

SOPPOA POMtec 2023

Toward Sustainable & Value-Added Business Operation

Date: 8-9 August 2023

Venue: Imperial Hotel, Miri, Sarawak



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- Biomass Pelleting Technologies
- EFB Pelleting Challenges
- Market Demand for PELLET
- About Treehouz Asia

— WOODY BIOMASS PELLET IN MALAYSIA



**Plantation / Forestry /
Municipal Waste**

Offcuts
Sawdust



**Plantation / Forestry /
Municipal Waste**

Rubber Wood
etc



Fast Growing Crops

Acacia
Jabon*
Bamboo*



— PALM BIOMASS PELLET IN MALAYSIA



Empty Fruit Bunch (EFB)



Oil Palm Trunk (OPT)



Palm Kernel Expeller



— BIOMASS PELLETING TECHNOLOGIES

Woody Biomass Pellet : Started 30 years ago in US/Europe

- European Technologies : Large Scale, high up-time
- China/Local : Small Scale, low availability

Palm Biomass Pellet – Started 10 years ago in Malaysia

- Combination of **Malaysia** and oversea (Europe, Japan, US and China) equipment

— EFB PELLETING CHALLENGES

MOST CHALLENGING BIOMASS MATERIAL IN SOUTHEAST ASIA



ONLY **30%**

WOOD PELLETING KNOW-HOW IS
APPLICABLE FOR EFB PELLETING

— EFB PELLETING CHALLENGES

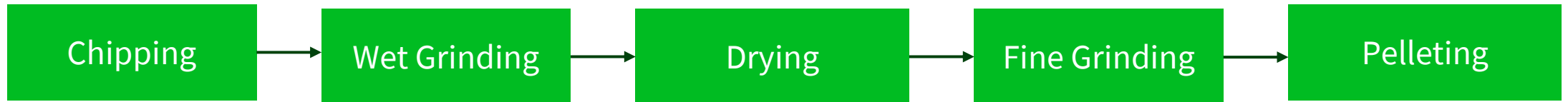


Known Facts :

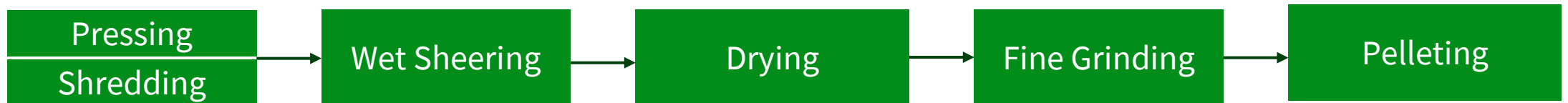
- EFB bulk density is very low
- When it is very fine, EFB fiber is fluffy
- Low flowability

— TYPICAL PELLETING TECHNOLOGIES

Typical Wood Log to Pellet Processes



Typical EFB to Pellet Processes

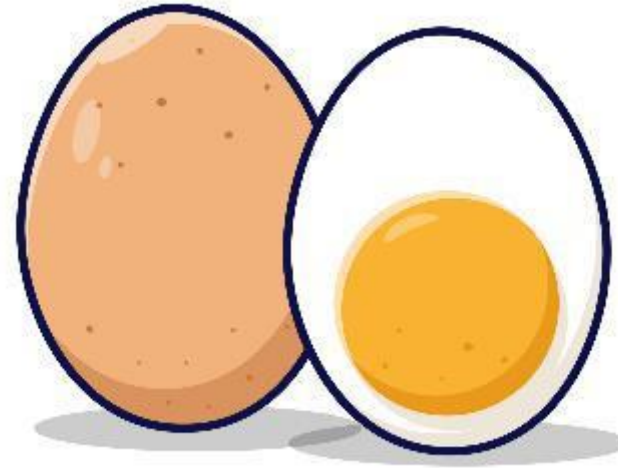


As compared to woody biomass, convert raw EFB bunch to fine fiber
require high energy and incur high wear and tear

**MARKET /
PRODUCT**



— CHICKEN OR EGG CONUNDRUM



Buyer: I want to do some trial before commit long term contract

Investor: I can build the plant if there is long term contract

— MARKET (PREMIUM)

| Japan adds new biomass fuels, certificates to FiP, FiT

Published date: 05 April 2023

Share:

Japan's ministry of economy, trade and industry (Meti) has decided to add new biomass fuels and sustainability certificates to its feed-in-premium (FiP) and feed-in-tariff (FiT) schemes from the April 2023-March 2024 fiscal year.

Meti added empty fruit brunch, coconut shells, cashew nut shell, chestnut shell, almond shell, pistachio shell, sunflower seed shell, corn straw pellet, bengkuang seed, sugarcane stem and leaf, peanut shell and cashew nut shell liquid as crop residues to its two schemes. Meti considers these residues inedible, and thinks existing standards can ensure their sustainability, including keeping lifecycle greenhouse gas (GHG) emissions below the limit.

Meti is still examining whether to add straw, rice straw and rice husk to its schemes as they are used to feed livestock and as fertilizers.

Meti approved palm oil (PO), palm kernel shell (PKS) and palm trunk as biomass fuels under the FiP and FiT schemes.

CERTIFICATION

Source

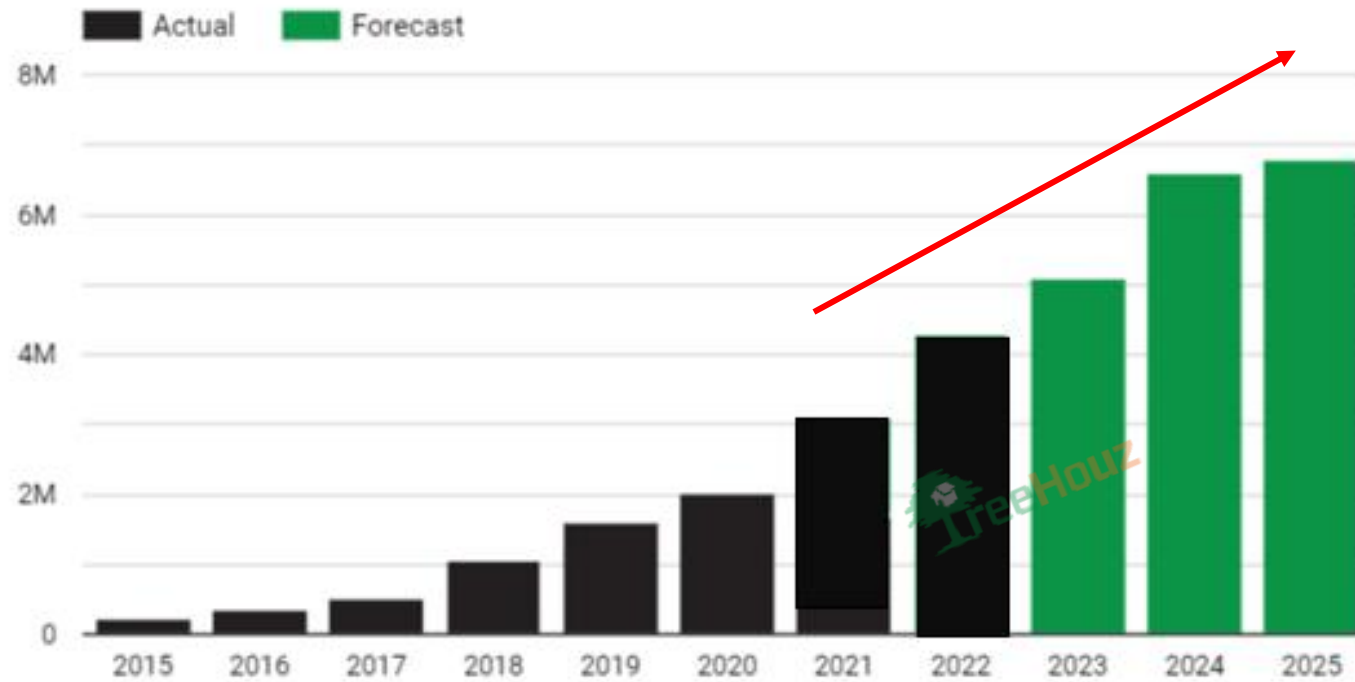


Production



Life Cycle GHG Emission

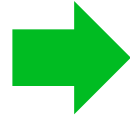
— PELLET DEMAND OUTLOOK



* Japan wood pellet demands is forecasted to be 6.8 million tons per year by 2025

Source: ITC Trademap & Futuremetrics

— PELLET DEMAND OUTLOOK



— About us



The Pellet Plant Engineers



— OUR PRESENCE



Maintenance Support & Spare Parts Program	>12 plants	Engineering, Design & Build	19 plants	1 - 40 tph
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COMPLETED PROJECTS



Thank you for your attention

“CHOOSING THE RIGHT BIOMASS TECHNOLOGY
PARTNER IS ONE OF THE MOST IMPORTANT
DECISIONS YOU WILL MAKE”



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