Oil Palm: Economic Blessing or Environmental Curse

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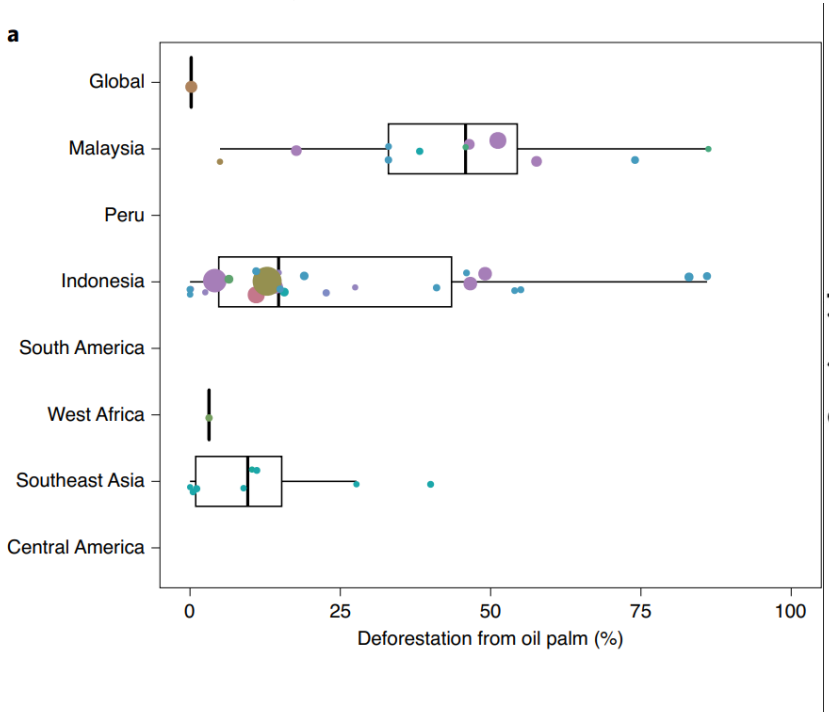
Oil Palm and the Environment

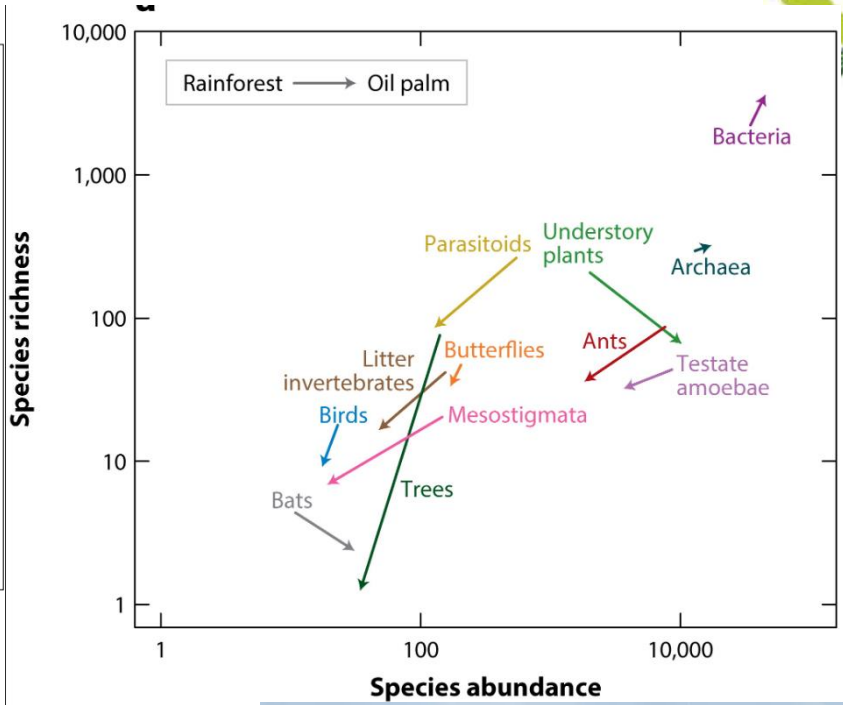
- Oil palm is a tropical plant grown for its vegetable oil-rich fruit

- A significant portion of land covered by oil palm was converted from pristine rainforest

Meijaard et al. 2020



Qaim et al. 2020



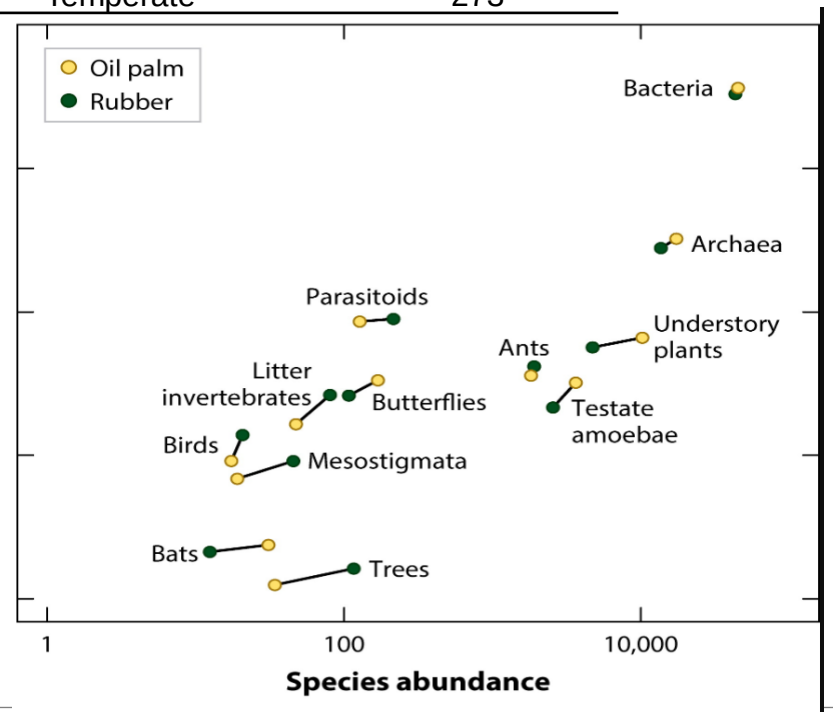
- Oil palm contains fewer carbons stock and biodiversity than forests
  - Forest: 200 t/ha
  - Oil palm: 40 t/ha

Oil Palm and Other (Oil) Crops

- Oil palm contains more carbons stock and biodiversity than other crops
  - Oil palm: 40 t/ha
  - Soybean: 5 t/ha
- Uses 50-80% fewer chemical fertilizers and pesticides
- Provides the highest palm oil per ha
  - Big room to improve yield, but not in perennial crops
  - Less in nitrogen needs and soil erosion

Oil Crop	Type	Oil Yield (t/ha)	Main biome impacted	Median species richness (# of species)
Oil palm	**Perennial**	**1.9-4.8**	**Tropical rainforest**	**472**
Coconut	Perennial	0.4-2.4	Tropical and Subtropical	317
Olive	Perennial	0.3-2.9	Mediterranean	N/A
Soybean	Annual	0.4-0.8	Subtropical	278
Rapeseed	Annual	0.7-1.8	Temperate	227
Cotton	Annual	0.3-0.4	Subtropical	299
Groundnuts	Annual	0.5-0.8	Subtropical	351
Sunflower	Annual	0.5-0.9	Temperate	189
Maize	Annual	0.1-0.2	Temperate	273

Meijaard et al. 2020



Qaim et al. 2020

IPB University — Bogor Indonesia
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Tadulako University
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Oil Palm and Socioeconomic Benefits (1/2)

- Benefited producing and non-producing countries
- Contributes to lowering malnourishment globally (calorie supply)
- The crop's production has stimulated producer countries' rural economies
- Hires the highest labor per unit of land – among tropical plantation crops and agroforestry

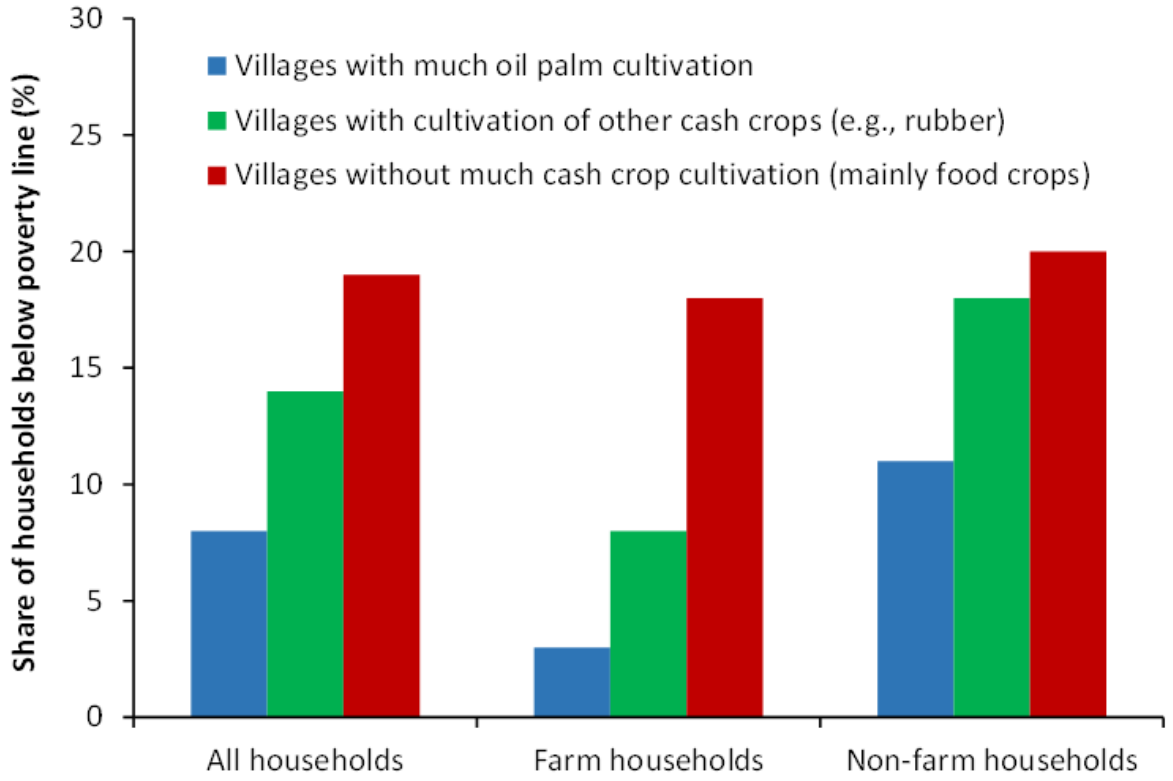
Exporters	Exported value palm oil (US $ billion)	Total national value exported (US $ billion)	Share in national exports (%)
Djibouti	0.18	0.37	49.08
Sao Tome and Principe	0.01	0.02	30.14
Nepal	0.26	1.67	15.48
Indonesia	26.67	228.23	11.68
Papua New Guinea	0.80	11.91	6.70
Solomon Islands	0.03	0.53	6.21
Togo	0.06	1.07	5.31
Guatemala	0.71	13.59	5.22
Malaysia	14.21	299.29	4.75
Honduras	0.24	4.98	4.74
Sierra Leone	0.02	0.96	2.17
Liberia	0.03	1.69	2.04
Others	7.31	20470.13	11.71
World	48.97	21953.10	0.22

Export value of palm oil and its fractions in 2021

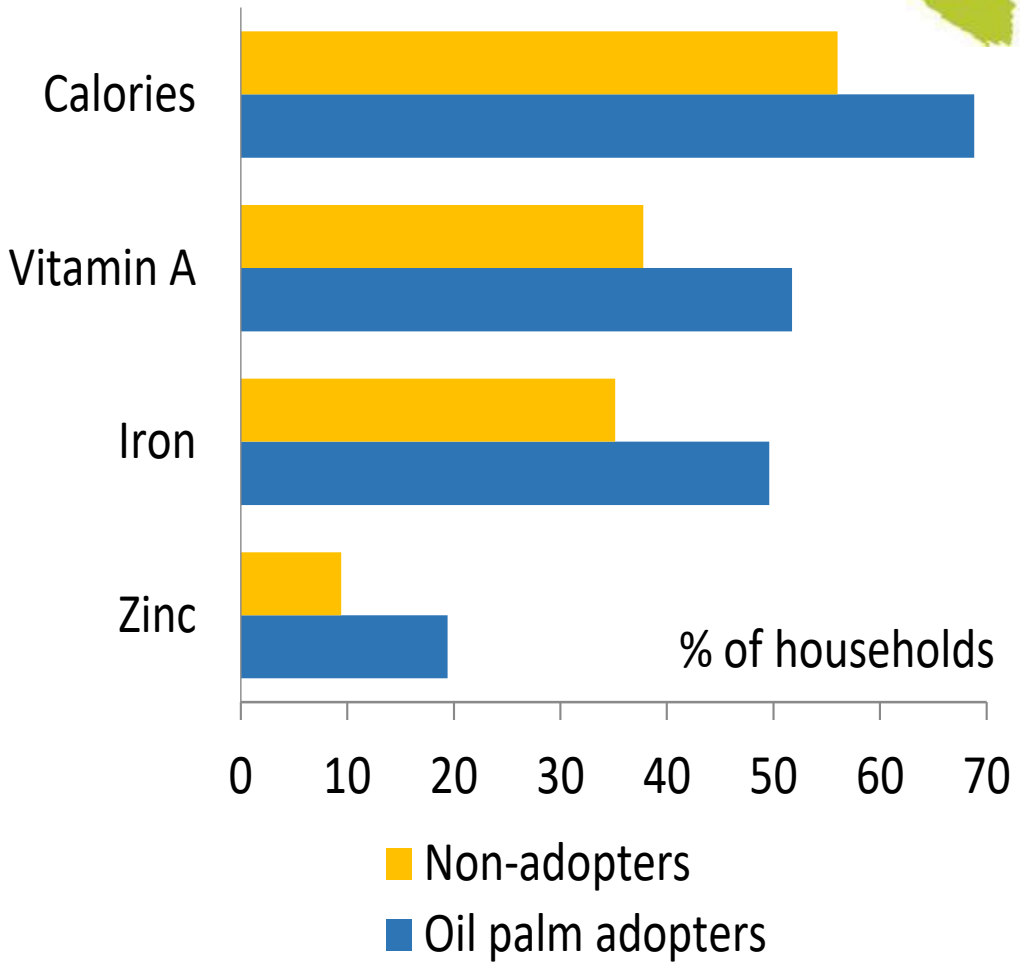
Sibhatu (2023)

Oil Palm and Socioeconomic Benefits (2/2)

- Oil palm contributed to poverty reduction
- It has brought greater food security and diets for farm and non-farm rural households



Bou Dib et al. (2018b)



Dietary sufficiency
Sibhatu (2019)

Oil Palm and Socioeconomic Problems

Economic benefits have come at serious social costs:

- Oil palm expansion has increased conflicts and tension between local communities and agro-industrial companies
- Worsened workers' conditions
- Widened domestic economic inequality

The adverse socioeconomic effects associated with oil palm are mostly because of the nature of companies, lack of land rights, and institutional set-up than with the crop itself.

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Oil Palm and Future Oil Demands

- Global demand for vegetable oil will rise to 310 Mt. (current ~180 Mt) in 2050
- Two ways to address this gap:
  - Increase the yield of existing crops (more oil on the same land size)
  - Allocating new land
- What crops should be chosen to address this gap?
  - If we ban oil palm and focus only on the other oil crops (soybean, etc.), we will need ~200 mill ha
  - If we mix oil palm, we only need ~60 mil ha (saving 140 mill ha)
- Replacing palm oil with alternative vegetable oils would require much larger areas, causing even larger environmental issues

Sources for all points in this slide: Meijaard (2022); www.sustainablepalmoilchoice.eu

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Solutions for Problems Associated with Oil Palm (1/2)

- No palm is now a marketing tool in Europe and North America
- Address biases and perceptions in consumers
- Stopping consumption in the West means, increasing unsustainably produced palm oil in other regions at cheaper price

Solutions for Problems Associated with Oil Palm (2/2)

- Make oil palm production systems more sustainable and productive
- Improve property rights and better land planning

If tropical rainforest are a global common, and so does the welfare of the millions of people living there. Global solutions (by Western Countries) to environmental issues in the tropics should complement biodiversity and human welfare.

Anything else is doomed to fail!

Oil Palm Boom: Economic Blessing or Environmental Curse?

- For detail and more expalation for most of the keyp oints discussed, please refer this article:

Environmental, Economic, and Social Consequences of the Oil Palm Boom

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