

Global Sustainable Palm Oil Campaign Based on Research and Development

*Dr. sc.agr. Ir. Aiyen Tjoa, MSc.
Juri Lomba Riset Sawit Mahasiswa
Litbang BPDPKS*

aiyenb@yahoo.com/aiyen@untad.ac.id

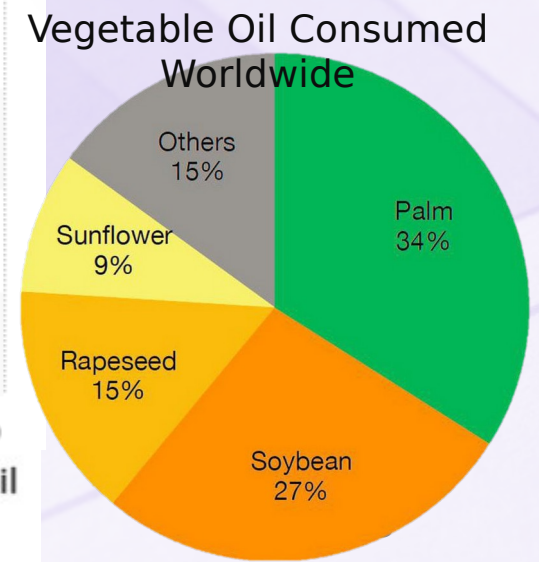
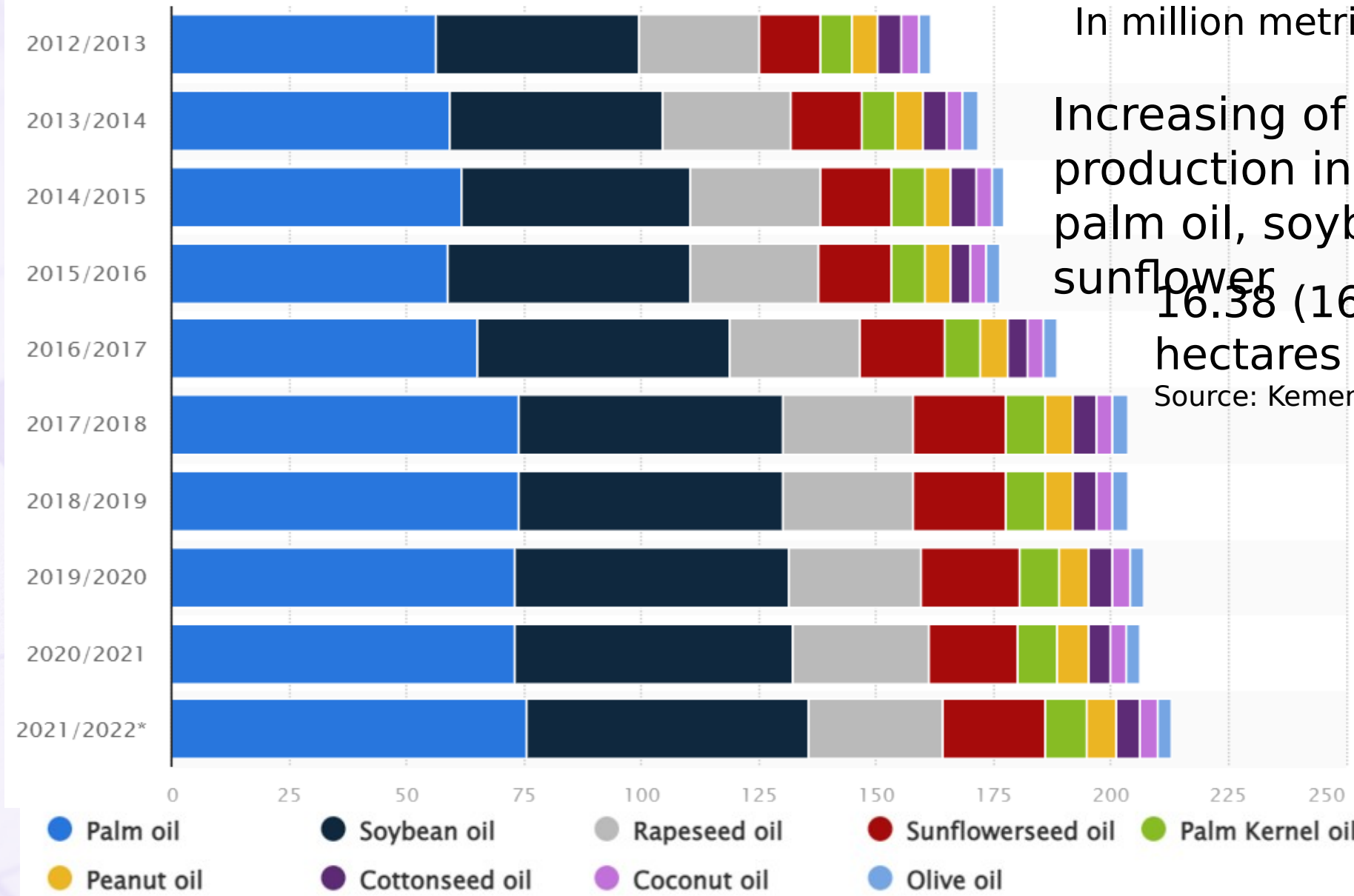
*Plt. Warek Pengembangan dan
Kerjasama Universitas Tadulako*

Presentation flow

- ❖ Why oil palm- any future?
- ❖ Opportunity, challenges, and position
- ❖ Sustainability aspects
- ❖ Innovation and invention requirements



Production of major vegetable oils worldwide

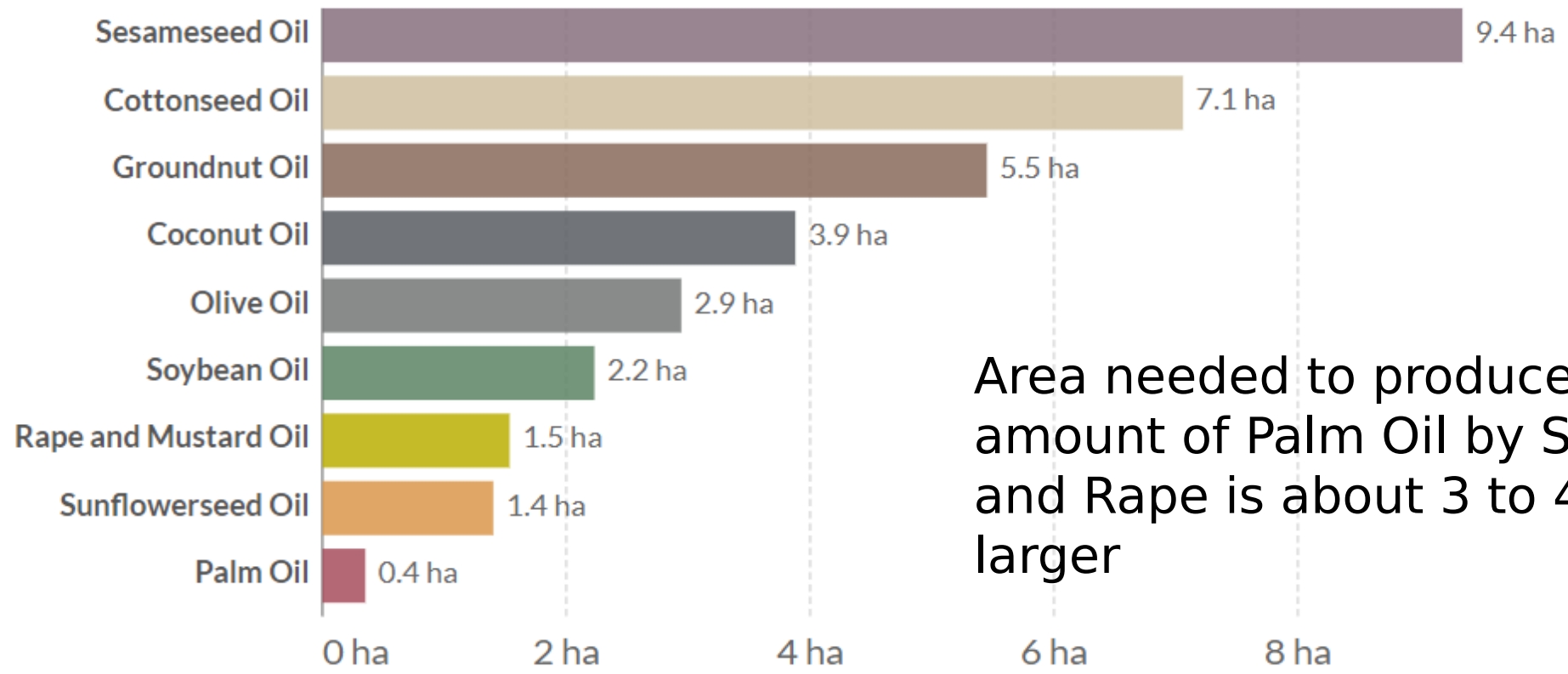


Oil palm is high efficiency of oil production

Area of land needed to produce one tonne of vegetable oil, 2018

Our World in Data

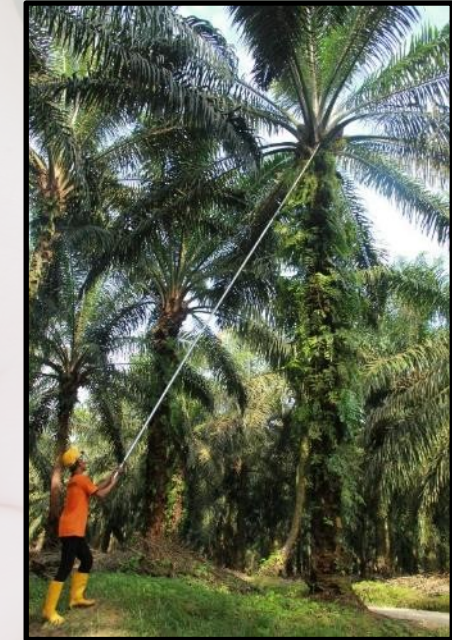
This metric is the inverse of oil yields. It represents the amount of land that would need to be devoted to grow a given crop to produce one tonne of vegetable oil.



Area needed to produce same amount of Palm Oil by Sunflower and Rape is about 3 to 4 times larger

Source: Calculated by Our World in Data based on data from the UN Food and Agriculture Organization (FAO) OurWorldInData.org/crop-yields • CC BY

Oil palm plantation landscape vs. other vegetable oil landscapes



Source : Google Image & GAPKI Documentation

Kelapa Sawit (*Elaeis guineensis* Jacq.)



Palm oil product



Lever Brothers' "Sunlight" soap was one of the first soap brands to switch from animal-based fats to palm oil during the industrial era. In this 1897 photo, workers package soap in their factory at Port Sunlight, Liverpool. (Image: Bedford Lemere & Co / Alamy)

When was oil palm first used?

<https://frymax.co.uk/palm-history/#:~:text=in%20saturated%20fat.-,Palm%20oil%20facts,brought%20the%20oil%20to%20Egypt.>

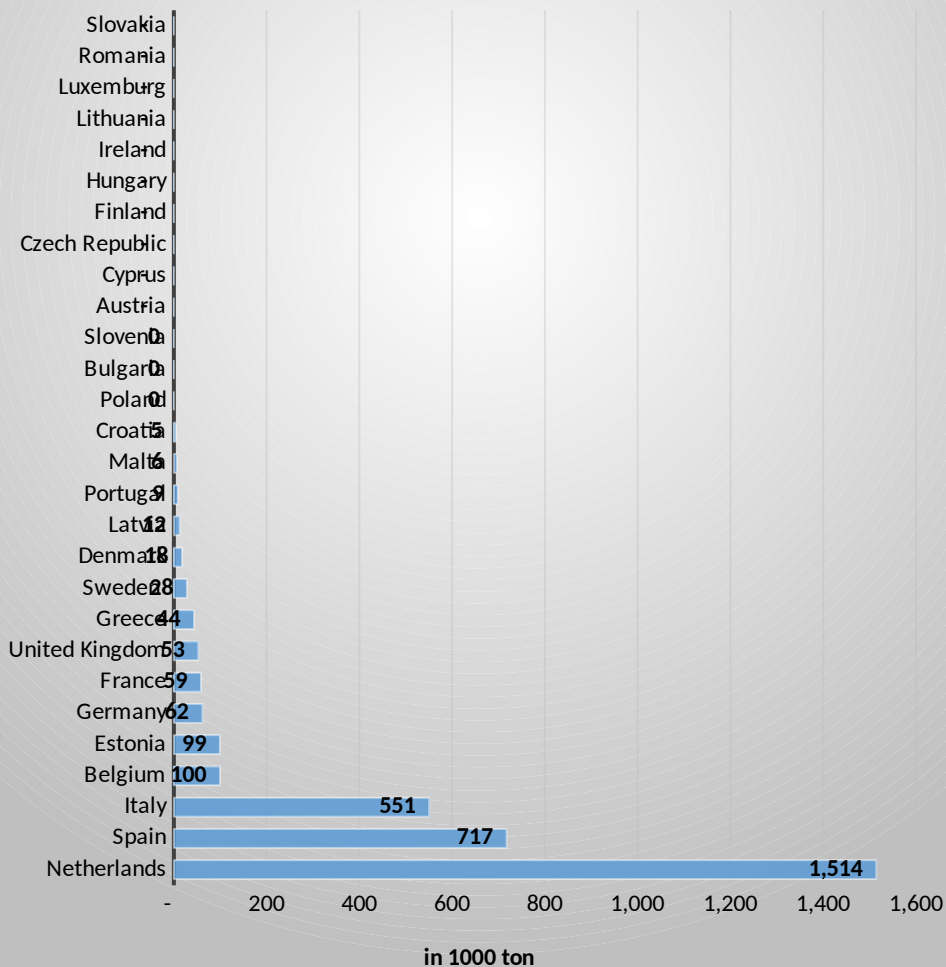
5,000 years ago, in the late 1800s, archaeologists discovered a substance in a tomb at Abydos (dated back to 3,000 BC)



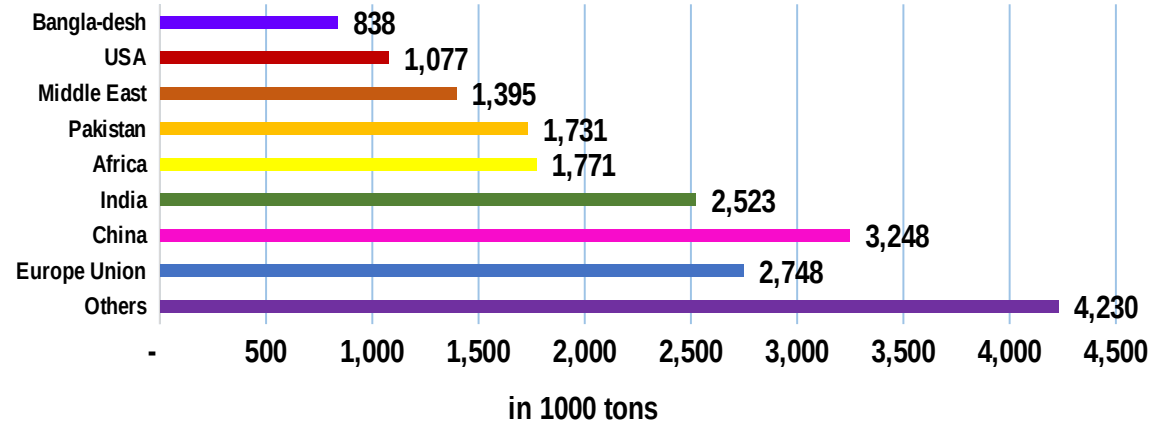
Palm oil industry profile



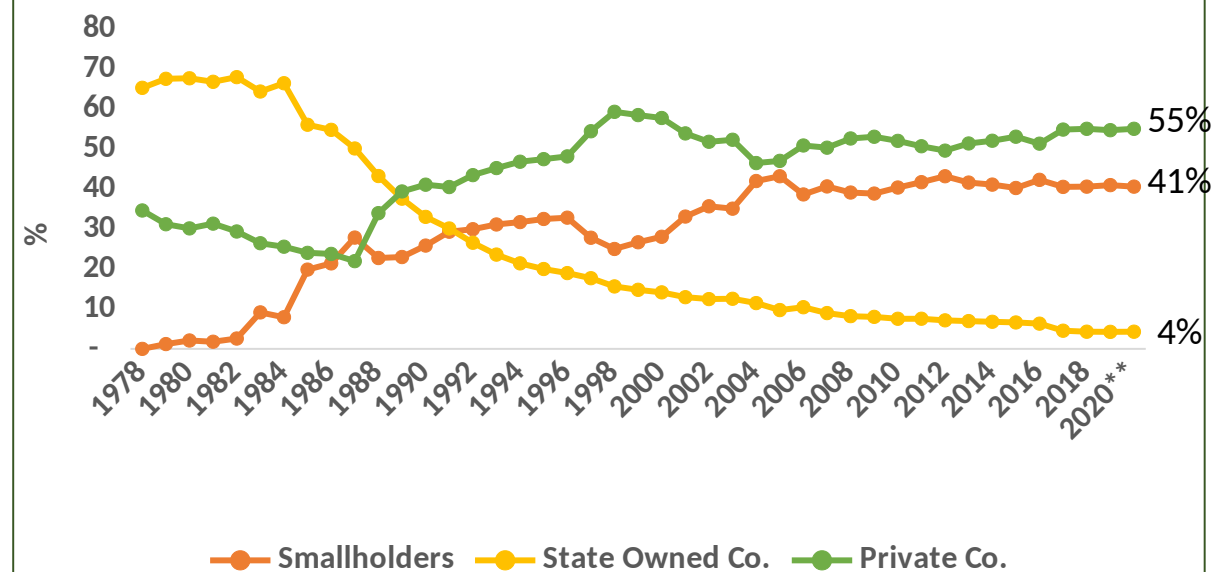
Ina Palm Oil Export to EU as at Jul 2021



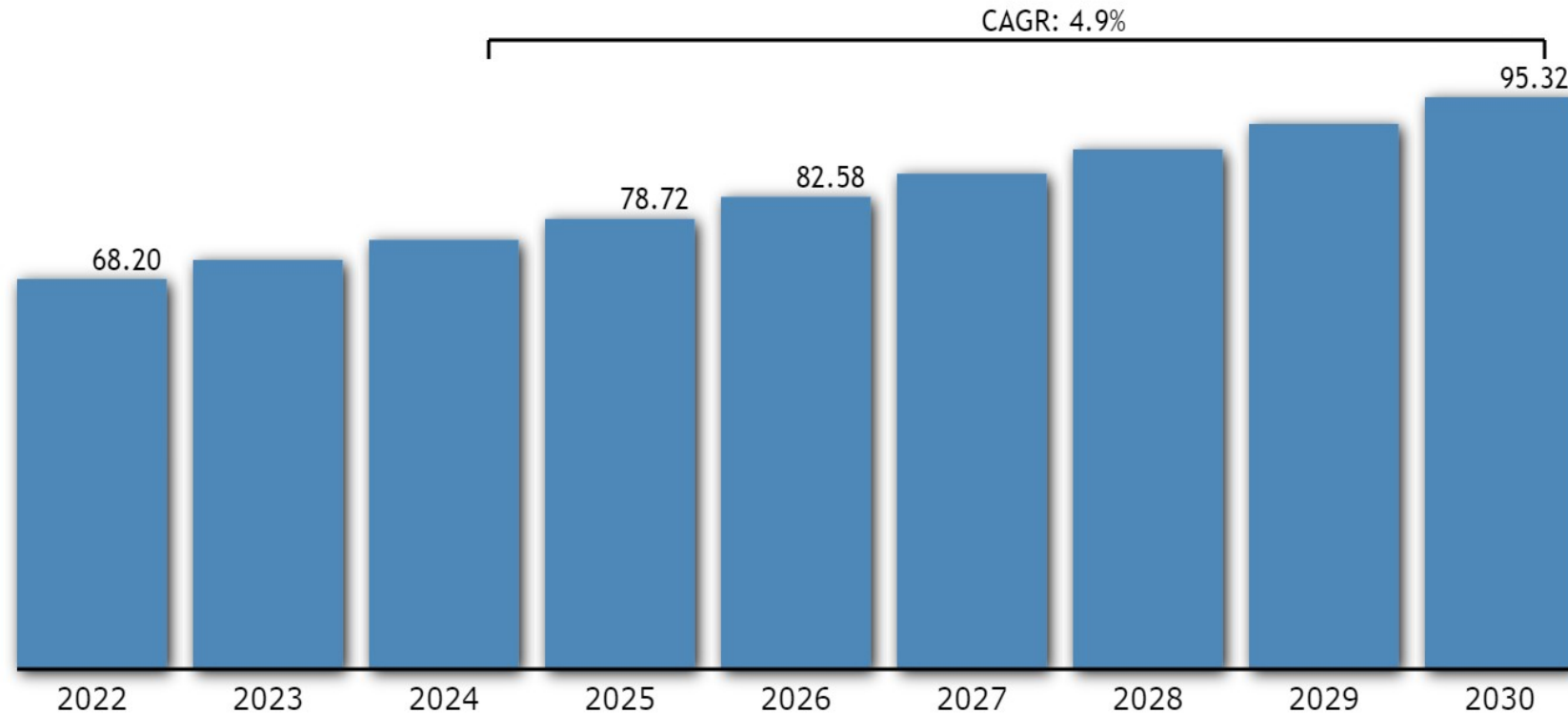
*Ina Palm Oil Export (august 2021)



Indonesian Oil Palm Plantation Area based on Ownership



Future – sunshine?



Global oil palm market is valued at USD 68,2 billion (2022)

2030 – projected 95,32 billion USD

Compound Annual Growth Rate (CAGR) 4,9%

Triggered by sustainability (certification), new product, research and policy, campaign/dissemination

Challenges

Make palm oil a mandatory title in the ingredients list on food products on shelves in NZ.



Dimulai 11 April 2017
Mempetisi Mr Mark Booth (Food Standards Australia New Zealand)

Petisi ditutup

Petisi ini mencapai 5.271 pendukung

FSANZ : Make palm oil a mandatory title in the ingredients list on food...

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50% of all packaged food contains palm oil.

Buying products made with palm oil encourages orangutan habitat destruction.



Consumer movement

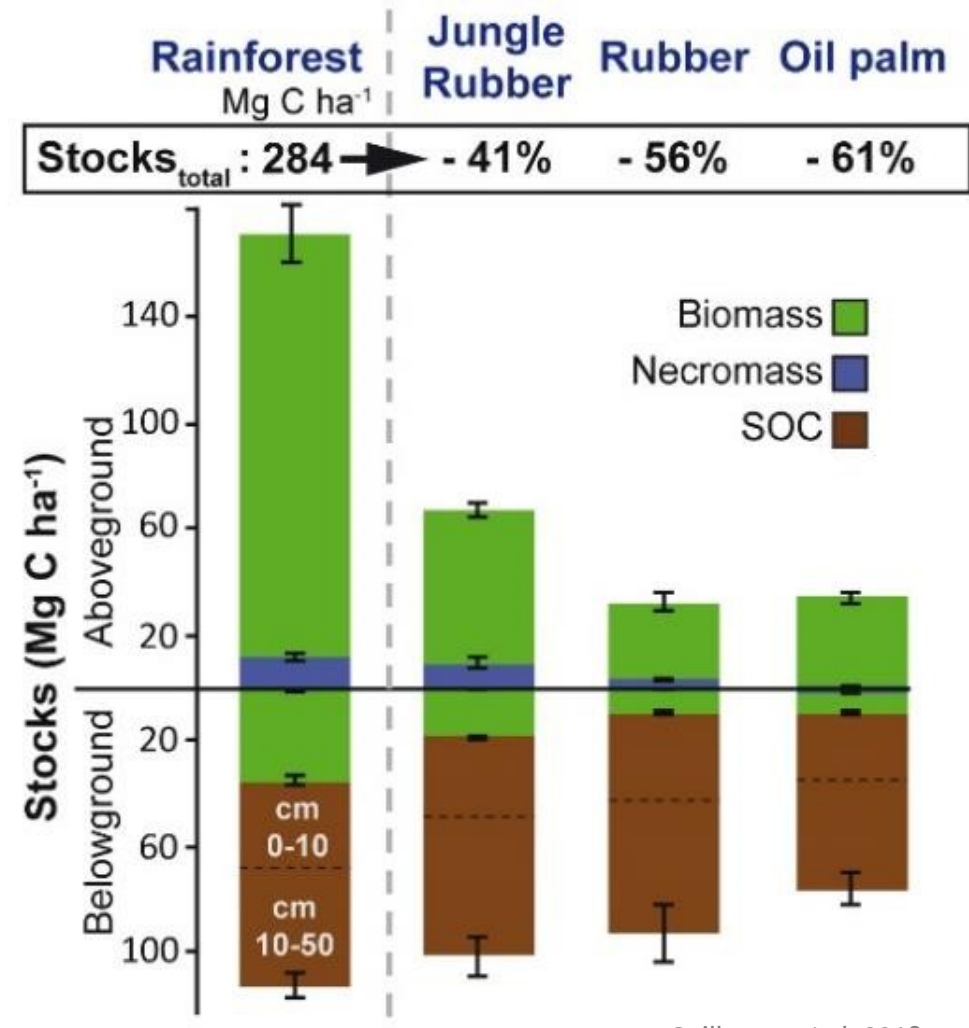
Consumption of palm
oil products!
(Sustainability products)

Regulation

Consumer awareness

Certification

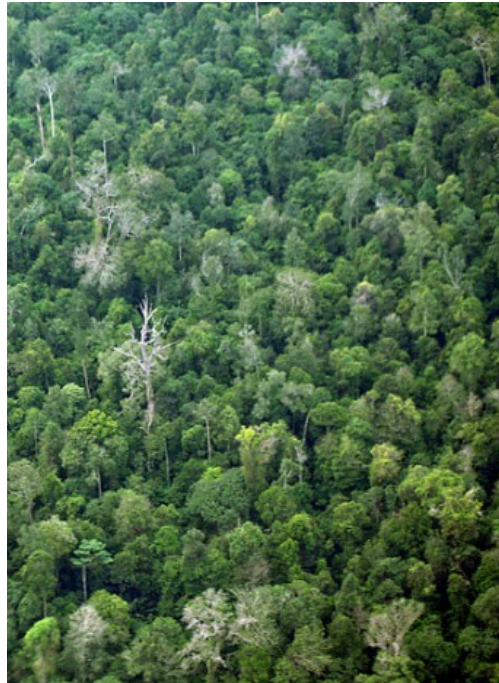
Loss of stored carbon



Guillaume et al. 2018



Land-use change leads to surface warming



Forest as reference



Mature oil palm plantation



Young oil palm plantation



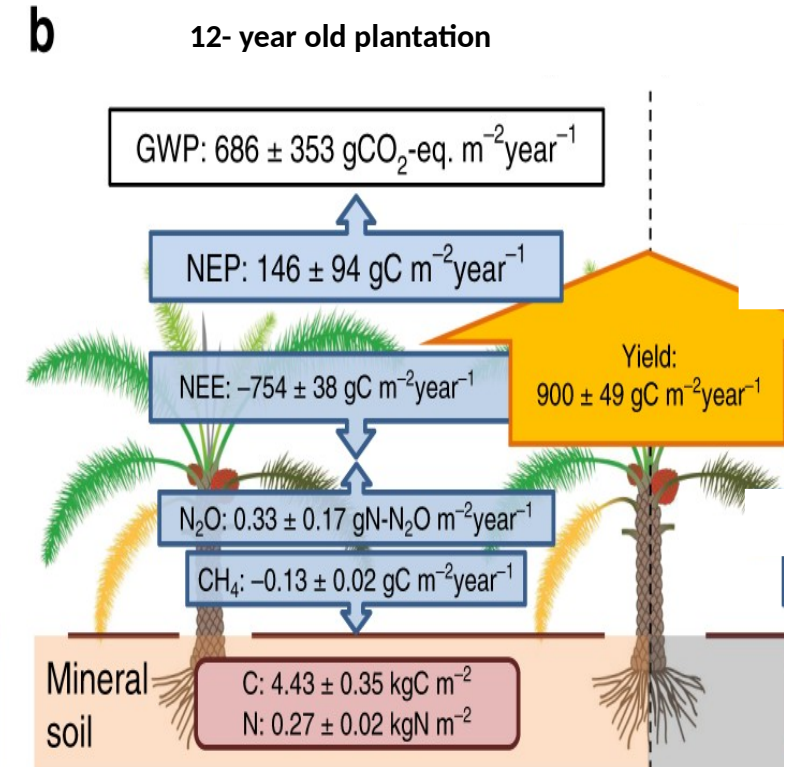
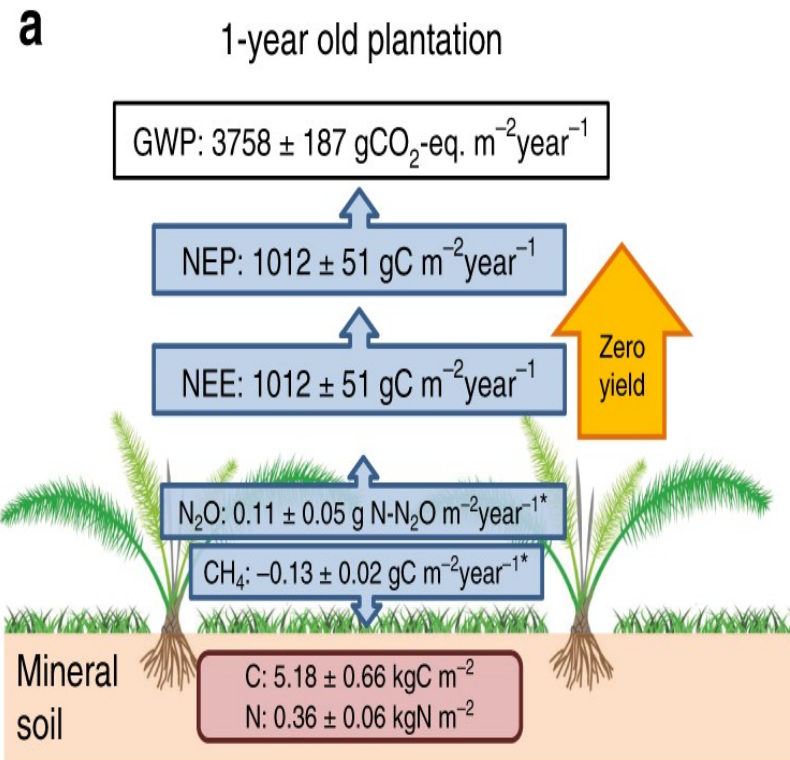
Bare soil

Sabajo et al. 2017

Oil palm plantation – still a net greenhouse gas source (1st generation)

















Flux tower in oil palm plantation



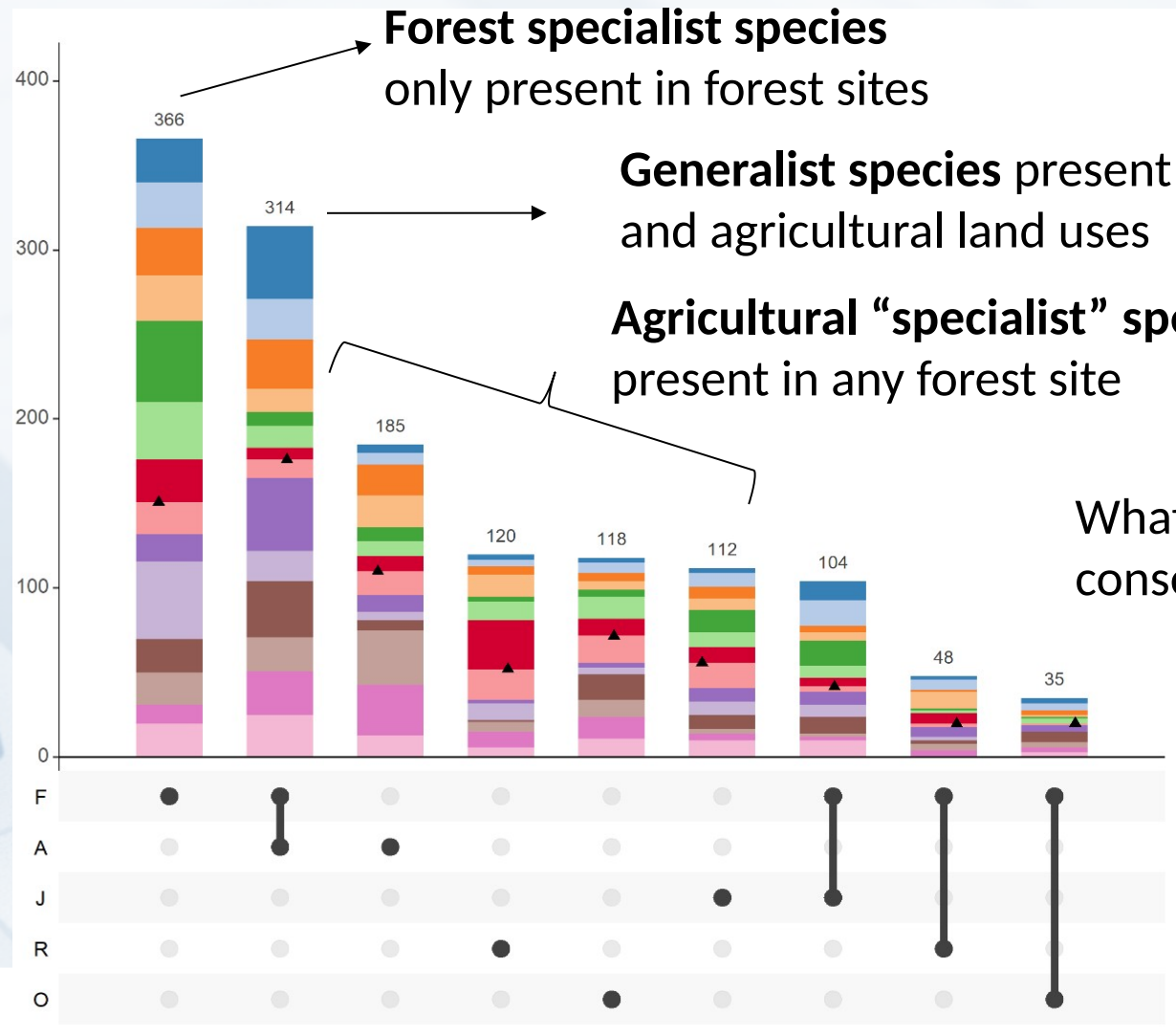
Stiegler et al. 2019
Meijide et al. 2020



Forest specialists are most strongly affected by land-use change

-  Canopy Ants
-  Canopy Parasitic Wasps
-  Butterflies
-  Birds
-  Plants
-  Leaf litter ants
-  Spiders
-  Fungi
-  Oribatida mites
-  Mesostigmata mites
-  Testate amoeba
-  Archaea
-  Bacteria
-  Protists

Forest
Agricultural system
Jungle rubber
Rubber
Oil palm



What are the consequences?



Effects of enrichment of oil palm with native trees (*EFForTS-BEE*)

Conventional Oil Palm



Oil-palm-based agroforestry



Enriching oil palm plantations with native trees



Effects of enrichment of oil palm with native trees (*EFForTS-BEE*)



© Watit Khokthong

- Most organisms benefit from tree enrichment without compromising yields



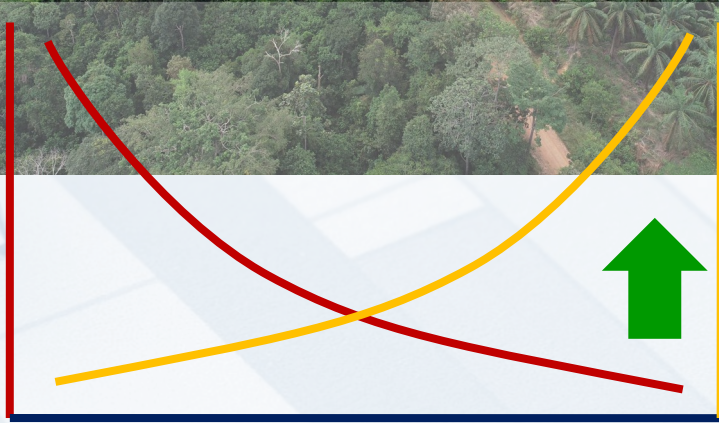


Exploring options of restoring biodiversity and ecosystem functions



Biodiversity
Ecosystem functions

Economic functions

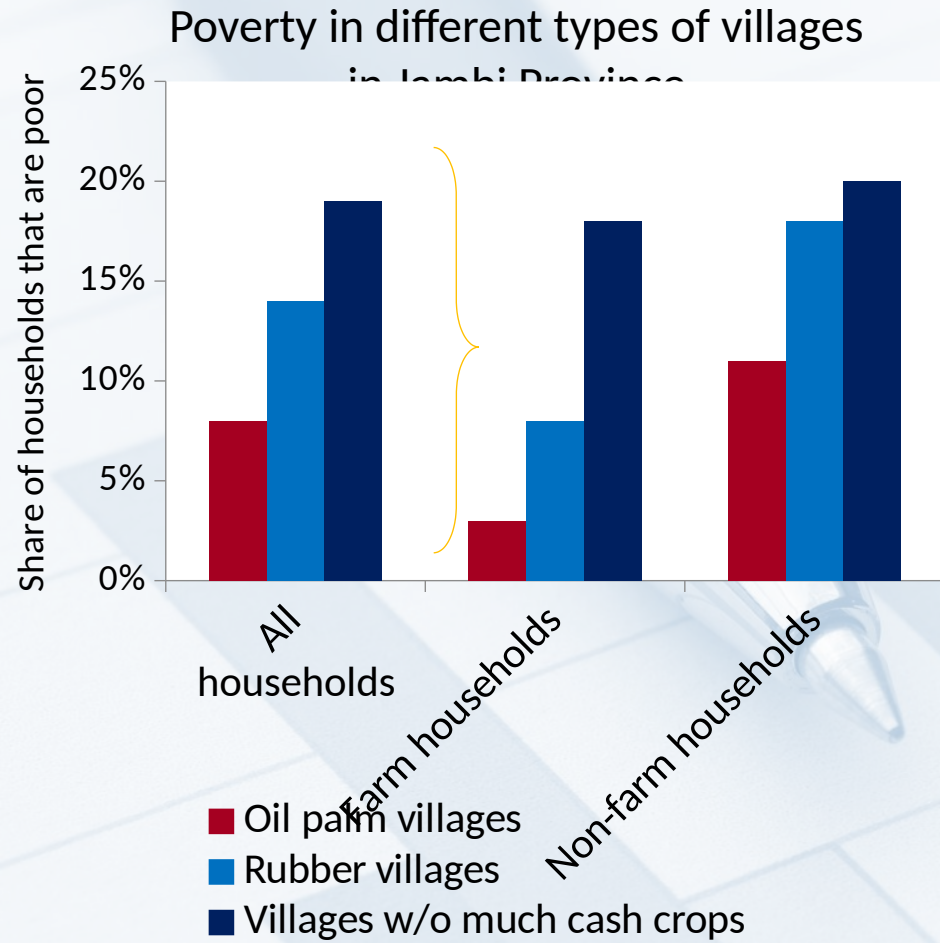


Restoration?

Land-use intensity



Expansion of oil palm is associated with improved livelihoods

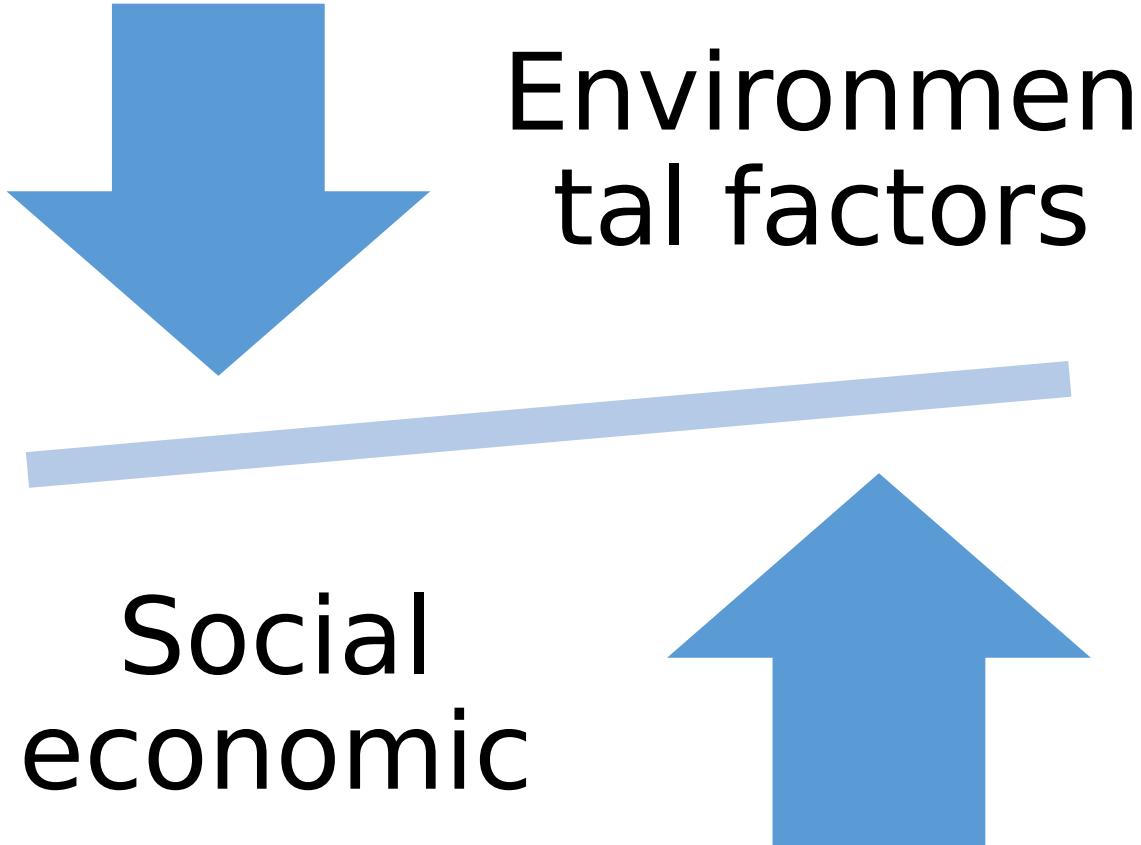


- Household income ↑ 13%
- Consumption and nutrition
- Improved houses
- Better roads, electricity

Bou Dib et al. 2018, Kubitzka et al. 2018, Euler et al. 2015, Gatto et al. 2015



Environmental factors vs social economic



- ❖ Environmental and social goals may be in conflict -who benefits and who suffers?
- ❖ The environment provides resources to the economy but acts as a sink for emissions and waste, and causes degradation (a net benefit or a net cost for society)
- ❖ How can environmental policies help make the most out of environmental protection and economic growth?

A holistic approach to analyzing and addressing problems and reforms shall be adopted!

TANTANGAN PENGEMBANGAN KELAPA SAWIT



Produktivitas Rendah

Produktivitas CPO rata-rata 3,6 ton/ha/thn. Potensi 6-8 ton/ha/thn



Black Campaign

Isu deforestasi, kerusakan lingkungan (biodiversity lost, gambut)



Terindikasi Kawasan Hutan

Terindikasi 3 juta ha sawit berada dalam kawasan hutan



Legalitas dan Perizinan

Masih terdapat kebun sawit belum memiliki legalitas (SHM, HGU, STDB)



Gangguan usaha dan Konflik

Harmonisasi PBS/PBN dgn perkebun rakyat menurunkan provitas



Hambatan akses pasar di beberapa negara tujuan ekspor

Tarif bea masuk yang tinggi, kebijakan anti dumping, *food safety*



Hilirisasi

Pengembangan produk turunan CPO belum optimal



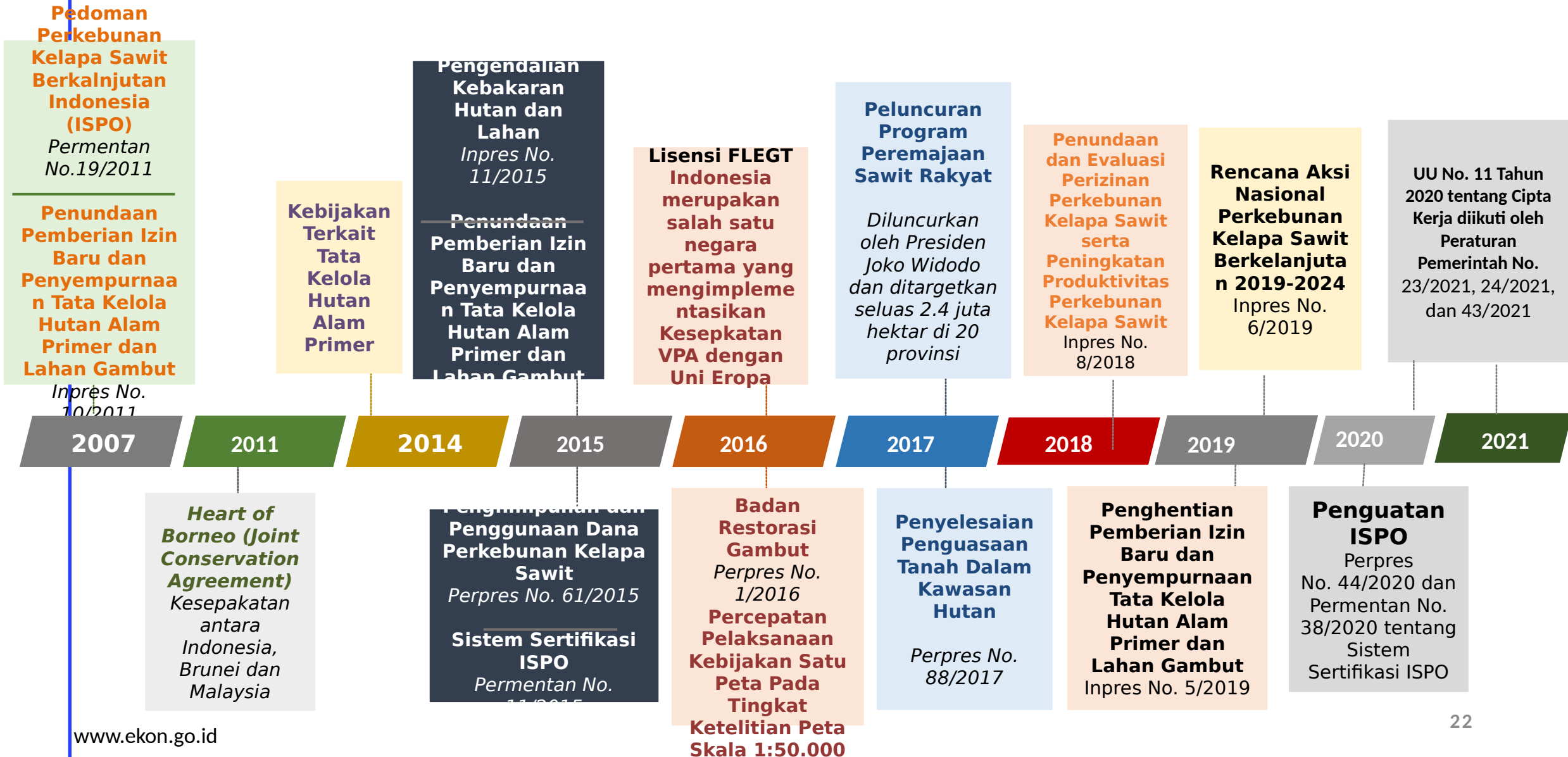
Energi

Potensi sumber daya belum tergarap maksimal untuk energi

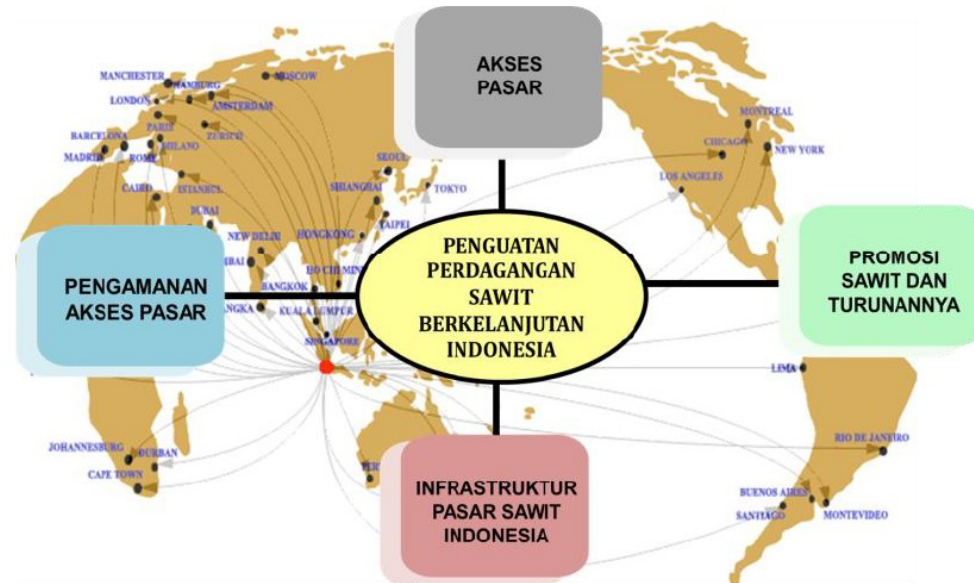
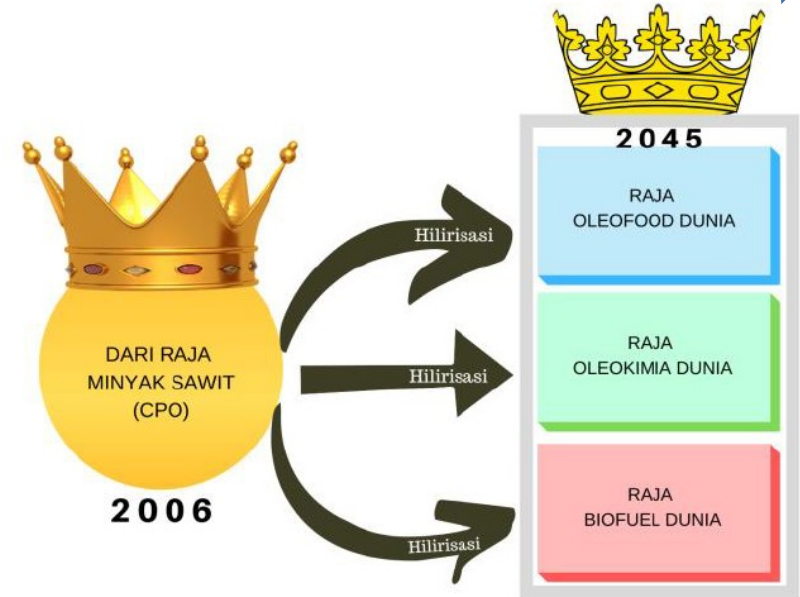
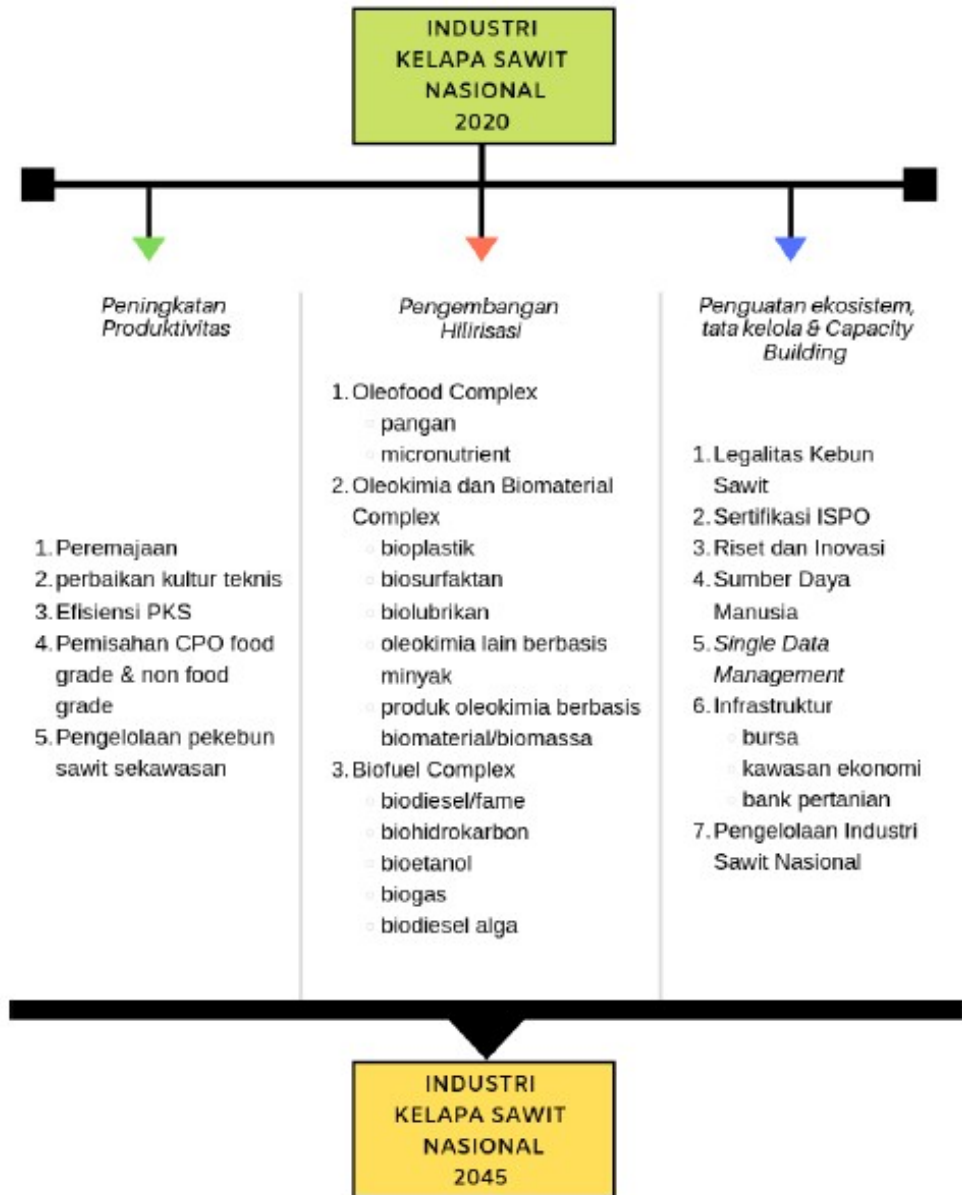
KEBIJAKAN TERKAIT PEMBANGUNAN KELAPA SAWIT

BERKELANJUTAN

Tataran makro untuk memastikan aspek keberlanjutan dalam industri kelapa sawit



STRATEGI UTAMA PENGEMBANGAN SAWIT NASIONAL MENUJU TAHUN 2025



Strategi Pengembangan Perdagangan Produk Kelapa Sawit Indonesia

Sustainability Barrel

ECONOMIC FACTORS:

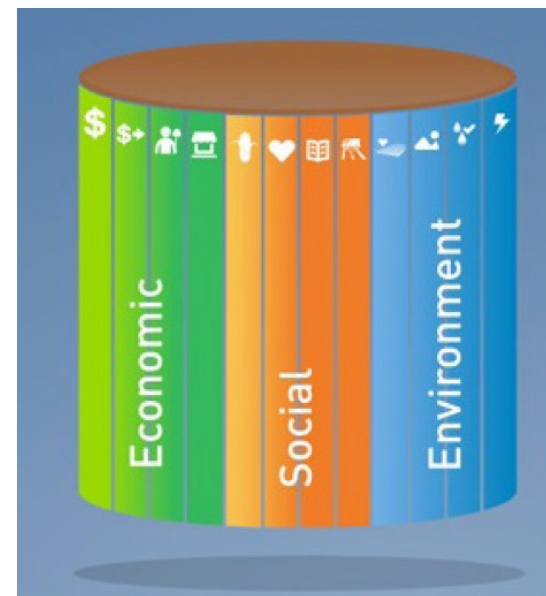
profits, jobs, incomes, community

SOCIAL FACTORS:

food, education, health, infrastructure

ENVIRONMENTAL FACTORS:

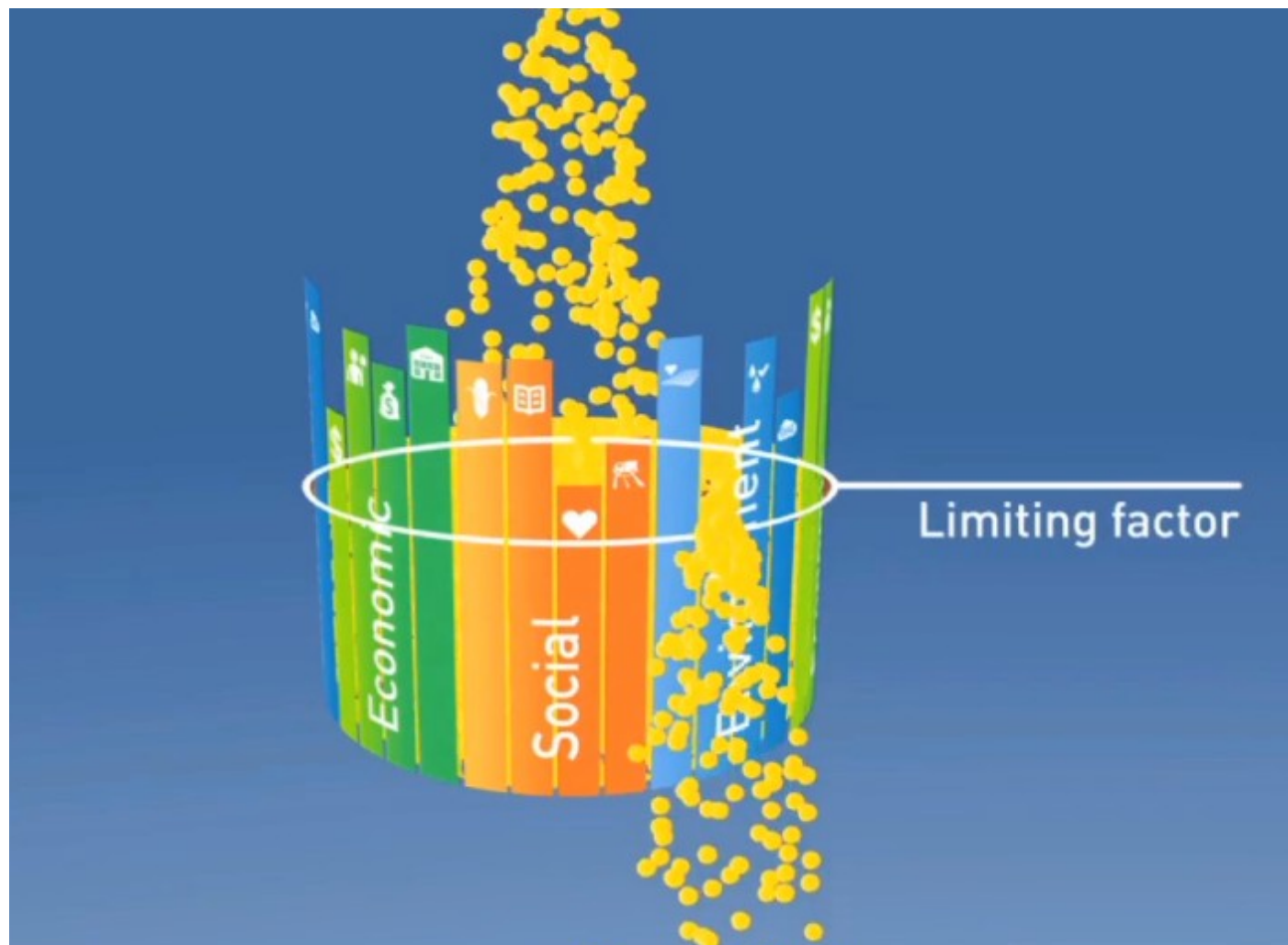
soil health, habitats, water, greenhouse gases



Can a farmer take the same land, soil, seeds, water, and tractors and double their production from one year to the next?

No! There are limitations

Sustainability Barrel



We must continually improve the weakest factor!

Ripple Effect

Can one single drop of water impact an entire body of water?



Yes. Even a small drop of water creates a ripple

Ripple Effect

If a farmer harvests a successful oil palm? What “ripples” could this create?

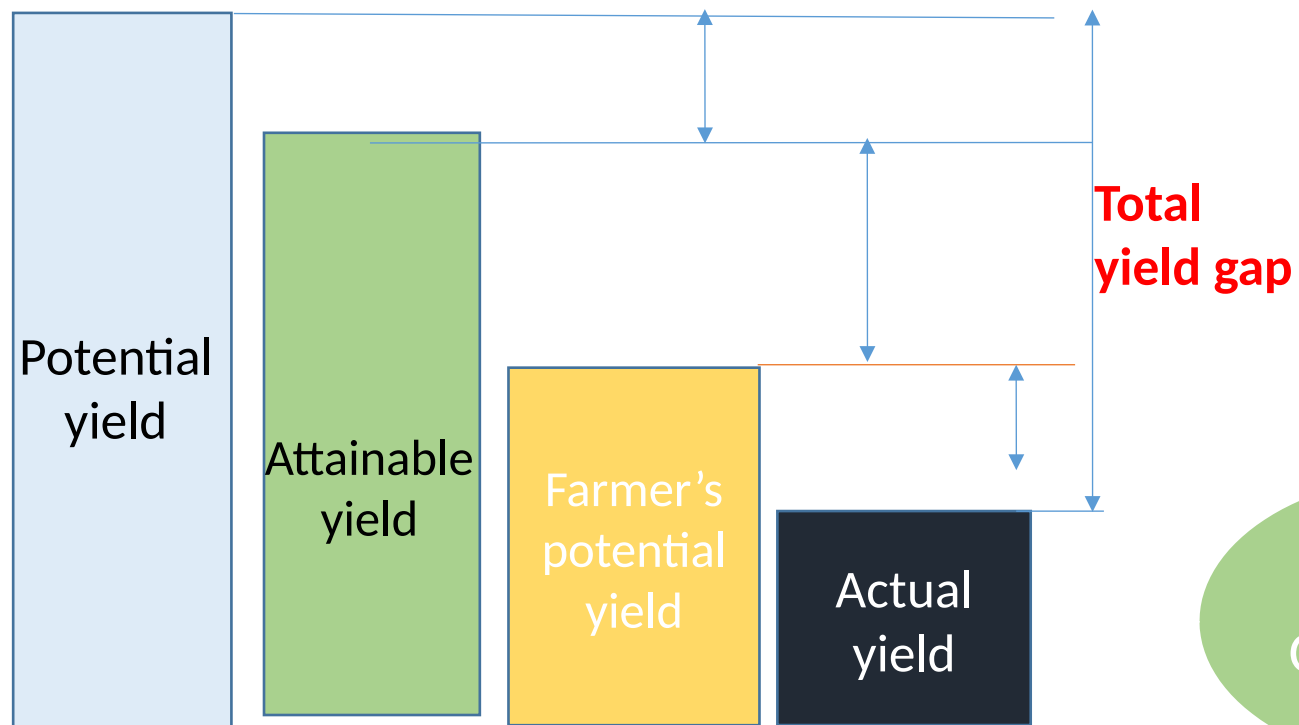


Financial investments improve local economy and provide more jobs

Earn enough money to invest in better farming technology
Opportunity to send children to school and access health care

Provides our food supply

Classical challenge- Productivity!



Kenaikan 1 ton ha⁻¹ identik dengan ± 20-25% produksi tahun⁻¹

- ✓ Human capacity
- ✓ Science & Technology (investment & Acceleration) - ICT - AI

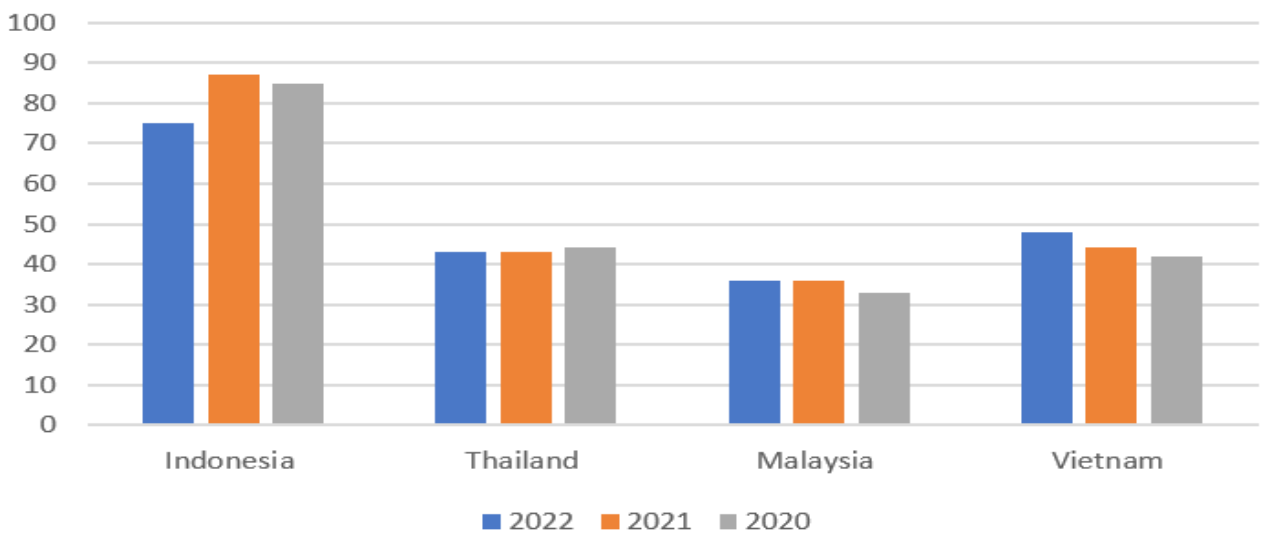



Invent what we don't use yet

Using better what we already use (Innovate)

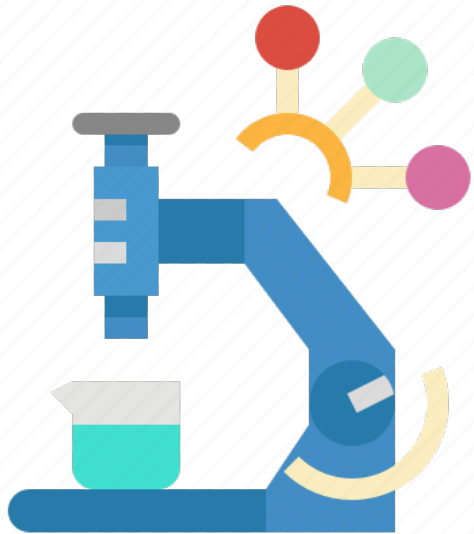


Global Innovation Index



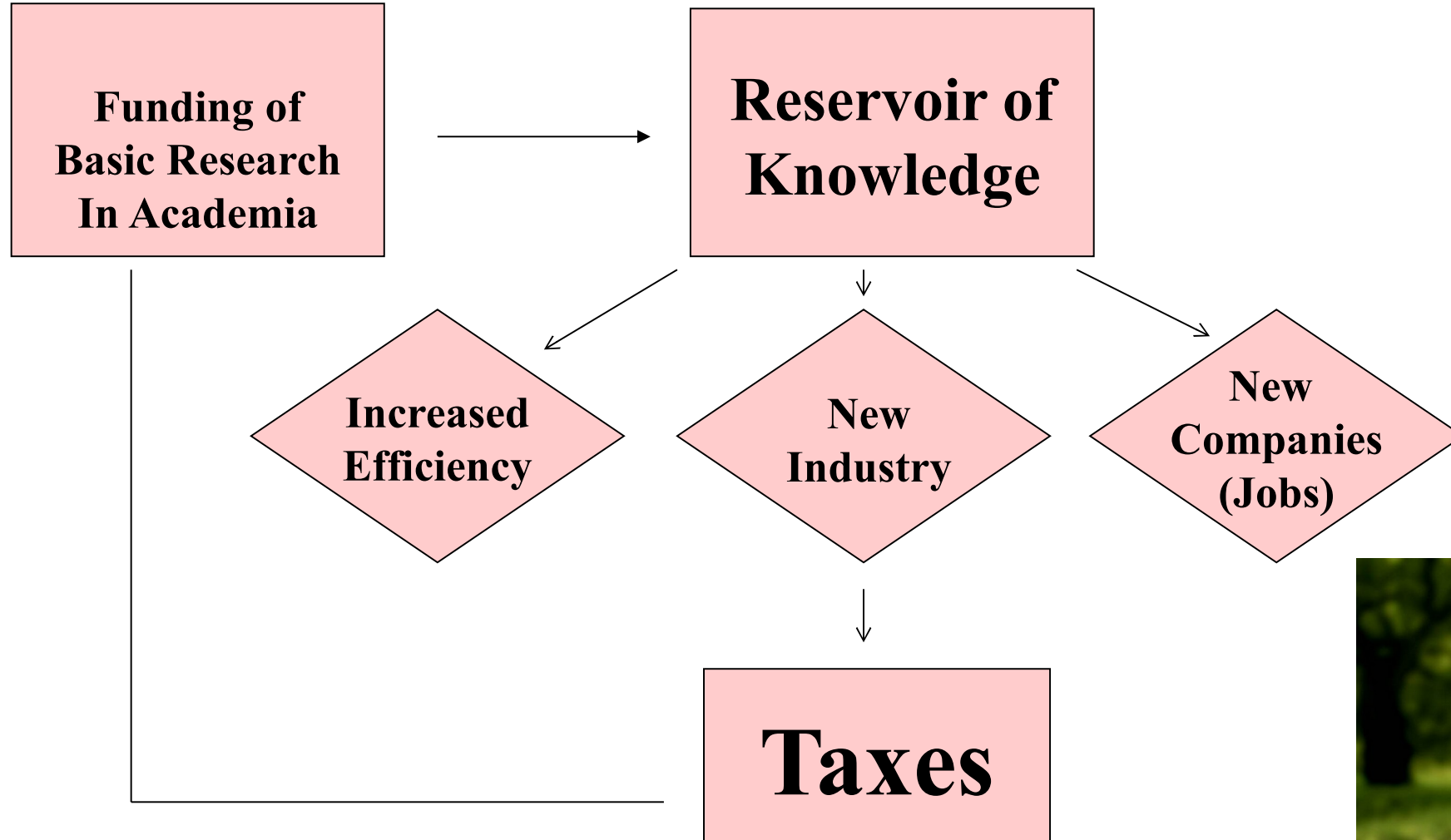
**Inovasi itu dinamis dan kompleks:
 Banyak aktor, keterkaitan tinggi
 antar faktor spt sistem umpan-
 balik, ketersediaan platform
 Inovasi proses non-linear**

Perdirut BDPDPKS No. 1 Tahun 2018



- 1 *Grant Riset Sawit – Terbuka*
- 2 Riset Sawit – Inisiatif Eksternal/Internal
- 3 Lomba Riset Sawit Tingkat Mahasiswa

Why invest in research?

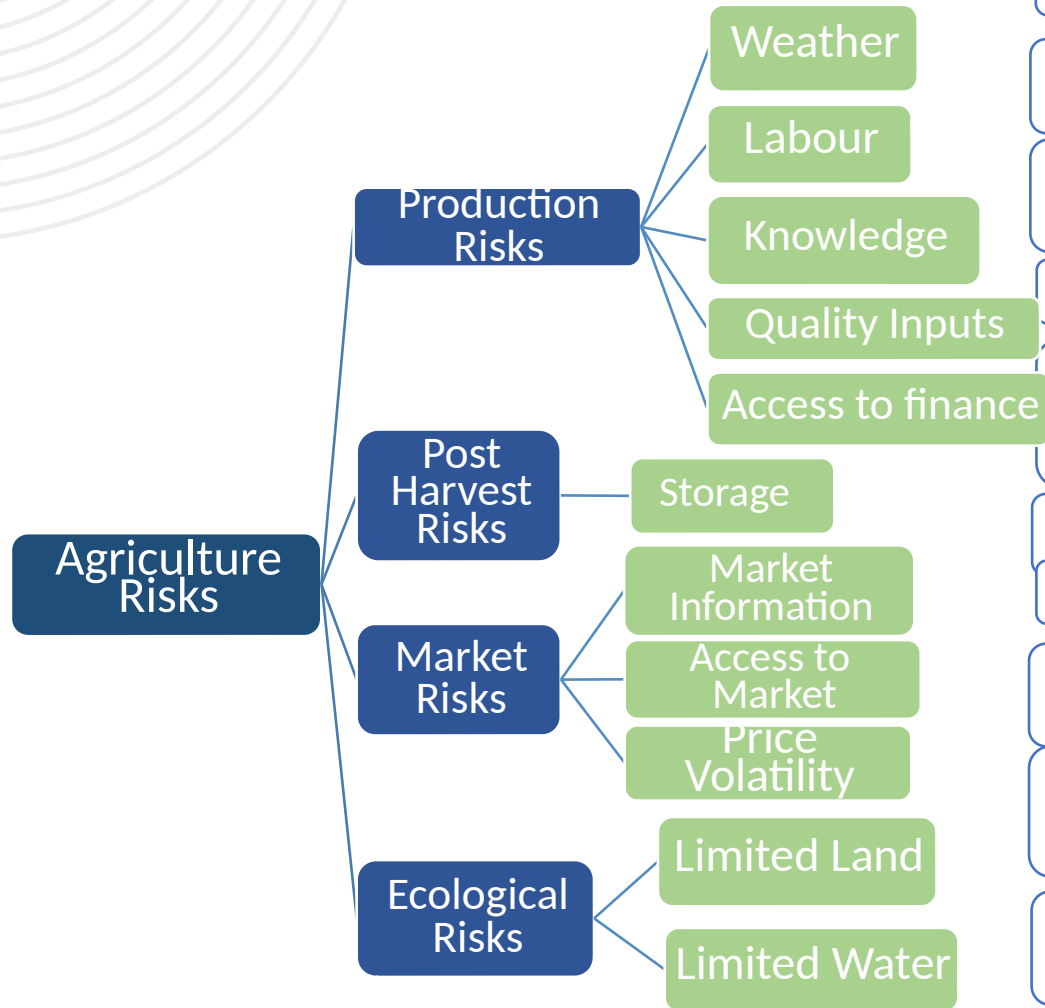


Muda- berbakat-berani kerja keras -inovatif!





Pertanian-kegiatan ekonomi yang beresiko tinggi!

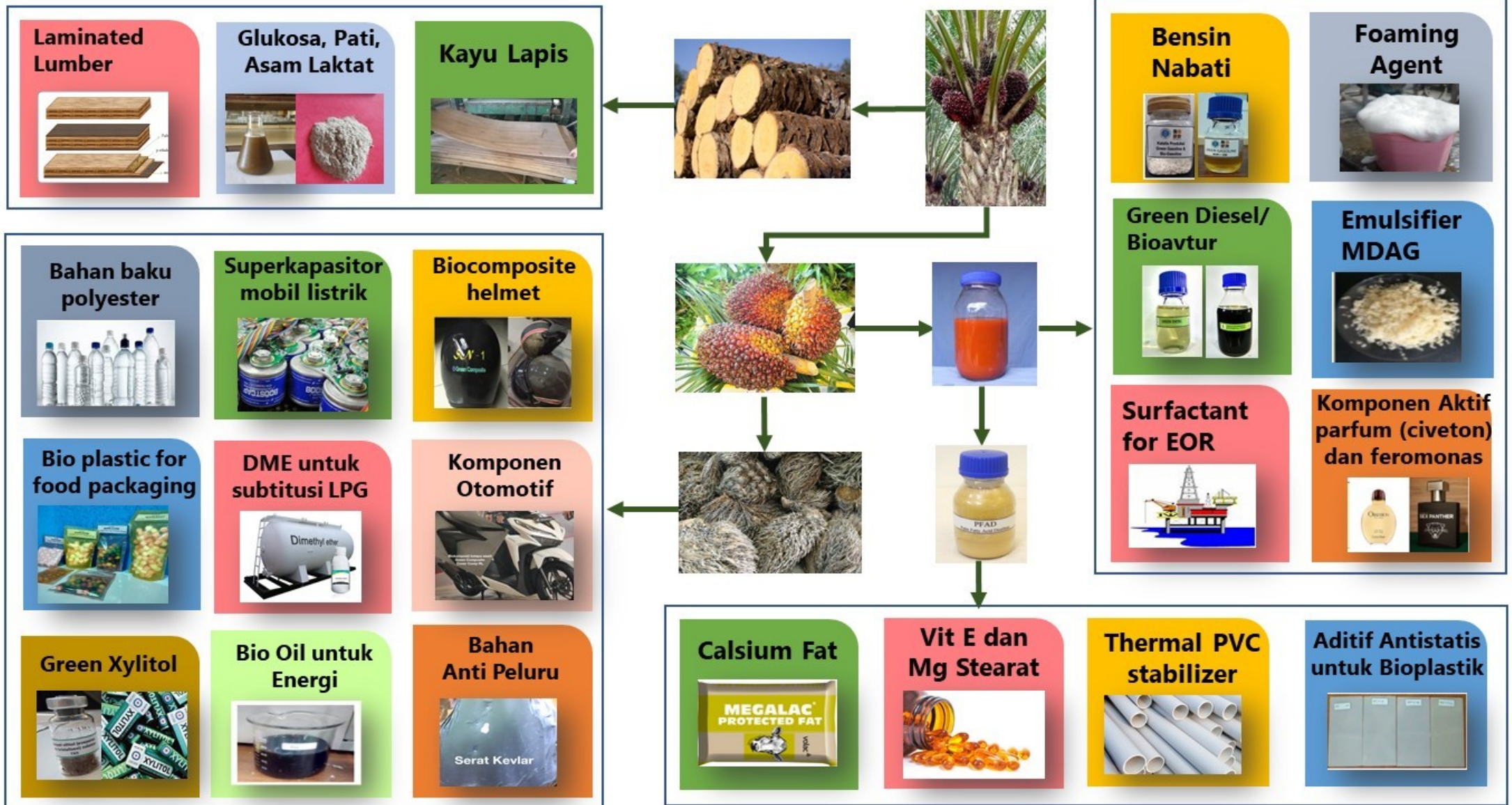


- Perubahan iklim -ketidakpastian menjadi tinggi
- Mekanisasi mengatasi kekurangan Pekerja & Skill (dana?)
- Pelaku pertanian -masih tradisional, begitu juga organisasi pemerintahan, penyuluh
- Kualitas, kuantitas dan waktu yg tepat misal pupuk, bibit dll
- Akses akan modal, sisi lain tingkat tanggung jawab atas akses yang diberikan juga kurang
- Kehilangan produksi karena tidak memiliki penyimpanan
- Asimetri informasi pasar - petani rugi
- Akses terhadap pemasaran langsung -tanpa perantara (Tani hub -masih dengan perantara)
- Volalitas harga memberikan keuntungan pada spekulan bukan petani
- Degradasi luas dan kualitas lahan pertanian - masa depan?
- Ketersediaan dan kualitas air

Digitalisasi- bisa memitigasi resiko pertanian (?)



A few innovations-the outputs of the GRS 2015-2020





THANK YOU

**BEST OF LUCK WITH
YOUR PROPOSAL!**