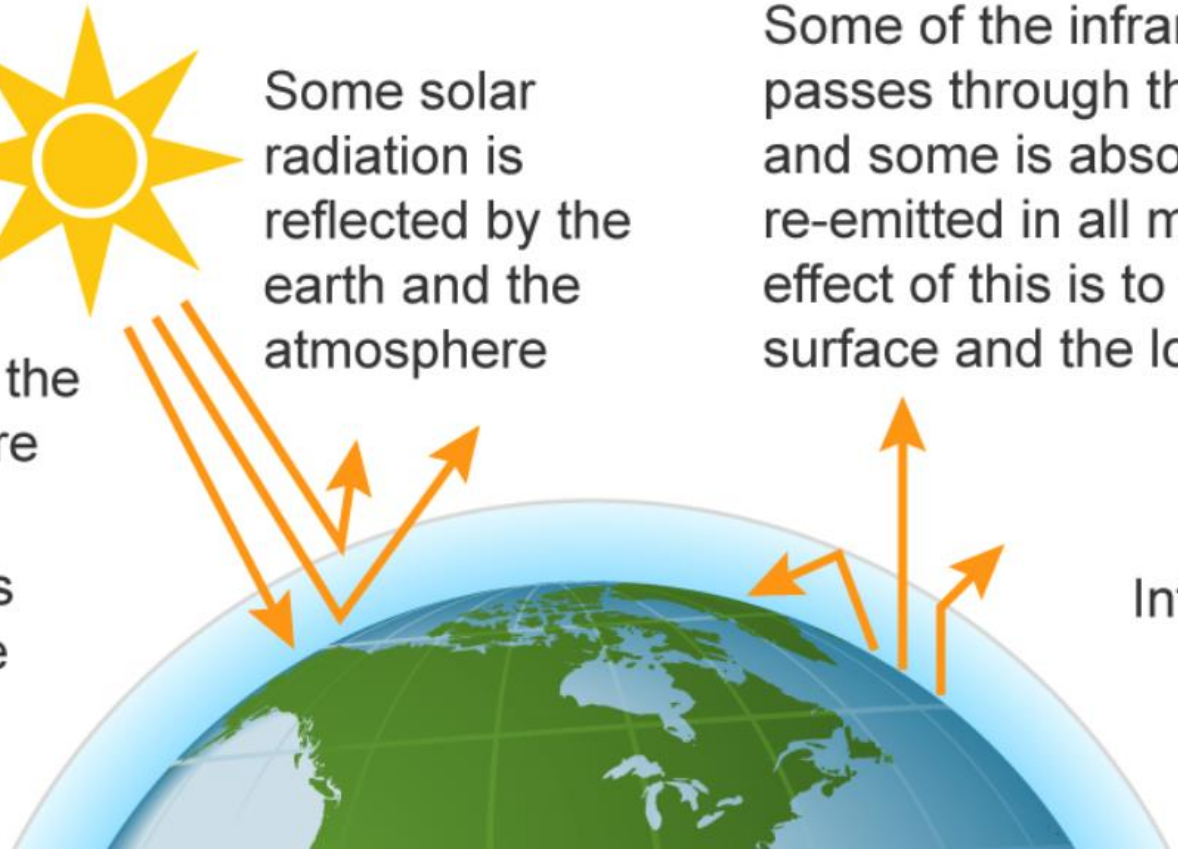
SQL Project

Is top 10 economies more responsible for co2 emission than rest of the world ?

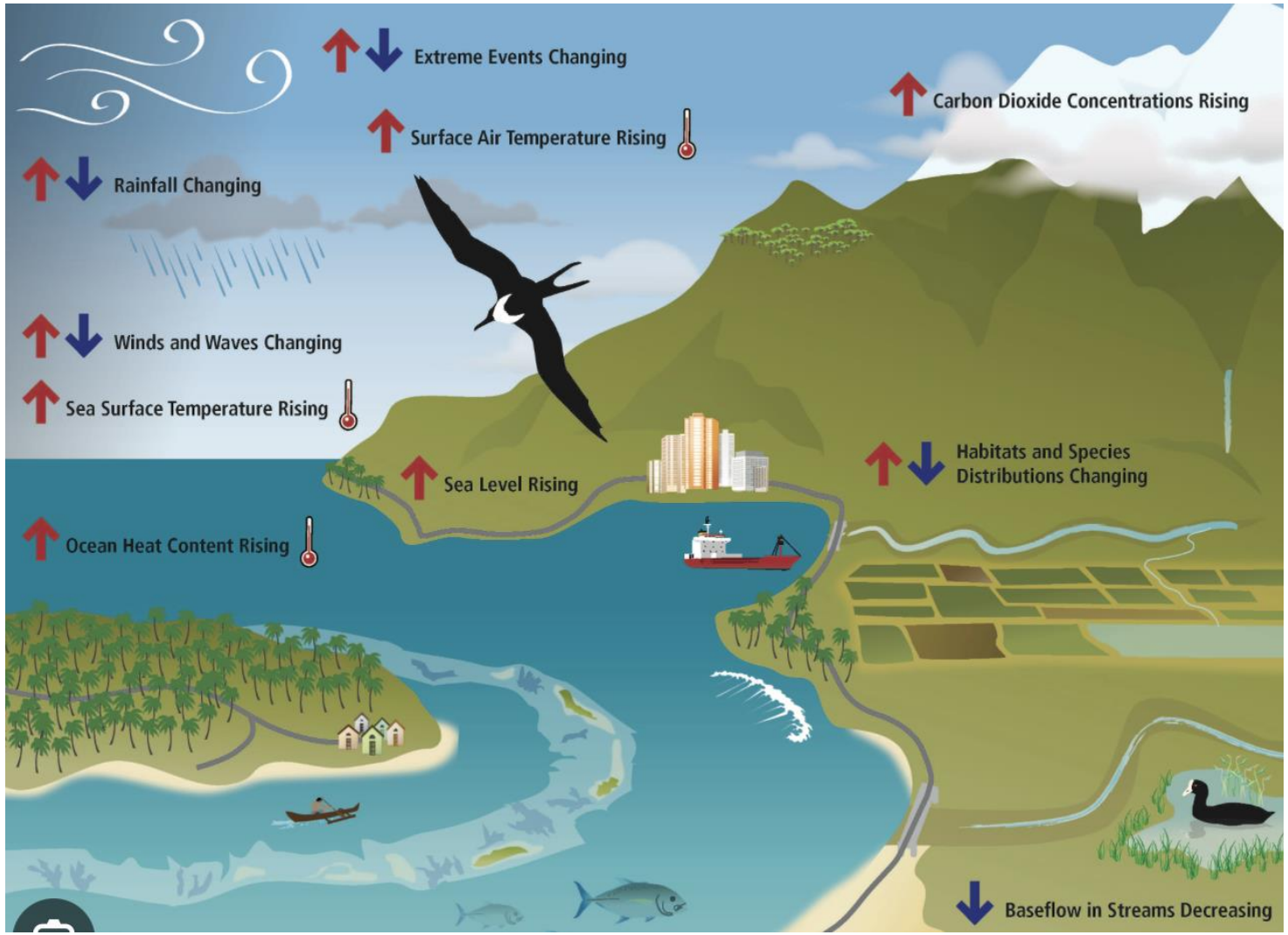
Introduction :

The greenhouse effect



➢ *Data Source : IMF – International Monetary Fund*

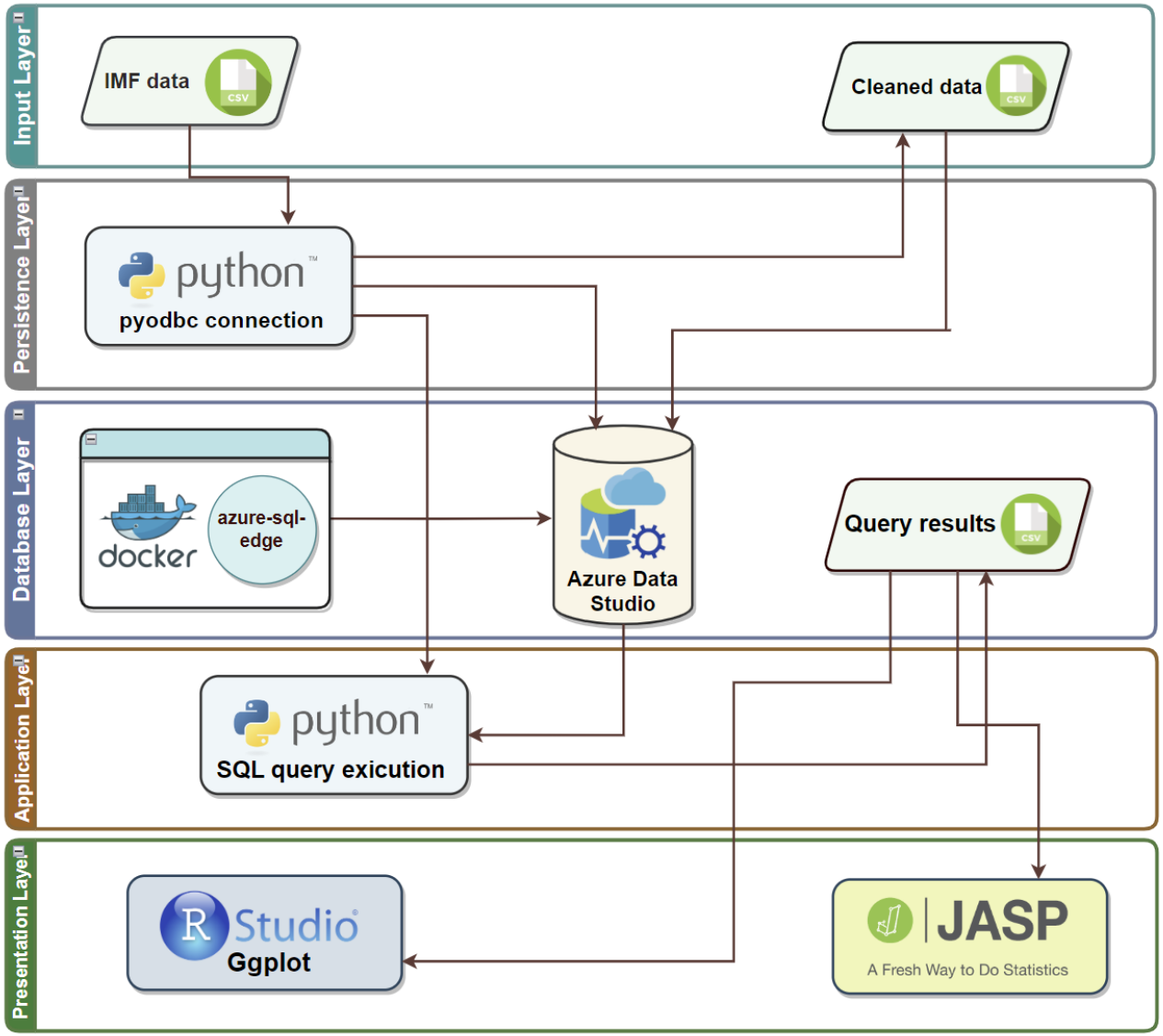
Introduction :



- Carbon Dioxide Concentrations
- Forest area
- Surface Temperature change
- Mean Sea Level
- Rain Fall Change

➢ *Data Source : IMF – International Monetary Fund*

Architecture - DFD :



- The DFD is a visual representation illustrating the flow of data within a system or process.

- Input Layer
- Persistence Layer
- Database Layer
- Application Layer
- Presentation Layer

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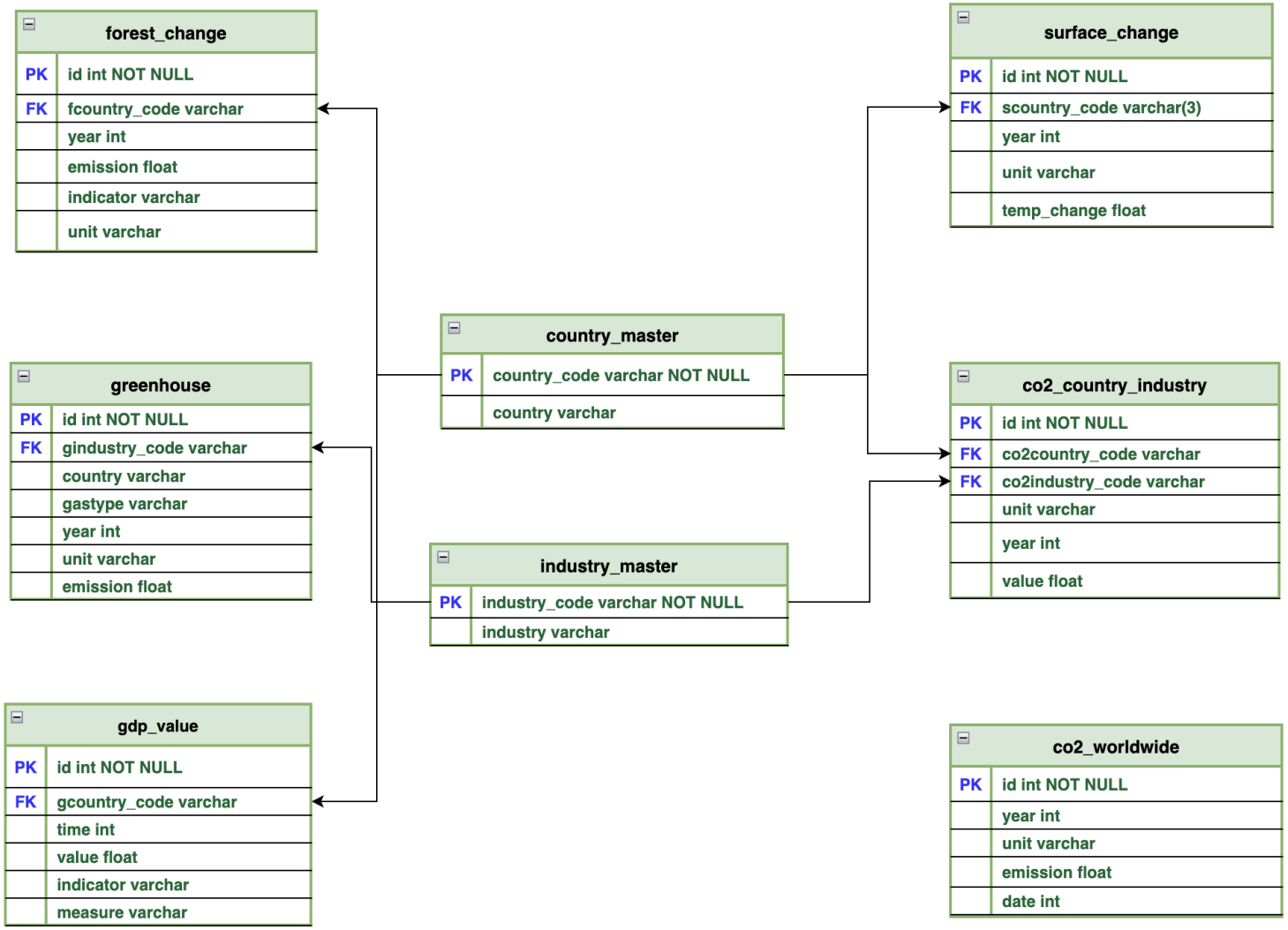
Entity Relationship Diagram :



PK – Primary key

FK- Foreign keys

Tables

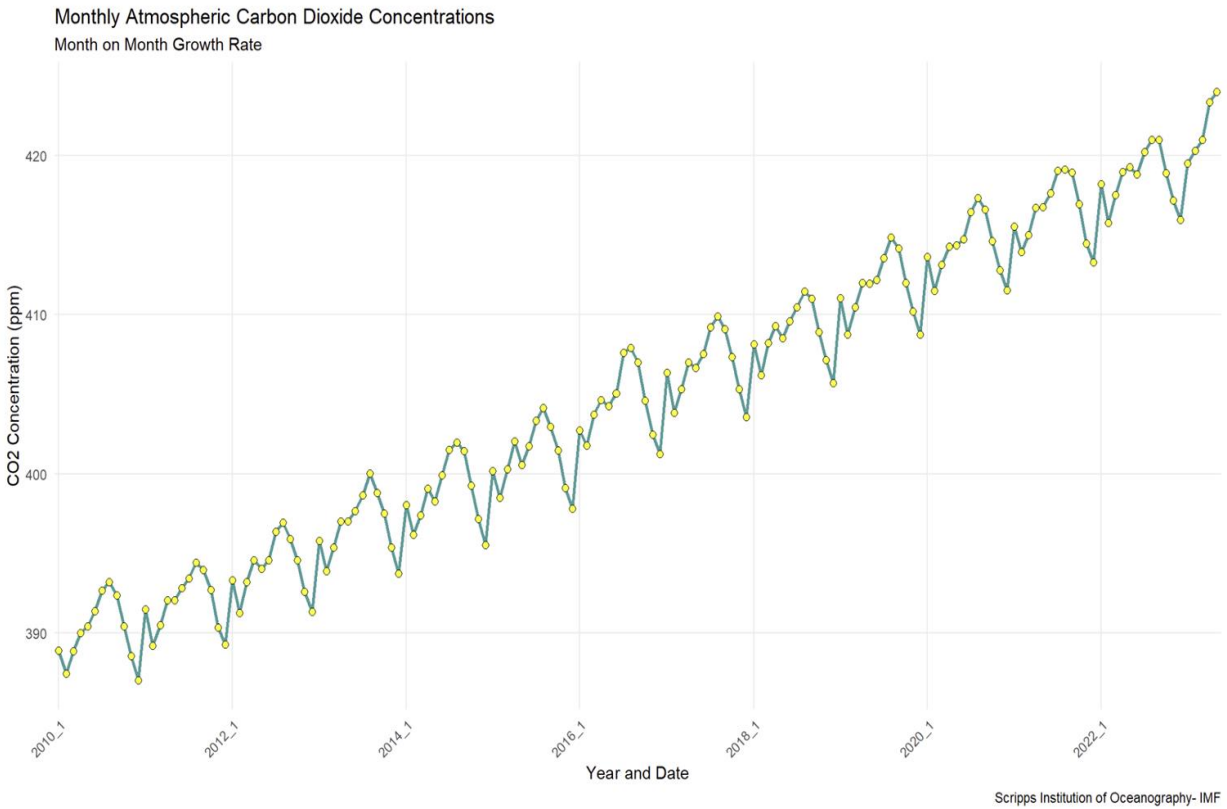
1. Country_master
2. Industry_master
3. Surface_change
4. Co2_country_industry
5. Co2_worldwide
6. GDP_value
7. Greenhouse
8. Forest_change

➢ *Data Source : IMF – International Monetary Fund*

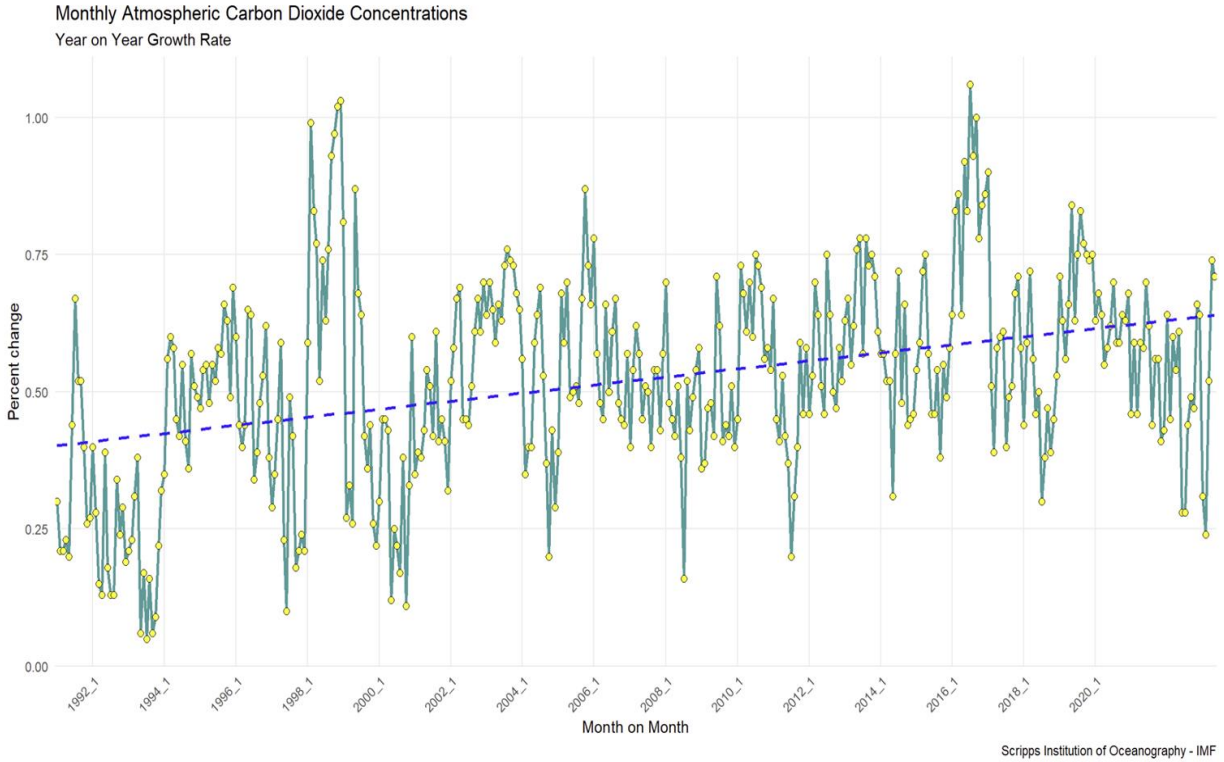
Monthly Atmospheric Carbon Dioxide Concentrations :

- The overall trend of the graph is upward, showing that carbon dioxide levels in the atmosphere are increasing over time.
- The year-on-year growth rate has been relatively stable in recent years, but the month-on-month growth rate has been more variable.

1. Graph - Monthly Atmospheric Carbon Dioxide Concentrations – (PPM)



2. Graph - Monthly Atmospheric Carbon Dioxide Concentrations – (Percent)

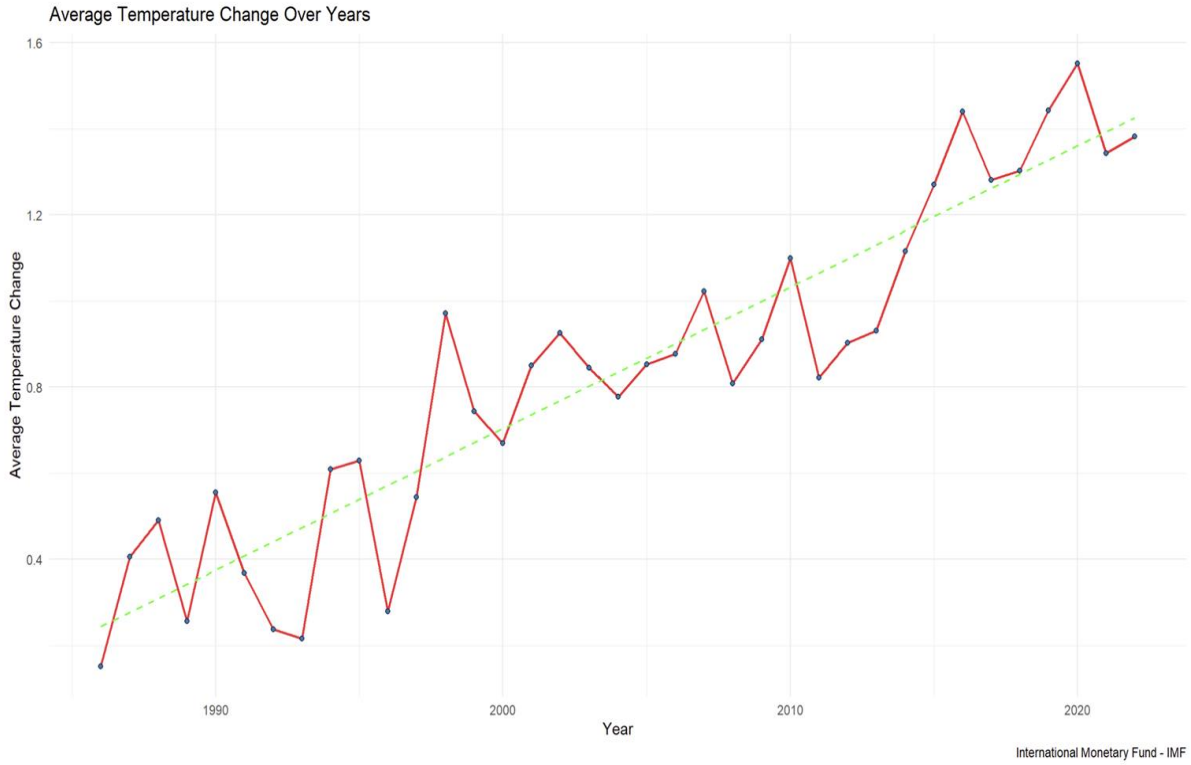


➢ *Data Source : IMF – International Monetary Fund*

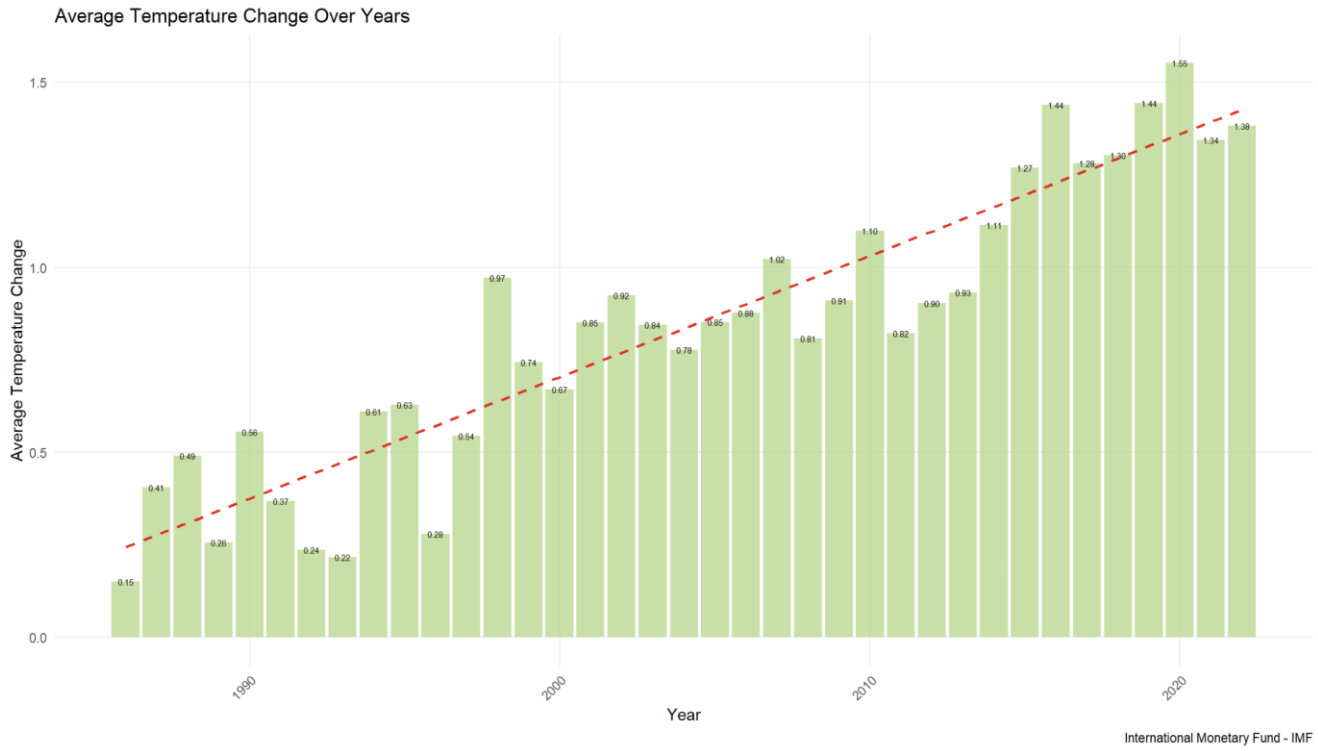
Average Temperature Change Over Years :

- The average temperature has been increasing steadily since the late 19th century.
- The rate of warming has accelerated in recent decades and the graph shows that the planet is warming rapidly.

1. Graph - Average Temperature Change Over Years – Line graph



2. Graph - Average Temperature Change Over Years – Bar graph



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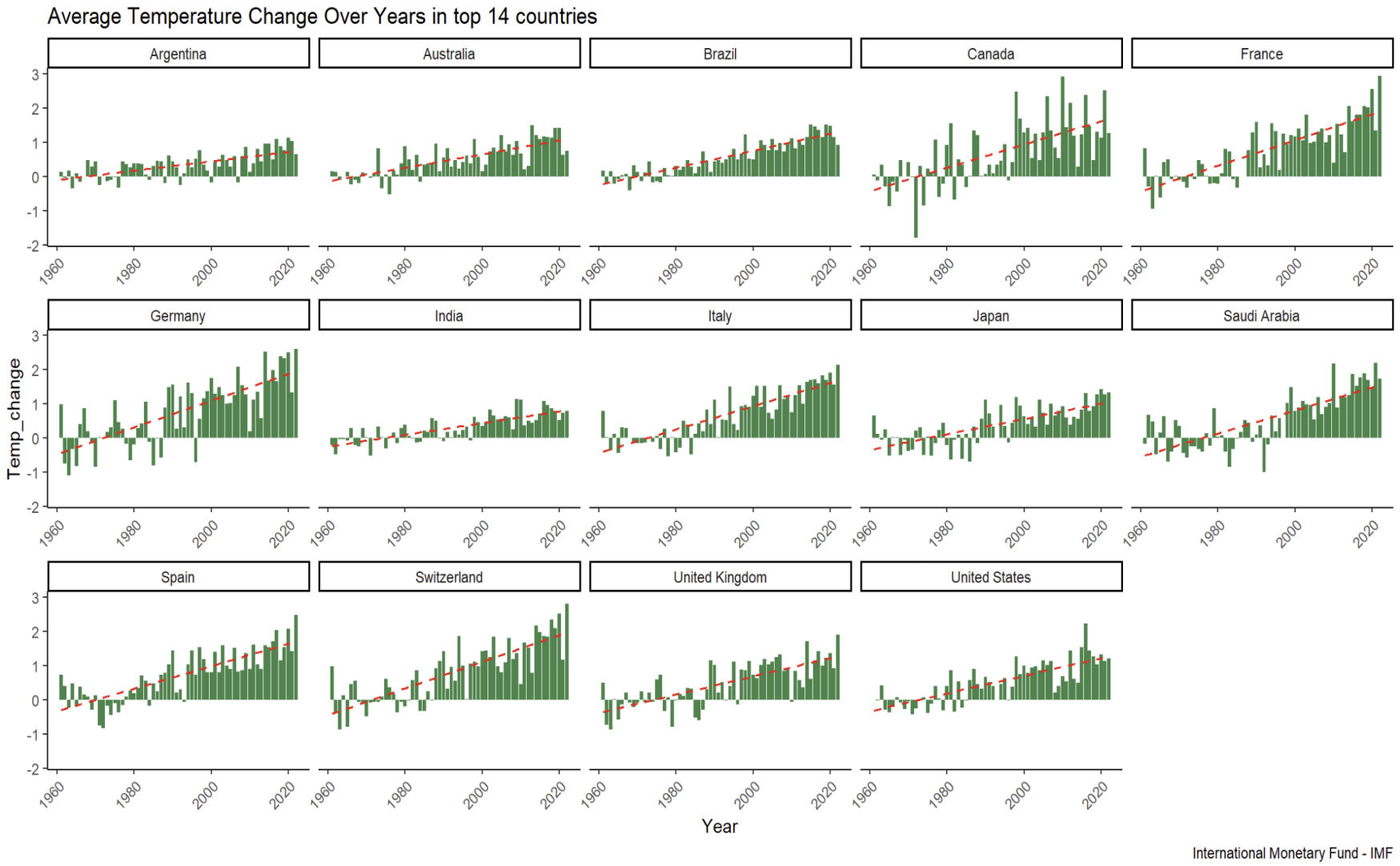
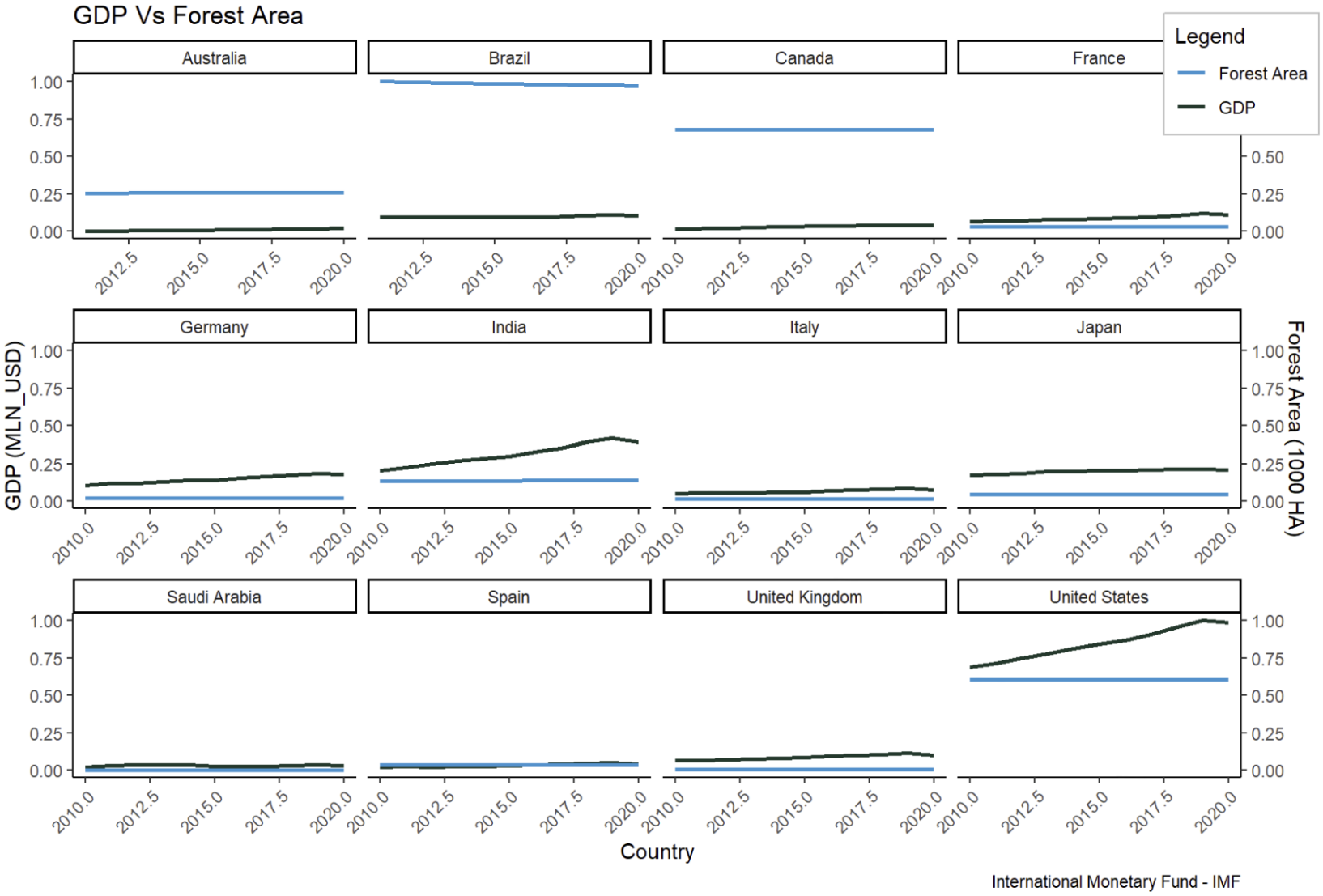
Average Temperature Change Over Years top14 countries:



- All 14 countries in the graph have experienced an increase in average temperature over the past few decades.
- The countries that have experienced the greatest warming are Argentina, Australia, Brazil, Canada, and France
- The countries that have experienced the least warming are United States, Germany, Japan, and Spain..

➢ ***Data Source : IMF – International Monetary Fund***

GDP and Forest Area: A Country-wise Analysis :



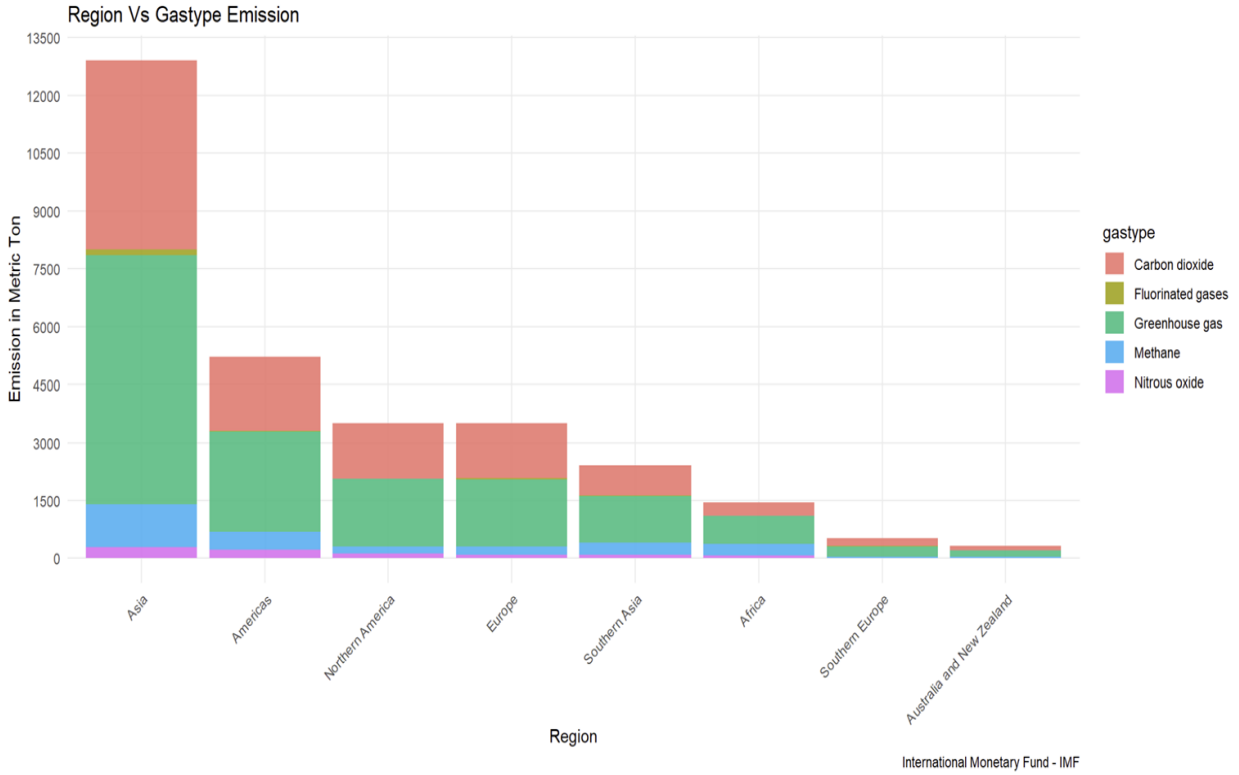
- Brazil has the largest forest area of all the countries in the graph. However, its GDP has been growing in recent years, which has led to some deforestation.
- France and Germany have a high GDP, but their forest area is relatively small. This is due to the extensive agriculture, urbanization, and industrialization of these countries.
- In developing nations like India and Brazil, forest cover has diminished because of economic growth (GDP).

➢ *Data Source : IMF – International Monetary Fund*

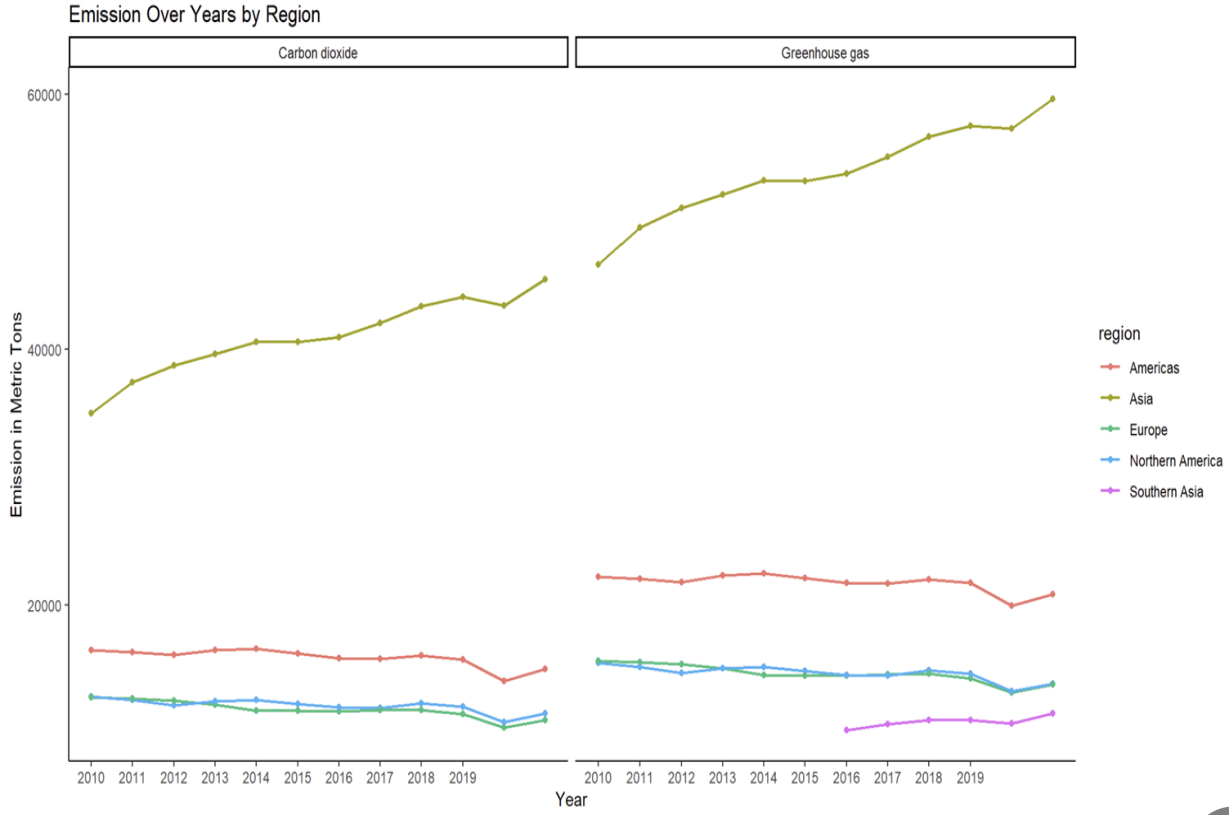
Exploring Gas Emissions Patterns Across Regions:

- The highest emissions of greenhouse gases are from Northern America, followed by Europe and Southern Asia.
- The main source of emissions in all regions is the energy sector, followed by the agriculture and industry sectors.

1. Graph – Region and Gas type Emission



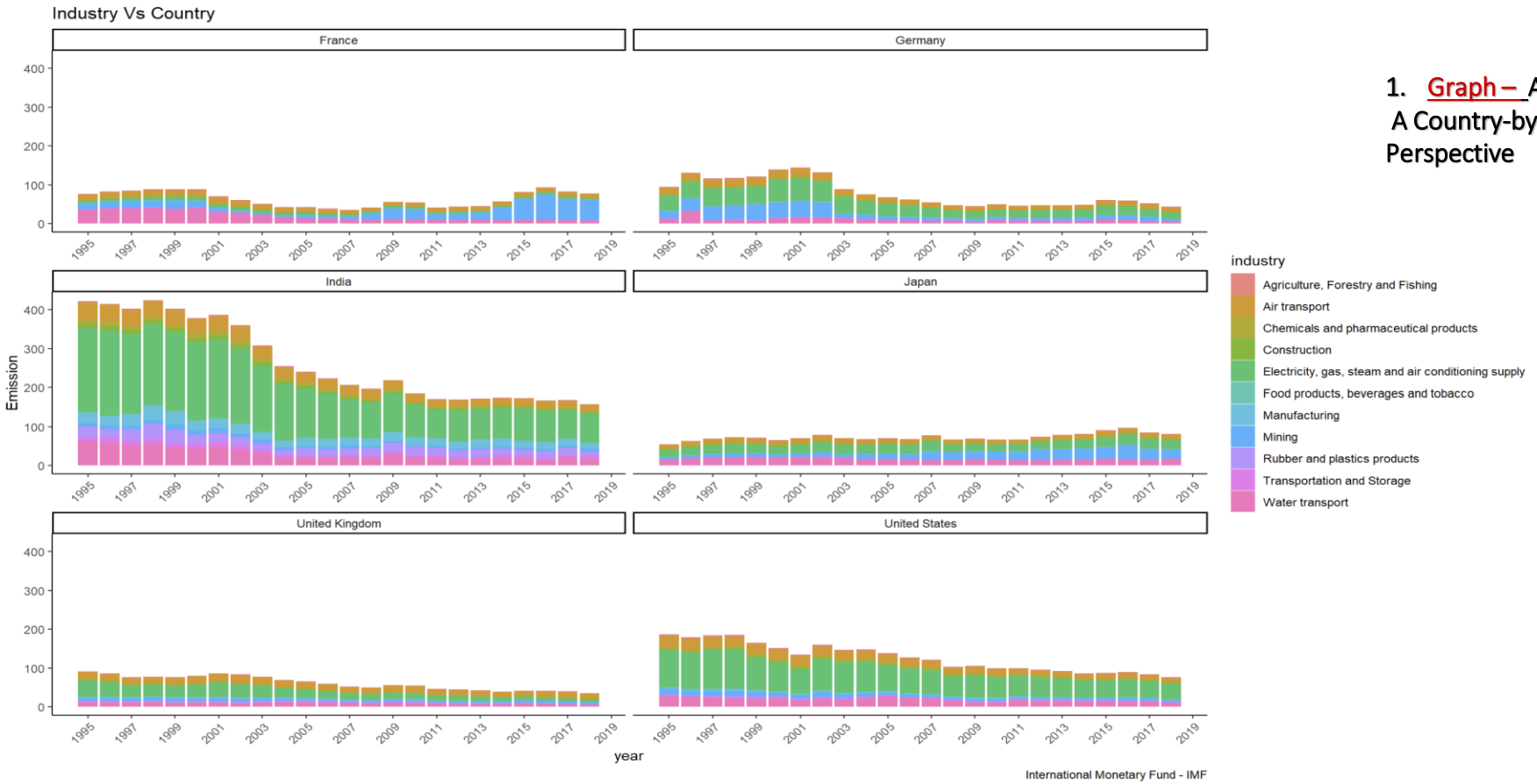
2. Graph – Region and Gas type Emission Year on Year growth



➢ *Data Source : IMF – International Monetary Fund*

Country Vs Emission Growth rate over years – Region wise analysis:

- The average emission of Co2 from the industry has been steadily decreasing over time, from 2017.
- The graph illustrates the country-specific CO2 emissions across 11 different industries.



1. Graph – Analyzing Annual Emission Growth Rates: A Country-by-Country and Industry-by-Industry Perspective

➢ *Data Source : IMF – International Monetary Fund*

Independent Sample T – Test :

Independent Samples T-Test

	t	df	p	Cohen's d	SE Cohen's d
Co2 Emission	1.055	52	0.296	0.357	0.346
GDP	6.342	52	< .001[a]	2.143	0.568

Note. Student's t-test.

[a] Brown-Forsythe test is significant (p < .05), suggesting a violation of the equal variance assumption

- Hypothesis Analysis – Student t -Test
- H_o : CO2 emission in Low GDP group = CO2 emission in High GDP group
- H1 : CO2 emission in Low GDP group < CO2 emission in High GDP group.

Assumption Checks ▼

Test of Equality of Variances (Brown-Forsythe)

	F	df_1	df_2	p
Co2 Emission	0.560	1	52	0.458
GDP	13.032	1	52	< .001

Descriptives

Group Descriptives

	Group	N	Mean	SD	SE	Coefficient of variation
Co2 Emission	HighGDP	11	$1.107\times10^{+8}$	$7.977\times10^{+7}$	$2.405\times10^{+7}$	0.721
	LowGDP	43	$8.568\times10^{+7}$	$6.750\times10^{+7}$	$1.029\times10^{+7}$	0.788
GDP	HighGDP	11	$5.026\times10^{+10}$	$4.716\times10^{+10}$	$1.422\times10^{+10}$	0.938
	LowGDP	43	$4.923\times10^{+9}$	$4.976\times10^{+9}$	$7.589\times10^{+8}$	1.011

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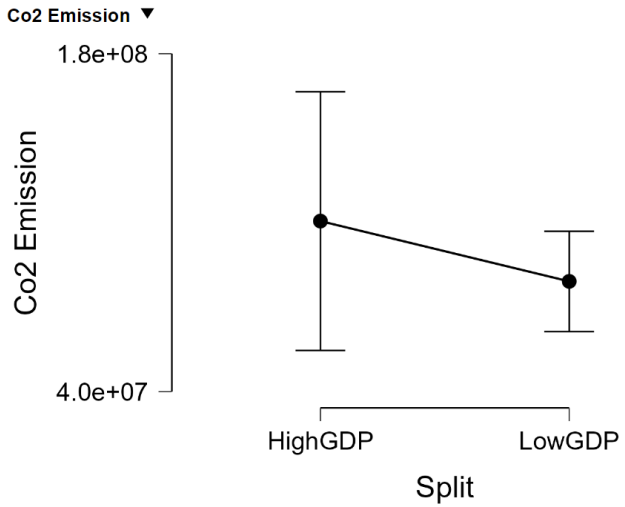
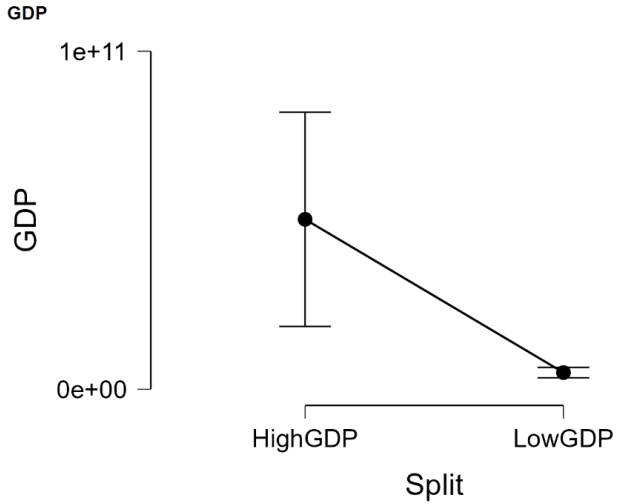
Independent Sample T – Test :





- Hypothesis Analysis – Student t -Test

The obtained p-value for CO2 emissions is greater than 0.05 (0.296), indicating that there is insufficient evidence to reject the null hypothesis, which asserts that CO2 emissions in the Low GDP group are equal to CO2 emissions in the High GDP group.

This conclusion is drawn considering the observed spread of data and the evident separation of means between the groups

➢ ***Data Source : IMF – International Monetary Fund***


THANK YOU