

# FutureMetrics

RESEARCH, ANALYTICS, EXPERT ADVICE

## Global Pellet Market Outlook

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# *FutureMetrics*

***Intelligent Analysis, Market Intelligence, Operations Guidance, and Strategic Leadership for the Pellet Sector***

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# Senior Members of the FutureMetrics Team



Dr. William Strauss, President

**Named one of the most influential leaders in the biomass sector in 2016 and 2017 by Argus Media. Recipient of the 2012 International Excellence in Bioenergy Award. A leader in the industry for two decades.**



John Swaan, Pellet Plant Operations

**Recipient of the 2014 International Founders Award. Founder of Pacific BioEnergy and producer of the first shipment of wood pellets from North America to Europe (1998). Leading expert on pellet plant operations.**



Seth Walker, Senior Economist

**A leading and often cited researcher, analyst, and author in the wood pellet sector. Has presented at dozens of conferences throughout the world.**



Laurenz Schmidt, Technology Specialist

**Globally respected expert in thermodynamics and mass and energy flow dynamics. Has authored FutureMetrics analyses of steam exploded pellet production.**

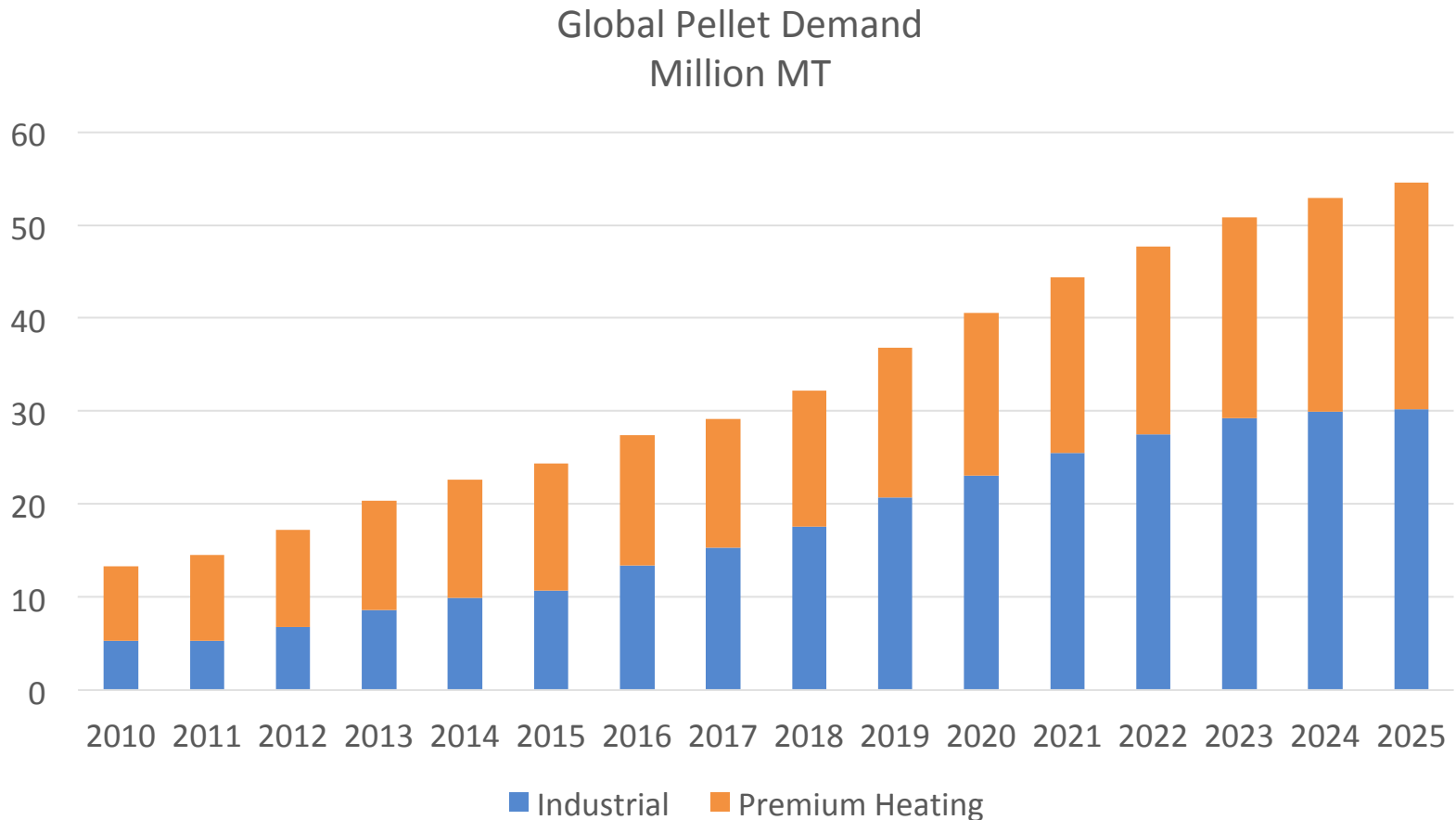
# Consultants to the World's Leading Companies in the Wood Pellet Sector

Selection of Current and Recent Clients



## Two major markets for pellets:

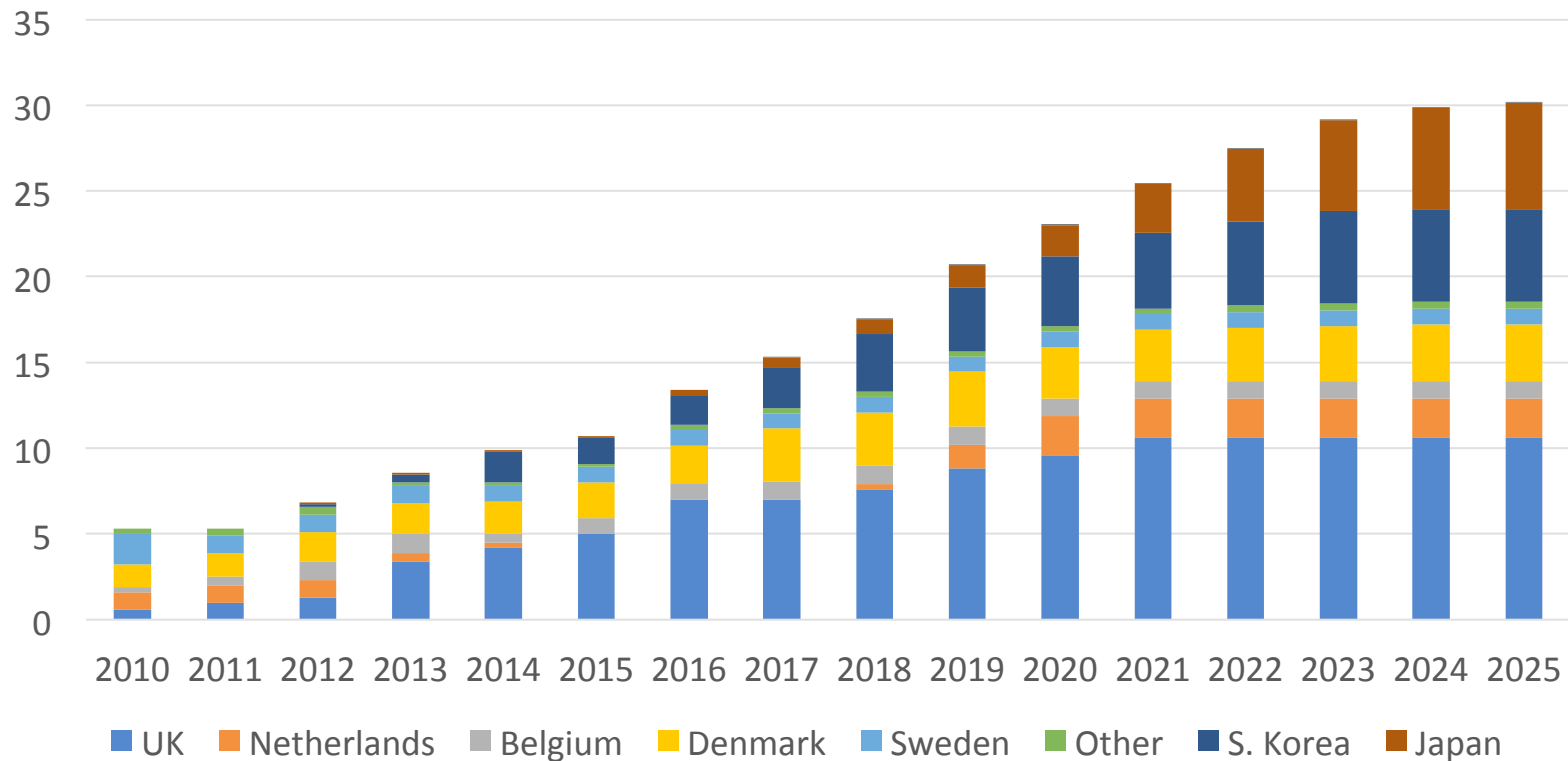
- (1) **Industrial pellets** used as a substitute for coal in large utility power stations;
- (2) **Premium heating pellets** used in pellet stoves and pellet fueled central heating systems.



## Industrial Pellet Demand

- Motivated by policies that promote renewable energy and/or the reduction of GHG Emissions
- Primarily in countries with limited domestic resources (small size, large population) and historic reliance on coal
- First Northwest Europe and UK now North Asia

Global Industrial Pellet Demand  
Million MT



# European Industrial Pellet Markets

- UK – increasing from 7 – 10.5 million MT
  - Drax 4<sup>th</sup> unit conversion
  - Lynemouth + MGT Teeside
- Netherlands – co-firing to resume
  - RWE: Amer 9, Eemshaven; Uniper: Maasvlakte; Engine: Rotterdam
  - Major point of contention – shuttering of coal plants by 2030 (2024)
- Denmark – 2<sup>nd</sup> biggest importer in 2017
  - Heat > Electricity
  - More than 64% of Danish households get heat from district heating
- Belgium – “steady state” at ~ 1 million MT
  - Could Langerlo be revisited?

# Asian Industrial Pellet Markets

Japanese and Korean wood pellet imports have increased 15-fold from 2012 to 2017, from 194,000 MT to 2.9 million MT

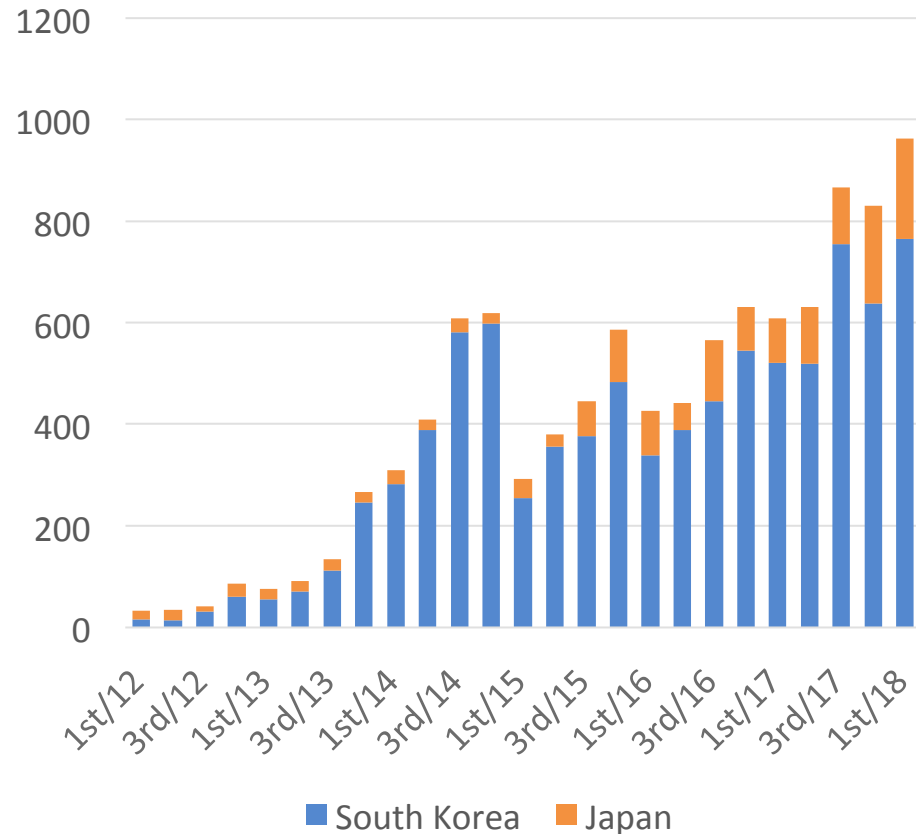
**In 2017:**

Korea imported 2.4 million MT a 41% increase from 2016

Japan imported 506,000 MT, a 46% increase from 2016

*Most of the growth in pellet demand forecasted over the next 10 years will occur in Asia*

Quarterly Asian Wood Pellet Imports  
Thousand MT



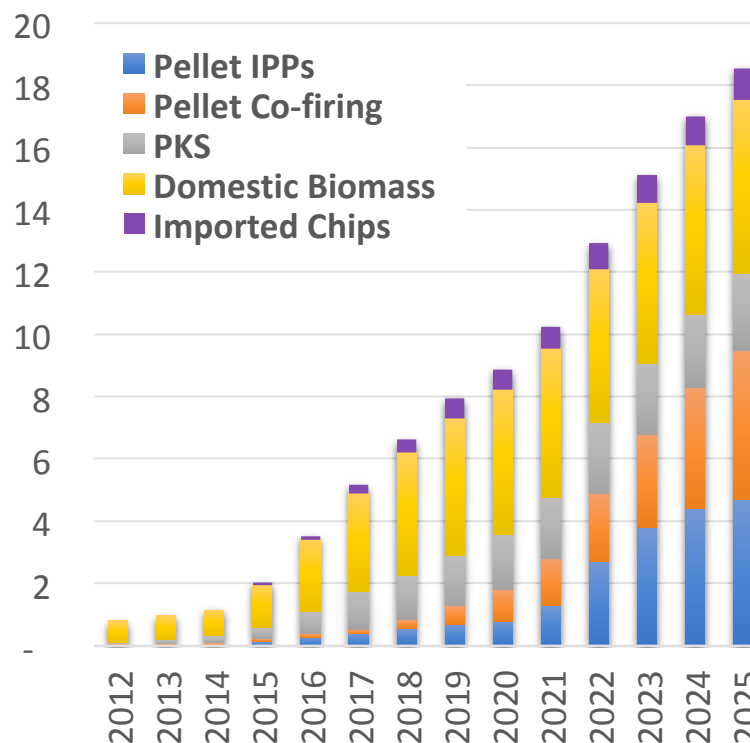


# Japan

## *Two distinct Markets*

1. Dedicated biomass Independent Power Producers (IPPs)
  - Motivated by FiT for renewable energy
2. Co-firing at major coal stations
  - Some support from FiT
  - Efficiency standards
  - Emissions intensity reduction

Japanese Biomass Demand  
Million MT (pellet equivalent)



# Korea's RPS

- Renewable energy promoted by the country's Renewable portfolio Standard (RPS).
- Renewable Energy Certificates (RECs) used to demonstrate compliance.
- Utilities must generate or buy REC's to meet their RPS obligation, or pay a fine of 150% of the average REC price.

\*Current REC price (110,301 KRW/US\$102.41) on 5/25/18

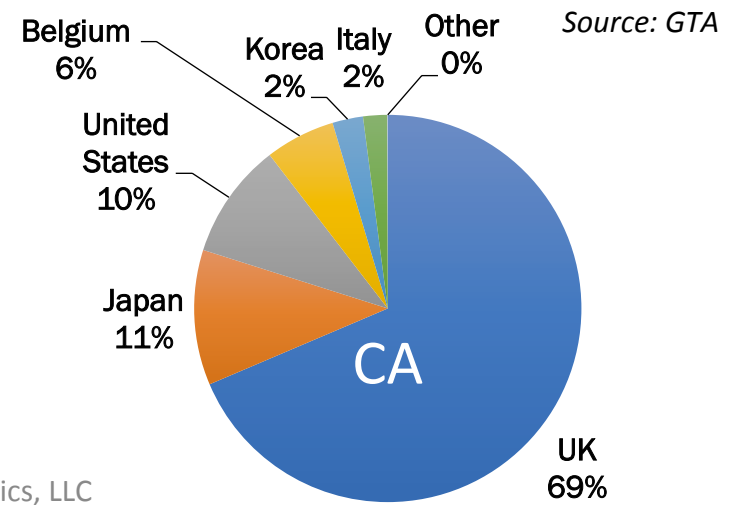
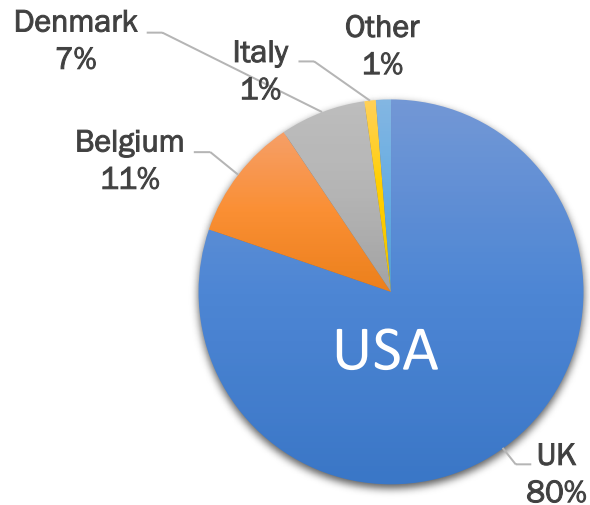
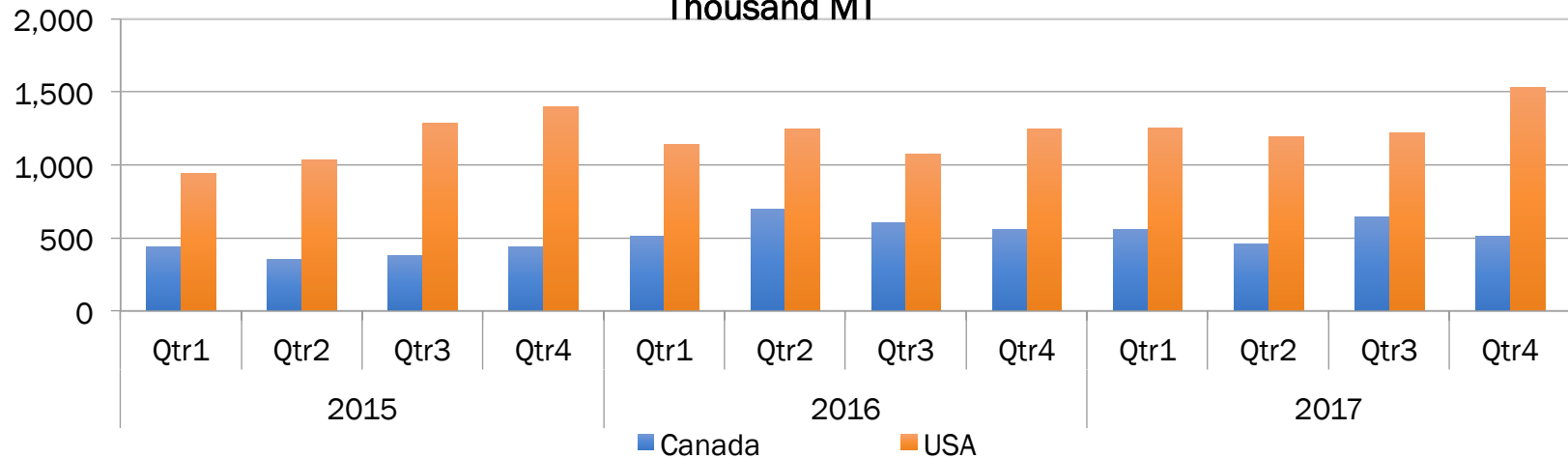
## Challenges:

- Uncertainty in subsidy value (tradable market for RECs)
- Limitations on l/t contracts (tendering system used)

2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
2.0%	2.5%	3.0%	3.0%	3.5%	4.0%	4.5%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%

# North American Pellet Exports

Quarterly Wood Pellet Exports  
Thousand MT



Source: GTA

# New Pellet Production Regions

- Vietnamese pellet production increased to 1.6 million MT in 2017
- Elsewhere in Southeast Asia (Malaysia, Indonesia, Thailand) pellets more than doubled from 298,000 MT in 2016 to 628,000 MT in 2017
- Australia – Plantation Energy and Altus re-starts
- US Northwest – several projects in development
- Brazil – a few flops (Suzano), alternative feedstocks?

