

Key Insights

- 1. Massive deforestation primarily occurs in **South America**, **Southeast Asia**, **and Africa**, home to the world's **remaining rainforests** and predominantly composed of **developing countries**.
- 2. **Cattle meat industry** single-handedly contributes to a total accumulated deforestation globally close to almost all the other commodities combined. **Making informed purchase decisions** to avoid meat from countries like **Brazil** could help mitigate negative impacts significantly.
- 3. The **change** in deforestation patterns is closely related to s**ocio-economic factors** such as trade, policies, global events, etc.
- 4. This project highlights the importance of **data integrity** and the need to recognize the limitations of data collection methods, as **misclassification**—such as reforested areas being labeled as unclassified forest plantations—can lead to misleading conclusions.

Project Context

Focus: Investigating hidden factors behind deforestation, including consumer products and global supply chains.

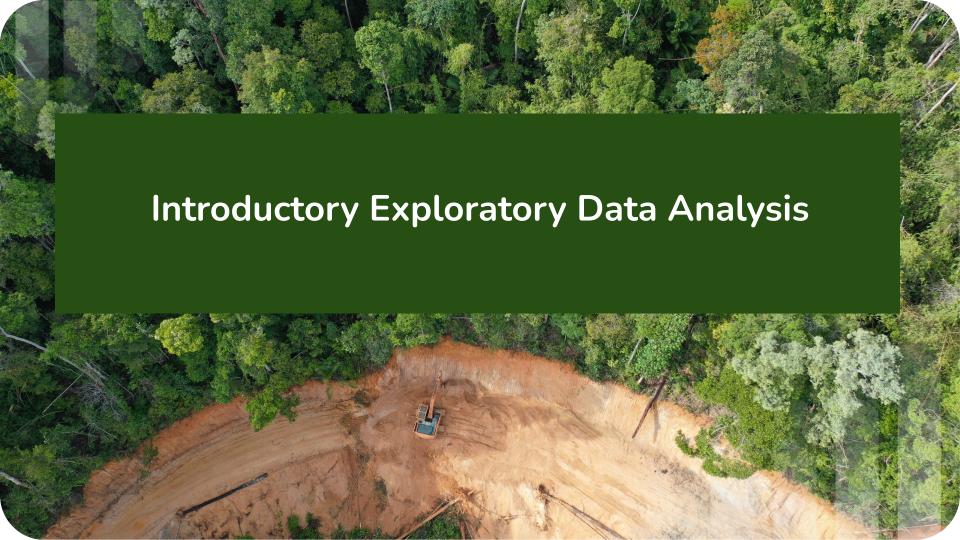
Significance: Connecting global environmental challenges with individual responsibility and everyday choices.

Questions

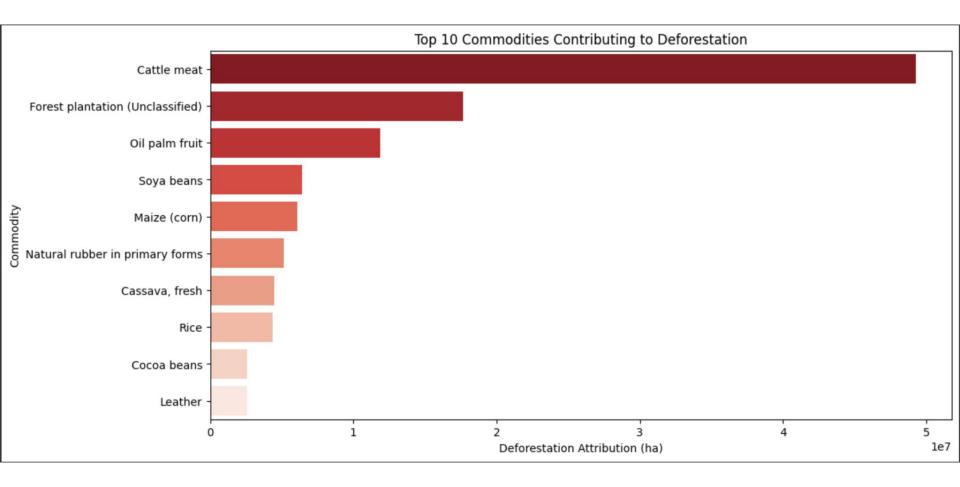
- 1. How does commodity deforestation vary across different continents and countries?
- 2. What are some commodities that are really bad for the environment?
- 3. How is the global agricultural and forestry commodities' deforestation risk vary throughout time?

Dataset

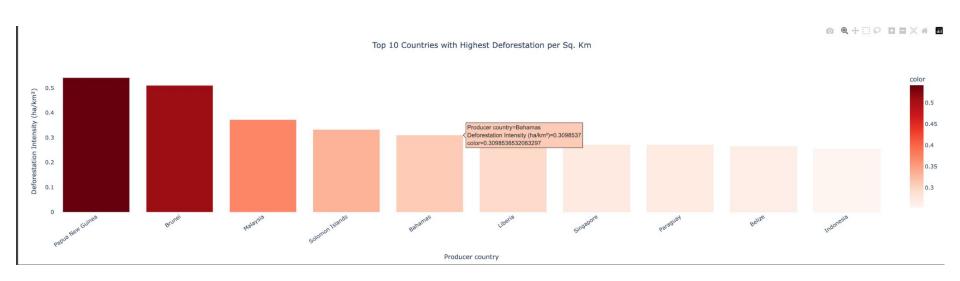
- DeDuCE (Deforestation Driver and Carbon Emission)
- Agricultural Land (sq. km) from World Bank
- Livestock & Poultry Production United States Department of Agriculture - Foreign Agricultural Service



Overall, what are the worst commodities in terms of deforestation



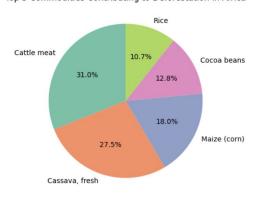
Papua New Guinea, Brazil and Malaysia are the top three countries with highest deforestation per sq. km.



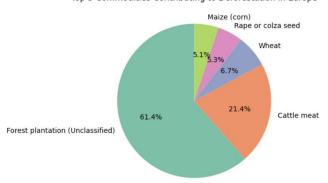


Looking at the top commodities in each country group

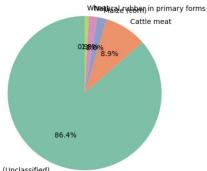
Top 5 Commodities Contributing to Deforestation in Africa



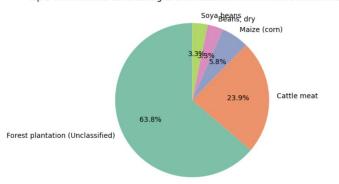
Top 5 Commodities Contributing to Deforestation in Europe



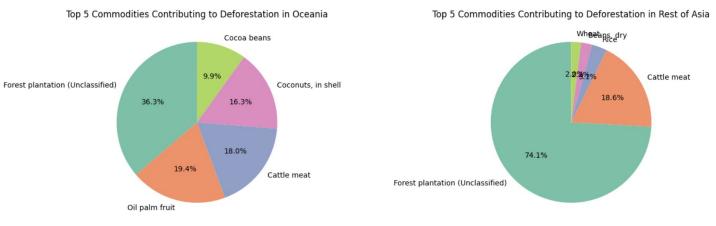
Top 5 Commodities Contributing to Deforestation in North Asia

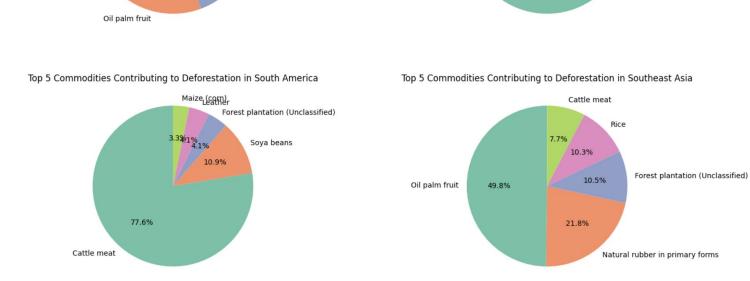


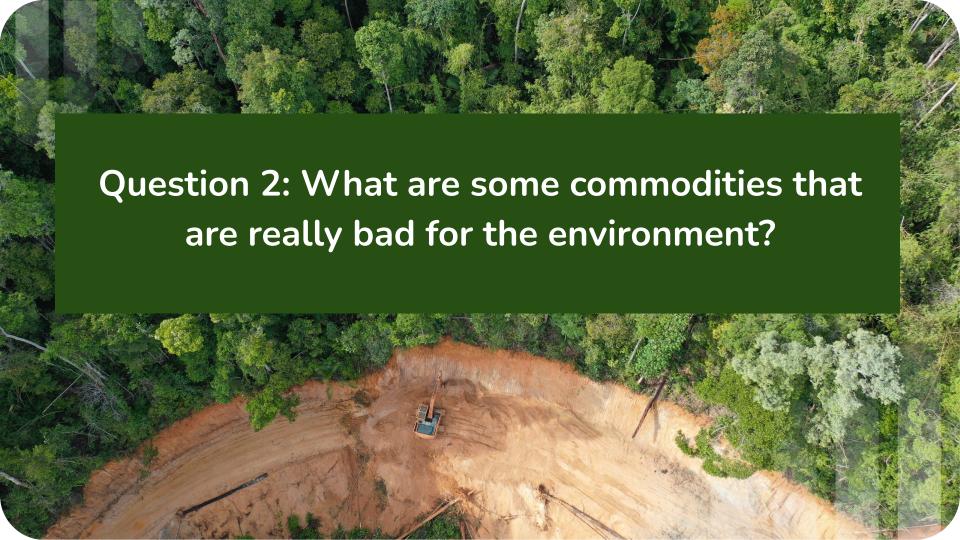
Top 5 Commodities Contributing to Deforestation in North and Central America

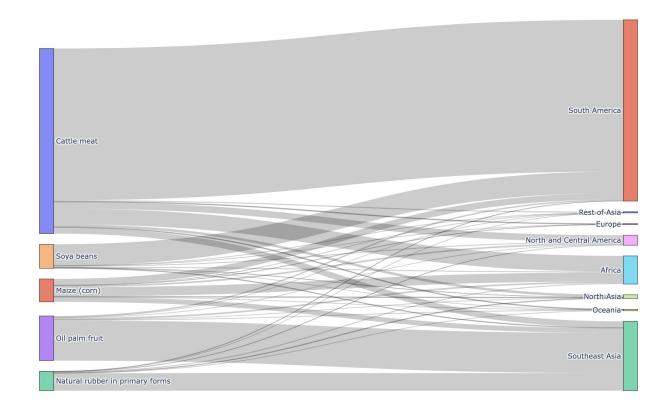


Forest plantation (Unclassified)





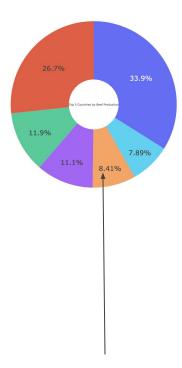




Cattle meat is the largest contributor to deforestation in South America, but not so much in other country groups

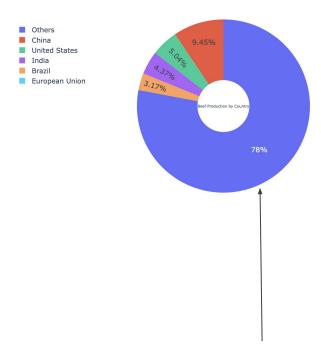
Brazil

Argentina



Top 5 Countries by Beef Production (Others Combined)

Brazil contributes only 8.41% to global cattle meat production.



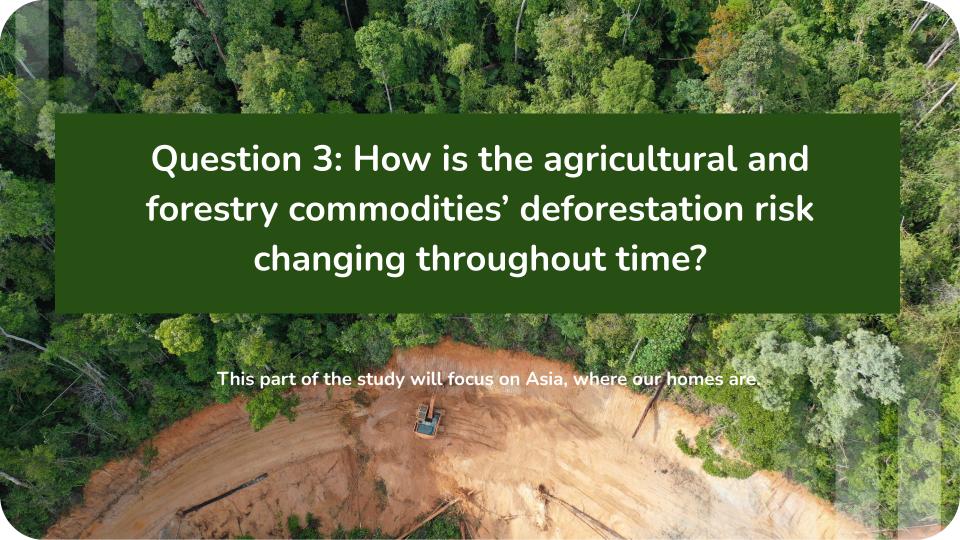
BUT

Cattle meat production accounts for 78% of deforestation in Brazil.

Metric to understand sustainability of production of commodities in different regions

Beef Production vs Deforestation by Country (Brazil, China, United States, India)

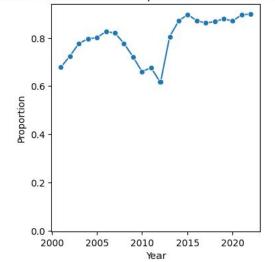




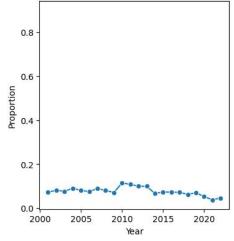
Subquestion 1: Why Does North Asia Have Such High Deforestation Attribution from Unclassified Forest Plantation

Forest plantation (Unclassified) takes up a huge proportion (near 90%) of total Deforestation Attribution in North Asia.

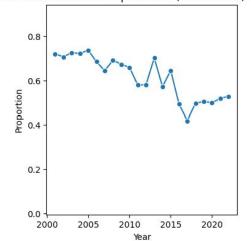
Deforestation Attribution of 'Forest plantation (Unclassified)' in North Asia



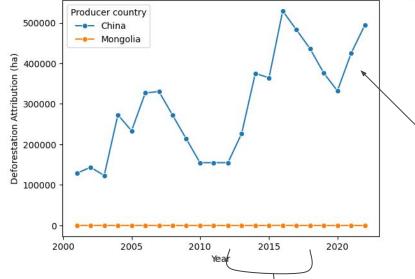
Classified forest plantation: bamboo, broadleaf, needleleaf, and mix of previous two.



Deforestation Attribution of 'Forest plantation (Unclassified)' in the Rest of Asia



Deforestation Attribution by Unclassified Forest Plantation Was Mostly Driven by China



Several reforestation programs in the 2000s came to fruition + nationwide ban on felling natural forests

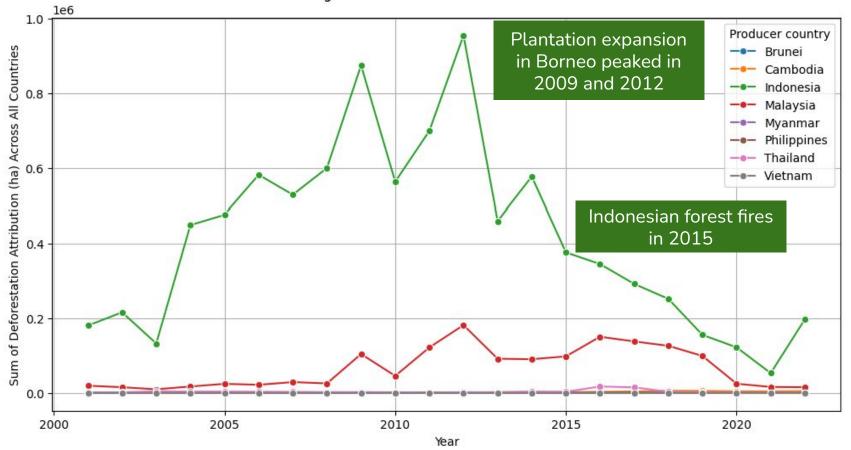
But China experienced a net gain of 2.14 Mha in tree cover from 2000 to 2020?

The reason behind it was likely due to misclassification! Since the DeDuCE data model relies on remotely sensed datasets combined with agricultural statistics, it cannot differentiate between reforested areas and deforested land repurposed for commodity production.

China's post COVID Forestry Law revision

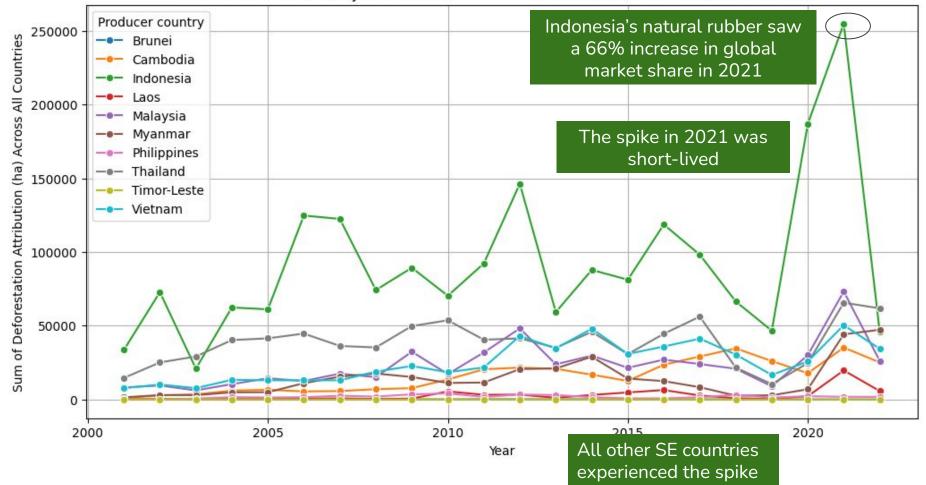
Subquestion 2: What Are Some Interesting Trends in Palm-Oil-Production-Related Deforestation in Southeast Asia

Indonesia and Maylasia Are Major Contributors to Deforestation in SE Asia from Palm Oil Production; Attribution from Indonesia Shows Huge Historical Fluctuations and Recent Continuous Decrease Since 2015.



Subquestion 3: How Can We Explain the 2020 Uptick in Natural-Rubber-Production-Induced Deforestation in Southeast Asia

Indonesia Is the Primary Contributor of Deforestation from Natural Rubber Production.



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