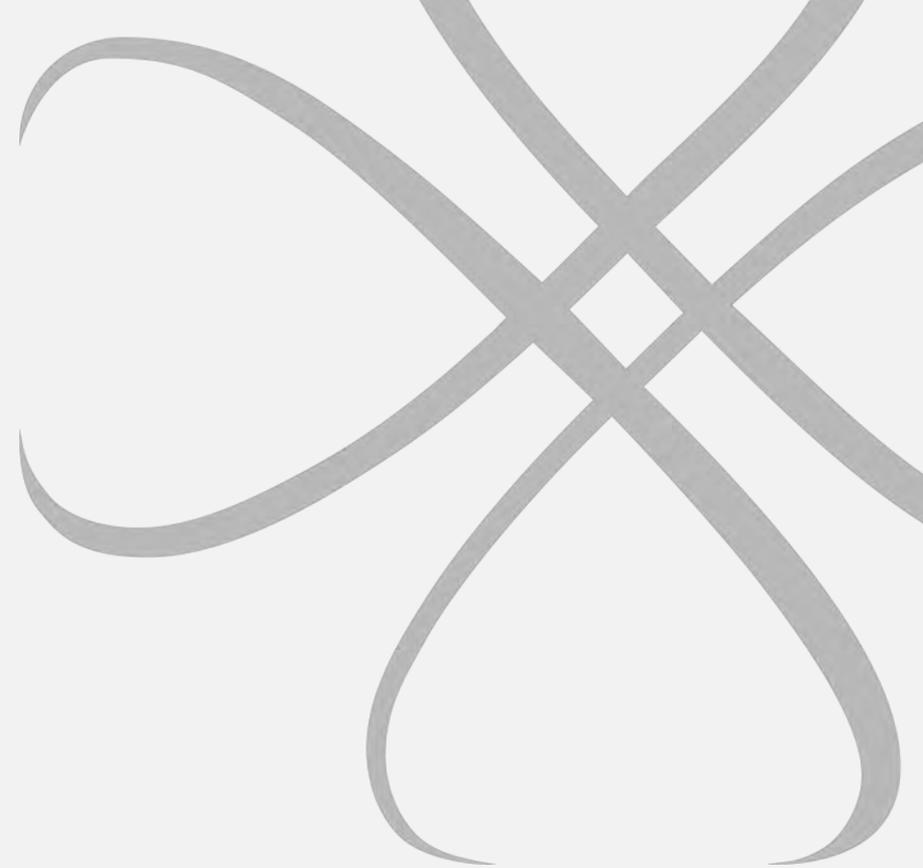


# Overview of Palm Oil Processing Industry

Hong Wai Onn, Novozymes Malaysia Sdn Bhd  
17 June 2021

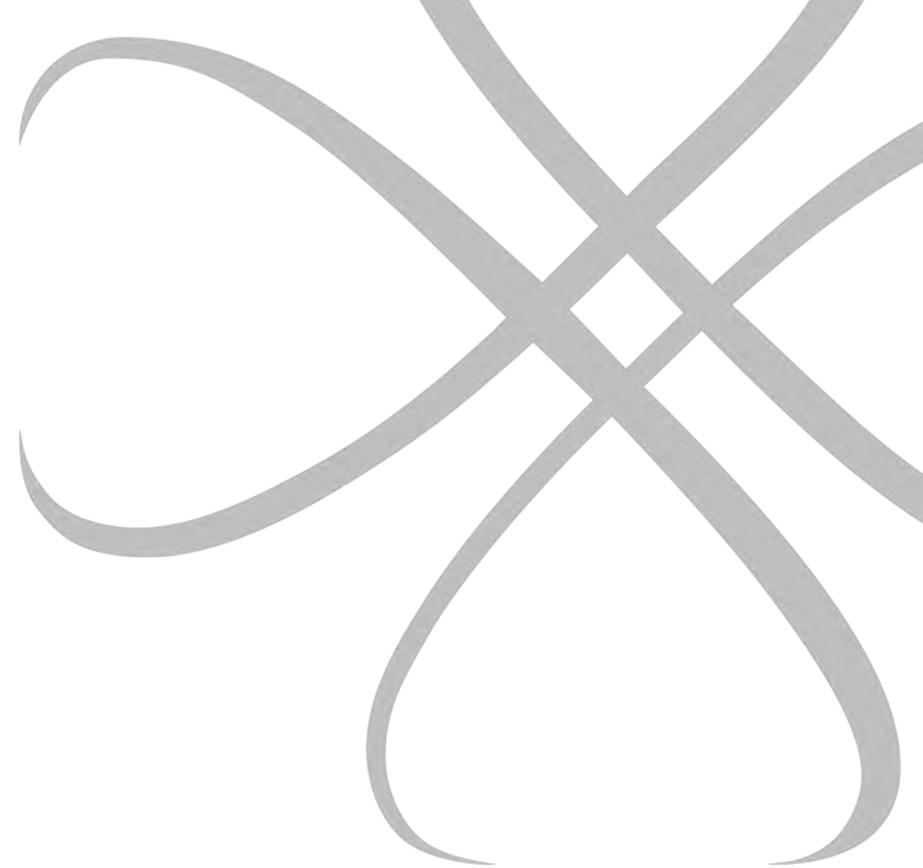
## Session outline

- 1 How relevant is the palm oil industry?
- 2 What's involved in the palm oil processing value chain?
- 3 Any career opportunities?



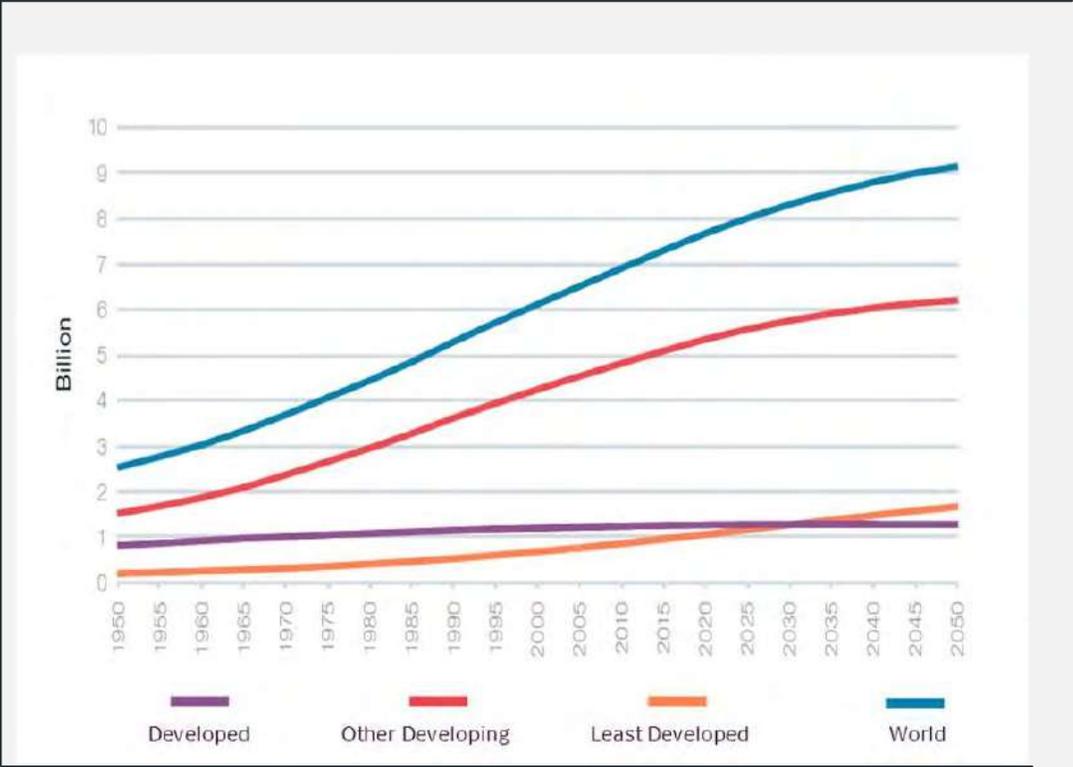
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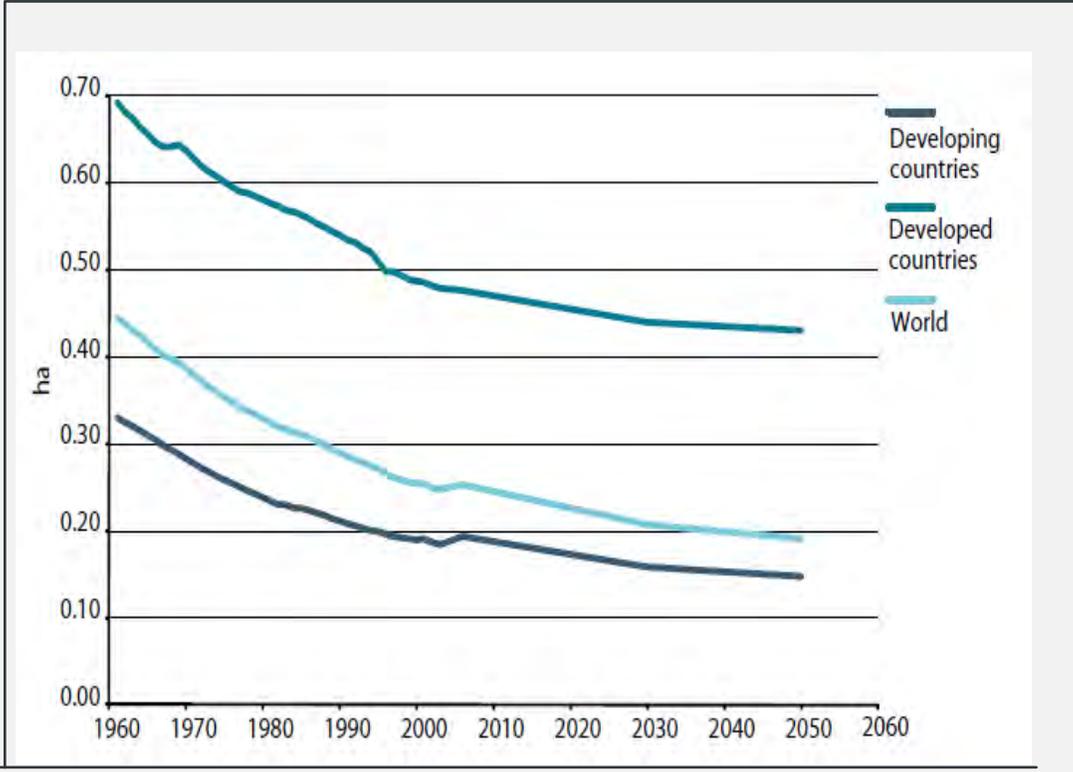


# World population is estimated to reach 9 billion by 2050, but the arable land per person is shrinking

World population will reach 9.1 billion by 2050, with significant growth in developing countries



Arable land per capita with a projected decline from 0.38 ha in 1970 to 0.18 ha per person by 2050

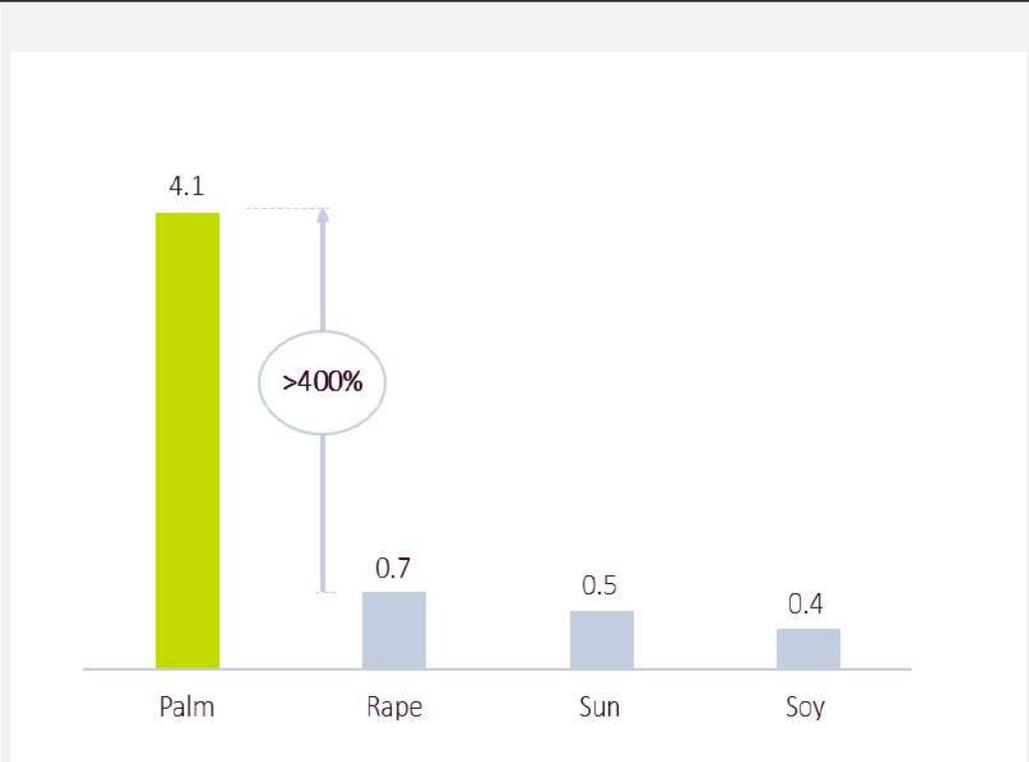


Source(s): UN Population Division, from van der Mensbrugge et al., 2009; OECD-FAO

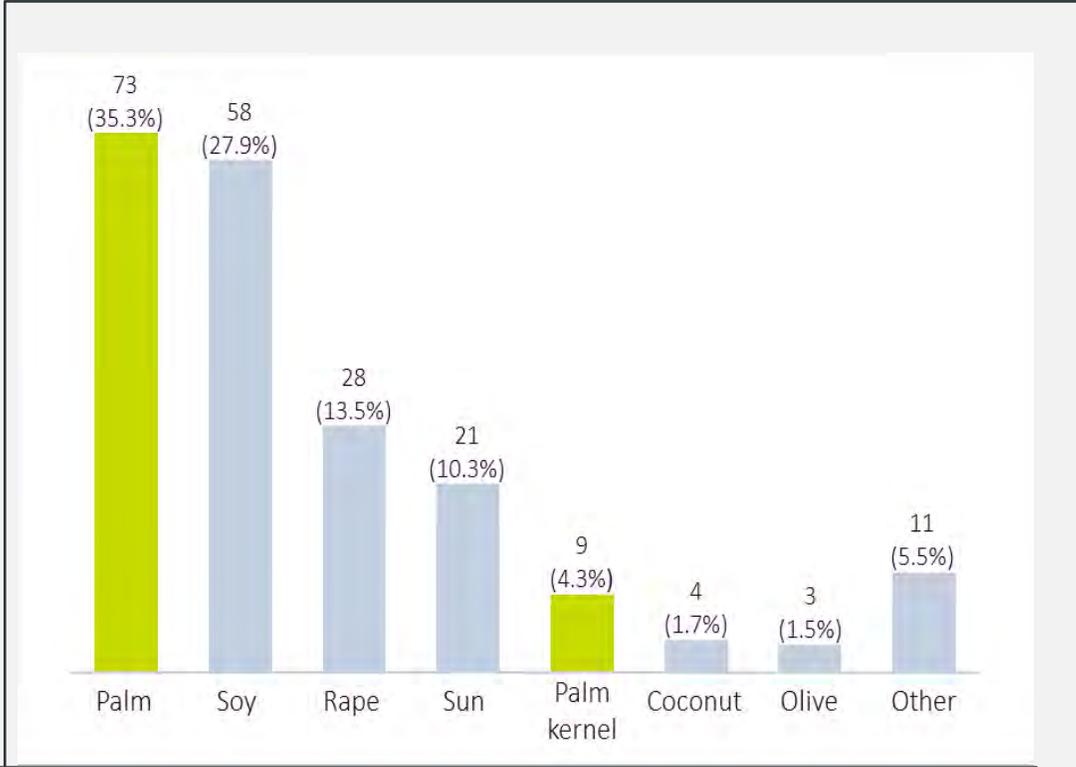
# Palm by far is the most efficient oil crop

Palm oil accounts for one-third of the world vegetable oils

Palm outmatches all other oil crops when it comes to efficiency per used land



Palm oil and palm kernel oil comprises of one-third of the global vegetable oil production in '19/20 (million metric tonnes)

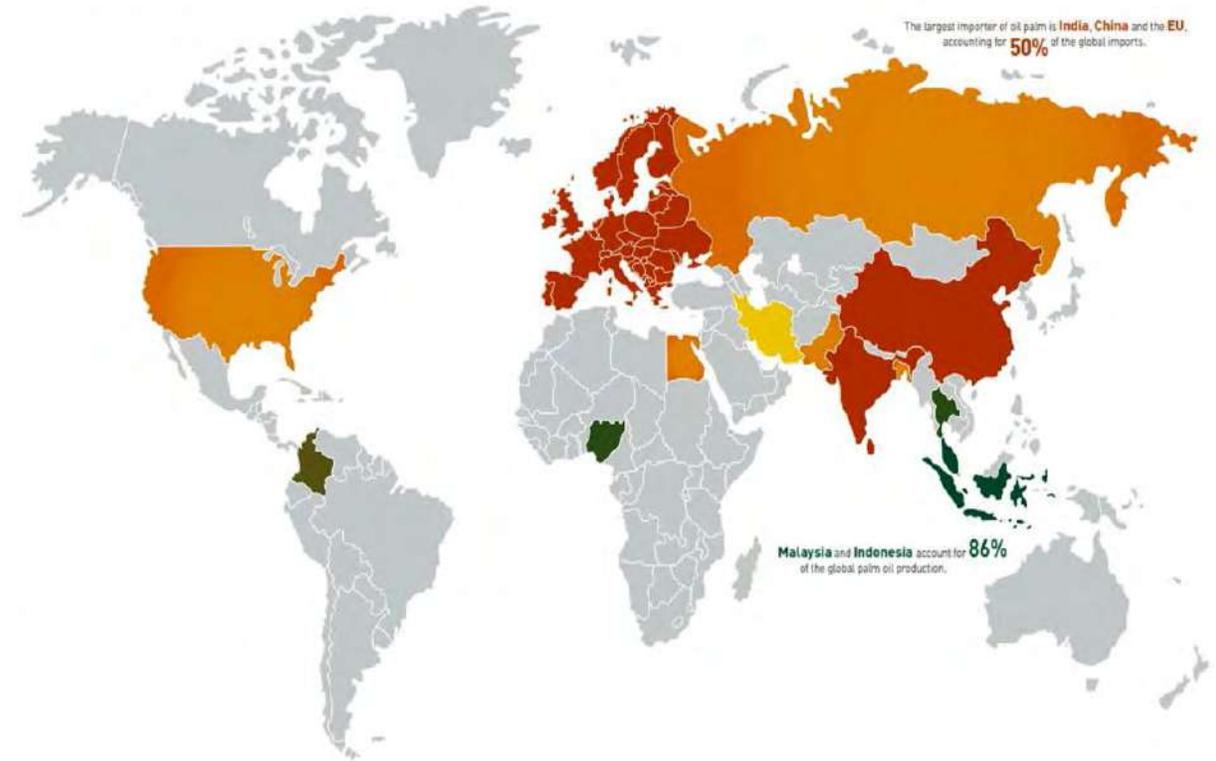


Source(s): Oil World 2013; United States Department of Agriculture 2020

Indonesia & Malaysia are responsible for producing about 85% of the world's palm oil.

India, China and EU are the largest importers of palm oil.

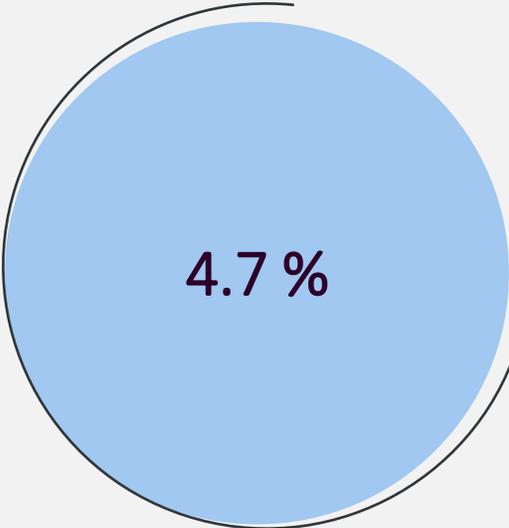
PRODUCERS AND IMPORTERS  
OF OIL PALM



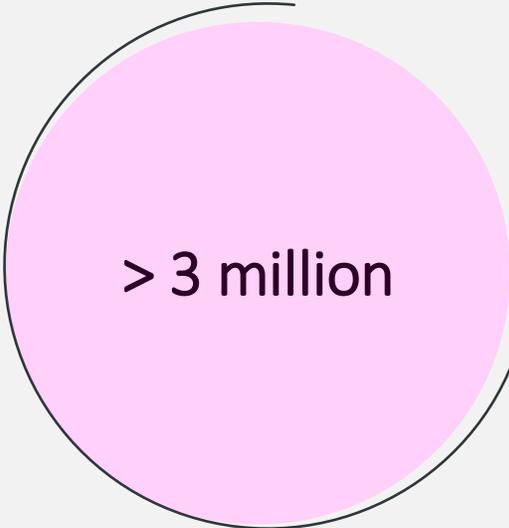
# Palm oil industry is one of the key contributors to Malaysia's social-economic



Export revenue



Gross domestic product



Indirect employment

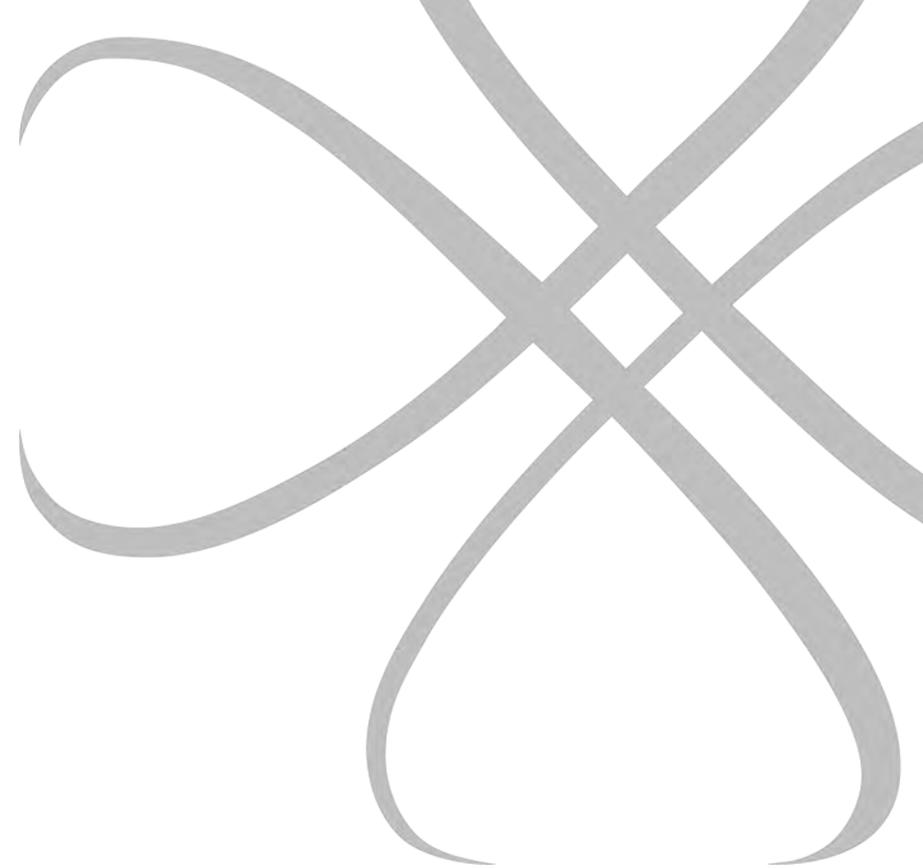


Smallholders

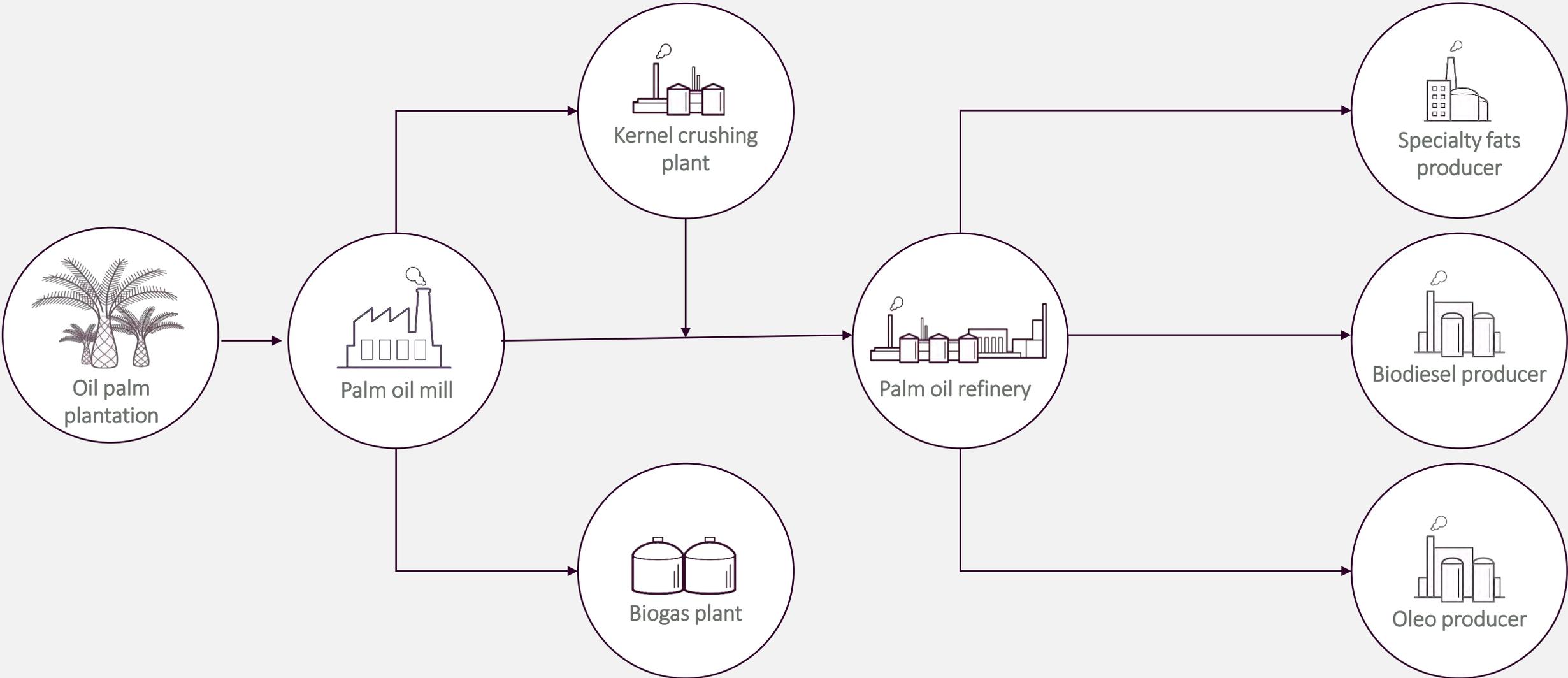
Source(s): Ministry of Plantation Industries and Commodities, 2021

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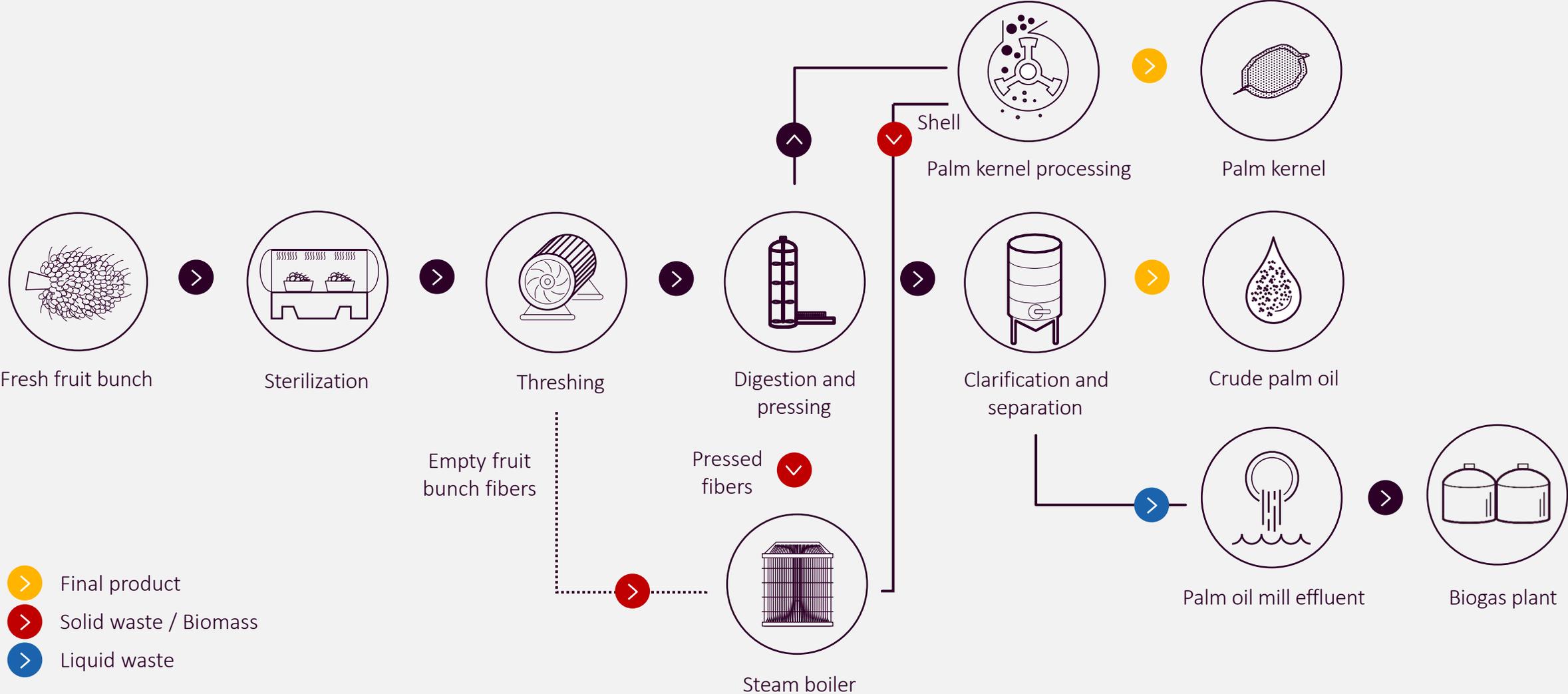
Palm oil processing value chain is not different from oil & gas industry. There is an upstream, midstream and downstream



# The starting point of the journey



# Palm oil mill produces crude palm oil and kernels as primary products and biomass as secondary product



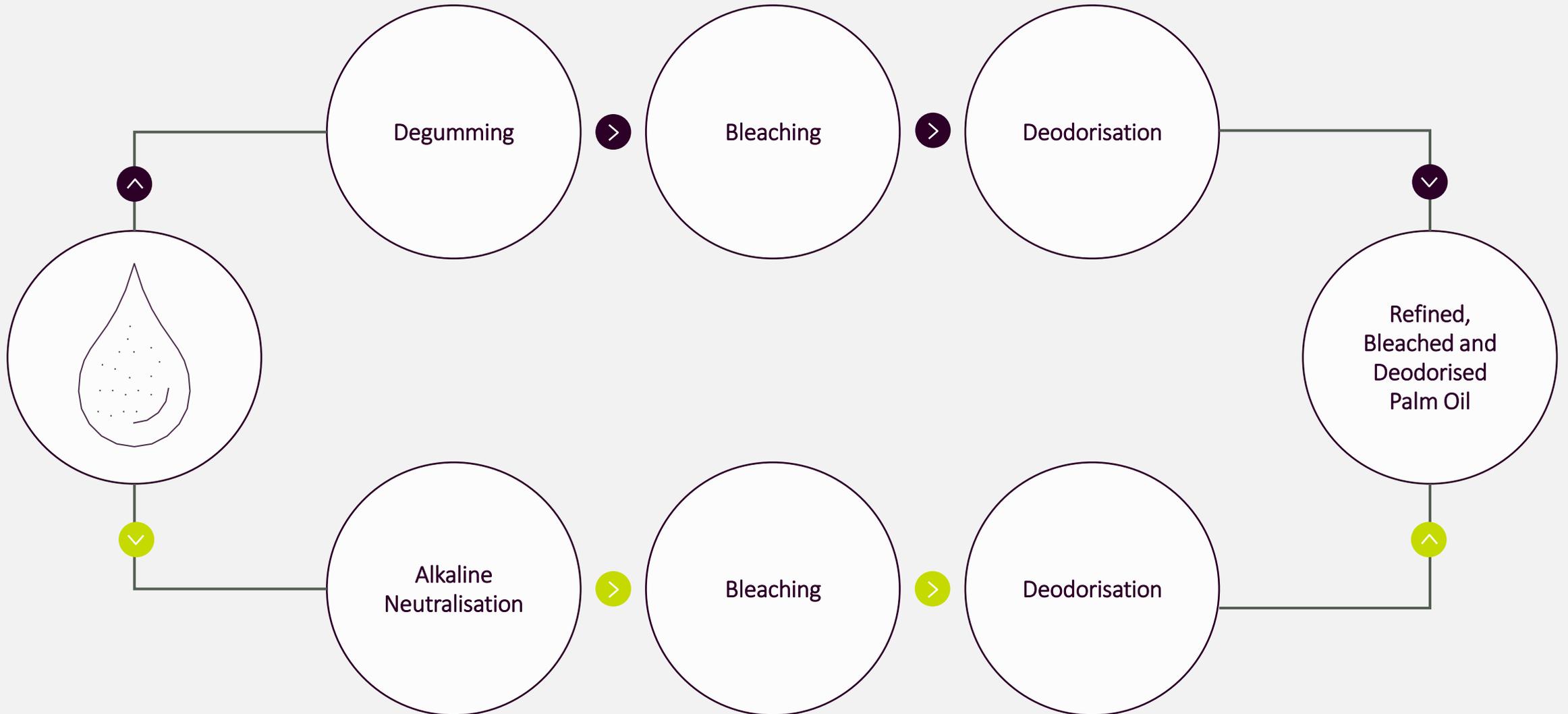


Oil **refinery** produces refined oil from crude palm oil and palm kernel oil through degumming, bleaching and deodorizing.

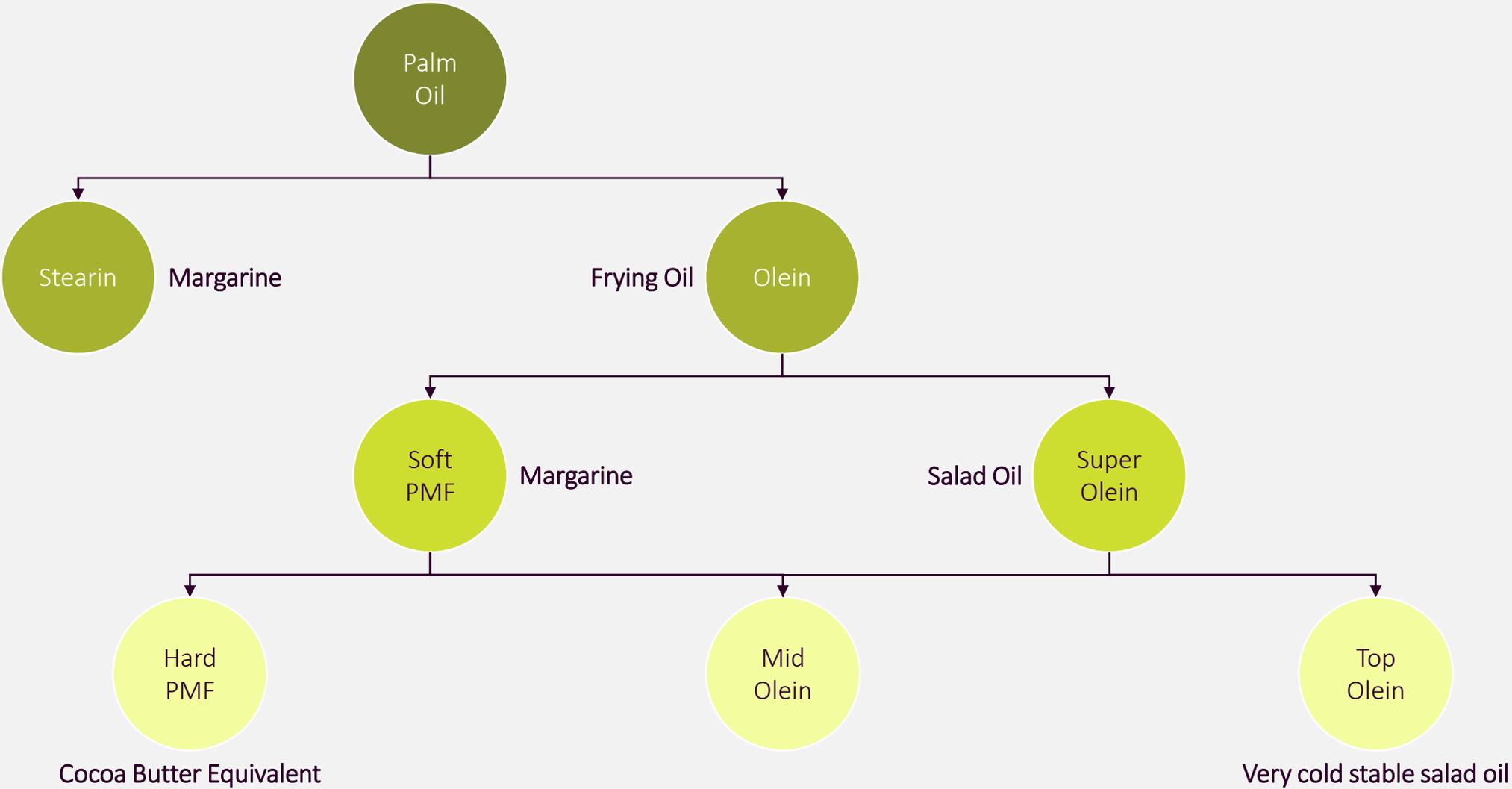
Refined palm oil will go through **fractionation** process to separate solid phase (stearin) and liquid phase (olein).



Refining is done by either physical refining or chemical refining



# Typical fractionation process is achieved by thermo-mechanical means



# We could get healthier and higher-value fats using palm oil feedstocks



## Interesterified Fats

Low trans-fat hard stock for margarine and shortenings.



## Cocoa Butter Equivalent (CBE)

CBE production process can be tailored to eliminate use of exotic fats and exclusively use the more economical palm-based feedstocks.



## Human Milk Fat Equivalent (OPO)

Mothers' milk fat (OPO fat) can be produced from palm-based feedstocks, and to be blended in premium infant milk formula.

Palm-based **biodiesel plant** produces environmental-friendly and renewable fuel i.e., biodiesel, from palm oil and its by-products.

Palm biodiesel refers to methyl esters and it can be used in diesel engines without any modifications.



Palm-based **oleochemicals plant** produces fatty acids, fatty alcohols, fatty amines, and methyl esters using palm oil feedstocks.

They are widely used for cosmetics, personal care applications including skin care, hair care and oral care. It is also used to produce detergents, soaps and cleaners.



What comes to mind when you  
think about products  
containing palm oil?



Cooking and frying oils



Potato chip



Body wash



Lubricating oil



Chocolates



Spreads



Lipstick



Candle



Margarine



Bakery product



Tocotrienol



Ice cream

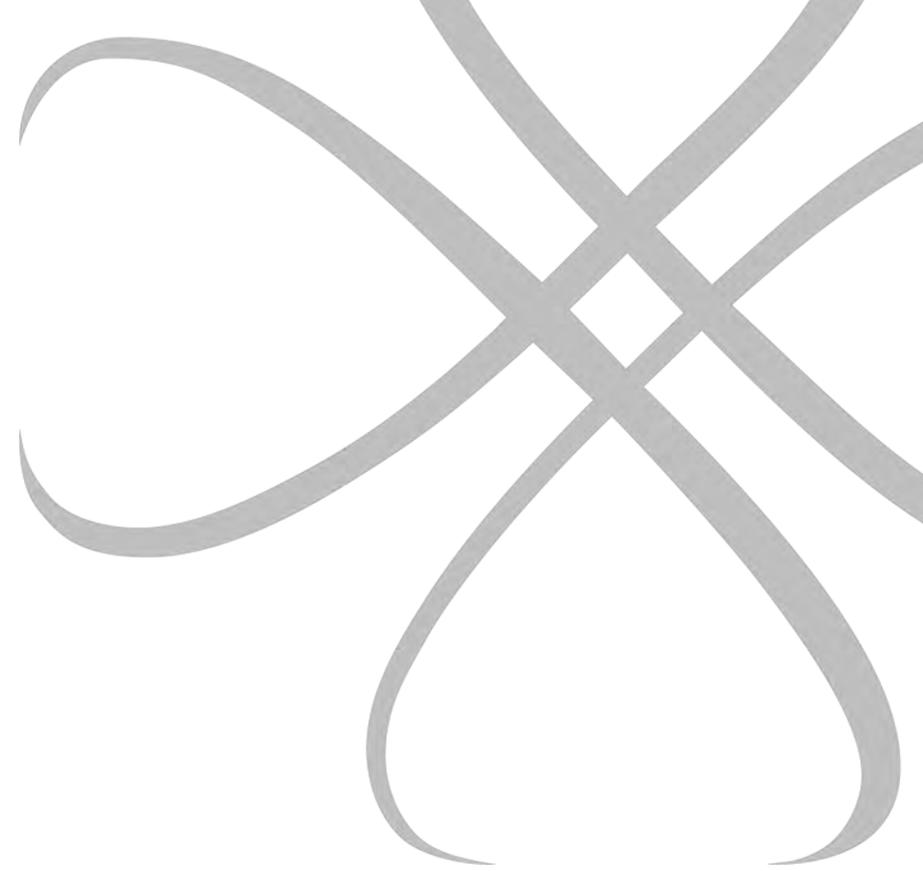


Soap bar

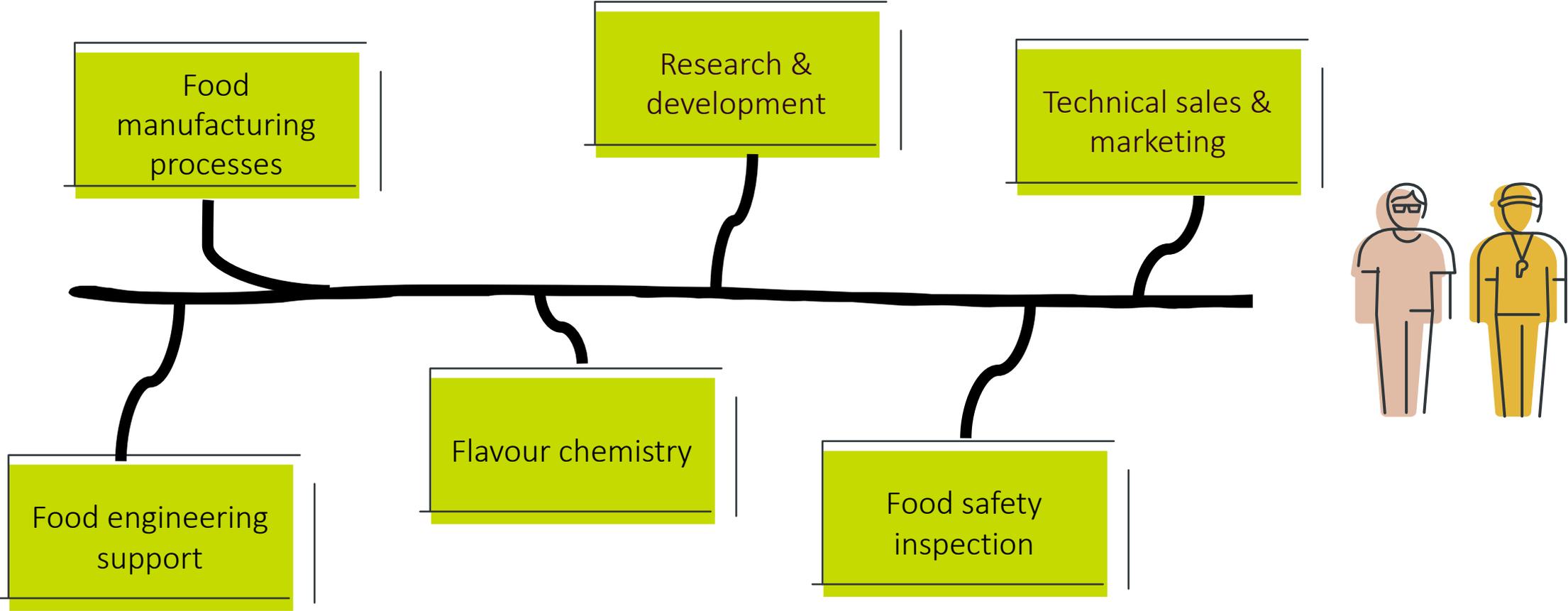
It's not unrealistic to claim more than half the products on sale in supermarkets are made with palm oil

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# Food science professionals have a wide range of career options in palm oil processing industry



# There are many players involved in the palm oil processing value chain

## Suppliers / Technology Providers



## Producers / Manufacturers



## Customers



Thank You