IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, July 2025
Impact Factor: 7.67

A Tableau Tool for an Climate Changes and Environmental Impact

Mohammad Shaista Shoukeen[1], Nagulapati Manasa[2], Dr. S. Sai Kumar[3]
II B. Tech, Information Technology[1,2]
Sr. Assistant Professor, Information Technology[3]
Prasad V. Potluri Siddhartha Institute of Technology, Vijayawada, India

Abstract: *Climate change is one of the most pressing global concerns, affecting ecosystems, economies, and human well-being. It is primarily driven by greenhouse gas emissions, deforestation, industrial activities, and unsustainable consumption patterns. This project leverages Tableau Software to visualize climate trends, analyze CO_2 emissions, temperature variations, extreme weather patterns, and environmental degradation, and propose data-driven solutions to mitigate climate change effects. The goal is to create interactive, easy-to-understand dashboards that can assist researchers, policymakers, and environmental organizations in assessing climate risks and implementing effective policies.*

Keywords: Climate Change, Environmental Impact, Tableau Analytics, Global Warming, CO2 Emissions Sustainability, Data Visualization.

I. INTRODUCTION

Over the past century, climate change has intensified due to human activities, primarily the burning of fossil fuels and deforestation. Understanding how these changes impact ecosystems, biodiversity, and human societies requires comprehensive analysis through advanced data visualization. Traditional methods of climate study involve scattered data sources, making it challenging for researchers and policymakers to obtain actionable insights. This paper proposes a structured approach using data visualization tools to address these issues.

II. PROPOSED SYSTEM

The goal is to design a geospatial visualization platform for climate and environmental monitoring that presents up-to-date data to improve awareness and decision-making. This system uses data visualization tools to simplify the interpretation of complex environmental data. It allows users to analyze trends in air quality, greenhouse gas emissions, temperature fluctuations, and more via interactive dashboards. The interface is designed to be user-friendly and secure, enabling informed environmental research and action. This integrated approach resolves challenges associated with manual tracking and fragmented data sources.The system uses a geographical representation of climate change effects, providing interactive dashboards displaying temperature variations, deforestation rates, carbon footprints, and extreme weather patterns. By integrating real-time datasets, the visualization tool enhances accessibility and efficiency in climate research.

III. TECHNOLOGIES USED

A. Microsoft Excel

Microsoft excel is a spread sheet developed by Microsoft for Windows, macOS, Android and iOS. It features calculation, graphing tools, pivot tables anda macro programming language called Visual Basic for Applications. It has been a very widely applied spreadsheet for these platforms, especially since version 5 in 1993. The Windows version of Excel supports programming through Microsoft's Visual Basic for Applications (VBA), which is a dialect of Visual Basic. Programming with VBA allows spreadsheet manipulation that is awkward or impossible with standard spreadsheet techniques. Programmers may write code directly using the Visual Basic Editor (VBE), which includes a

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, July 2025
Impact Factor: 7.67

window for writing code, debugging code, and code module organization environment. The user can also implement numerical methods in Microsoft excel.

B. Microsoft Tableau

Tableau is a data visualization tool which is viewed by many disciplines as a modern equivalent of visual communication. Tableau also has a mapping functionality ,and is able to plot latitude and longitude eco-ordinates .Tableau serves as an advanced data visualization tool that helps users create interactive dashboards for analyzing climate trends. It provides dynamic charts and graphs that illustrate global temperature changes, emission rates, and extreme weather occurrences. The integration of geospatial mapping in Tableau allows users to track deforestation, rising sea levels, and climate impact in specific regions. Tableau also supports real-time data integration, making it a valuable tool for researchers who need up-to-date analytics on climate change.

C. File

The new option will be used for creating a tableau file and load all the necessary attributes into it. The tableau file will be saved with an extension :twb or .twbx. These files can be various types of format of data.

D. Dashboard

A dashboard is a collection of several worksheets and supporting information shown in a single place so you can compare and monitor a variety of data simultaneously. Dashboards compile various climate indicators into a single view, making it easier to observe patterns and correlations e.g., CO_2 rise vs. temperature increases. Users can compare cities, monitor changes over time, and generate actionable insights from the interactive components.

E. Server

Tableau Server public is the option where the tableau application is linked with the web application to get the information .The Tableau Software is an online solution for sharing ,distributing, and collaborating on content created in Tableau. Shareable. Create workbooks and views, dashboards, and data sources in Tableau Desktop, and then publish this content to the server.Researchers and policymakers can publish visualizations that display real-time environmental data and forecasts.

F. Maps

The application needs to visualize the data geographically; we can plot the data on a map in Tableau .Maps in Tableau provide a geographical context to the data plotting temperature rise, deforestation zones, or pollution hotspot.

IV. RESULTS

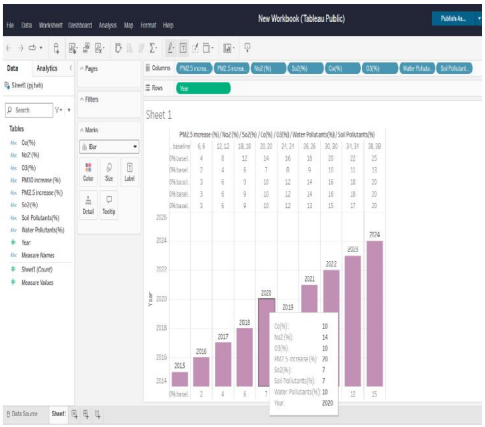

Fig:1.1 Visualization of Environmental Pollutant Trends Visualized in Tableau.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, July 2025
Impact Factor: 7.67

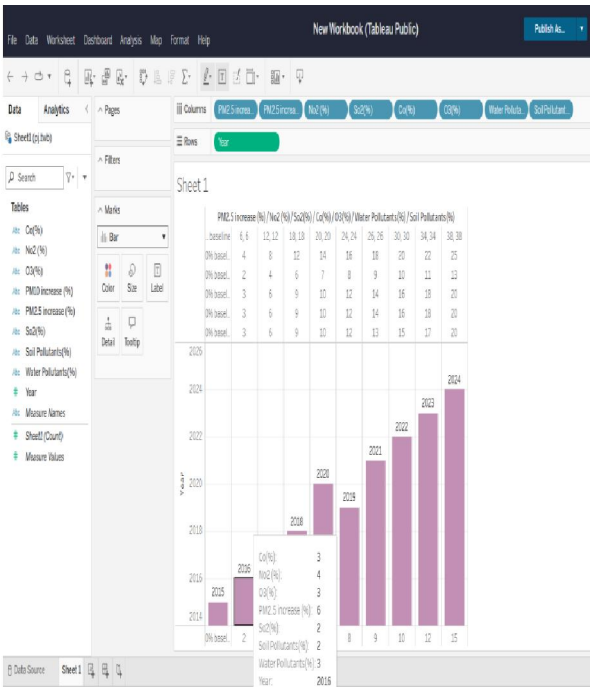

Fig:1.2 Visualization of Environmental Pollutant Trends Visualized in Tableau.

[1] There is a consistent increase in pollutant levels over the years.

[2] The highest pollutant levels are observed in 2024, indicating a critical environmental concern.

[3] The increase in PM2.5 and NO2 is especially significant in recent years.

Fig 1.3 Visualization of Environmental Pollutant Trends Visualized in Tableau

Copyright to IJARSCT
www.ijarsct.co.in
DOI: 10.48175/IJARSCT-28401

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, July 2025
Impact Factor: 7.67

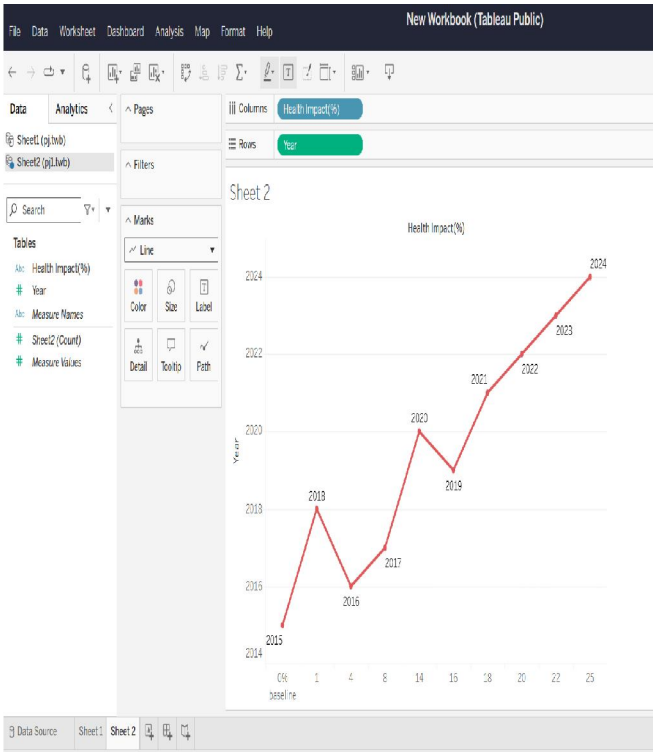

Fig:2.1 ,2.2Year-wise Health Impact (%) Due to Environmental Pollution

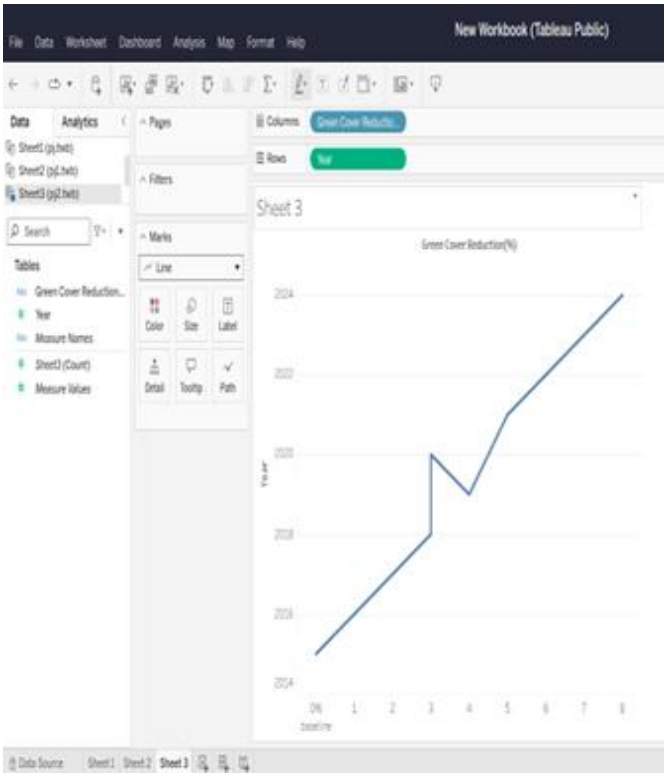

Fig:3 Graph Representing Green Cover Reduction (%)

Copyright to IJARSCT
www.ijarsct.co.in
DOI: 10.48175/IJARSCT-28401

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, July 2025
Impact Factor: 7.67

V. CONCLUSION

The version of this template is V2. Most of the formatting instructions in this document have been compiled by Causal Productions from the IEEE LaTeX style files. Causal Productions offers both A4 templates and US Letter templates for LaTeX and Microsoft Word. The LaTeX templates depend on the officialIEEEtran.cls and IEEEtran.bst files, whereas the Microsoft Word templatesare self-contained.

REFERENCES

[1]. S. M. Metev and V. P. Veiko , Laser Assisted Microtechnology, 2nd ed., R. M. Osgood, Jr., Ed. Berlin, Germany: Springer-Verlag, 1998.

[2]. J. Breckling, Ed., The Analysis of Directional Time Series: Applications to Wind Speed and Direction, ser. Lecture Notes in Statistics. Berlin, Germany: Springer, 1989, vol. 61.

[3]. S. Zhang, C. Zhu, J. K. O. Sin, and P. K. T. Mok, "A novel ultrathin elevated channel low-temperature poly-Si TFT," IEEE Electron Device Lett., vol. 20, pp. 569–571, Nov. 1999.

[4]. M. Wegmuller , J. P. von der Weid, P. Oberson, and N. Gisin, "High resolution fiber distributed measurements with coherent OFDR," in Proc. ECOC'00, 2000, paper 11.3.4, p. 109.

[5]. R. E. Sorace, V. S. Reinhardt, and S. A. Vaughn, "High-speed digital-to-RF converter," U.S. Patent 5 668 842, Sept. 16, 1997