

Introduction:

There is a debate among economists and environmentalists that economic development comes at the cost of deforestation. Over the last 10000 years, we have lost one-third of the world's forest cover, half of which happened in the last 100 years. However, not all kind of economic advancements may be linked with deforestation. ^{[3],[13],[16]}

Objective:

The objective is to determine what correlations exist between deforestation and the various indexes of socio-economic development like per capita GDP, infant mortality, life expectancy etc. We intend to

- Analyze each of these dimensions against deforestation data.
- Generate a consolidated score covering all KPIs for every country.

This will help in meaningful analysis of the net effect of socio-economic parameters on deforestation ^[12] across countries.

Our aim is to orchestrate a data pipeline and build interactive visualizations on analytical models that would help users garner critical information on this important topic. We will make use of data from reliable sources like worldbank.org, undp.org and unicef.org for this project. The team will analyze the KPIs that are most relevant for this study. We will build the prototype using Python, SQLite, and Tableau.

How is it done today; what are the limits of current practice?

Research have linked deforestation ^[11] with trade-liberalization ^[1], unemployment ^[2], pollution and carbon emission ^[5], infant mortality ^[6], colonization ^[18], population ^{[7],[14]}, GDP^[8] and corruption ^{[15],[19]}. For example - the Environmental Kuznets curve (EKC) hypothesizes ^[9] the relationship between

various indicators of environmental degradation like deforestation and income per capita. The existence and relevance of the first half of the EKC curve is well established ^[10]

However, most of the current studies are based on a single dimension and have not been inclusive of other factors.

What is new in our approach? Why will it be successful?

We intend to bring more dimensions of socio-economic development to gather insights and address this issue with a more holistic view. The main idea is to capture the strength of the relationship of these factors with deforestation. Additionally, we rank them in order of their importance, and bring all meaningful comparisons under one hood. User can interact with the data and compare various development KPIs against deforestation statistics across individual countries or collectively.

Who cares?

Government, Non-Government environmental organizations and Researchers can benefit from this dashboard.

If we are successful, what difference and impact will it make, and how do we measure them?

- Government and environmental agencies can use the outcome of this study to chart out policies for sustainable development.
- It can also be used as a supporting tool for guiding environmental strategy ^[17].
- Cluster and Classify countries into similar groups for targeted study.
- Trend analysis

What are the risks and payoffs?

There are direct and indirect causes and effects of deforestation ^[4]. There is a risk of not

arriving at any conclusive correlation between deforestation levels and any of the socio-economic factors.

The payoff is that if we arrive at some meaningful conclusion, we will be able to provide a platform for deeper analysis into this important subject.

How much will it cost?

To start with we will use readily available data from reputed and official sources. We will use open-source technology to build our prototype, thus we do not expect any software licensing cost for developing this project.

How long will it take?

The project team is confident of building the prototype consisting of end-to-end data pipeline, analytical model, and interactive visualizations within a period of 8 to 10 weeks.

What are the midterm and final “exams” to check for success? How will progress be measured?

The project team is a mix of functional experts, project management professionals and full stack developers. As a team, we have decided following milestones and will divide the work

among the team members based on their area of expertise.

1. Design specifications including user stories, functional and technical solution specification. This will include data source, data structure, data transformation, data flow diagrams, data model – entity relationships, data analysis algorithms, user experience wireframes etc. - 4 weeks.
2. Develop, test, refine cycle(s) – 3 weeks.
3. Final design documentation – 1 week
4. Final presentation – 2 weeks

Progress will be measured using stage gate checklists for each of the stages above.

All team members have contributed similar amount of effort so far in following activities:

- exploring project problem statements
- conducting literature survey
- identifying possible data sources
- technical design discussions
- project deliverables planning and coordination

Project Team:

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