  
Storage issue

**PKS** : Uncertain Sustainability  
Environmental issue

**Pellet** : Heavy competence in material procurement

Black Pellet  
Torrefied Pellet



[Source : Sumitomo Corporation]

## Challenges for of Biomass Power generation in Japan

- **Many Qualified FIT project promoters have not materialized**

*Because*

- **Many Optimistic projections from experience of Solar**
- **Project finance failed because Fuel procurement is not reliable**



**FIT project needs biomass supply sources with**

- **more secured feedstock**
- **reliable long term performance**
- **compliance with sustainability goal**

## Pacific BioEnergy Corporation group



- Established in 1994 (most experienced in woodpellet)
- Group production capacity : 550,000 Mt / yr (2<sup>nd</sup> largest supplier in Canada)
- Owns Annual Allowance Cut License (secured its own controllable feedstock)
- Partnership with Sumitomo Corporation in 2017 (market access in Asia)
- Newly signed 10-15yrs long term contract w/ 2 Japanese utilities. (Dec 18)



*Growing business  
with trust*

***Thank you for your attention***

***Questions ?***



***End***