Unsustainable Necessities

Digitizing palm oil supply chains

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
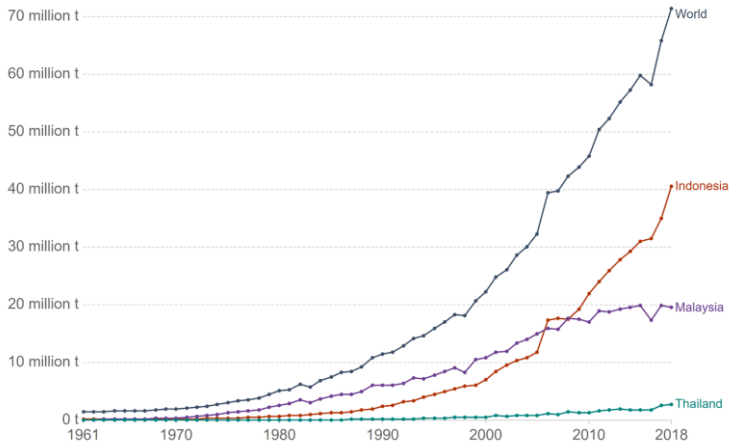
13 CLIMATE ACTION

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Palm Oil is a Necessity

Oil palm production
Oil palm crop production is measured in tonnes.

Our World in Data

70 million t — World
60 million t
50 million t
40 million t — Indonesia
30 million t
20 million t — Malaysia
10 million t
0 t — Thailand
1961   1970   1980   1990   2000   2010   2018

Source: UN Food and Agriculture Organization (FAO)   OurWorldInData.org/agricultural-production • CC BY

Economy Booster

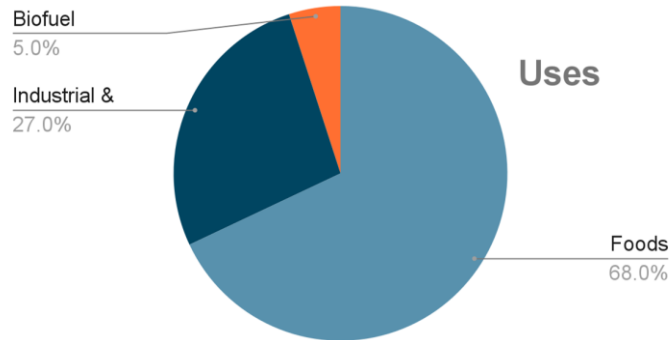Major employer - 6m jobs (plantation workers etc.)

11% of Indonesian's exports, 13.7% of Malaysia's gross national income

Irreplaceable

Found in 50% of everything you buy

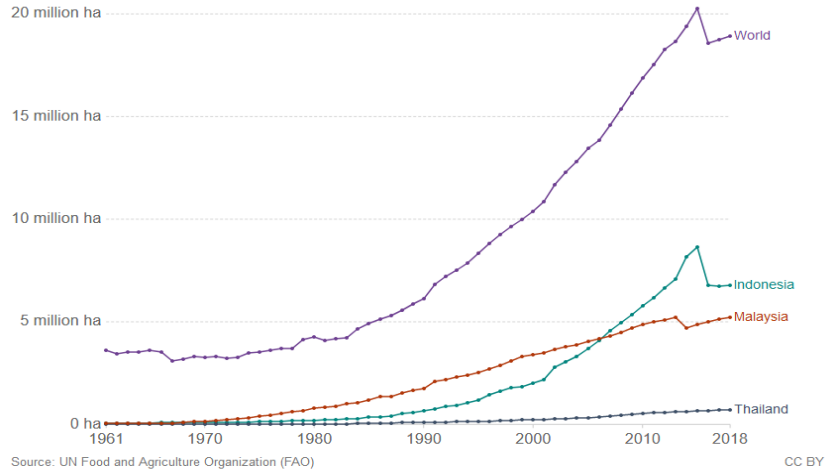Makes your shampoo smoother, lipstick shinier and chocolate creamier

Palm crop produces 4-10 times as much oil per hectare than other vegetable oils

Uses

Biofuel
5.0%

Industrial &
27.0%

Foods
68.0%

However, **irresponsible production methods** have led to **mass environmental damage**

Produced irresponsibly

Land use for palm oil production

Our World in Data

20 million ha — World

15 million ha

10 million ha

5 million ha — Indonesia, Malaysia

0 ha — Thailand
1961   1970   1980   1990   2000   2010   2018

Source: UN Food and Agriculture Organization (FAO)   CC BY

Haze

Slash and burn method to clear area for plantation

Thick smoke from **burning forests** spreads to ASEAN neighbours - Malaysia and Singapore

Governments forced to **shutdown schools**

Severe respiratory issues for infants, elderly

Escalates **political tensions** between countries

Deforestation

Indonesia lost more than **6m hectares** of primary forest between 2000 and 2012, an area **half the size of England**

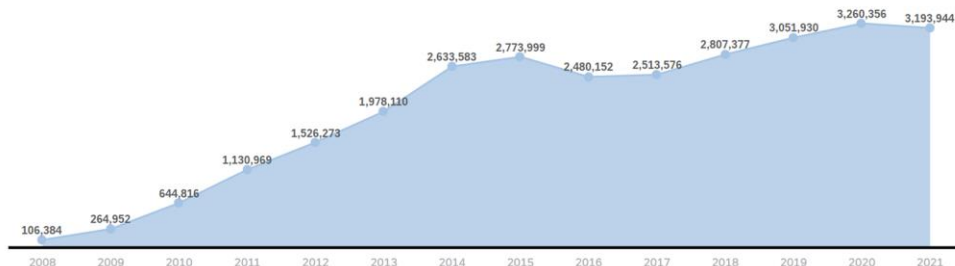Thousands of animals driven out of their **natural habitat**

In view of these impacts, NGOs have introduced **sustainability policies,** most notably **oil certification schemes**

Palm Oil Certifications

Established to **recognise and motivate** suppliers who **switch to sustainable agricultural methods**

Certified Sustainable Palm Oil production area (ha)

Total fresh fruit bunches produced		36.95
Total certified sustainable palm oil		8.45
Total ceritified sustainable palm kernel		1.88

Volume in million metric tons

Ineffective
The **figure has STAGNATED** and is not looking to improve. To date, **only 19%** of the world's palm oil producers are certified
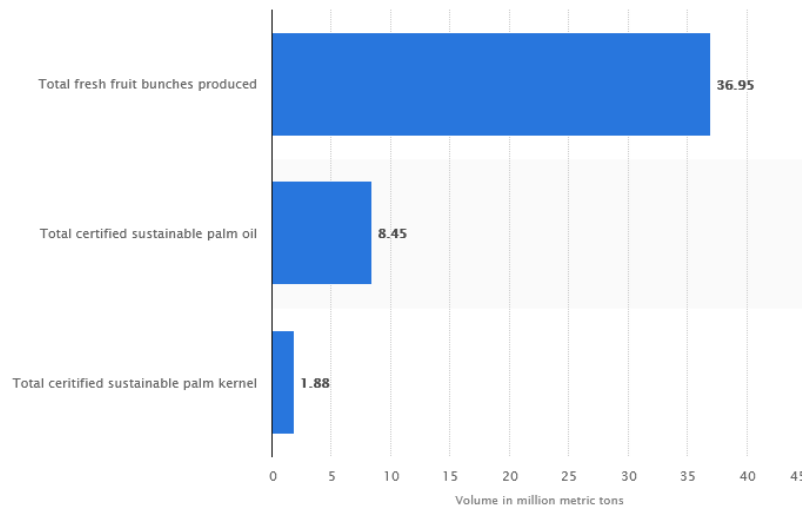
81% of producers stuck with **unsustainable methods** of agriculture. **Why?**

Poor traceability and transparency

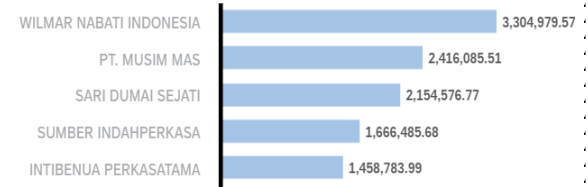**Extremely complex global supply chain**

Unsustainably produced oil still finds its way onto supermarket shelves. **Continued demand** for such oil provides **NO INCENTIVE** for these producers to switch to sustainable methods of production

30% of 'Sustainable Palm Oil' sales in 2016 **could not be traced** back to provider

Palm Oil Supply in Indonesia

Volume of Top 10 Exporter
1 Filter

WILMAR NABATI INDONESIA	3,304,979.57
PT. MUSIM MAS	2,416,085.51
SARI DUMAI SEJATI	2,154,576.77
SUMBER INDAHPERKASA	1,666,485.68
INTIBENUA PERKASATAMA	1,458,783.99

Volume of Top 10 Mills
1 Filter

PT. HINDOLI - SUNGAI LILIN	98,634.00
PT. PINAGO UTAMA	98,634.00
PT. SELAPAN JAYA - LIMAU MUNGKUR	98,634.00
PT. TH INDO PLANTATION (PULAI)	98,634.00
PT. AGRO MINANG PERKASA	98,634.00

We can deduce that top exporters receive oil **from over 20 mills on average**

Blockchain Technology

Cryptocurrency

Invented in 2008 to track cryptocurrency transactions

Blocks of transactions chained together on shared database

Secure & Unchangeable

Accessible by all parties involved in transaction

Supply Chain

Existing technology can be applied to record transactions in supply chains

Track assets from production to shelf

Transparent & Traceable

Accessible by all members of supply chain

Augmented with mobile applications and IoT-backed sensors, **Project Transparency and Traceability** (TnT) aims to reach **near-full sustainability of palm oil supply chains by 2030**

2030 Transparent and Traceable Supply Chain

Plantations	Mills	Refineries	Manufacturer	Consumer
IoT Sensors, Mobile App Plantation worker scans number of fruits harvested & destination to be shipped to. Location will be checked with GPS to see if land was deforested	Mill machinery scans individual batch numbers and refineries they are shipped to	Refinery machinery scan raw oil batch number and manufacturers to be shipped to	Manufacturers scan oil batches	QR code on product allows consumer to view percentage of sustainability of product

IoT Sensors, Mobile App

Added to blockchain

Blockchain Data

Secure record of transactions that can be viewed by approved parties

Implementation

ASSC A.1. Engaged stakeholders in ASEAN Processes	**2022** Approval	• Gain commitment from major stakeholders (NGOs, Green Organisations) • Appoint 1 executive per organisation involved to be project ambassador • Necessary for future regulatory and legal cooperation
ASSC A.2 Empowered people and strengthened institutions	**2024** Aggregate	• Hold discussions and conferences with project ambassadors • This fosters collaboration among stakeholders • Ambassadors to familiarize their respective organisations with technologies to be used
ASSC E.2 **Towards a** Creative, Innovative and Responsive ASEAN	**2026** Assemble	• Ambassadors to assemble necessary digital design teams to be in charge of - blockchain database setup, scanning of plantation fruits and mobile applications • Upskill supply chain members such as mill, refinery and plantation helpers to be able to use new updated technologies • NGOs to caution uncertified plantations, giving ample time to become certified, avoiding economy disruption in 2030
ASSC D.3. A Climate Adaptive ASEAN with enhanced institutional and human capacities to adapt to the Impacts of Climate Change	**2030** Action	• Blockchain should be a well-known technology by now • All stakeholders are aware of responsibilities and technologies are in place • Project ambassadors to organise regular checks and audits to ensure no fraudulent activity occurs

In the future..

ASSC c.4.
Sustainable consumption and production

Higher demand for certified palm oil puts **pressure** on plantations **to switch to sustainable methods**

Unsustainable practices such as deforestation **drastically reduce**

All palm oil containing products can be **traced to supplier**

Companies **avoid sourcing** from irresponsible suppliers to **distinguish themselves** from competitors

ASSC c.1.
Conservation and Sustainable Management of Biodiversity, Natural Resources

ASSC c.3
Sustainable Climate

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