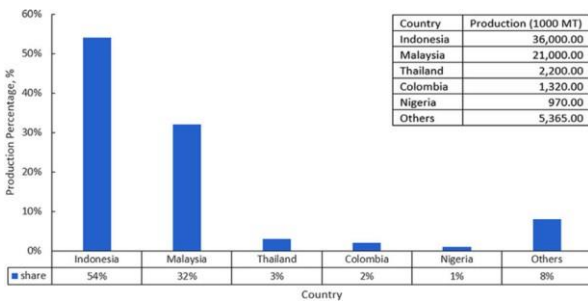


# GTOP-PELLET: Green Torrefied Oil Palm Pellet

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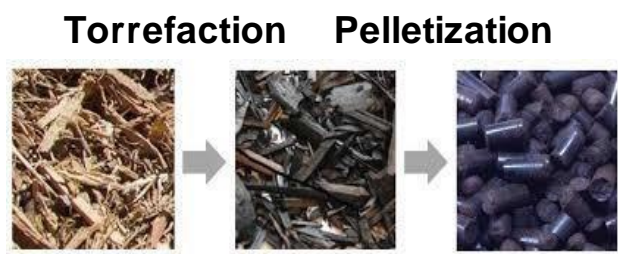


## Product Background

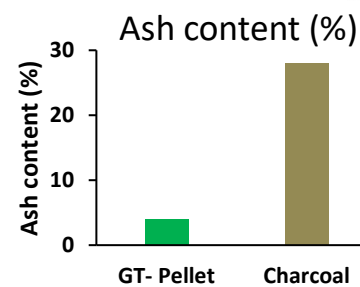
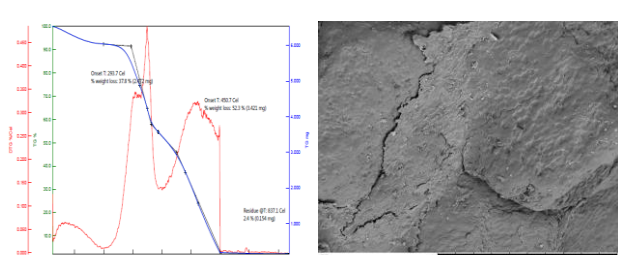


- Malaysia as world second largest producer of palm oil.
- An oil palm tree consist 79% of biomass such as oil palm frond (OPF), empty fruit bunch (EFB), palm kernel shell (PKS), palm mesocarp fiber (PMF) and Oil palm trunk (OPT).

## Methods



## Characterization



- High heating value, High mechanical properties and low ash content

## Achievement/Award

- GOLD CITREX, 2020

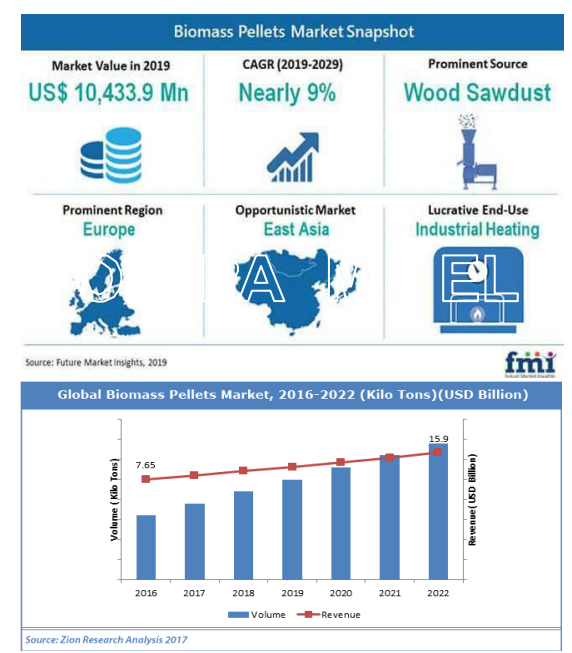
## Publication

- Effect of Torrefaction on Palm Oil Waste Chemical Properties and Kinetic Parameter Estimation, 56, 2017 CHEMICAL ENGINEERING TRANSACTIONS.
- Physicochemical Property Changes and Volatile Analysis for Torrefaction of Oil Palm Frond, 56, 2017 CHEMICAL ENGINEERING TRANSACTIONS.
- Properties Prediction of Torrefied Municipal Solid Waste using Linear Correlation Model, 158, 836-841, 2018, Energy Procedia.
- Anhydrous Weight Loss Prediction of Meranti Sawdust during Torrefaction using Rousset Model, 318, 2018, IOP Conference Series: Materials Science and Engineering.

## Novelty

- Low-cost pellet production with high mechanical characteristics, high heating value and low ash content

## Marketability



- The major consumers are China, Japan and South

## Cost Analysis

Raw material (RM/tonne)	0
Manufacturing (RM/tonne)	900
Shipping (RM/tonne)	750
Total cost (RM/tonne)	1650
Selling Price (RM/tonne)	3000
Profit (RM/tonne)	1350

## GTOP- PELLET



## Application



## Environmental Impact

