HOW DOES MALAYSIAN PALM OIL SUPPORT UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

SDG 1 No Poverty

FELDA provides land to 112,635 families to generate income & create livelihoods

Parid, M.M.; Miyamoto, M.; Nor Aini, Z.; Lim, H.F.; Michinaka, T. Eradicating Extreme Poverty through Land Development Strategy. In Proceedings of the Workshop on REDD+ Research Project in Peninsular Malaysia, Kuala Lumpur, Malaysia, 4 February 2013; pp. 81–91.

SDG 8 Decent Work and Economy Growth

Palm oil usage in food & non-food sectors create new segments in the industry to boost economy

MPIC (2016). The employment survey in oil palm plantations, Malaysia 2018. Ministry of Plantation Industries and Commodities, Putrajaya.

SDG 4 Quality Education

Farmers learn machinery & skills to increase efficiency in production through training & courses

Junaidi, A. B., Mohd Fuad, M. J., Ahmad Rizal, M. Y., Al-Amril, O., & Rosmadi, F. (2020). Socio-economic development of palm oil smallholders in Malaysia. International Journal of Advanced and Applied Sciences, 7(7), 109-116.

SDG 9 Industry, Innovation and Infrastucture

Utilization of palm oil biomass & by-products as feedstock (R&D) for industrial applications

Parveez, G. K.A., Tarmizi, A. H.A., Sundram, S., Loh, S. K., Ong-Abdullah, M., Palam, K. D. P., ... & Idris, Z. (2021). Oil palm economic performance in Malaysia and R&D progress in 2020. J. Oil Palm Res, 33(2).

SDG 15 Life on Land

Shift to Agroforesty (mixed-species tree planting of fruit & rubber trees) in palm oil plantation to minimize the losses of forest biodiversity

Dorrack, L.S.; Röll, A.; Ellsäßer, F.; Ehbrecht, M.; Irawan, B.; Hölscher, D.; Knohl, A.; Kreft, H.; Siahaan, E.J.; Sundawati, L.; Stiegler, C. and Zemp, C.D. (2021). Microclimate and land surface temperature in a biodiversity enriched oil palm plantation. For. Ecol. Manag., 497:119480

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IPOSC 2022 INTERNATIONAL PALM OIL SUSTAINABILITY CONFERENCE

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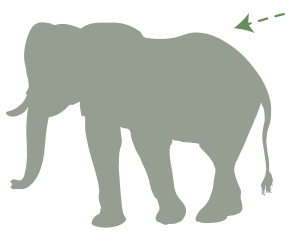
MPOC

MALAYSIAN PALM OIL AND SUSTAINABLE DEVELOPMENT GOALS

What the Malaysian Palm Oil industry has contributed towards Malaysia's Sustainable Development Goals ?



Protecting the abundant wildlife

such as the Bornean Pygmy elephant in the Sabah Rainforest.

Reducing global warming

Palm oil plantation is more efficient carbon sink than a tropical rainforest.

a study has shown :

palm oil plantation **assimilate**

= 44.0 tonnes of dry matter per hectare per year

than

rainforest **assimilate**

= 25.7 tonnes of dry matter per hectare per year

For example, a local farmer, Mr. Thomas Lamit Anak Lutek

Providing farmers with property rights and a fair income.

- farmers were given a hand documentary by SALCRA as proof that they owned his land.
- farmers harvest fresh fruit bunches from their oil palm trees
- farmers sell fresh fruit bunches to the SALCRA mill, which pays them a fair dividend
- SALCRA maintains a reserve fund to cover smallholders' replanting costs.

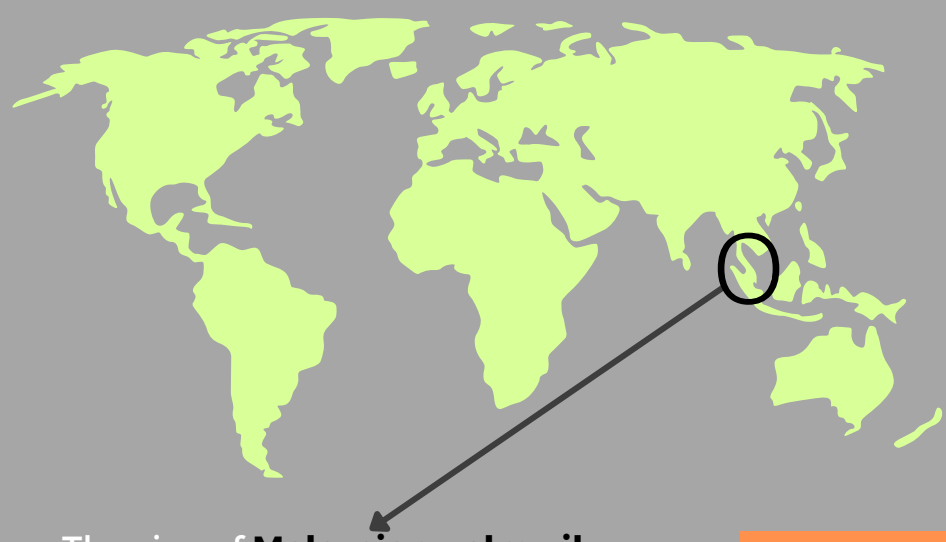
SDGs that have been met:

15 LIFE ON LAND

8 DECENT WORK AND ECONOMIC GROWTH

13 CLIMATE ACTION

How the Malaysian Palm Oil industry can contribute towards Malaysia's Sustainable Development Goals ?



The size of **Malaysian palm oil plantations** was around

5.2

milion hectares

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

1 MPO is potentially to create a large-scale production of graphene as it can be made from palm kernel waste.

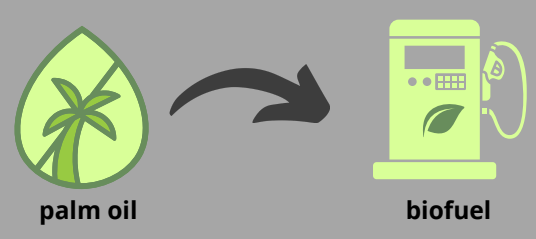
Graphene **vs** Metal

200 : 1

strength

a highly fire-resistant material and an efficient conductor that may be employed in a variety of industrial areas.

3 GOOD HEALTH AND WELL-BEING



palm oil → biofuel

11 SUSTAINABLE CITIES AND COMMUNITIES

2 Reducing our reliance on fossil fuel while reaping the benefits of environmental

- do not require drilling or milling to produce it.
- It causes less air pollution and emits a minimal amount of carbon monoxide and nitrogen oxides when burned, preventing the formation of acid rain.

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4. Malaysia Harmoni (2022, August 9) . Malaysia jadi negara pertama hasilkan Graphene, 200 kali ganda lebih kuat dari logam . https://malaysiaharmoni.net/malaysia-jadi-negara-pertama-hasilkan-graphene-200-kali-ganda-lebih-kuat-dari-logam
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جَامِعَة العُلُوم الإِسْلَامِيَّة المَالِيزِيَّة

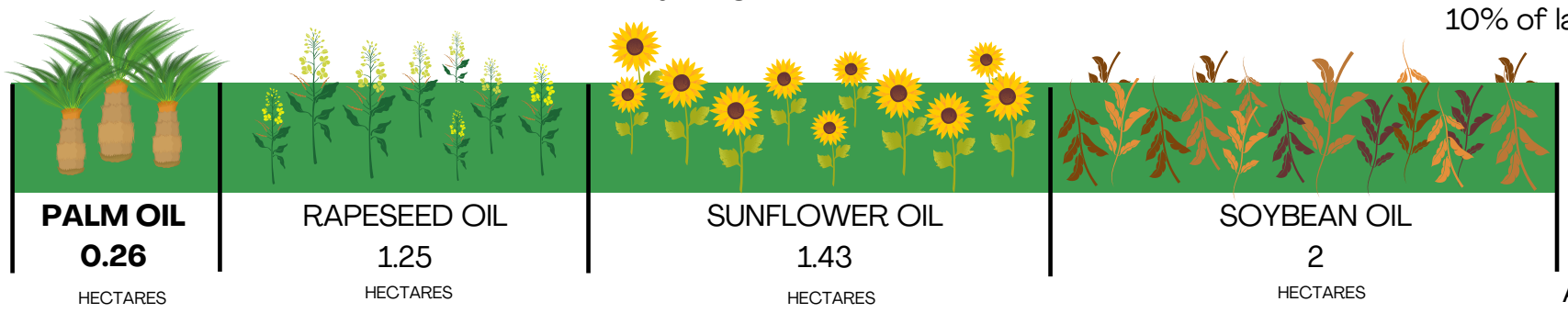
AMIRUL HAIRIE BIN MOHAMMAD
ANIS ATIRAH BINTI MOHAMAD
IZATUL AZHAR

Tamhidi of Physical Science and Technology
Tamhidi Centre

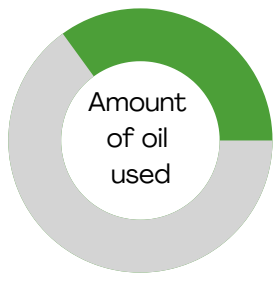
AINA NATASHA BINTI MAHMOOD | NUR ALIAH SYAFIQAH BINTI AHMAD FAUZI
Food Technology, Department of School of Industrial Technology, USM

MALAYSIAN PALM OIL (MPO) INDUSTRY

Land required to produce 1 tonne of major types of oil



PO represents 35% of all vegetable oil used, but only require 10% of land



All other vegetable oils 65%

CONTRIBUTION OF (MPO) TOWARDS THE UNITED NATIONS (UN) SUSTAINABLE DEVELOPMENT GOALS (SDGS)

EMPLOYEMENT

1 NO POVERTY

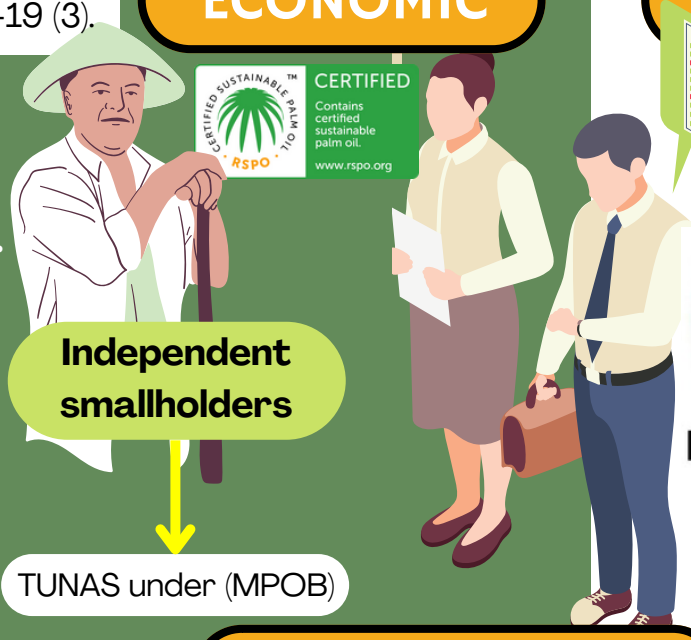
8 DECENT WORK AND ECONOMIC GROWTH

Employs around **2.3 million** people in Malaysia (2);

- An increment by **1.2%** of the employment rate recently after COVID-19 (3).

ECONOMIC

40% of all Palm Oil plantations owned by small farmers (1).

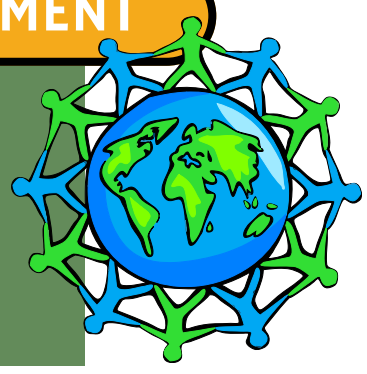


Organized smallholders → FELDA, FELCRA, RISDA.

Independent smallholders → TUNAS under (MPOB)

ENVIRONMENT

RSPO certification reduces illegal deforestation outside of certified supply bases (7).



3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

SOCIAL

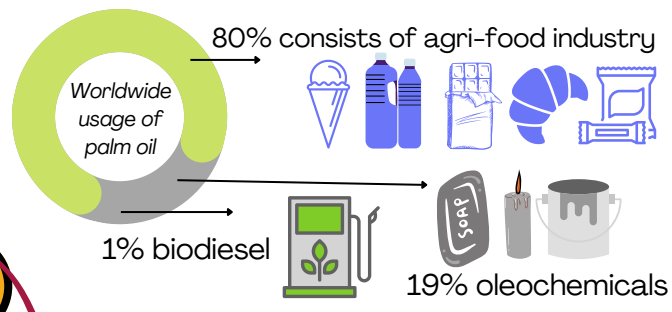
Increase possibility to access to healthcare, especially for smallholder familiies (4).

Sime Darby Plantation — Developing Sustainable Futures

Majority of large palm oil companies in Malaysia are involved in **building schools to provide education for the children** of their workers (5).

13 CLIMATE ACTION

15 LIFE ON LAND



FURTHER MPO INDUSTRY POTENTIAL CONTRIBUTION TOWARDS MALAYSIA'S SDGS

GHG emissions in Malaysia can be reduced by 4.1 t CO2-eq ha−1 pa simply by **banning the establishment of new OP plantations on peat soil** (8)

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

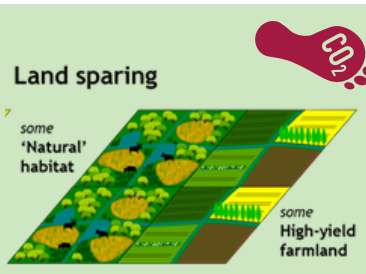
14 LIFE BELOW WATER

Legal enforcement of best practices embedded in national laws is needed **to improve sustainability of PO production practices**

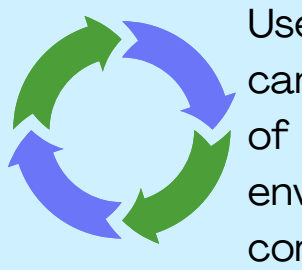
Routine monitoring of forest cover loss in certified plantations and **penalties** for members who do not comply.

PO smallholders should **receive more assistance** from (federal and state governments, MPOB, RSPO)

To ensure they have the **right technical and market information**



Intercropping with other crops, provide high land sparing, replenish more groundwater and reduce carbon footprint (9)



Use of **life cycle assessments** can better estimate the impact of human activities on the environment, specifically for a commodity chain (8)

Abbreviations

PO = Palm Oil, **MPO** = Malaysian Palm Oil, **COVID-19** = Corona Virus Disease 2019, **FELDA** = Federal Land Development Authority, **FELCRA** = Federal Land Consolidation and Rehabilitation Authority, **RISDA** = Rubber Industry Smallholders Development Authority, **TUNAS** = Tunjuk Ajar & Nasihat Sawit, **RSPO** = Roundtable on Sustainable Palm Oil, **GHG** = Greenhouse Gas, **CO2** = Carbon Dioxide & **MPOB** = Malaysia Palm Oil Board

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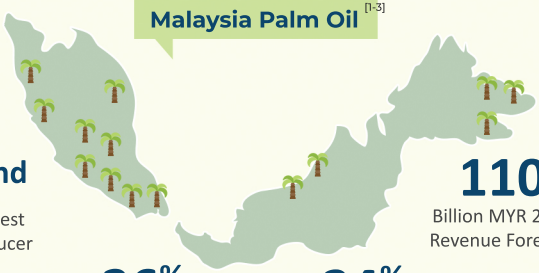
CONTRIBUTIONS OF MALAYSIA PALM OIL TOWARDS UNITED NATION SUSTAINABLE DEVELOPMENT GOALS

Loi Xuen Ler Chen Yu Ng | School of Engineering and Physical Science | Heriot-Watt University Malaysia

Malaysia Palm Oil [1-3]



2nd Largest Producer

110 Billion MYR 2022 Revenue Forecast

26% Global Production

34% Global Exports

Significant Contributions

Government Incentives For Rural Farmer [4,5]

Oil Palm Integrated Farming Scheme (ITa)
Agro Bank-MPOB Easy Financing Scheme

2.3 million people employed in palm oil sector [1]

Improved Nutrition Uptake at Affordable Price [4,6]

Pro-vitamin A Acitivity and Fortification
Rich in Tocotrienols (Vitamin E)

300 kcal/pax/day food supply secured [7]

Employees Living Conditions Improved [8]

Basic amenities are given to employees
Rural Children are exposed to education

76% of workers experienced overall positive change [8]

Created More Job Opportunity For The Nation [1]

Plantation, refinery and supply chains
Attracts foreign investment

2.7% Malaysia GDP in 2020 [9,10]

Future Outlook

Palm Oil Derived Biofuel
B20 Biodiesel Mandate by end of 2022 [11]

Sustainable Certification
RSPO ISPO MSPO ISCC [12,13]

Biodiversity Protection
MPOWCF funding [14]

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Referenes :

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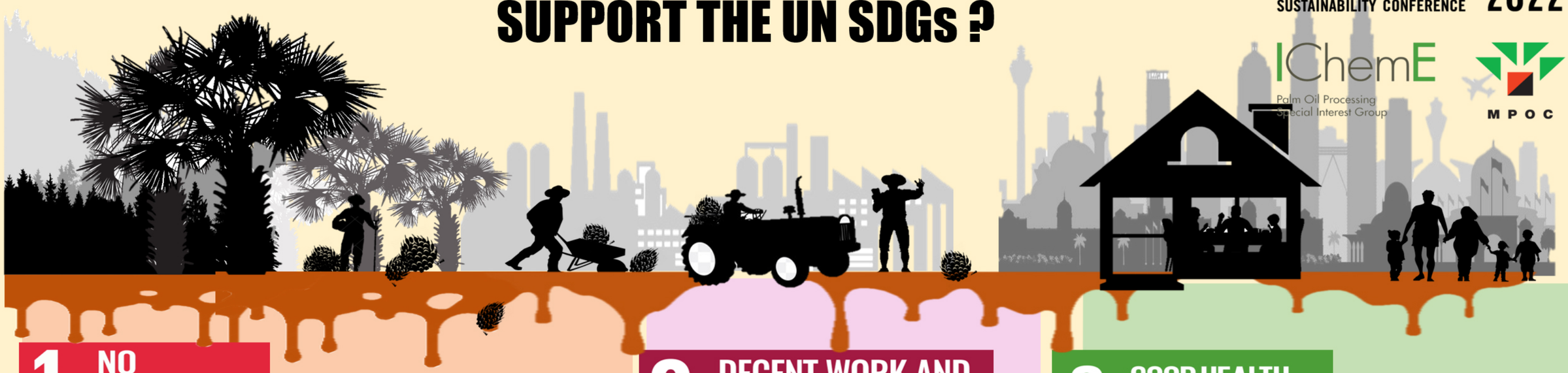


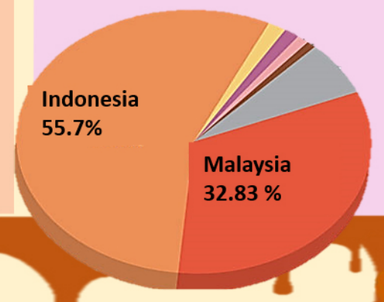
1 NO POVERTY

" **40%** of palm oil cultivated area in Malaysia are possessed or grown by small farmers, who have profited from oil palm agronomy[1] "

" Monthly average household income of FELDA smallholders amplified from **MYR1338** (2006) to **MYR3000** (2010), surpassing the national poverty limit[1] "

8 DECENT WORK AND ECONOMIC GROWTH

" In **2021**, the export revenue of Malaysia palm oil industry products is **RM108.5bn** and expected to increase to **MYR110bn** [2]



World palm oil exports in 2018 (from Global Oil & Fats Business)

3 GOOD HEALTH AND WELL-BEING

" **Red palm oil** can be effectively used as regular food to prevent **vitamin A deficiency** [3] "

" Palm vitamin E, i.e. tocotrienols, have been explored for their **anti-cancer**, **anti-thrombotic, and antioxidant effects** [3] "

More Sustainable Future Potentials :

Sustainable energy resource

Waste cooking oil
High triglycerides
→ Transesterification → **Biodiesel**

Palm Fatty Acid Distillate (PFAD)
High free fatty acid content
→ Esterification → **Biodiesel**

Palm oil mill effluent (POME)
High organic compound
→ Anaerobic digestion → **Biogas**

Bio-fertilizer industry

Palm oil mill effluent (POME)
Can be converted into fertilizer via compositing [4]

Activated carbon, semiconductor

Empty fruit bunch actually can be converted to functional carbon-based materials such as activated carbon, carbon nanotubes or graphene for potential applications in wastewater treatment, semiconductor materials and etc [5].

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