

BRIDGING FINANCE AND SUSTAINABILITY: A-CROSS COUNTRY ANALYSIS OF GREEN INVESTMENTS IN SOUTH ASIA

Ms. Vimla Virparia

Research Scholar, DPPG, B K School of Management
Gujarat University, Ahmedabad
Email id: vimlavirparia@gmail.com

Mr. Om Bhatt

Student, Department of Management Studies
GSFC University

Dr. Nilam Panchal

Professor & Head, DPPG, B K School of Management
Gujarat University, Ahmedabad

ABSTRACT:

Green finance plays a pivotal role in promoting environmentally sustainable practices in the financial sector. It includes financial services and goods that help businesses and initiatives that have a beneficial environmental impact, like renewable energy, sustainable agriculture, and energy-efficient building. Using secondary data gathered from official sources such as the World Bank and OECD, this study compares green finance investments throughout South Asian nations, with the exception of Nepal. The data, which covers the years 2016–2020, assesses a number of elements under four main headings: life expectancy at birth, purchasing power parity, environmental effect, and socioeconomic factors. The GDP deflator, population density, sanitation, production-based CO₂ productivity, and general quality of life are among the important variables examined. The results show notable national differences in sustainability measures and green finance investment. In order to promote the adoption of green finance in South Asia and guarantee long-term economic and environmental sustainability, the report emphasizes the necessity of a more comprehensive and policy-driven strategy.

Key Words – Green Finance, Growth Indicators, sustainability, Socio-Economic Context, Environmental.

INTRODUCTION

In the face of mounting environmental challenges, green finance has emerged as a critical tool for fostering a sustainable future. This financial framework aims to channel investments towards initiatives that prioritize environmental well-being, such as renewable energy projects, clean technologies, and resource conservation efforts. By bridging the gap between environmental goals and economic activities, green finance presents a compelling opportunity to drive economic growth while mitigating environmental damage.

The idea of sustainability is more important than ever in a world where social injustice, resource depletion, and climate change are major concerns. It encompasses a comprehensive strategy that strikes a balance between addressing existing demands and maintaining a healthy earth and just society for future generations. It goes beyond merely safeguarding the environment.

Unprecedented environmental concerns beset our globe. Sustainability and green finance are driving a financial revolution that will ensure a healthy future. This new profession aims to reroute funds to projects that support an economy that uses less energy and produces less carbon.

GREEN FINANCE:

Green finance includes investment opportunities, financial services, and goods that promote ecologically sustainable enterprises and initiatives. Investing money in projects that support sustainable development, climate change mitigation, and environmental protection is its main objective. The importance of green finance in addressing environmental challenges stems from several key factors:

1. Climate Change Mitigation:

Projects and technologies targeted at lowering greenhouse gas emissions are greatly aided by green money. Investments in clean mobility, energy efficiency, and renewable energy help to mitigate climate change by reducing the need for fossil fuels.

2. Environmental Protection:

Green financing provides funding for projects that create sustainable land use practices, enhance air and water quality, and preserve biodiversity, all of which support efforts to protect natural ecosystems and conserve environmental resources.

3. Transition to a low- carbon Economy:

Green financing helps the economy shift to a low-carbon one by providing incentives for investments in sustainable agriculture, green buildings, renewable energy infrastructure, and other areas with smaller environmental footprints.

LITERATURE REVIEW

Pasquale Marcello Falcone (2020) has studied A lively debate on reducing reliance on fossil fuels in the current economic system is gaining global attention. The shift to sustainability faces numerous challenges, and green finance is seen as crucial for overcoming complexities and uncertainties, expediting the transition, and ensuring fair competition between traditional and green economies. **Farhad Taghizadeh-Hesary (2019)** The abstract suggests introducing Green Credit Guarantee Schemes (GCGSs) and allocating a portion of tax revenue from green energy spillover to investors. This aims to mitigate green finance risks and enhance returns for green energy projects. Leveraging distributed ledger technologies can improve transparency. The paper proposes practical frameworks based on project size to encourage private involvement in green finance and investment.

Menghan Li (2021) The COVID-19-induced global crisis has impacted renewable energy project competitiveness, hindering sustainable development goals. A study on China's 1990–2020 data using wavelet analysis shows high volatility in renewable energy investment (IRE), green finance (GFi), and renewable energy electricity output (REEO) compared to GDP and energy investment. Bidirectional causation exists between IRE and REEO, while unidirectional links run from GDP to IRE and IRE to GFi. Short and long-term causal relationships vary, emphasizing the need for policies addressing volatility and promoting investment in renewable sectors for sustainable economic growth and environmental goals.

Romain Berrou (2019) This chapter offers an overview of the current state of the green finance market. It traces the ethical roots of finance, emphasizing the political events leading to the Paris Agreement and the adoption of Sustainable Development Goals. The chapter explores the role of green finance in these processes, detailing existing green securities and investment trends. It concludes by summarizing the remaining challenges for green finance to establish itself as a stable element in the contemporary financial landscape.

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Issac Akomea Frimpong (2020) This study reviews 46 relevant works on green finance within the banking sector, employing content analysis. Key products identified include green securities, investments, climate and carbon finance, green insurance, credit, and infrastructural bonds. Determinants influencing green finance policies encompass environmental regulations, interest rates, religious factors, risks, social inclusion, justice, and banking regulations. The study serves as a theoretical guide, offering insights for future research and aiding banks in adopting, developing, and implementing green finance by highlighting crucial considerations.

Dina Kapsaplyamova (2018) Facilitating private investment in renewable energy is crucial for global decarbonization. This study, based on data from 13 countries (2004-2016), analyzes the impact of fiscal policies (feed-in tariffs, taxes, loans, grants) on private sector investment. Results highlight the effectiveness of feed-in tariffs and loans. The research aims to inform policymakers and researchers on factors promoting increased investment in renewable energy.

Farhad Taghizabeh Hesary (2020) This paper addresses challenges in green energy project financing, such as long-term funding, low returns, market player capacity, and various risks. Proposed solutions involve leveraging public and non-banking financial institutions, using spillover taxes to boost project returns, implementing green credit guarantee schemes, establishing community trust funds, and addressing risks through financial and policy de-risking. A practical example of these solutions is also presented.

Zeng Hailiang (2022) Policymakers in emerging economies are addressing environmental concerns by transitioning from non-renewable to costly renewable energy. The study, focusing on BRICS economies from 2000 to 2018, employs advanced techniques to analyze the impact of green finance and renewable energy consumption on environmental quality. Results indicate that green finance, renewable energy use, and technical innovations effectively reduce carbon emissions. However, environmental quality is compromised by non-renewable energy consumption, economic progress, F.D.I., and trade openness, emphasizing the need for green investment in growth policies.

UNO environment (2017) The paper explores the role of central banks in promoting environmentally sustainable financial systems. It analyzes how environmental considerations affect traditional central bank goals and discusses the arguments for and against central banks addressing sustainability challenges. The paper suggests ways central banks and financial regulators can influence investment decisions and credit allocation through various policies, including climate stress testing and disclosure requirements.

Constantin Brâncuși (2021) The research delves into the increasing global concern over climate change and sustainable development, particularly amplified by the COVID-19 pandemic. It focuses on the conceptual analysis of sustainable finance's role in facilitating a green recovery post-Covid-19 and steering the European Union towards a sustainable economy. Using literature, analysis, and synthesis, the paper outlines key factors for developing a new paradigm of sustainable finance, emphasizing its objectives and principles. While some progress exists, the study underscores that the EU's journey toward a sustainable financial framework, aligned with ESG criteria and climate neutrality goals, is only in its early stages.

Parvadavardini SOUNDARRAJAN (2016) Green finance plays a vital role in fostering low-carbon growth by bridging the financial sector, environmental enhancement, and economic development. This paper aims to assess the feasibility of green finance in Indian industries to counter ecological degradation from carbon emissions. It involves market-driven investment strategies considering environmental impact in risk assessment. The discussion encompasses current trends, future prospects, and challenges in green finance within emerging India, emphasizing the recognition of environmental value and natural capital for human well-being and ecological integrity.

RESEARCH DESIGN

The study follows a descriptive research design.

OBJECTIVES:

- To explore the Current State of Green Finance investments in South Asian Countries except Nepal from the year 2016 to 2020.
- To Evaluate the alignment of investment objectives with national and international environmental goals.

- To Assess the economic and environmental benefits of resource-efficient investments

DATA COLLECTION

Data has been collected from secondary sources. The data is taken from registered and highly monitored websites like the OECD.

SAMPLE SIZE

Except for Nepal, all of the South Asian nations—Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Pakistan, and Sri Lanka have been included in this study.

TIME FRAME

Time Duration considered for this study is five years i.e. 2016 to 2020.

DATA ANALYSIS & INTERPRETATION

A) ENVIRONMENTAL & |RESOURCE PRODUCTIVITY

1. Production-based CO₂ intensity, energy-related CO₂ per capita (unit in tonnes)

This metric measures the average amount of CO₂ emissions per person associated with the production of goods and services within a country.

Production-based CO ₂ intensity, energy-related CO ₂ per capita					
Country / Year	2016	2017	2018	2019	2020
Afghanistan	3.87	4.47	5.53	4.02	1.96
Bangladesh	7.44	7.34	7.20	8.06	9.03
Bhutan	80.64	94.07	103.27	89.57	30.35
India	3.75	3.79	3.81	4.03	4.12
Iran	2.21	2.20	2.11	2.08	2.19
Maldives	523.54	358.91	177.10	250.92	112.97
Pakistan	5.79	5.54	5.24	5.97	6.22
Sri Lanka	12.15	12.98	14.22	12.99	13.54

From the above table we can interpret that Maldives has having highest per capita CO₂ intensity, and then comes Bhutan. And overall in the year 2020, Afghanistan has the lowest per capita 1.96 tonnes intensity of CO₂.

B) SOCIO-ECONOMIC CONTEXT

1. Population density, inhabitants (per km)

Population density refers to how crowded an area is, expressed as the number of people living in each square kilometer.

Population density, inhabitants per km ²					
Country / Year	2016	2017	2018	2019	2020
Afganistan	-90.24	-47.09	-47.21	-8.08	166.82
Bangladesh	-55.01	-175.76	-323.38	-344.05	-61.15
Bhutan	-0.52	0.29	0.29	0.29	0.29
India	68.12	-219.66	-561.56	-593.49	-34.77
Iran	23.76	7.71	-29.98	-34.57	-156.67
Maldives	12.19	11.66	10.58	6.69	1.13
Pakistan	-	-	-	-	-
Sri Lanka	2,290.41	1,574.58	1,309.61	1,574.58	1,177.22
	-98.90	-98.60	-97.10	-98.60	-94.90

From the above table, we can interpret that Pakistan has the highest population density but is negative (1,177.22) then comes Afghanistan with 166.82. Overall in the year 2020, Maldives has the lowest population density of 1.13.

2. Life expectancy at birth

Life expectancy at birth is the average number of years a newborn could expect to live if current mortality rates stay the same.

Life expectancy at birth					
Country / Year	2016	2017	2018	2019	2020
Afghanistan	5.26	5.13	5.00	4.87	4.75
Bangladesh	2.10	2.04	2.04	2.03	2.00
Bhutan	1.84	1.70	1.57	1.46	1.43
India	2.27	2.20	2.18	2.11	2.05
Iran	2.07	2.07	1.97	1.77	1.71
Maldives	1.91	1.84	1.78	1.74	1.71
Pakistan	3.83	3.76	3.68	3.62	3.55
Sri Lanka	2.07	2.05	2.03	2.02	2.00

From the above table, we can interpret that Afghanistan has the highest life expectancy at birth (4.75) then comes Pakistan with 3.55 then India with 2.05. And overall in the year 2020, Bhutan has the lowest life expectancy with 1.43.

C) ECONOMIC CONTEXT

1. GDP deflator

The GDP deflator adjusts the total value of goods and services produced (GDP) to account for inflation, giving a clearer picture of economic growth.

GDP deflator					
Country / Year	2016	2017	2018	2019	2020
Afganistan	17.45	17.21	17.15	17.95	19.12
Bangladesh	28.50	29.74	30.73	31.29	32.11
Bhutan	18.83	19.21	19.09	18.92	20.05
India	19.90	20.65	20.95	21.07	21.99
Iran	11,796.81	13,061.29	16,772.68	21,535.33	30,697.96
Maldives	8.13	8.16	8.22	7.98	7.91
Pakistan	32.38	33.59	34.07	36.49	39.64
Sri Lanka	46.28	49.39	50.31	51.34	52.32

From the above table, we can interpret that Iran has the highest GDP Deflator with 30,697.96 then comes Sri Lanka with 52.32. And overall in the year 2020, Maldives has the lowest GSP Deflator with 7.91.

2. Purchasing power parity

Theoretically, the amount of money you would need in another country to purchase the same assortment of goods and services that you could in your own is known as purchasing power parity, or PPP.

Purchasing power parity					
Country / Year	2016	2017	2018	2019	2020

Afghanistan	67.87	68.03	72.08	77.74	76.81
Bangladesh	78.47	80.44	83.47	84.45	84.87
Bhutan	67.20	65.12	68.39	70.42	74.10
India	67.20	65.12	68.39	70.42	74.10
Iran	30,914.85	33,226.30	40,864.33	42,000.00	42,000.00
Maldives	15.37	15.39	15.39	15.38	15.38
Pakistan	104.77	105.46	121.82	150.04	161.84
Sri Lanka	145.58	152.45	162.46	178.74	185.59

From the above table, we can interpret that Iran has the highest Purchasing Power Parity with 42,000.00 in 2019 as well as 2020 then comes Sri Lanka with 185.59. And overall in the year 2020 India and Bhutan has the second lowest purchasing power parity with 74.10.

3. Value added in industry, % of total value added

This statistic indicates the share of industrial activity, such as manufacturing and building, in a nation's overall economic output.

Value added in industry, % of total value added					
Country / Year	2016	2017	2018	2019	2020
Afghanistan	27.03	27.87	23.23	27.04	28.07
Bangladesh	14.06	13.56	13.09	12.52	12.44
Bhutan	15.11	15.84	16.99	16.56	19.68
India	18.04	18.25	17.58	18.38	20.16
Iran	10.12	10.16	11.60	13.77	12.52
Maldives	6.54	6.22	6.06	5.30	8.83
Pakistan	23.95	23.54	23.24	22.03	23.22
Sri Lanka	8.10	8.64	8.76	8.15	9.11

From the above table, we can interpret that Afghanistan has the highest value added in the industry with 28.07% then comes Pakistan with 23.22%. And overall in the year 2020, Maldives has the lowest value added in industry with 8.83.

D) QUALITY OF LIFE

1) Population with access to improved sanitation, % total population

This percentage indicates how many people in a country have access to toilets or latrines that hygienically dispose of waste.

Population with access to improved sanitation, % total population					
Country / Year	2016	2017	2018	2019	2020
Afghanistan	0.02	0.02	0.02	0.02	0.02
Bangladesh	57.00	57.00	58.00	58.00	59.00
Bhutan	36.00	36.00	36.00	36.00	37.00
India	0.03	0.03	0.03	0.03	0.03
Iran	0.05	0.05	0.05	0.06	0.06
Maldives	0.02	0.02	0.02	0.02	0.02
Pakistan	0.05	0.05	0.05	0.05	0.05
Sri Lanka	0.03	0.03	0.03	0.03	0.03

From the above table, we can interpret that Bangladesh and Bhutan have the highest improved sanitation % of the population with respect to other countries.

HYPOTHESIS TESTING:

H₀: There is no significant difference among the means of all the South Asian Countries based on various parameters.

H_a: There is a significant difference among the means of all the South Asian Countries based on various parameters.

Parameter	F Value	F Crit	Rejected/ Accepted
Production-based CO ₂ intensity, energy-related CO ₂ per capita	14.29	2.313	Rejected
Population density, inhabitants per km ²	37.64	2.313	Rejected
Life expectancy at birth	444.36	2.313	Rejected
GDP deflator	29.89	2.313	Rejected
Purchasing power parity	251.76	2.313	Rejected
Value added in industry, % of total value added	147.22	2.313	Rejected

Population with access to improved sanitation, % total population	22488.07	2.313	Rejected
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A single factor Annova analysis is carried out to determine whether or not there is a statistically significant difference between the means of South Asian countries from 2016-2020. From the above table we can interpret that, if the F calculated value is greater than the F Crit value hence we can say that, the null hypothesis is rejected, which indicates the means of all the south Asian countries based on various parameters are not equal. There is a difference in the means of all the selected countries. There is a notable variation in the means of the data during the last five years among all South Asian countries in terms of GDP deflator, energy efficiency, life expectancy, and other similar factors.

FINDINGS

- When it comes to production-based CO2 intensity, the Maldives leads all other nations in terms of intensity. While Afghanistan has the least amount of CO2.
- In the area of Population density Pakistan ranked first then Afghanistan and Iran and at last came Bhutan with having lowest population density per km. India performs on average related to this area.
- In the area of life expectancy at birth Afghanistan ranks first then comes Pakistan. India stands for 3rd position in this area. Then comes Iran and Maldives at last.
- In the Area of GDP Deflator Iran has the highest GDP deflator then comes Sri Lanka and Then at last Maldives.
- In the context of purchasing power parity Iran also stands at first position then comes Sri Lanka and at last Maldives with the lowest one.
- In the area of value added to industry Afghanistan stands first then comes Pakistan and India comes third. Maldives stands last as it has the lowest Value-added % to industry.
- In the area of population with improved sanitation Bangladesh stands first Bhutan and Afghanistan and Maldives at last as it has the lowest population with improved sanitation.
- Hypothesis results show that there is a significant difference in the means of all the South Asian countries based on various parameters selected for the study.

CONCLUSION

In conclusion, this research looked at how sustainability and green finance interact in South Asian nations. According to the research, South Asia offers a distinct environment for green financing projects. Even if there are still issues like high CO2 intensity and population density, there are encouraging signs like increased life expectancy and economic growth (adjusted for PPP and inflation). Positively, more industry value addition and better sanitation coverage point to a growing emphasis on sustainable development. The countries of South Asia should give priority to investing in clean technology, resource efficiency, and renewable energy in order to fully realize the potential of green financing. Together, businesses, financial institutions, and governments can make a big step toward a more sustainable and greener future for the region.

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