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GREEN GDP: AN ANALYSIS FOR DEVELOPING COUNTRIES

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ABSTRACT

Green GDP is a measure of economic growth that takes into account environmental factors in addition to traditional GDP. It takes into account both the positive and negative effects of economic activity, such as resource depletion. Establishing a reliable, faultless, and scientifically based green GDP accounting system is an essential long-term goal, notwithstanding the difficulties that currently exist. Combining qualitative research with quantitative analysis and implementing best practices from both local and global contexts are necessary to achieve this goal. The development and improvement of systems for monitoring, early warning, and assessment need immediate attention. Whatever the degree of accuracy or type of relationship, the important thing is to draw a comparison between the costs of resource and environmental degradation and the advancement of social and economic development. The government may find this information to be extremely useful. When deciding on development, production, and consumption, businesses and individuals.

1. Introduction:

Green national accounts are being called for as a result of growing environmental consciousness. They are intended to provide the inventory of environmental resources and their use and depletion in traditional national accounts. Considering their societal worth, green GDP should include both environmentally harmful and beneficial items. The recommendation calls for classifying items based on how they affect the environment and using the Ministry of Statistics and Programme Implementation's Supply and Use tables as a source of data for data collection and analysis (MoSPI).

It is necessary to define output, consumption, and wealth more broadly in order to incorporate green accounting into the traditional GDP. This entails including into the national account goods

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with both favourable and unfavourable environmental effects. Furthermore, related economic operations should take these items' societal worth into account. There are several reasons for this situation. From an economic perspective, the GDP is viewed as dangerously insufficient since it ignores social costs, environmental effects, and income inequalities in favour of production and consumption. The public's worry over depleting natural resources, pollution in the environment, and other ecological issues is rising.

From a philosophical standpoint, when contrasted to society's material quality of living, human cravings and population expansion pose obstacles to non-market metrics of well-being. Political reactions to the idea of "green growth" vary; they can be enthusiastic or cautious depending on the opportunity and danger that it brings, as it may put certain nations at a disadvantage internationally. Moreover, methodological issues are brought up by the absence of well-established guidelines for trustworthy statistical data, hindering the development of an accurate accounting and valuation system for economic growth and development.

2. What is Green GDP

The Green GDP, which stands for Green Gross Domestic Product, is a measure of economic growth that adds environmental factors to a country's traditional GDP. It takes into consideration things like the loss of biodiversity and the costs related to climate change. Indicators such as the "Sustainable Development Index" may be created by combining physical measures like "waste per capita" and "carbon dioxide emissions per year."

2.1. Rationale Behind Green GDP

The traditional GDP measures are limited because they capture economic expansion and desired levels of life more than anything else. It only measures the total amount of economic output; it cannot identify the assets and riches that are produced as a consequence of this output.Moreover, the conventional GDP is unable to evaluate the sustainability of the revenue produced in a nation. This disadvantage is addressed by the pursuit of the "green GDP" idea.

The reason why the GDP does not adequately describe national capital is because it is excluded since it is considered unimportant. Future environmental preservation initiatives have potential advantages that policymakers and economic planners typically miss when evaluating their costs. For example, the benefits of agricultural or forest land are not taken into account, mostly because

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it is difficult to measure and evaluate these types of assets with accuracy. Furthermore, the impact of declining natural resources that are necessary for maintaining the economy is not taken into consideration by typical GDP calculations.

Because it is disregarded because it is deemed irrelevant, national capital is not sufficiently represented by the GDP. Policymakers and economic planners often overlook the potential benefits of future environmental preservation programmes when assessing their costs. For instance, the advantages of land used for agriculture or forests are not included, mostly due to the difficulty of accurately measuring and assessing these kinds of assets. Furthermore, standard GDP figures do not account for the impact of depleting natural resources, which are essential to sustaining the economy.

2.2. How is Green GDP Calculated?

The depletion of net natural capital, which includes resource depletion, environmental degradation, and protective environmental actions, is subtracted from the conventional GDP to arrive at the green GDP. Alternatively, one may also apply similar calculations to the net domestic product (NDP), as GDP takes capital depreciation into account. Resource extraction operations must always be translated into monetary values since that is how national accounts represent them.

2.3. GDP vs Green GDP?

Some of the results, according to some who oppose using environmental elements in computations, are difficult to measure, particularly when non-tradable goods like ecosystem services are involved. When valuation is carried out indirectly and may rely on speculative or hypothetical assumptions, problems might occur.

There are two ways that proponents of modified aggregates might address this criticism. First, they contend that as technology advances, more precise valuation techniques will eventually be able to be developed. Second, they argue that adjustments are still a better choice than traditional GDP, even if measures for non-market natural assets are not perfect.

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3. What is the Significance of Green GDP

Green GDP is a measure of economic growth that takes into account the environmental cost of economic activity. It is calculated by subtracting the cost of natural resource depletion and environmental degradation from the conventional GDP of a country. Green GDP can help countries to make better decisions about economic growth and development. By accounting for the environmental costs of economic activity, GGDP can help countries identify sectors and activities that have a significant negative impact on the environment. This information can then be used to design policies and regulations that encourage sustainable economic growth and development.

Some of the specific benefits of using GGDP include:

- **It provides a more comprehensive measure of economic well-being:** GGDP takes into account the environmental costs of economic activity, which conventional GDP does not. This means that GGDP can provide a better indication of how economic growth is affecting the well-being of people and the planet.
- **It can help to identify and address environmental problems.9** GGDP can be used to identify sectors and activities that have a significant negative impact on the environment. This information can then be used to design policies and regulations that encourage sustainable economic growth and development.
- **It can help to promote sustainable economic growth.** GGDP can be used to track the progress of countries towards achieving sustainable economic growth. This information can be used to identify areas where further action is needed to ensure that economic growth is sustainable in the long term

4. What are the Challenges in Implementing Green GDP[1]

- **Data Availability and Reliability:** The ambiguity surrounding statistics on environmental costs, benefits, and the value of natural resources makes calculating the green GDP difficult. The dependability and comparability of the outcomes are impacted by estimates since they are based on subjective evaluations and assumptions.

[1] Gaikar, V., et al., eds. "FMET 2022." Advances in Engineering, Business and Management Research, vol. 227, Springer, 2023, pp. 503-508

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- **Value Assignment:** There is debate when environmental products and services are given a monetary value. Some who oppose it argue that some aspects, such as cultural heritage or biodiversity, have inherent worth that goes beyond economic assessment techniques. They contend that the practice oversimplifies and commodifies nature by attributing economic values to the environment.
- **Complexity and Indicators:** The process of calculating Green GDP is intricate since it takes into account social, economic, and environmental factors. To make matters harder, there isn't a single, widely accepted way to combine these variables, and choosing the right indications is hard.

5. Policy Implementation and Trade-offs:

Green GDP is helpful, but implementing it as policy can be challenging. We need to overcome challenges, get political support, and work together to make policies work. Furthermore, since striking a balance between environmental preservation and economic growth is difficult and situation-specific, universal policies based solely on Green GDP are being considered. **Green Growth: Why it matter for developing countries?**

For two main reasons, developing countries are essential to the advancement of green development worldwide. First of all, the economic and social fallout from environmental deterioration is a major concern for many nations. Compared to more developed countries, they are more vulnerable to the effects of climate change and frequently depend more largely on the exploitation of natural resources for economic growth. In addition, a lot of developing countries face significant ecological, social, and economic difficulties, such as the effects of climate change and extreme weather events as well as the insecurity of food, water, and energy. A number of issues, including as pollution, low water quality, and illnesses linked to climate change, impede their ability to flourish further.

Second, there is a chance for higher emissions if developing nations follow traditional economic growth methods, even if their present shares of global greenhouse gas (GHG) emissions are still relatively small when compared to the OECD and large emerging economies. These countries are contributing more and more to the expansion of the global economy, which is driving up emissions and, in turn, the more intense use of natural resources. This dual function emphasises how vital emerging nations are to determining the course of global green growth.

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The concept of "green growth" has emerged as a novel approach to addressing the growth and development difficulties previously discussed while preserving goals for future growth and poverty reduction. In order to accomplish these objectives, this strategy looks to reinterpret the conventional growth model and reevaluate different investment options. The OECD defines "green growth" as seeking to advance economic development and expansion while guaranteeing the continuous availability of resources and environmental services from natural assets that enhance our quality of life (OECD, 2011b). However, different developing countries would understand the notion of "green growth" in different ways, resulting in differing viewpoints, and the concept has raised some concerns.

5.1. What are the concerns of developing countries about the concept of green growth?

Diverse political positions, from zeal to prudence, are being sparked by the idea of "green growth," which suggests a combination of insufficient knowledge and limited experience. This variability results from worries that particular countries may be negatively impacted by global green growth strategies as well as variations in how opportunities are viewed in different countries. Emerging economies, for example, are very excited about the potential that green growth presents, and they benefit from having access to the necessary funding and technology to make these opportunities a reality. With 1.4% of its GDP invested in clean technology as of 2008, China was the world's top producer of this technology (ADB, 2012). However, a lot of low-income countries (LICs) take a cautious approach to the idea. LICs are just beginning to assess the advantages, disadvantages, and ramifications of pursuing a green economic path. They encounter difficulties, though, because the technology and policy concepts may not be completely in line with their country's development requirements and are not always readily available. There is a noticeable negative political response to the green growth idea in a few nations.

Developing countries are similarly hesitant about the details of "green growth," with worries ranging to global issues such as the dangers of "green protectionism" and the application of "green" requirements to official development assistance. Other important things to think about are:

- **Will poverty and other development concerns be adequately addressed by green growth?**

  The existing policy suggestions for green growth, which prioritise high-tech and low-carbon solutions, do not specifically address concerns of fairness at the national or

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international levels. This involves the difficulty of including people working in the informal economy from many developing nations into the mechanisms that determine economic policy and the possibility of large-scale economic growth. The possible advantages of making better use of natural capital are not given enough consideration.Furthermore, there are states that fear the Rio Principles, particularly the one about shared but distinct duties, may be compromised by the focus on green growth.

- The substantial upfront costs associated with promoting green growth might be a hindrance for many developing countries in particular. For example, some nations might not be able to afford the price of implementing green practises, such as installing solar electricity in rural regions. Most developing regions still lack basic technology in critical sectors including integrated water resource management, wastewater treatment, waste management, and energy efficiency. Furthermore, there's concern that these countries' own technology, as well as indigenous methods, could not be able to compete, forcing other countries' innovations to be imported. In order to really allow the transfer of green technology between developed and developing nations, it is imperative to eliminate barriers such as intellectual property rights and promote the sharing of scientific and technological information.

6. Patterns of Growth in developing countries?[2]

These developments are influenced by a number of global variables, such as the development of internationally interconnected supply chains and the notable expansion of the global labour pool. Furthermore, there has been a discernible increase in the demand for commodities, particularly industrial metals and fossil fuels. As a result, emerging nations may be divided into three primary categories: those that primarily depend on the sale of fuel, those that export non-fuel goods, and those that prioritise manufacturing. High carbon emissions and extensive use of natural resources are commonplace in emerging countries experiencing economic expansion, especially in the industrial and extractive industries. Moreover, these nations are especially vulnerable to the negative effects of resource depletion and climate change. Significant negative effects on the economy, society, and health are predicted from these trends, including decreased agricultural production, difficulties obtaining freshwater, severe weather-related incidents and early mortality brought on by unchecked pollution.

[2] OECD, Green Growth and Developing Countries: A Summary for Policy Makers (2012). [Green Growth and Developing Countries: A Summary for Policy Makers. OECD]

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In order to promote sustainable development and equitable economic growth, emerging nations need to implement policies that result in observable and quantifiable progress. Over the next forty years, the OECD expects developing countries and rising economies to grow significantly. Therefore, in order to significantly contribute to global green development and promote environmental sustainability, these countries must make the transition towards environmentally friendly growth.

There are opportunities to balance economic and environmental sustainability, especially for emerging countries that may include environmental factors into their infrastructure investment choices. Additionally, by advancing the development of agriculture and other natural resources, there is potential to improve livelihoods, create jobs, and reduce poverty. Developing nations and rising markets may avoid unsustainable and inefficient production and consumption patterns by adopting green growth strategies. In contrast to developed economies that are constrained by route dependency and sunk capital, emerging economies have the ability to create the networks and infrastructure required for sustainable growth if they have access to enough funding.

7. A policy framework for greening growth in developing countries

The integration of inclusive economic development that takes into account, produces, and maintains social and environmental values is known as "green growth" in many nations. This entails improving the efficacy and efficiency of the government as well as customers and formal and informal economic players. Green growth requires reforming mainstream policies and governance structures in a methodical way. To put it simply, it means making sure that economic governance is in line with sustainable development ideals.

Three important factors should be taken into account by a national government when developing and executing a green growth strategy:

i) creating a national strategy for green growth to create favourable circumstances.
ii) putting in place systems for mainstreaming green growth in order to look for possibilities inside already-existing industries.
iii) using green growth policy tools to take advantage of particular opportunities in resource and spatial systems.

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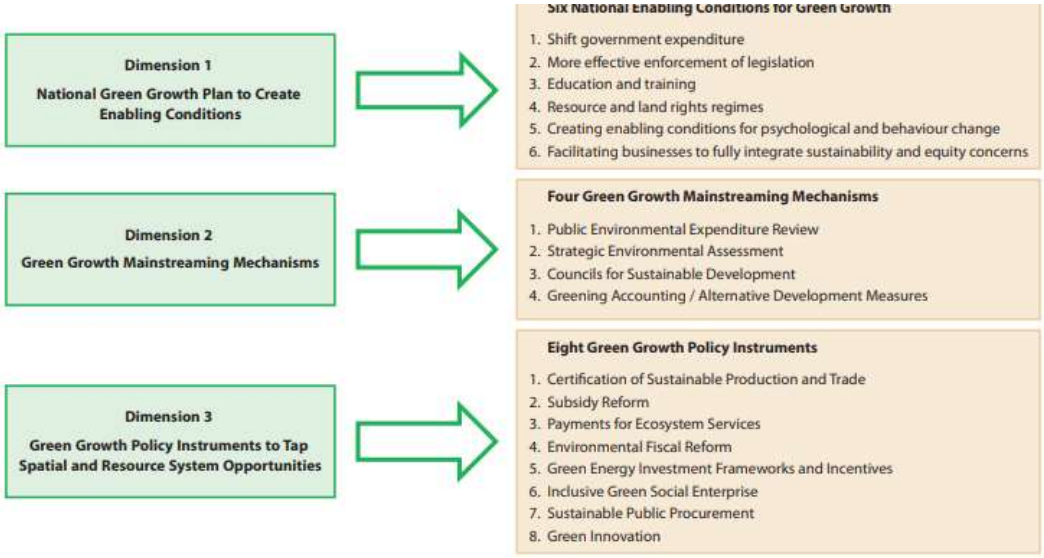

8. Countries use Green GDP?

i) CHINA[3]

In terms of the creation and implementation of policies pertaining to green GDP (GGDP), China has taken the lead. The nation started experimenting with GDP in the early 2000s, and in 2006 it formally released its first estimate of GDP. China has since continuously enhanced its GGDP technique and used it to inform its economic strategies. China has set its own standards for Green Gross Domestic Product (GGDP) in light of the particular environmental problems it faces. China thinks that the environmental effects of economic activity are significant based on its gross domestic product (GGDP). For example, in 2017 China's conventional GDP (gross domestic product) was estimated to represent 6.96% of the environmental costs of economic activity. This suggests that $6.96 of every $100 in conventional GDP was devoted to resource depletion and environmental remediation.

Estimates of China's Green Gross Domestic Product (GGDP) have influenced the development of several environmental laws. Among these are campaigns to:

a) Encourage the development of greener energy sources, such as wind and solar energy.
b) Promote policies aimed at improving energy efficiency.
c) Put policies in place to reduce pollution from industrial sources.
d) Protect the environment by taking steps to preserve forests and waterways, among other things.

[3] Hu J, Lyu J, Zhang X. Evaluating Agricultural Sustainability and Green GDP in China: An Emergy Analysis. Int J Environ Res Public Health. 2022 Dec 13

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ii) United States of America

The United States has implemented a comprehensive system of environmental-economic accounting that provides a range of indicators emphasising the interaction between the environment and the economy. These accounts include data on environmental spending, environmental taxes, and several facets of the interaction between economic activity and the environment. It's crucial to remember, though, that the United States does not provide a single indicator of green GDP.

iii) Europe

Although environmental-economic accounting are in existence in the US, there is no official way to estimate green GDP. By way of comparison, the European Union requires its member states to compile reports covering emissions, taxes, materials, and spending on waste management. The adjusted domestic product or green GDP may then be computed using these accounts.

iv) Sweden

According to the Global Green Economy Index, which evaluates the performance of 130 nations in four important areas—markets and investment, environment and natural capital, leadership and climate change, and efficiency sectors—Sweden stands out as a high-performing country. Furthermore, Sweden has developed a dashboard with a series of metrics to monitor its progress in attaining green growth**.**

9. India's Status as a Green Economy[4]

Countries throughout the world are ranked according to the 2020 Environmental Performance Index based on factors including waste management, air quality, fisheries, ecosystem services, and climate change. India ranks 169th out of 180 nations among the six major economies, indicating a lack of green growth. Based on particular metrics, India's standings are as follows: Fisheries (36), Biodiversity & Habitat (149), Waste Management (103), Sanitation & Drinking Water (139), Air Quality (179), and Climate Change (106). India's poor performance should worry us since it poses serious hazards to the environmental health of around 1.3 billion people. India's ability to reduce its dependency on resources necessary to maintain economic growth will determine how far it can go towards achieving green growth, which would improve social fairness

[4] Verma, Shreya, and Pragita Gupta. "India as a Green Economy." Aranca Research, 25 Oct. 2021. Web. 27 Oct. 2023.

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and create jobs. Finding a balance between both agendas is essential, and green growth is a key component. However, the main barriers to national policymaking—public debt and fiscal deficits—may make it difficult to make the technology advancements required for green growth. In addition, macroeconomic policy heavily considers the trade balance. Understanding and maximising the developmental benefits of green growth efforts is therefore crucial in important areas like energy, trade, and income.

9.1. Government Initiative towards Green Energy

The Ministry of Finance has proposed several initiatives for the environment:

i) **Hydrogen Energy Mission-** The project's goal is to produce hydrogen using sustainable energy sources, which has the potential to transform the transportation industry and promote the use of clean fuels in India. The budget's emphasis on green hydrogen is in line with both the goal of scientific advancement and the overall mission of lowering long-term reliance on rare earth elements and mineral batteries for energy storage.

ii) **Public transport-** The government has made a ground-breaking decision by designating INR 18,000 crores (USD 2.43 billion) in private finance for the purchase of 20,000 buses. This programme, when paired with creative funding via public-private partnerships, has the potential to completely transform how India's public transportation system operates. The initiative's objective is to reduce dependency on individual automobiles, which will reduce the nation's total carbon impact.

iii) **Deep Ocean Mission-** As part of the plan, extensive deepwater surveys and exploration will be carried out, and projects designed to protect deepwater biodiversity will be put into action. Over a period of five years, a budget surpassing INR 4,000 crore would be set aside for the implementation of this programme.

iv) **Urban Swachh Bharat Mission 2.**0- The government wants to clean up all of the current landfills and effectively manage the garbage from building and demolition projects. The emphasis is on reducing air pollution, classifying waste sources, minimising disposable plastics, and managing manure, sludge, and sewage treatment combined.

CONCLUSION

Green GDP is a measure of economic growth that takes into account how economic activities affect the environment. This helps countries make more informed decisions about how to develop their economies. However, there are a number of challenges associated with putting the Green

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GDP into practise, including finding reliable and accessible data, setting values, managing complexity and indicators, and handling trade-offs and policy implementation. Developing nations play a crucial role in the global green development process. Nevertheless, there are concerns regarding the concept of green growth's ability to effectively address poverty and other developmental issues, as well as the substantial upfront costs involved in advancing green growth The government can put measures in place to promote the growth of green GDP, such as designating particular leaders for each department and creating a coordination agency for green development. In order to establish coordination mechanisms and carry out related management measures, this coordination agency would promote conversations among relevant business departments. Relevant departments should also actively participate in worldwide environmental cooperation and economic exchanges. They ought to aid in the restructuring of the global environmental governance system as well as the international economic order. The goal is to take advantage of the chances that arise from the political and economic environment's changing regulations. Given its inherent benefits, creating a uniform, faultless, and scientifically sound green GDP accounting system is undoubtedly a long-term development goal, even though it remains difficult in the short term. In order to accomplish this, it is crucial to combine qualitative research with quantitative analysis and learn from cutting-edge practises both locally and globally. Systems for assessment, early warning, and monitoring must be developed and improved right away. The important thing is to create a comparison between the costs of environmental and resource degradation and social and economic development, regardless of whether the relationship is exact or imprecise, qualitative or quantitative. When making decisions about development, production, and consumption, the government, corporations, and people can all benefit from having this information as a valuable resource.