Global Food Production Trends and Analysis (1961–2023)

1. Introduction

1.1 Project Overview

The project focuses on analyzing global food production trends from 1961 to 2023. Using Power BI, the dashboard offers deep insights into the production patterns of major crops—rice, wheat, maize, tea, coffee, and a variety of fruits—across different countries and years.

1.2 Objectives

- To understand the historical trends of global food production.
- To identify the top contributing countries and crops over time.
- To present the data visually for better understanding and decision-making.
- To evaluate growth, demand, and agricultural evolution globally.

2. Project Initialization and Planning Phase

2.1 Define Problem Statement

Lack of centralized, interpretable historical data on global food production has limited efforts in food security planning, trade policy, and sustainability efforts.

2.2 Project Proposal (Proposed Solution)

Create an interactive Power BI dashboard to visualize production data from 1961 to 2023 for essential food categories across countries, highlighting trends, volumes, and growth areas.

2.3 Initial Project Planning

- Timeline: 2 weeks
- Tool: Power BI
- Data Source: [FAO] world food production dataset
- Output: Visual dashboard, summary insights, performance report

3. Data Collection and Preprocessing Phase

3.1 Data Collection Plan and Raw Data Sources Identified

Data was collected from the "World Food Production.csv" file sourced from FAO datasets. It includes production volume (in tonnes) of multiple commodities across countries and years.

3.2 Data Quality Report

- Handled missing values
- Unified units (tonnes)
- Removed duplicate records
- Standardized country and crop names

3.3 Data Exploration and Preprocessing

- Grouped and aggregated production per crop and year
- Filtered irrelevant records (e.g., non-food crops)
- Created calculated columns for year-wise and entity-wise totals

4. Data Visualization

4.1 Framing Business Questions

- What are the production trends of key crops from 1961 to 2023?
- Which countries dominate in specific crop production?
- How has maize, wheat, and rice production changed over the decades?
- Which fruits show the highest production volumes?

4.2 Developing Visualizations

- Time-series charts for year-wise production
- Bar graphs for country-wise crop production
- Pie and donut charts to show maize growth shares
- Gauge and KPI cards for total wheat, rice, and tea production

5. Dashboard

5.1 Dashboard Design File

The Power BI dashboard contains:

- A high-level summary panel (Wheat, Rice, Tea totals)
- Country-wise bar graphs for coffee and fruits
- Time series for Rice, Wheat, Maize
- Pie chart for maize production share across selected years
- Bar chart comparing fruit production (bananas, apples, oranges, grapes)

6. Report

6.1 Story Design File

Key insights derived from the dashboard:

• Wheat is the top-produced crop with 282 billion tonnes, followed closely by Rice (269 bn tonnes).

• Tea production has reached 2 billion tonnes, reflecting global demand.

• Coffee (green) is majorly produced in Africa, Asia, and South America, with Brazil and Vietnam as top contributors.

• Post-1980s, wheat, maize, and rice saw exponential growth due to agricultural advancements.

• Maize production peaked in 2021 (25.2%), followed by 2010 (23.3%) and 1983 (17.75%).

• Among fruits, bananas lead with 32 bn tonnes, followed by apples (39 bn), grapes (43 bn), and oranges (26 bn).

7. Performance Testing

7.1 Utilization of Data Filters

• Country and year slicers used

• Crop category filter implemented for visual toggling

7.2 Number of Calculation Fields

• 6 calculated fields for totals and year-wise segmentation

7.3 Number of Visualizations

• 9 distinct visuals: 4 bar charts, 2 KPI cards, 1 line chart, 1 donut chart, 1 gauge chart

8. Conclusion/Observation

The dashboard effectively communicates global food production dynamics. It highlights regional strengths, production shifts over time, and evolving global demand. These insights can guide policy-makers, researchers, and agricultural economists in strategic planning.

9. Future Scope

• Integration with climate data to analyze environmental impacts

• Year-on-year yield efficiency visualizations

• Predictive modeling for future food demand and supply trends

10. Appendix

10.1 Source Code (if any)

N/A (Power BI project file)

10.2 GitHub & Project Demo Link

Project not hosted online