In [219…
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
df1 = pd.read_csv("FAOSTAT_data_en_5-8-2025 (2).csv")
df2 = pd.read_csv("Data.csv")

df1.head()
```

Out[219…

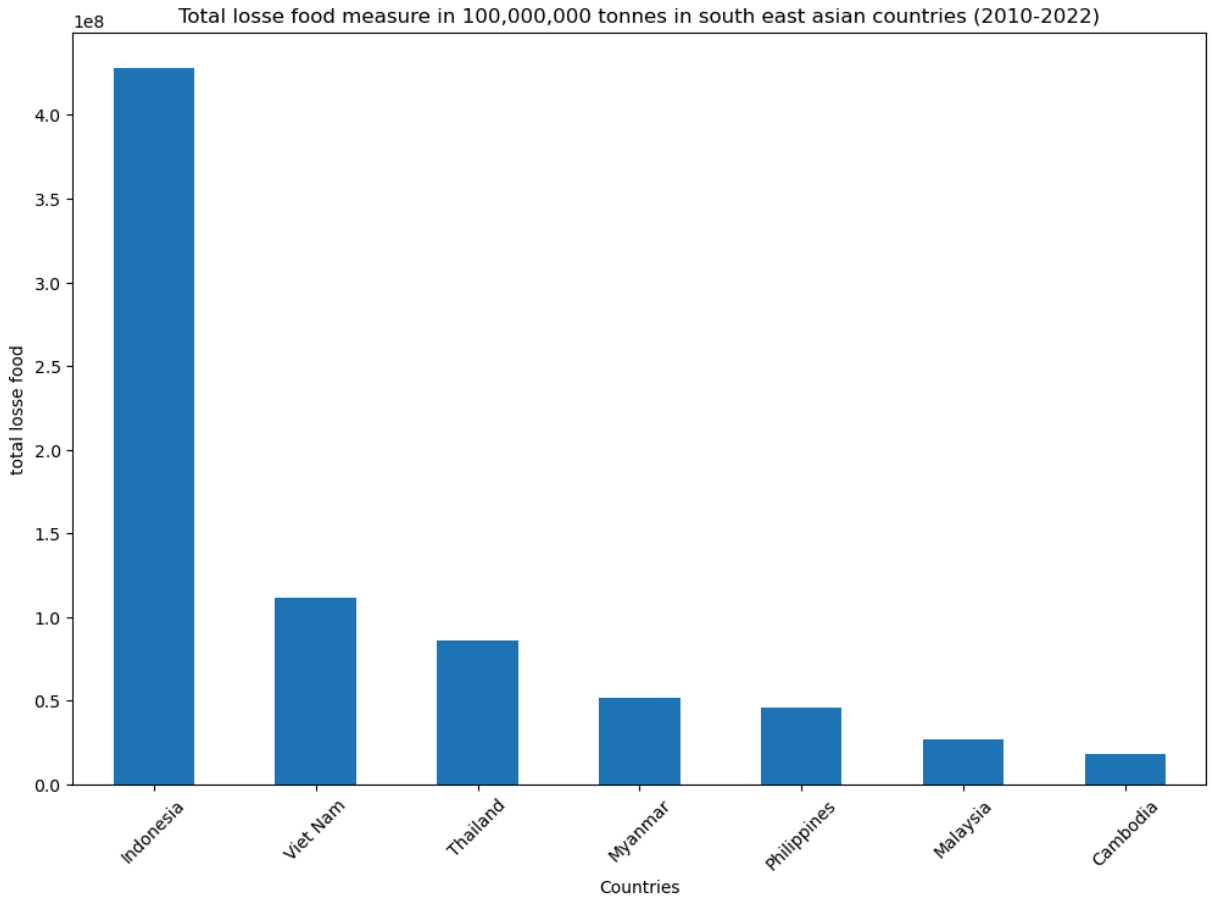
	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (FBS)	Item	Year Code	Year	
0	FBS	Food Balances (2010-)	116	Cambodia	5123	Losses	S2807	Rice and products	2010	2010	1
1	FBS	Food Balances (2010-)	116	Cambodia	5123	Losses	S2807	Rice and products	2011	2011	1
2	FBS	Food Balances (2010-)	116	Cambodia	5123	Losses	S2807	Rice and products	2012	2012	1
3	FBS	Food Balances (2010-)	116	Cambodia	5123	Losses	S2807	Rice and products	2013	2013	1
4	FBS	Food Balances (2010-)	116	Cambodia	5123	Losses	S2807	Rice and products	2014	2014	1

In [56]:
```
losse_food = df1.groupby('Area')['Value'].sum().sort_values(ascending = False)*1000
```

In [31]:
```
losse_food
```

Out[31]:
```
Area
Indonesia      427884000
Viet Nam       111463000
Thailand        86008000
Myanmar         51621000
Philippines     45875000
Malaysia        26744000
Cambodia        17801000
Name: Value, dtype: int64
```

In [52]:
```
losse_food.plot(kind = "bar", figsize = (12,8))
plt.xlabel("Countries")
plt.title("Total losse food measure in 100,000,000 tonnes in south east asian count
plt.ylabel("total losse food")
plt.xticks(rotation = 45)
plt.show()
```



OBSERVATION:

Base on the bar graph it show the total losse food in every country in south east asia from 2010-2020. Based on the graph it shows that Indonesia has the highest food losse

In [60]:
```
df2
```

Out[60]:

	m49_code	country	region	cpc_code	commodity	year	loss_percentage	loss_pe
0	104	Myanmar	NaN	23161.02	Rice, milled	2015	1.78000	
1	104	Myanmar	NaN	23161.02	Rice, milled	2015	11.77000	
2	104	Myanmar	NaN	23161.02	Rice, milled	2015	5.88000	
3	104	Myanmar	NaN	23161.02	Rice, milled	2015	3.57000	
4	104	Myanmar	NaN	23161.02	Rice, milled	2015	17.65000	
...	...	...	...	...	...	...	...	
25411	894	Zambia	NaN	0118	Millet	2000	2.50000	
25412	894	Zambia	NaN	0118	Millet	2000	2.50000	
25413	894	Zambia	NaN	0118	Millet	2000	2.38075	
25414	894	Zambia	NaN	0118	Millet	2000	3.44008	
25415	894	Zambia	NaN	0118	Millet	2000	1.27433	

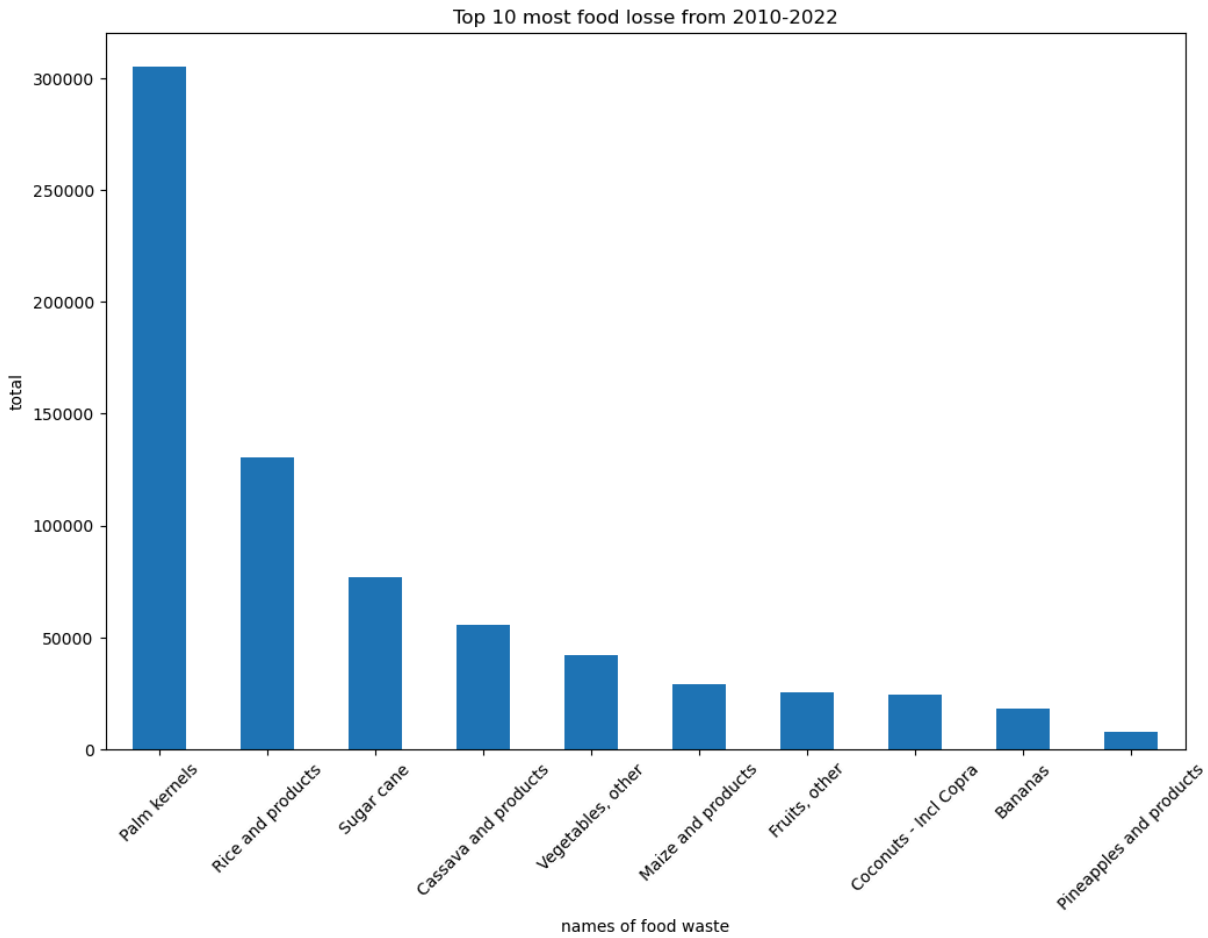
25416 rows × 18 columns

In [105…
```
distribution = df2['commodity'].value_counts(normalize = True)
```

In [139…
```
distribution2
```

Out[139…
```
Item
Palm kernels               304965
Rice and products          130413
Sugar cane                  76819
Cassava and products        55415
Vegetables, other           42025
Maize and products          29207
Fruits, other               25578
Coconuts - Incl Copra       24166
Bananas                     18037
Pineapples and products      7579
Name: Value, dtype: int64
```

In [172…
```
distribution2.plot(kind = "bar",figsize = (12,8))
plt.title("Top 10 most food losse from 2010-2022")
plt.xlabel("names of food waste")
plt.ylabel("total")
plt.xticks(rotation = 45)
plt.show()
```



OBSERVATION:

This Graph shows the most common food losse. This data shows the top 10 highest food lose from ASEAN countries. Here we have Palm kernels as our top 1

In [163…
```
years  = df1.copy()
pivot_total = years.pivot_table(index = "Area", columns = "Year", values = "Value",
```

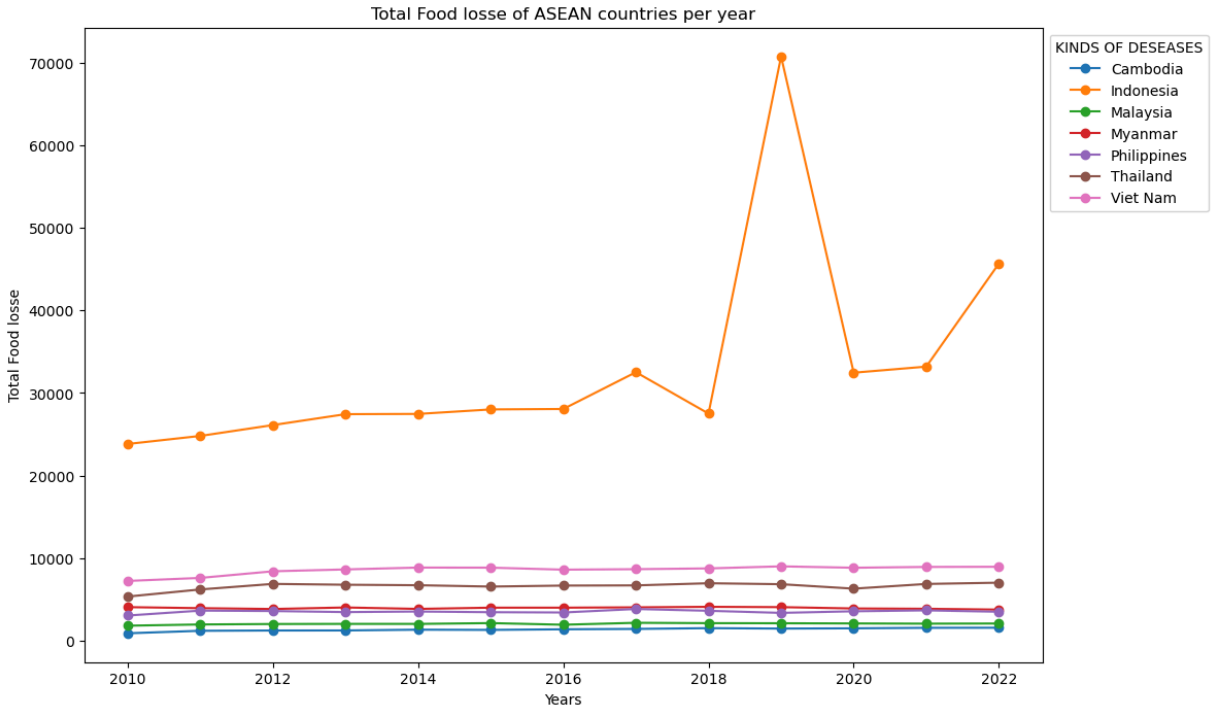
In [165…
```
pivot_total
```

Out[165…

Year / Area	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cambodia	911	1212	1247	1254	1346	1321	1393	1439	1531	1481	1512
Indonesia	23834	24807	26122	27442	27471	28016	28069	32524	27514	70753	32462
Malaysia	1831	1979	2033	2048	2046	2144	1946	2180	2137	2126	2103
Myanmar	4076	3953	3851	4037	3863	4012	4012	4052	4116	4077	3916
Philippines	3062	3654	3604	3476	3544	3464	3430	3851	3634	3381	3574
Thailand	5356	6219	6890	6789	6730	6567	6687	6710	6970	6854	6314
Viet Nam	7247	7615	8417	8642	8867	8857	8613	8672	8766	9014	8846

In [169…
```
pivot_total.T.plot(figsize = (12,8),marker = 'o', linestyle = "-")

plt.title("Total Food losse of ASEAN countries per year")
plt.xlabel("Years")
plt.ylabel("Total Food losse")
plt.legend(loc = "upper left",bbox_to_anchor=(1,1), title = "KINDS OF DESEASES")
plt.show()
```



OBSERVATION:

This graph shows the food losse produced per year of every countries in the south east Asia. Based on the graph. It shows that over the year Indonesia produces most of the food losse

In [178…
```
distribution_activities = df2['activity'].value_counts(normalize = True)
```

In [180…
```
distribution_activities
```

Out[180…

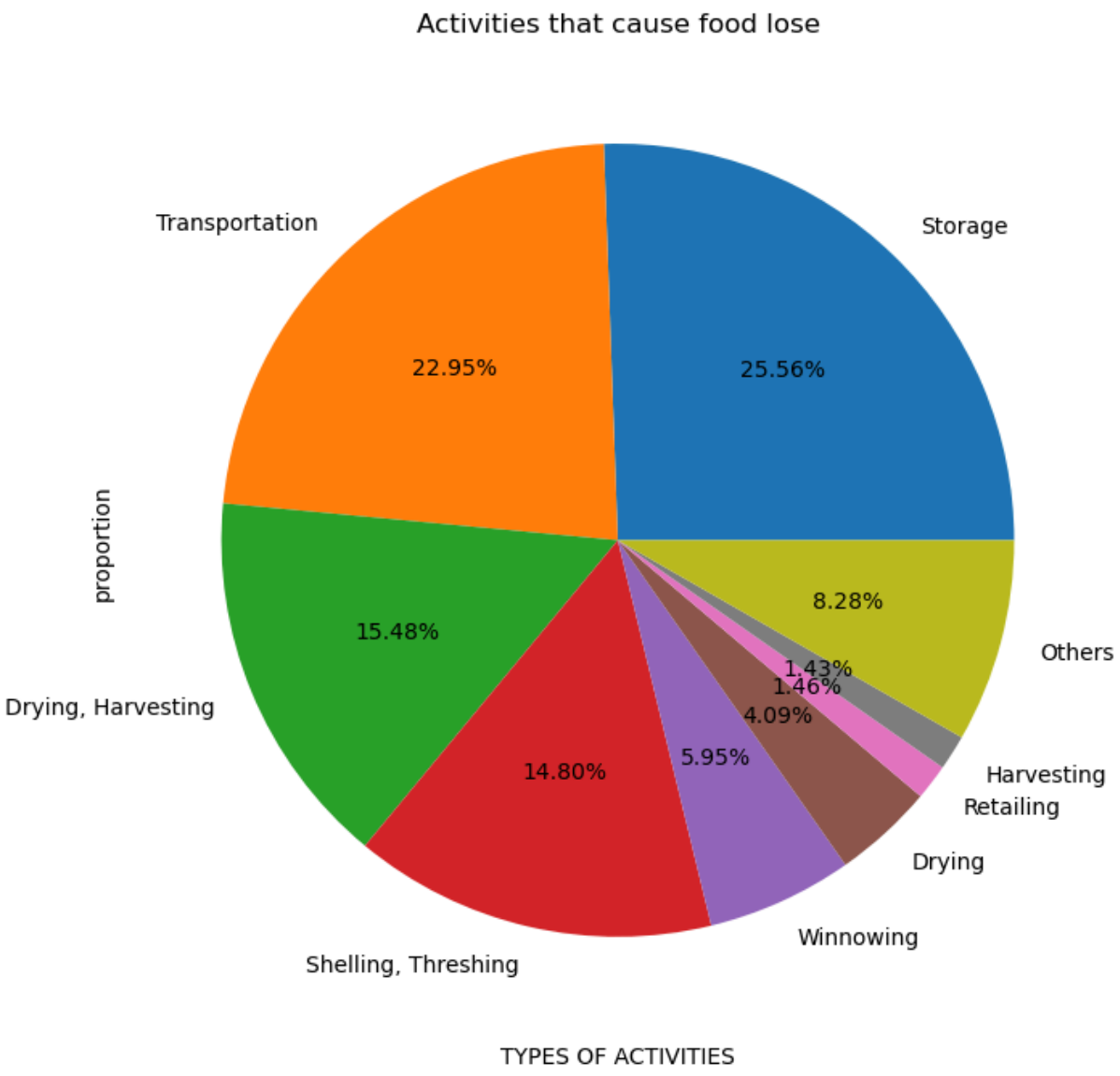
```
activity
Storage
0.255617
Transportation
0.229521
Drying, Harvesting
0.154812
Shelling, Threshing
0.147956
Winnowing
0.059492

...
Grading, Harvesting, Transportation
0.000044
Farm, Grading
0.000044
Distribution, Packaging
0.000044
Marketing, Retailing
0.000044
Collection, Grading, Harvesting, Packaging, Retailing, Storage, Transportation, Wh
olesale    0.000044
Name: proportion, Length: 127, dtype: float64
```

In [192…

```
threshold = 0.01
big = distribution_activities[distribution_activities >= threshold]
small = distribution_activities[distribution_activities < threshold]
big['Others'] = small.sum()

big.plot(kind='pie', figsize=(12, 8), labeldistance=1.1, autopct='%1.2f%%')
plt.title("Activities that cause food lose")
plt.xlabel("TYPES OF ACTIVITIES")
plt.show()
```



OBSERVATION:

In the figure above shows the distribution of activities that cause food lose. Base on the distribution storage shows the highest food lose, maybe the possible reason behind this is due to improper storage imfrastructure.

In [195…

```
df3 = pd.read_csv("global_food_wastage_dataset.csv")

df3.head()
```

Out[195…

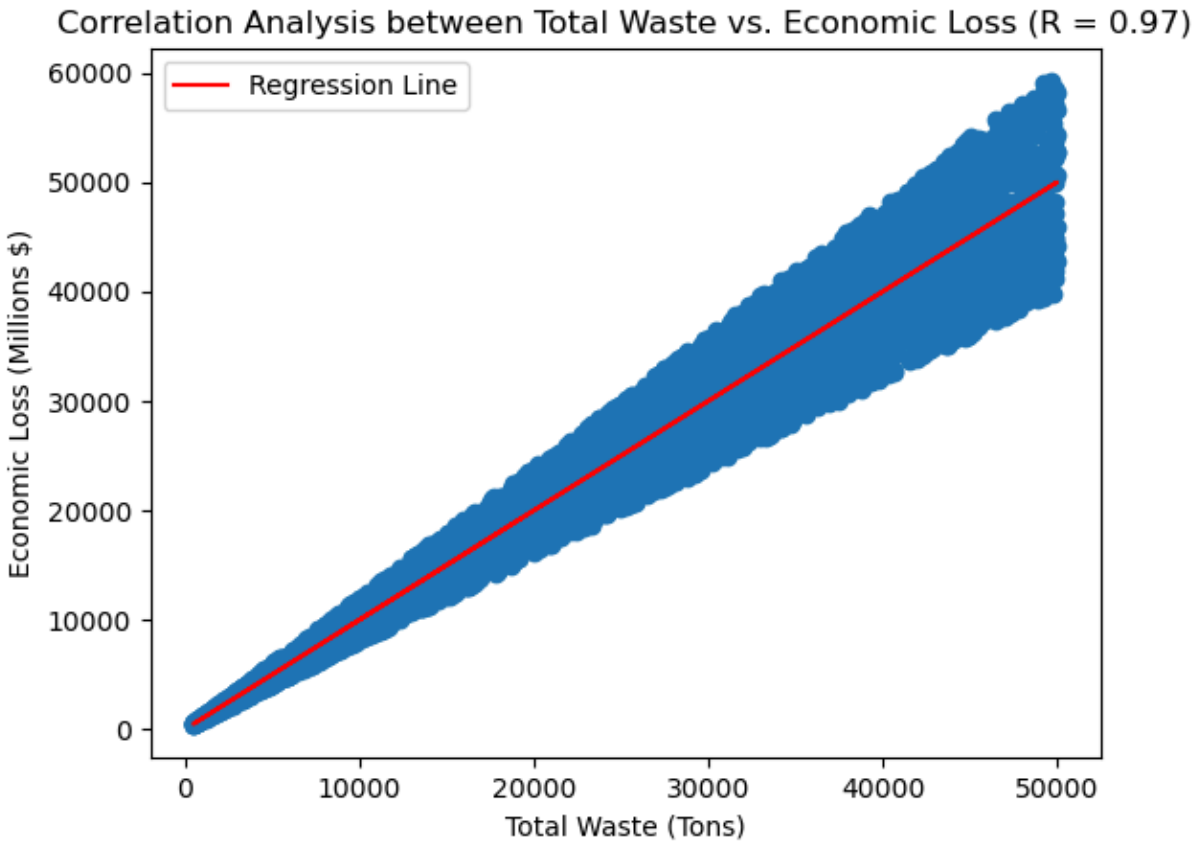
	Country	Year	Food Category	Total Waste (Tons)	Economic Loss (Million $)	Avg Waste per Capita (Kg)	Population (Million)	Household Waste (%)
0	Australia	2019	Fruits & Vegetables	19268.63	18686.68	72.69	87.59	53.64
1	Indonesia	2019	Prepared Food	3916.97	4394.48	192.52	1153.99	30.61
2	Germany	2022	Dairy Products	9700.16	8909.16	166.94	1006.11	48.08
3	France	2023	Fruits & Vegetables	46299.69	40551.22	120.19	953.05	31.91
4	France	2023	Beverages	33096.57	36980.82	104.74	1105.47	36.06

In [225…

```
x = df3['Total Waste (Tons)']
y = df3['Economic Loss (Million $)']


m, b = np.polyfit(x, y, 1)

plt.scatter(x, y)
plt.plot(x, m*x + b, color='red', label='Regression Line')
plt.title(f'Correlation Analysis between Total Waste vs. Economic Loss (R = {round(
plt.xlabel("Total Waste (Tons)")
plt.ylabel("Economic Loss (Millions $)")
plt.legend()
plt.show()
```



OBSERVATION:

The correlation shows a strong positive correlation between the total waste and economic loss which has a R value of 0.97. Based on the graph we can observe that countries that has higher food waste experience an economic Loss

CONCLUSION:

The dataset found have brought insight regarding common food waste. It also highlighted where in the foods life it is wasted. Even though it has brought good insights, it still lacks data for correlation and specificity reagarding household waste.

In [ ]: