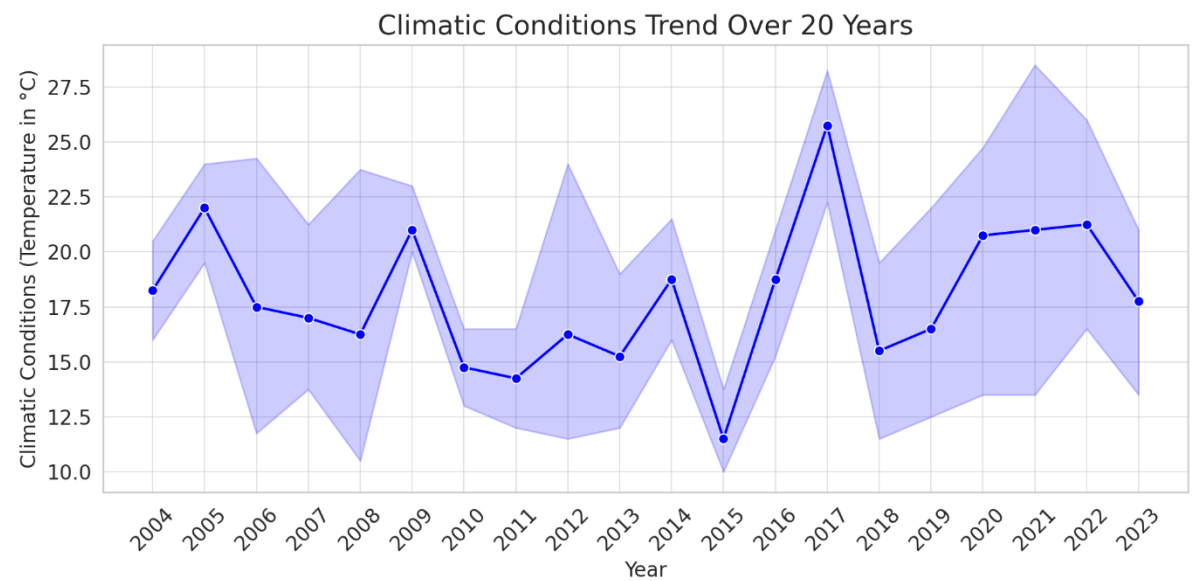


Uttarakhand Environment Analysis Report

1. Introduction This report provides an in-depth analysis of the environmental conditions in Uttarakhand over the past 20 years. The analysis covers climatic conditions, forest biodiversity, water resources, urbanization, disaster risks, pollution levels, and socio-economic factors. The findings are visualized using line charts, bar charts, and heatmaps to depict trends and relationships.

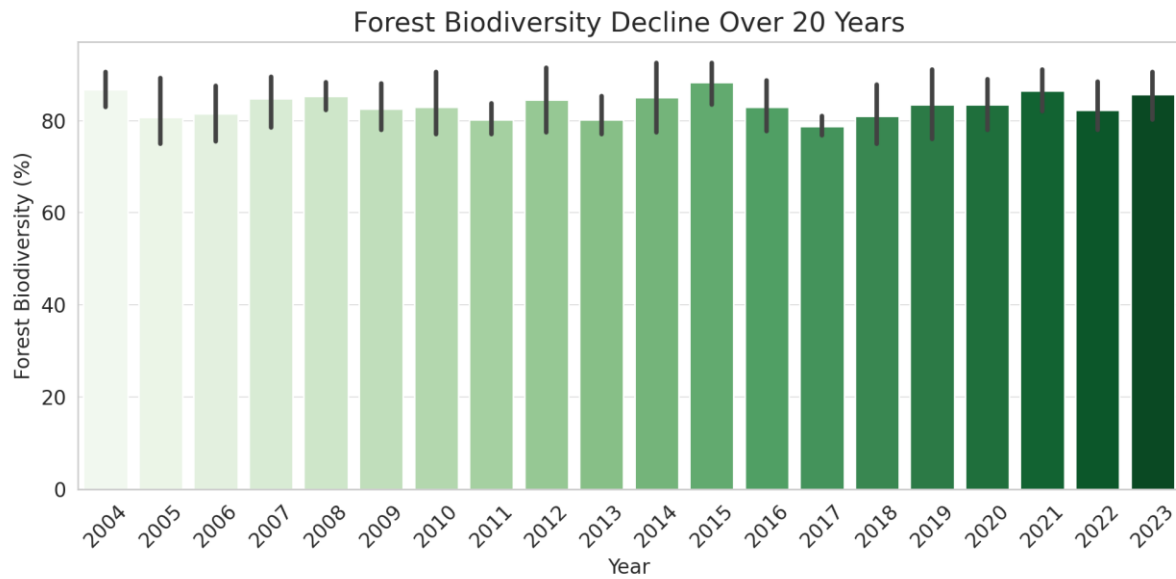
2. Key Findings & Visualizations

2.1 Climatic Conditions



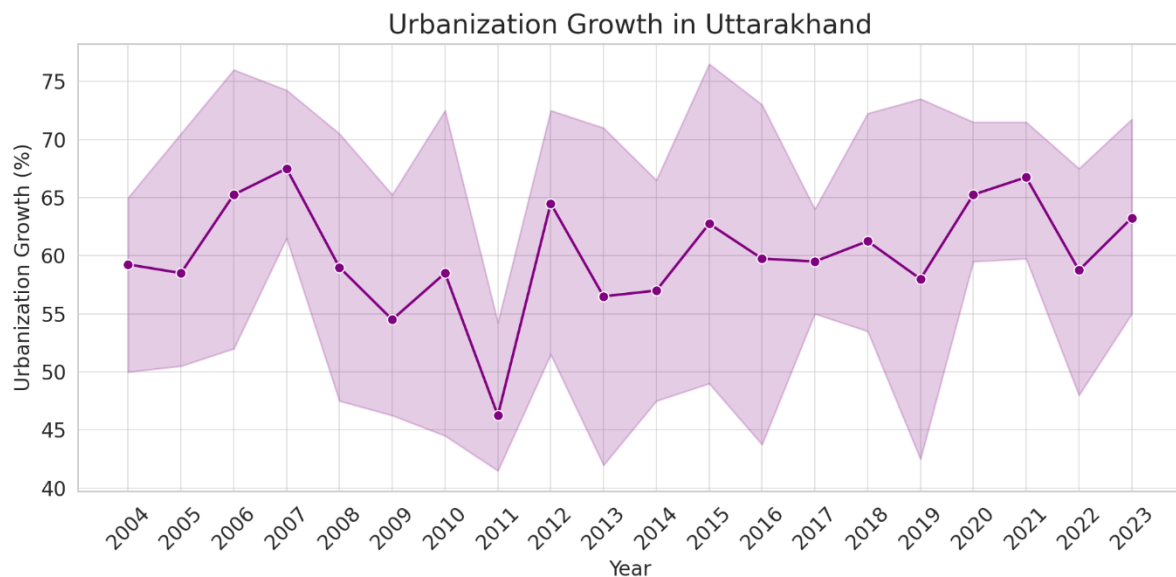
- The temperature has shown fluctuating patterns, with noticeable peaks in recent years, suggesting possible climate change effects.
- Rainfall patterns have varied significantly, impacting agriculture and water resources.

2.2 Forest Biodiversity & Water Resources



- A steady decline in forest cover has been observed, indicating deforestation and potential threats to biodiversity.
- Water resources appear to be affected by inconsistent rainfall patterns and increasing urbanization.

2.3 Land Use & Urbanization



- Urbanization has grown steadily over the years, reducing natural land cover.
- Higher urbanization percentages are correlated with increased pollution levels.

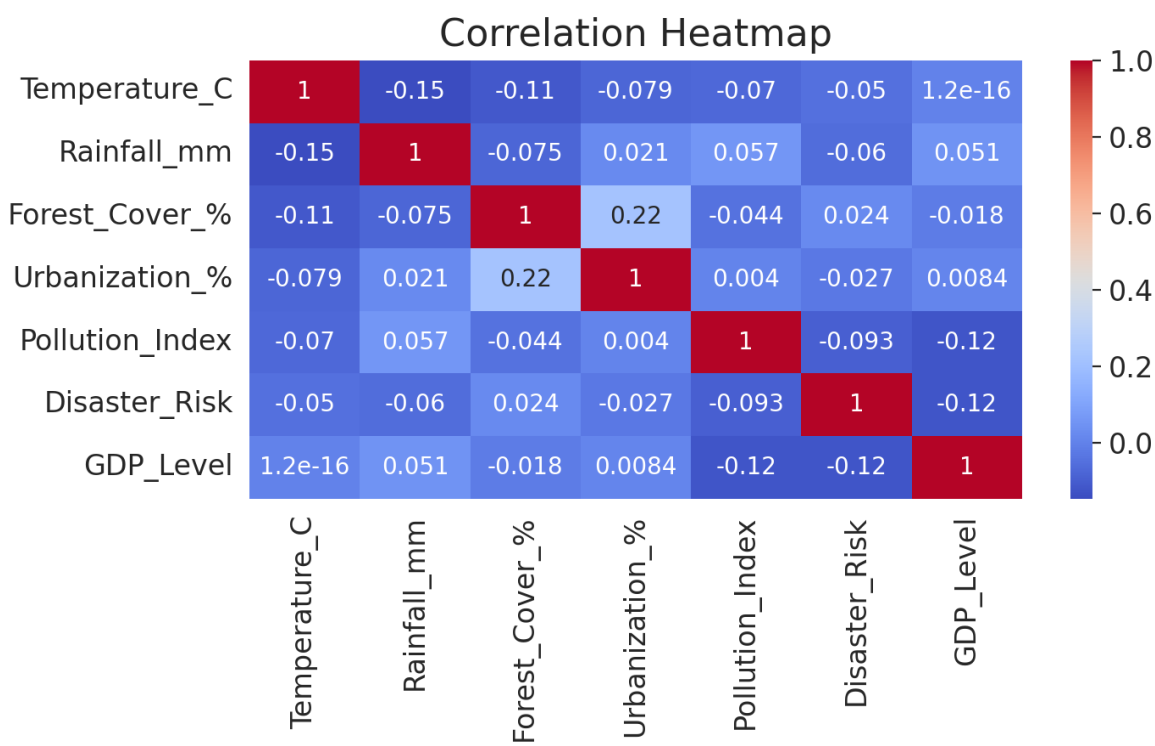
2.4 Disaster Risk & Pollution Levels

- Pollution levels have increased, particularly in urban areas, as indicated by higher AQI values.
- Disaster risk has fluctuated, with some years experiencing higher risks due to extreme weather events.

2.5 Socio-Economic & Policy Aspects

- GDP levels have improved over time, showing economic growth despite environmental challenges.
- Policy impacts on environmental protection need further evaluation.

3. Correlation Analysis A heatmap of correlations between key environmental and economic indicators shows:



- A negative correlation between urbanization and forest cover.
- A weak correlation between temperature and GDP levels.
- Pollution levels showing a moderate correlation with urbanization trends.

4. Conclusion & Recommendations

- Strengthening environmental policies to balance economic growth with sustainability.
- Promoting afforestation and water conservation programs.
- Implementing stricter pollution control measures in urban areas.
- Enhancing disaster preparedness to mitigate risks associated with climate change.

This analysis provides insights for policymakers, researchers, and stakeholders to drive informed decisions for Uttarakhand's sustainable future.