# Analysis of Bangladesh Economic Data

By **Muammer Galib Mahdi**

PHONE: +8801757294541
EMAIL: mgmahdi97@gmail.com
GitHub: https://github.com/enigmahdi97
Linkedin: https://www.linkedin.com/in/galib-mahdi/

# Introduction

In this article, we delve into a comprehensive analysis of Bangladesh's economic indicators spanning over three decades, from 1990 to 2022. Utilizing data extracted from the World Bank website, my examination encompasses diverse facets of the nation's economic landscape. From the intricate relationships between national expenditure and GDP to the critical dynamics of electricity access, trade patterns, remittances, and demographic influences, my study aims to uncover insightful trends that have shaped Bangladesh's economic trajectory. This exploration extends to social indicators, including mortality rates and environmental considerations, providing a holistic understanding of the nation's multifaceted development. The rich dataset serves as the foundation for this analytical journey, offering a nuanced perspective on Bangladesh's economic evolution over the past three decades. [Click here to view the entire excel workbook](#) and the raw data is in the third sheet from last in the excel file.

# National expenditure & GDP and GDP Growth

National Expenditure and Nominal GDP is rising hand in hand over the years, but national expenditure is slightly higher than GDP, indicating deficit, and the gap is getting bigger in the recent years. GDP Growth is also growing over time with dips and climbs every few years, but the biggest dip is in 2020 during the COVID lockdown.



National expenditure & GDP (Nominal, Billion $) and GDP Growth (annual %)
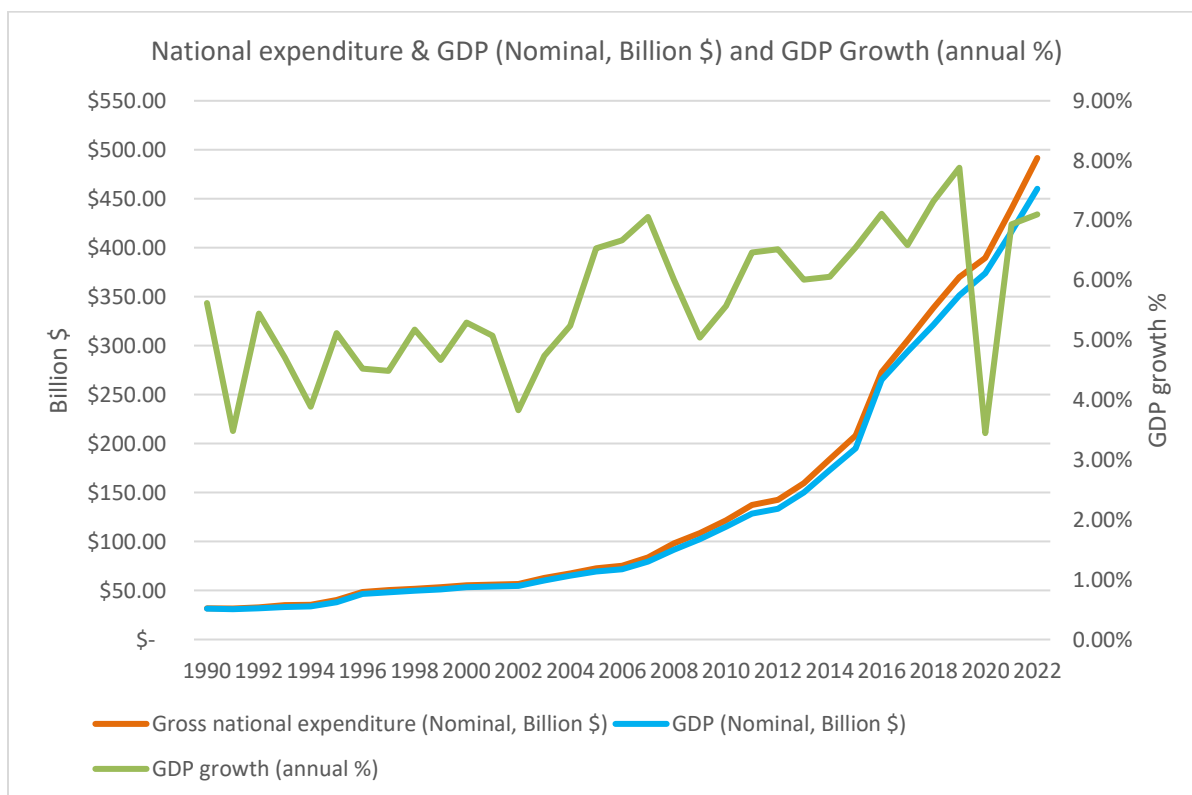
# Electricity and Energy

**Regression Analysis: Relationship Between Nominal GDP and Access to Electricity**

SUMMARY OUTPUT

| Regression Statistics | |
|---|---|
| Multiple R | 0.928931 |
| R Square | 0.862914 |
| Adjusted R Square | 0.858187 |
| Standard Error | 42.92698 |
| Observations | 31 |

ANOVA

| | df | SS | MS | F | Significance F |
|---|---|---|---|---|---|
| Regression | 1 | 336381.3 | 336381.3 | 182.5455 | 4.82E-14 |
| Residual | 29 | 53439.04 | 1842.725 | | |
| Total | 30 | 389820.3 | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|---|---|---|---|---|---|---|---|---|
| Intercept | -69.4458 | 16.55416 | -4.19506 | 0.000235 | -103.303 | -35.5887 | -103.303 | -35.5887 |
| X Variable 1 | 401.5788 | 29.72249 | 13.51094 | 4.82E-14 | 340.7894 | 462.3681 | 340.7894 | 462.3681 |
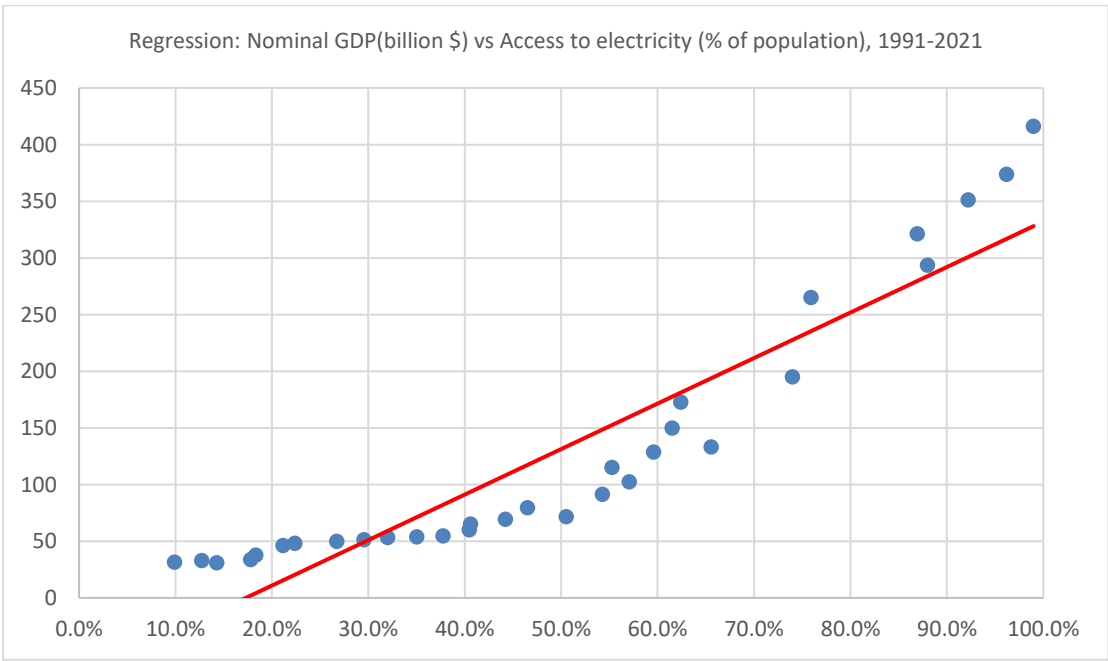


Regression: Nominal GDP(billion $) vs Access to electricity (% of population), 1991-2021
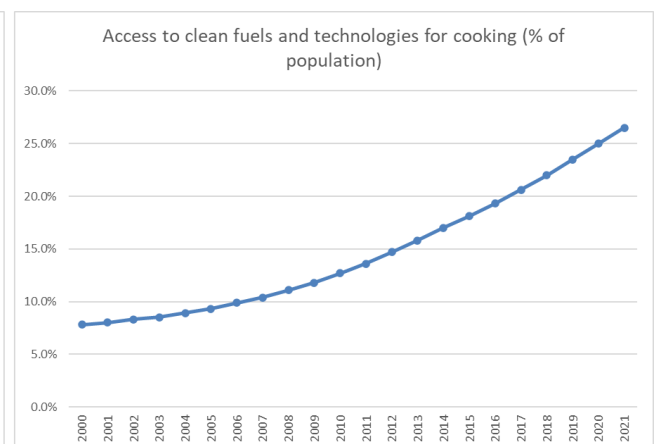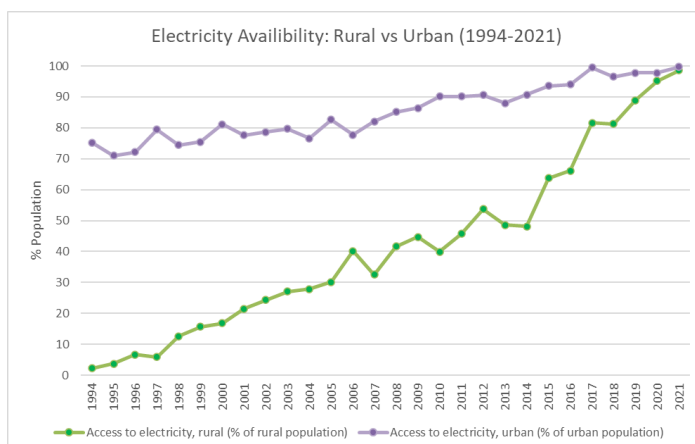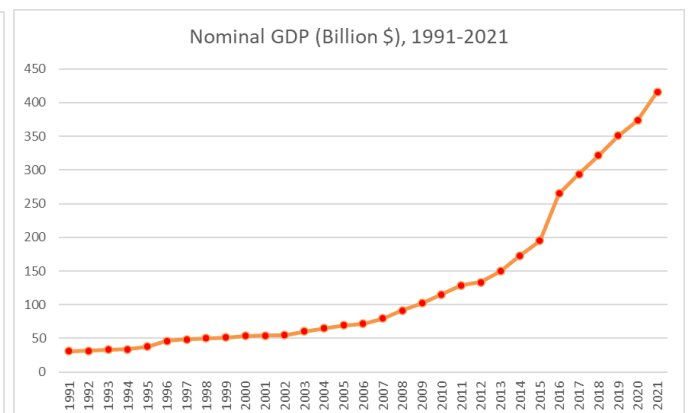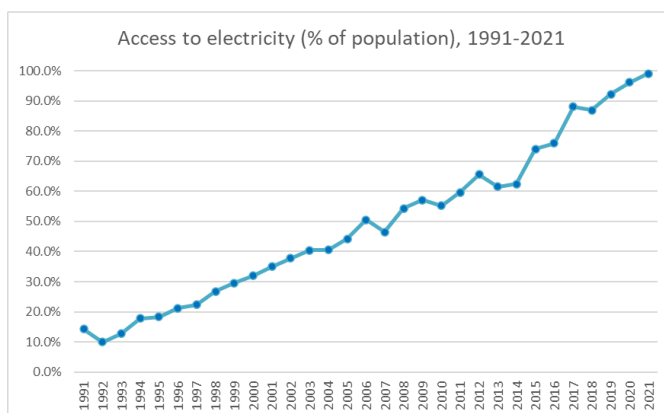
Multiple R is the multiple correlation coefficient, which measures the strength and direction of the linear relationship between the independent variable(Access to Electricity) and the dependent variable(Nominal GDP). Multiple R is approximately 0.929, indicating a strong positive correlation.

R Square of approximately 0.863 means that 86.3% of the variance in the dependent variable is explained by the independent variable(Access to Electricity).

The p-value associated with X Variable 1 is very close to zero (4.82202E-14), indicating that X Variable (Access to electricity) is highly statistically significant.

Now from the line charts below: As GDP grew over time overall access to electricity reached almost 100% by 2021 starting from 14.3% in 1991. But this low amount of accessibility was mostly due to rural regions being less fortunate, in 1994 only 2.24% of rural population had access to electricity where 75.2% of urban population had access to electricity. But over time this gap closed, now rural 98.54% and urban 99.69% population has access to electricity by 2021.

Access to clean fuel has also seen a steady rise over time, from 7.8% in 2000 to 26.5% in 2021.



Access to electricity (% of population), 1991-2021



Nominal GDP (Billion $), 1991-2021



Electricity Availibility: Rural vs Urban (1994-2021)



Access to clean fuels and technologies for cooking (% of population)

The regression analysis reveals a strong positive correlation between Nominal GDP and Access to Electricity, emphasizing the critical role of electricity in economic growth. The significant reduction in the gap between rural and urban access to electricity highlights positive strides in infrastructure development over time.

# Export, Import & Net-Export

Import (blue area in graph) has always been more than Bangladesh's Export (Orange area in graph); hence our Net Export (red line in graph) is always negative, causing us to have a continuous Trade Deficit. To give a better visual comprehension the import line is flipped on the negative side; as we can see, our exports are increasing but imports are increasing even faster, and the trade deficit is rising almost at a similar ratio.

The continuous trade deficit, with imports consistently surpassing exports, paints a challenging trade scenario for Bangladesh. While exports are on the rise, the faster growth in imports maintains the trade deficit. This imbalance necessitates a further planning of trade policies and strategies.
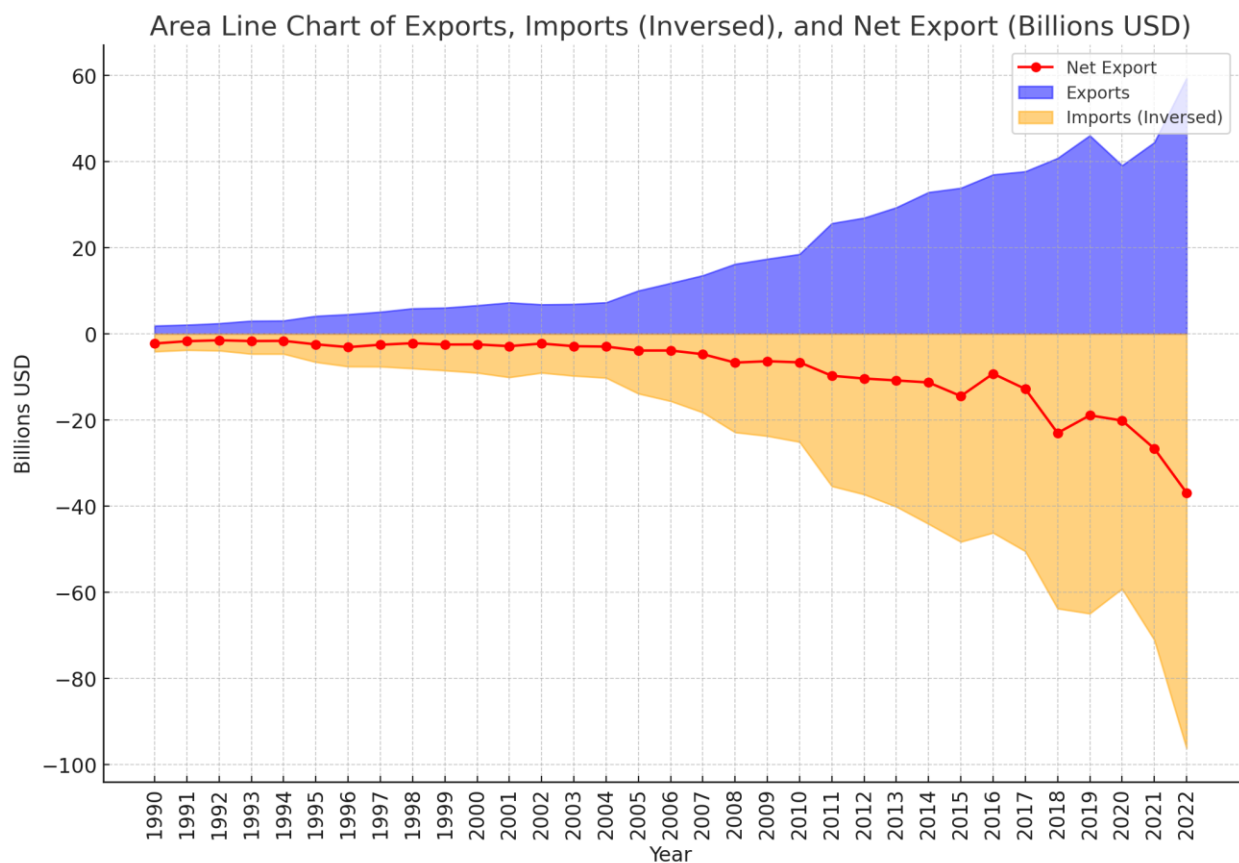
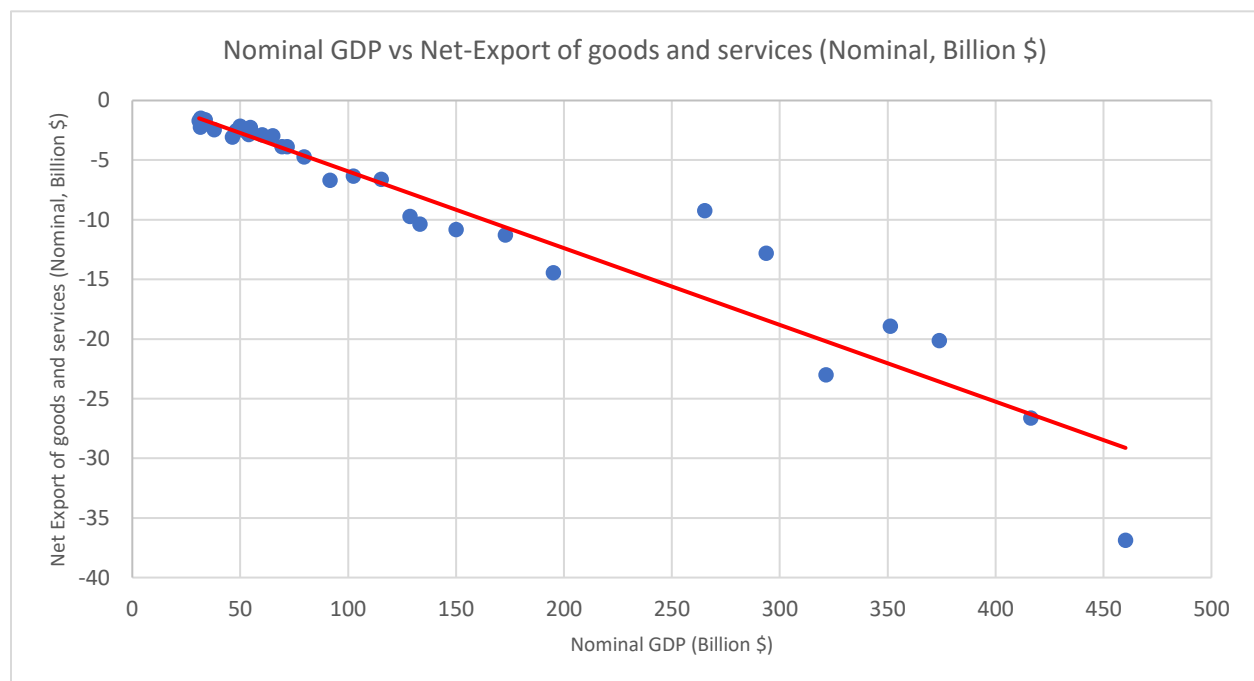# Relationship between Net-Export and Nominal GDP

SUMMARY OUTPUT

| Regression Statistics | |
| --- | --- |
| Multiple R | 0.955923403 |
| R Square | 0.913789552 |
| Adjusted R Square | 0.91100857 |
| Standard Error | 37.57069011 |
| Observations | 33 |

ANOVA

| | df | SS | MS | F | Significance F |
| --- | --- | --- | --- | --- | --- |
| Regression | 1 | 463816.6 | 463816.6 | 328.5852 | $4.7 \times 10^{-18}$ |
| Residual | 31 | 43758.26 | 1411.557 | | |
| Total | 32 | 507574.9 | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Intercept | 18.72284898 | 9.183872 | 2.038666 | 0.05009 | -0.00778 | 37.45348 | -0.00778 | 37.45348 |
| X Variable 1 | -14.19546649 | 0.783115 | -18.1269 | $4.7 \times 10^{-18}$ | -15.7926 | -12.5983 | -15.7926 | -12.5983 |



Nominal GDP vs Net-Export of goods and services (Nominal, Billion $)

Multiple R is the multiple correlation coefficient, which measures the strength and direction of the linear relationship between the independent variable (Nominal GDP) and the dependent variable (Net-export). Multiple R is approximately 0.956, indicating a strong positive correlation.

R Square of approximately 0.913 means that 91.3% of the variance in the dependent variable is explained by the independent variable (Nominal GDP).

The p-value associated with X Variable 1 is very close to zero ($4.7 \times 10^{-18}$), indicating that X Variable (Nominal GDP) is highly statistically significant.

Examining the link between Net-Export and Nominal GDP reveals an interesting story about Bangladesh's trade. Even though exports are going up, the rapid increase in imports consistently surpasses that growth, creating a constant trade deficit. The analysis shows a strong connection between how much the country earns (Nominal GDP) and its trade balance. Essentially, how well the economy is doing influences whether we're selling more than we're buying on the global market. This emphasizes the importance of carefully managing trade policies to address and improve this ongoing trade deficit.

# Relationship of Remittance with nominal GDP and Reserve

**Remittance vs Reserve**

| | Total reserves minus gold (Nominal, Billion $) | Personal remittances, received (Nominal, Billion $) |
|---|---|---|
| Total reserves minus gold (Nominal, Billion $) | 1 | |
| Personal remittances, received (Nominal, Billion $) | 0.927899951 | 1 |



Effect of "Personal remittances received" on "Total reserves minus gold" (Nominal, Billion $), 1990-2022
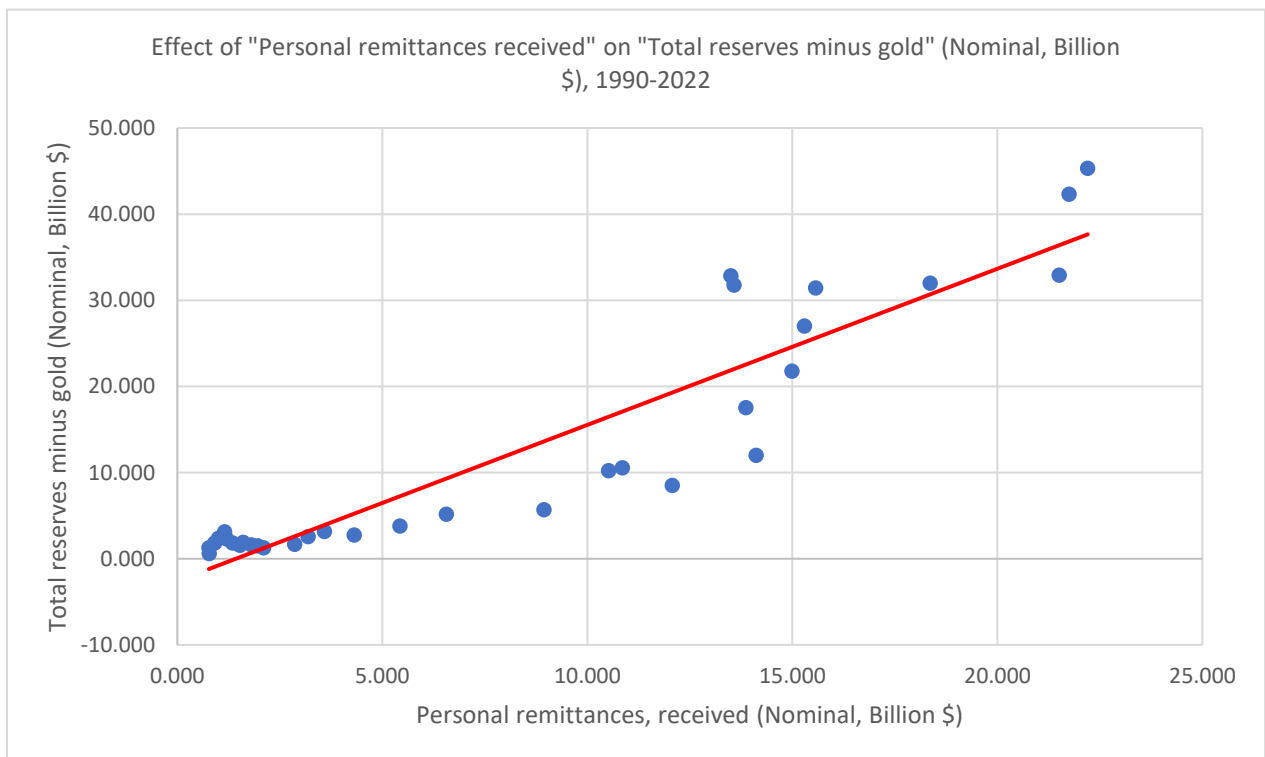
**Remittance vs Nominal GDP**

|  | GDP (Nominal, Billion $) | Personal remittances, received (Nominal, Billion $) |
|---|---|---|
| **GDP (Nominal, Billion $)** | 1 | |
| **Personal remittances, received (Nominal, Billion $)** | 0.923023577 | 1 |



Effect of "Personal remittances received" on "GDP (Nominal, Billion $)", 1990-2022
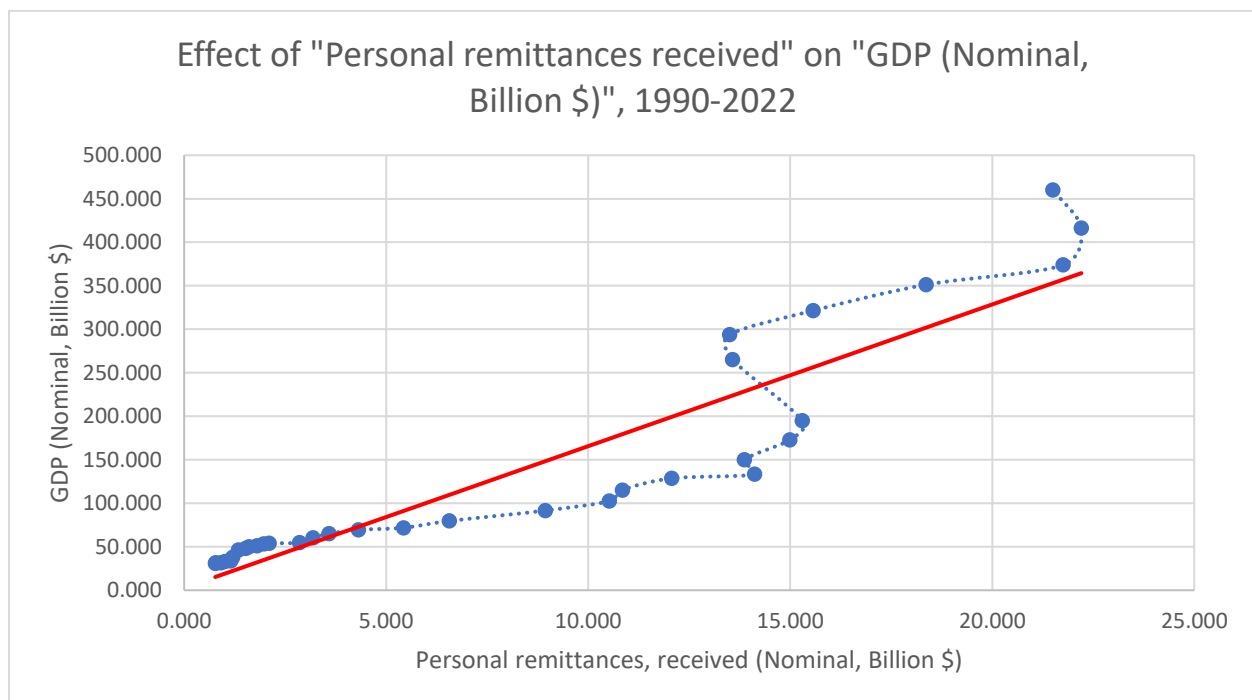
For both the graphs above, we can see that remittance plays a crucial role in both total reserves and GDP, in both cases a positive relation with 0.923 & 0.927 correlation.

Remittances emerge as a crucial factor influencing both total reserves and GDP. The positive correlations emphasize the importance of remittance inflows to the country's economic stability and growth.
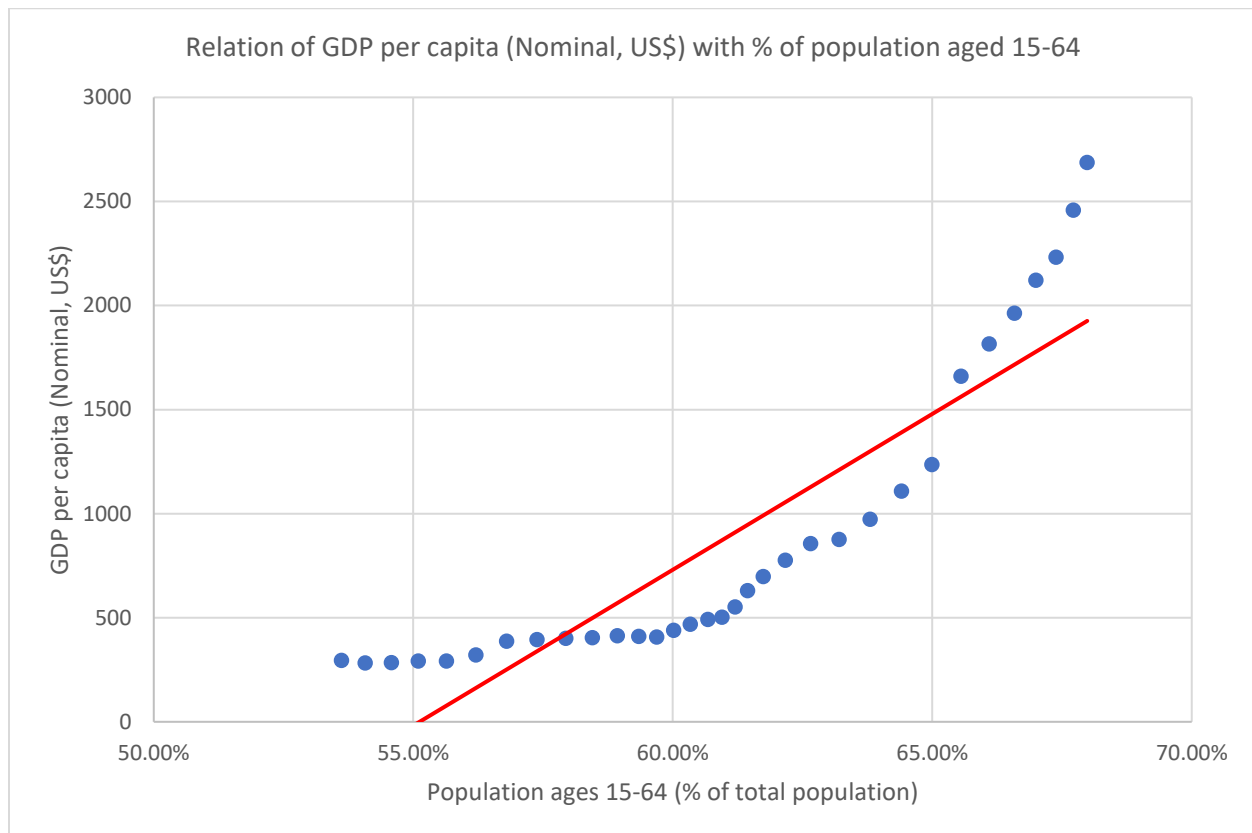
# Relationship of working age group population with GDP growth and GDP per capita

|  | *Population ages 15-64 (% of total population)* | *GDP growth (annual %)* |
|---|---|---|
| Population ages 15-64 (% of total population) | 1 | |
| GDP growth (annual %) | 0.601768518 | 1 |



In this graph we can see, as the working age population (15-64 year olds) increase over time the GDP growth rate also increases, but the correlation is a bit weak comparatively. That's probably due to there being a single outlier, during 2020 due to covid lockdown the GDP growth rate dropped to 3.45% even though the working population increased.

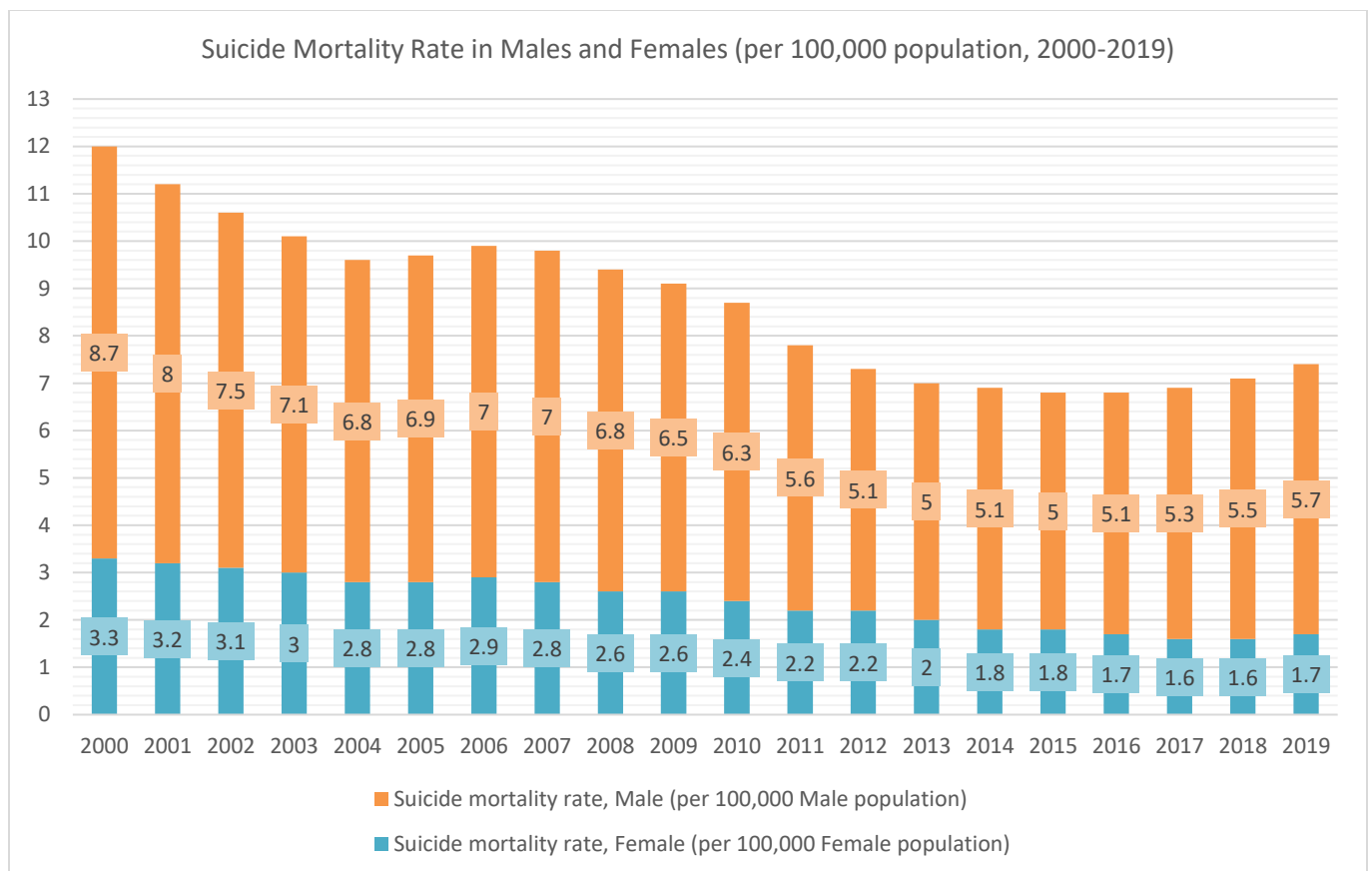| | Population ages 15-64 (% of total population) | GDP per capita (Nominal, US$) |
|---|---|---|
| Population ages 15-64 (% of total population) | 1 | |
| GDP per capita (Nominal, US$) | 0.888343225 | 1 |



But in this graph, we see that with the increase in working age population there is a very strong correlation with GDP per capita. This is simply due to this age group of people are the main earning class of the country.

The analysis clearly illustrates the importance of this demographic for the growth of the economy, also emphasizing the significance of this group in contributing to individual prosperity.
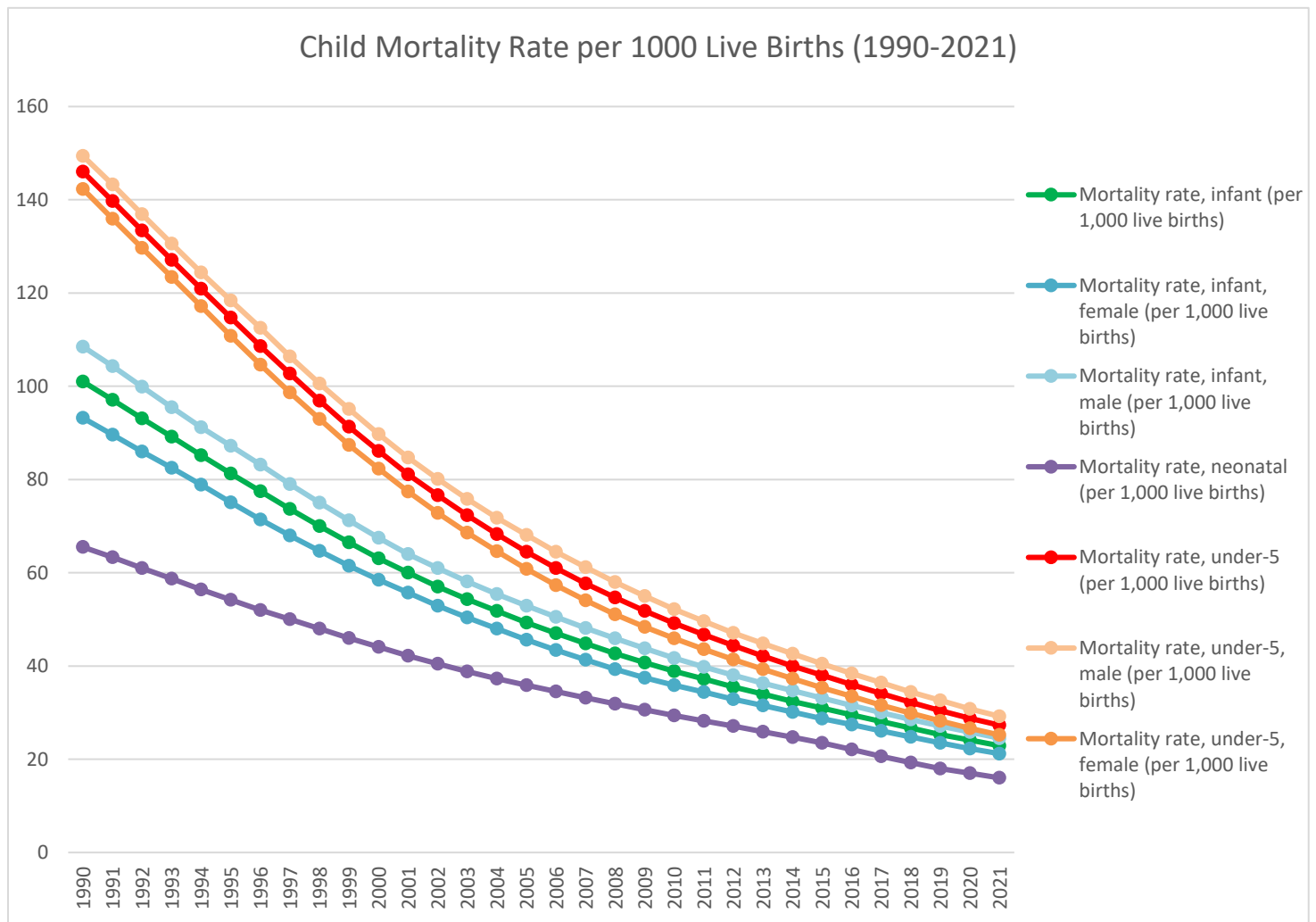
# Child and Youth Mortality Rate

**Suicide Mortality Rate**

The bar chart below depicts the mortality rate by suicide, from 2000 to 2019. The trend does show there is a slight decreasing trend, but the suicide rate is still quite high. Another thing to pay our attention towards, is that overall men have more than two-three times the death by suicide rate than women, through out every year.



Suicide Mortality Rate in Males and Females (per 100,000 population, 2000-2019)

Male values: 8.7, 8, 7.5, 7.1, 6.8, 6.9, 7, 7, 6.8, 6.5, 6.3, 5.6, 5.1, 5, 5.1, 5, 5.1, 5.3, 5.5, 5.7

Female values: 3.3, 3.2, 3.1, 3, 2.8, 2.8, 2.9, 2.8, 2.6, 2.6, 2.4, 2.2, 2.2, 2, 1.8, 1.8, 1.7, 1.6, 1.6, 1.7

■ Suicide mortality rate, Male (per 100,000 Male population)
■ Suicide mortality rate, Female (per 100,000 Female population)

**Child Mortality Rate**

## Child Mortality Rate per 1000 Live Births (1990-2021)



One of the biggest achievement of Bangladesh has to be what the graph above depicts, to improve the healthcare so much so that reducing child mortality drastically over the years, from nearly 150 to 27.3 for under 5 years age, from 101 to 22.9 for infants(under 1 year) and from 65.5 to 16 for neonatal (under 28 days old), deaths per 1000 births from 1990 to 2021, this is a great achievement. aside from that, In the graph above, for infants (under 1 year) and under 5 year olds, male children have more mortality rate than female children.

**Probability of dying among youths**

**Probability of dying among youth ages 20-24 years (per 1,000)**
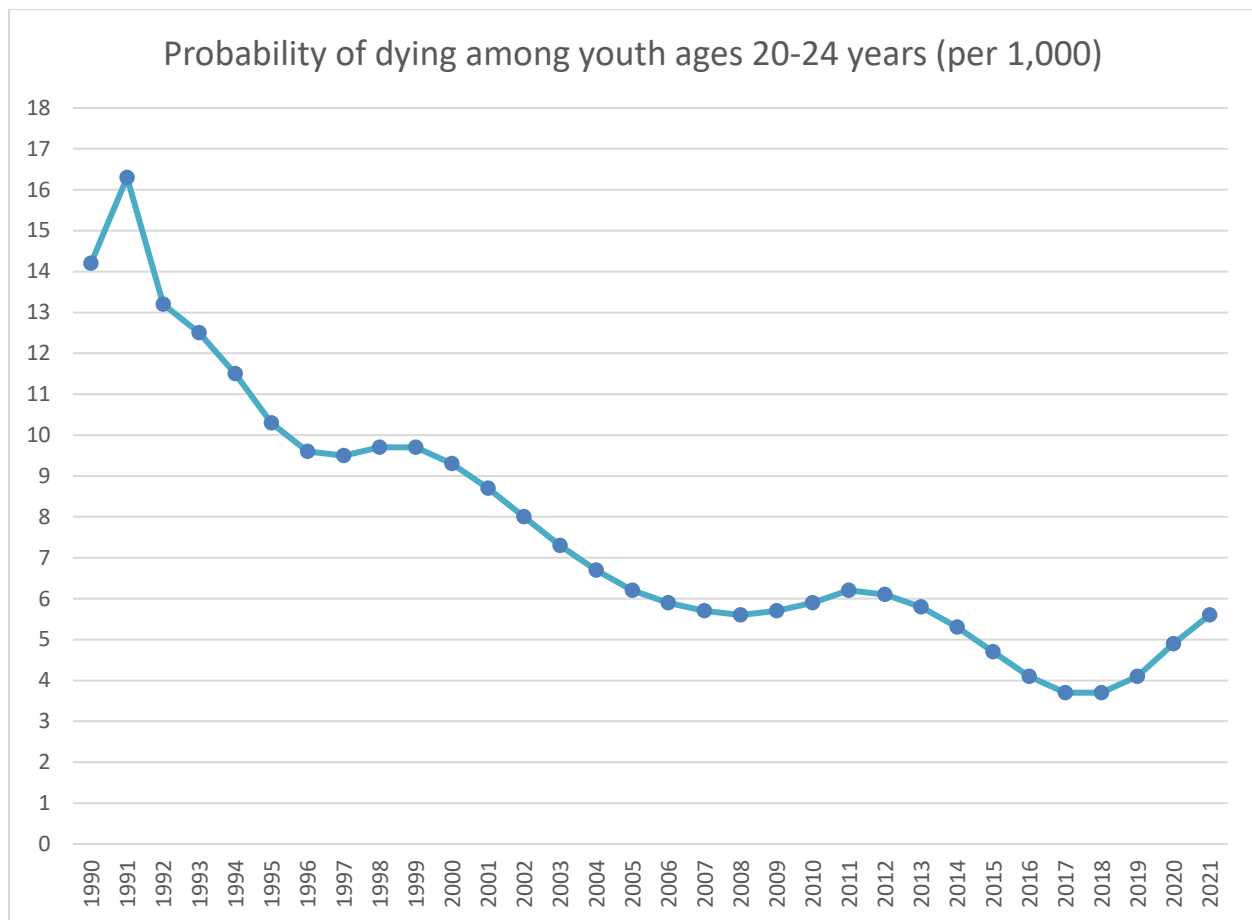


This graph portrays probability of death per 1000 amongst the youth (20-24 years age), which was very high in 1990 and 1991 reaching above 16 per 1000, this has decreased a lot over time but in 2021 it's still nearly 6.

**Overall:** Notable progress has been made in reducing child mortality rates, showcasing the success of healthcare initiatives. However, challenges persist, especially in addressing suicide mortality rates, particularly among men. Continuous efforts are essential to further improve mental health and well-being.

# Relation between nominal GDP and CO2 emission

|  | *GDP in Billion $ (nominal)* | *CO2 emissions (kt)* |
|---|---|---|
| GDP (current US$) | 1 |  |
| CO2 emissions (kt) | 0.954268014 | 1 |
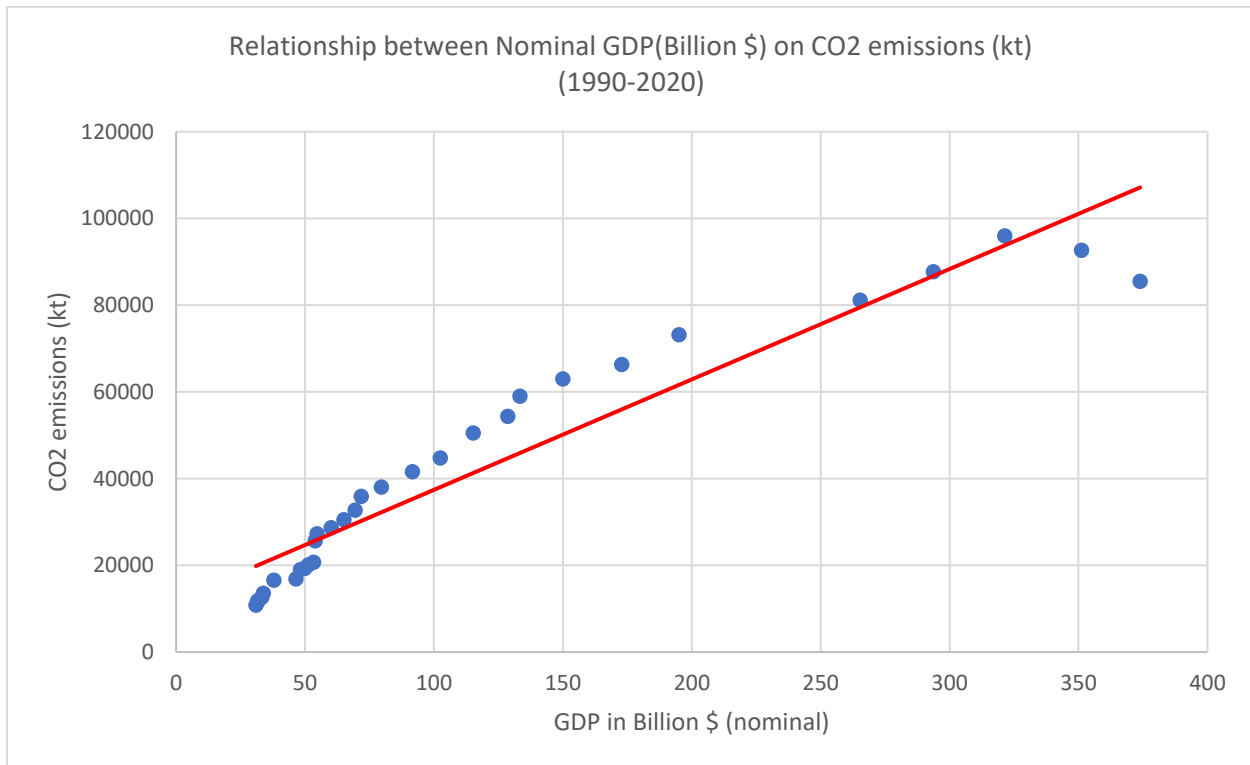


With a 0.95 correlation we observe from the graph that as the economy grows the CO2 emission also rises.

The high correlation between nominal GDP and CO2 emissions underscores the environmental challenges associated with economic growth. As the economy expands, efforts to decouple growth from environmental degradation become imperative for sustainable development.

# Conclusion

In conclusion, the comprehensive analysis of Bangladesh's economic indicators spanning over 33 years provides valuable insights into the nation's economic landscape. Several key trends and relationships have been identified, shedding light on the complex dynamics of Bangladesh's economic development.

In summary, while Bangladesh has achieved remarkable progress in various aspects of its economy and social indicators, challenges persist. Sustainable and inclusive economic policies, coupled with targeted interventions in healthcare, trade, and environmental conservation, will be pivotal for Bangladesh to navigate the complexities of the global economic landscape and ensure a resilient and prosperous future.

**Reference:**

*World Development Indicators | DataBank.* (n.d.).
https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.KD.ZG
&country=BGD#