Final Project Report Template

1. <u>**Introduction**</u>

    1.1. **Project overviews:-**

- ✓ Analyze global food production trends from 1961 to 2023, focusing on key commodities like rice, wheat, maize, fruits, tea, and coffee, using Power BI for visualization.
- ✓ Examine production volumes, growth patterns, and regional contributions to understand global food security and agricultural development.
- ✓ Utilize data from FAOSTAT and other reputable sources, clean and process the data, and create interactive Power BI dashboards to present findings.
- ✓ Complete the analysis and dashboard development within 8 weeks, including data preparation, visualization, and stakeholder reviews.
- ✓ Provide insights into production trends, identify emerging challenges, and support strategic decision-making in the agricultural sector.

    1.2. **Objectives:-** Build an interactive Power BI solution to visualize and analyze trends in global food production

2. <u>**Project Initialization and Planning Phase**</u>

    2.1. **Define Problem Statement:-**

Global food production has grown significantly since 1961—rice, wheat, grapes —but these high-level figures hide key issues: regional imbalances, crop-specific vulnerabilities, and potential risks like climate impacts or inefficient practices. Without digging deeper by commodity and region, ABC Company lacks the clear, targeted insights needed for strategic investment and risk management.

    2.2. **Project Proposal (Proposed Solution):-**

- ☆ **What we'll do:** Clean and break down the 1961–2023 food production data by crop (rice, wheat, maize, fruits) and by region (Asia, Europe, Africa).
- ☆ **How we'll do it:** Build interactive Power BI dashboards with charts, filters, and key growth/risk highlights.
- ☆ **Outcome:** ABC Company gets clear, easy-to-use visuals showing top-performing crops and regions, emerging risks, and growth opportunities—all at a glance.

    2.3. **Initial Project Planning:-**

    Duration: 10 days
- Day 1-2 - Data Collection and Extraction from database.
- Day 2-4 - Data Preparation.
- Day 3-5 - Data Visualization.

- Day 5-6 - Dashboard.
- Day 7-8 - Report.
- Day 8-9 - Performance Testing
- Day 9-10 - Project Demonstration and Documentation

3. Data Collection and Preprocessing Phase

3.1. Data Collection Plan and Raw Data Sources Identified:-

Data Collection Plan: Annual production data (1961–2023) for key crops (rice, wheat, maize, fruits, tea, coffee), broken down by region.

Raw Data Sources:

- **Surveys** – Responses directly gathered from individuals via questionnaires, offering structured qualitative and quantitative insights.

- **Transactional Records** – Data from purchases, sales, or financial transactions (e.g., point-of-sale systems), useful for business analytics.

- **Databases/Spreadsheets** – Structured internal files like CSVs or SQL tables containing raw entries, usually the starting point for analysis.

3.2. Data Quality Report:-

- ✓ **Zero Values:** Some rows contained zero values, which could represent missing or unrecorded data.

- ✓ **Inconsistent Data Types:** The dataset comprised columns with mixed data types, such as integers and decimals.

3.3. Data Exploration and Preprocessing:-

- I cleaned the dataset by removing any rows that had zeros—it was nearly 12,000 rows, so this didn't significantly reduce the data. There were no missing values or errors, so no additional filtering or transformation was needed.
- To keep visuals clean and easy to read, I converted decimal values into whole numbers. The data already came as a single, well-structured table, so no merging or splitting of columns was required, and since there's only one table, no relationships needed to be defined.

- Finally, I saved the cleaned dataset for easy reuse later. This approach aligns with standard practices of removing empty or irrelevant rows and simplifying data formatting for visualization.

4. <u>Data Visualization</u>

4.1. **Framing Business Questions:-**

1. What is the sum of Rice Production (tonnes)?

2. What is the sum of Wheat Production (tonnes)?

3. What is the sum of Tea Production (tonnes)?

4. What is the sum of Coffee, Green Production (tonnes) by Entity?

5. What is the sum of Wheat, Maize, and Rice Production (tonnes) by Year.

6. What is the sum of Apples, Avocados, Bananas, and Oranges Production (tonnes) by Entity.

7. What is the sum of Maize Production (tonnes) by Year.

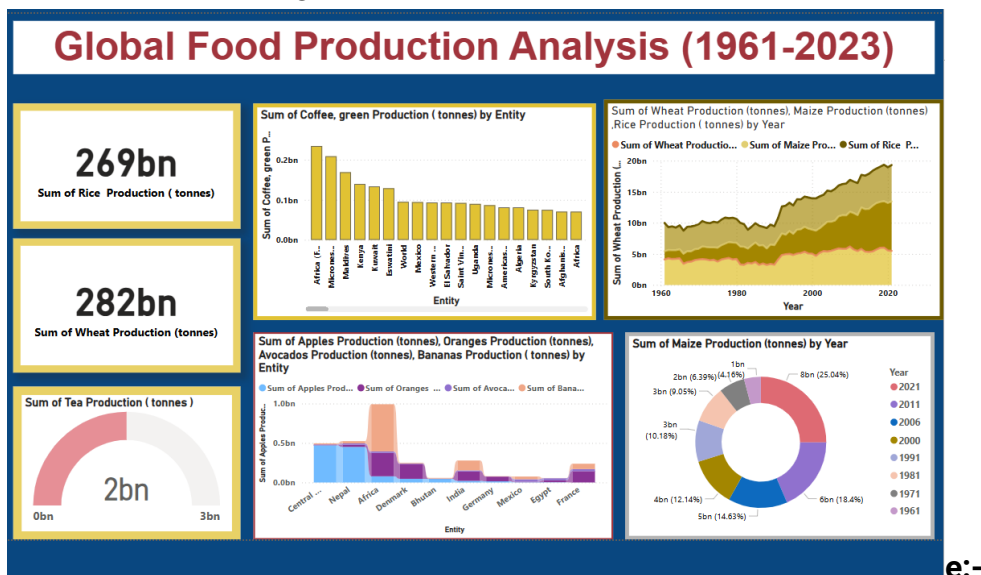8. What is the sum of Grapes, Apples, Bananas, and Oranges Production (tonnes).
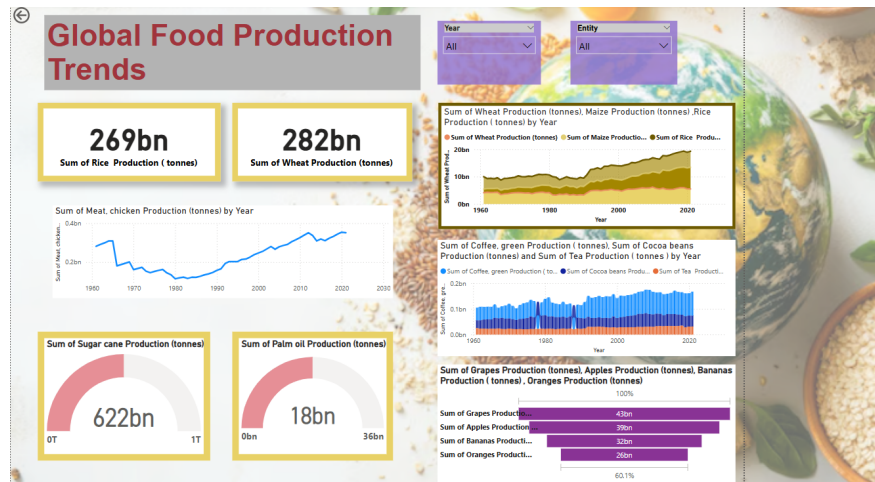
4.2. **Developing Visualizations:-**
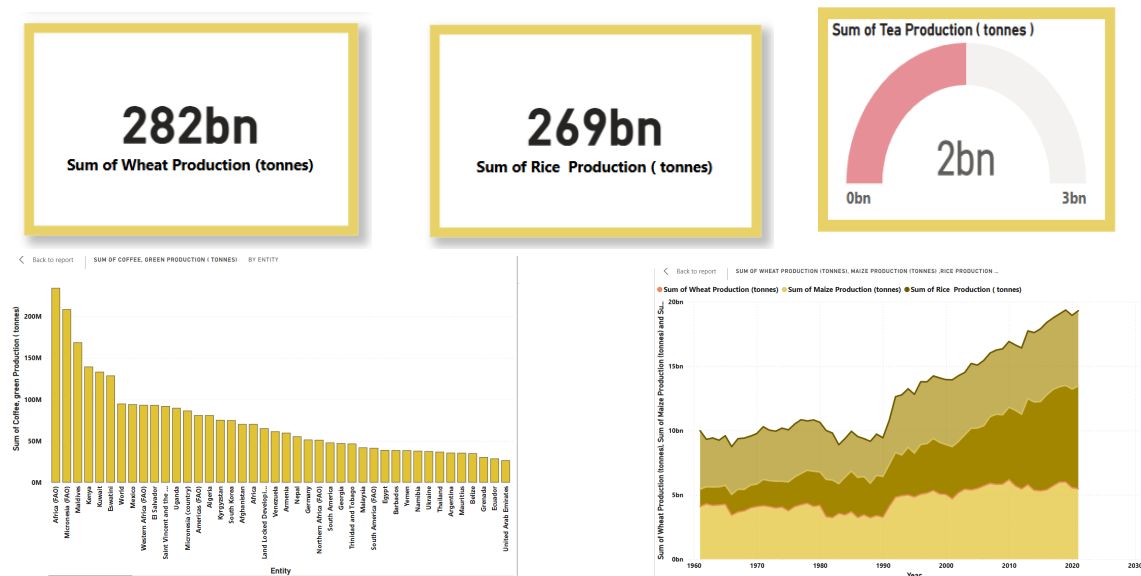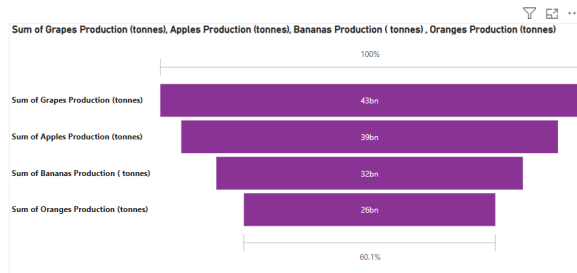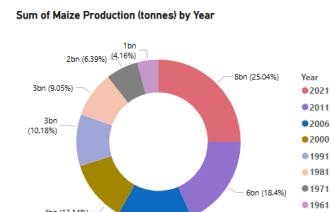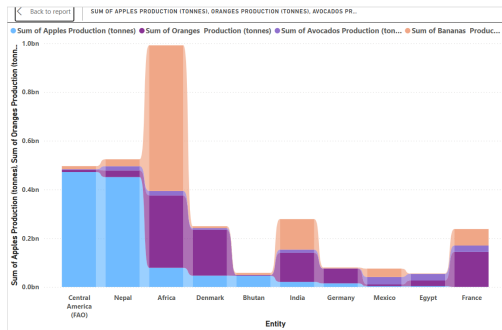
5. Dashboard

5.1. Dashboard Design File:-

Global Food Production Analysis (1961-2023)

6. Report

6.1. Story Design File:-

7. Performance Testing

      7.1 Utilization of Data filters:- Instead of using power query editor I used the traditional method of filtering the data(I used the manual method by unselecting the rows with zero).

      7.2 No of Calculation Field:- Not present.

      7.3 No of Visualization:- Total no.of visualizations are 8 they are Card,Guage, chart, Bar chart, Area chart, Ribbon chart, Donut chart and Funnel chart for the visualizations.

8. Conclusion/Observation:-

- **Production Surge:** Global food production has nearly quadrupled since the 1960s, growing faster than population—rice, wheat, maize, fruits, tea, and coffee all saw steady increases.
- **Geography:** Most production growth occurred in the Global South, while Northern regions plateaued.

9. Future Scope:-

        The future of food production relies on overcoming climate challenges, embracing technological innovations, and adopting sustainable practices to ensure a resilient and equitable global food system.

10. Appendix

      10.1. Source Code(if any):- This have no source code.

      10.2. GitHub & Project Demo Link:-

      GitHub Link:- https://github.com/MEGHANa-Nadipalli/Global-Food-Production-Trends/tree/main

      Demo Link:- https://drive.google.com/file/d/1nLOqAlb1xELPFt0yYSF9FnrcQzWwFN5m/view?usp=sharing