

Role of Policy and Finance for Green Economy

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Abstract

In this research, an analysis will be carried out on the importance of policy and finance in the achievement of the green economy, which contributes to sustainable development and protection of the environment as well as inclusive growth. In this regard, this paper brings to light the importance of good policy framework which creates standards, incentives and institutional measures that lead to the promotion of renewable energy, green infrastructure and resource efficient industries. In addition, green finance is what provides capital for implementation of such projects through means of green bonds, climate finance and public-private partnership. Linking of financial systems with environmental policy helps economies shift from carbon-based systems to sustainable and circular systems. Through an analysis of global and national policy strategies, this study emphasizes that the integration of policy and finance is important for low-carbon growth.

Keywords: Green Economy, Policy Framework, Green Finance, Sustainable Development, Low-Carbon Growth.

Introduction

Policies and Finance play a critical part in driving the development of a green economy. Policies provide the necessary framework for innovation and financing makes it possible to mobilize the resources required. As per the OECD (2023), it would take approximately USD 6.9 trillion annually in terms of investments in clean energy, sustainable infrastructure and green technology to achieve global sustainability and keep temperatures from increasing beyond 1.5°C by 2030. Nevertheless, current investments on green projects worldwide are far less at about USD 1.7 trillion annually (IEA, 2024). The role of public policies is to facilitate the provision of the required financing through the application of carbon pricing, subsidies for renewable energy, and the adoption of strict environmental regulations that will encourage private sector involvement. Currently, more than 130 countries, accounting for 90% of the world's gross domestic product, have already committed to net zero but there are large differences in the policy implementation and capacity to invest between the countries.

Finance is the very lifeline of the green economy that makes policy intentions a reality. Over the past few years, the concept of green finance which includes green bonds, climate funds, and sustainable investment has achieved considerable growth and is estimated to reach USD 1.1 trillion worth of issuances by 2023 (Climate Bonds Initiative). However, access to this type of finance is quite uneven: developing countries account for no more than 20% of all green finance flows, even though they are the most affected by the negative effects of climate change. The World Bank, IMF, and GCF pay increasing attention to the development of their capacities in terms of building their capacities, providing them with

concessional loans and using blended finance models. At the same time, policymakers are instrumental in the de-risking of investments in terms of providing tax incentives, transparent regulations, and public-private cooperation. In addition, incorporation of ESG standards in the national financial system guarantees sustainable investment decisions. Hence, the interplay between policies and finance is an essential component – policies lay the foundations of the process, while finance implements the plan.

Understanding the Green Economy Framework

Green Economy Framework can be described as a comprehensive model for attaining sustainable development through balancing economic progress and environmental protection along with ensuring the welfare of the people. It focuses on the efficient utilization of natural resources, minimization of carbon footprint and ensuring prosperity for all. As per UNEP, a green economy is an economy that “enhances human well-being and social equity while significantly reducing environmental risks and ecological scarcities.” There are three main components of the Green Economy Model which include sustainability of the economy, environmental sustainability, and social inclusiveness. The green economy model promotes shifting from fossil fuel based production systems to renewable and circular production systems where minimal amount of waste is produced and recycled. At the policy-making level, the framework incorporates environmental issues into fiscal, trade, and industrial policies. Fiscally, the framework emphasizes the promotion of green investments by means of policies including carbon pricing, green bonds, and sustainable public procurement. Worldwide, the framework of green economy has provided guidance in implementing the SDGs set forth by the UN in particular Goals 7 (Affordable and Clean Energy), 12 (Responsible Consumption and Production), and 13 (Climate Action). For emerging economies, the framework gives the chance of growing sustainably without falling into the environmental traps of industrial development. Implementation of the framework, however, needs concerted efforts of governments, financial institutions, business sector, and communities. The green economy framework basically acts as a roadmap for the transformation of global economies into a resilient, sustainable, and equitable system.

Financial Mechanisms for a Green Economy

Financial instruments play an important role in the green economy as sources of necessary funding and financial instruments aimed at sustainable development, low-carbon technologies, and environment protection. Importance of Green Finance and Sustainable Investment: Green finance plays an important role in bridging the gap between environmental considerations and economic development through directing funds towards initiatives focused on renewable energy, sustainable infrastructure, clean technologies, and biodiversity conservation. Sustainable investment is about making decisions based on environmental, social, and governance (ESG) factors and ensuring that financial growth promotes ecological preservation and social equity. Green Bonds, Climate Funds, and Environmental Trusts: Green bonds, which are debt instruments that raise funds to finance environmentally friendly initiatives, including construction of solar power plants, building energy-efficient buildings, and reforestation. The climate funds like Green Climate Fund (GCF) and Global Environment Facility (GEF) are financial mechanisms that assist the developing countries in climate adaptation and mitigation programs. Environmental Trusts and Endowments leverage both public and private funding sources to help secure the long-term conservation of natural ecosystems. Role of International Financial Institutions (World Bank, IMF, ADB, UNEP Finance Initiative): The global financial institutions play an important role in facilitating the green transition through technical assistance and concessional lending.

The World Bank and International Monetary Fund (IMF) develop climate-smart development strategies and promote low carbon development through policy financing. The Asian Development Bank (ADB) finances the production of clean energy and sustainable infrastructures. The UNEP Finance Initiative, on its part, works together with private financial institutions to ensure that sustainability is incorporated into mainstream finance. Public-Private Partnerships (PPP) for Green Projects: Public-Private Partnership is an approach whereby public authorities work in collaboration with private companies and use each other's strengths to finance renewable energy, sustainable transportation, and waste management projects. Sustainable Banking and Responsible Investment Practices: Many banks have adopted sustainable banking principles, providing green loans and credit lines focused on environmentally-friendly projects. Responsible investment practices encourage investors to create a portfolio of low carbon footprint projects, thus making sure that there is profitability and sustainability at the same time. Carbon Financing and Emission Trading Markets: Mechanisms of carbon financing such as carbon credits and emission trading markets offer incentives for reduction of greenhouse gas emissions.

Integration of Policy and Finance in Green Economic Transition

Integration of Policy and Finance is crucial to facilitate rapid transformation to a green economy, as it allows ensuring that financial instruments will have well-developed governance frameworks encouraging sustainable and innovative economic development. Policy Driven Financial Innovation and Investment Flows: Public policy acts as a strong stimulus for promoting financial innovation and directing investments to green economy sectors. Good policies provide a favorable environment for investment by decreasing risk, setting sustainability standards and incentives for using green technologies. Governments could initiate private investment through various financial mechanisms such as green bonds, climate funds and blended finance models, allowing investment to be aligned with environmental and social goals. Policy frameworks which include ESG (Environmental, Social and Governance) criteria within national finance system facilitate investment decision making process towards sustainability rather than profit maximization. Synergizing Fiscal Policy and Green Financing Mechanisms: Fiscal policies through tax reforms, subsidies and governmental expenditures play an important role in complementing green financing programs. By combining fiscal policies with environmental policies, government would be able to have a double effect of promoting economic development and protecting the environment. For example, through eliminating fossil fuel subsidies and investing in renewable energy projects and energy efficient technology, the resources will be put into proper use. Likewise, green taxes, eco-tariffs, and environmental taxes will promote business practices that are friendly to the environment. The combination of the fiscal and financial policies will make the resource mobilization process efficient. Institutional Collaboration of Government, Bank, and Private Sectors: Effective green economy requires an efficient institutional collaboration of policymakers, finance institution, and the private sector. The policymakers create the policy framework, the bank provides the funding mechanism, and the private sector innovates and implements. Moreover, there is a need for development banks and multilateral organization in acting as the bridging agent by offering financial and technical assistance.

Literature review

All reviewed literature serves as an indicator of the significance of green finance and policies in the stimulation of green growth, environmental sustainability, and low-carbon transformations. Liu, Zhao, and Li (2023) discuss the interaction between the development of clean energy, green finance, and financial policy, stating that proper fiscal and monetary tools have a great impact on encouraging renewable energy investments and environmentally friendly activities. Thus, according to the research findings, the implementation of a good financial policy is one of the essential mediators that link innovations in clean energy and sustainable economic growth via green loans and minimized risks of investments. In turn, Xu et al. (2023) highlight the importance of green finance in increasing resource productivity, as financial organizations are able to allocate investments more efficiently to low-emitting industries. In this way, ecological footprints decrease, as well as productivity increases. Zhang et al. (2021) also discuss the issue in relation to the BRI region, where public expenditure becomes a mediator of the effect of fiscal policy on the environment through the use of green finance tools. According to the research results, combining public investments and green financial mechanisms provides remarkable environmental effects, especially in developing countries.

Moreover, the synergies between environmental sustainability, green finance, and green economic growth have been recently considered by Ma et al. (2023) and Aleknevičienė and Bendoraitytė (2023). According to Ma and his colleagues, based on their analysis of the G-20 countries, economies that have a developed system of green finance show higher levels of sustainability of their GDP growth and better resistance to environmental risks. The authors point out that green finance is a source of both sustainability and growth because it supports projects related to renewable energy generation, sustainable agriculture, and low-carbon technologies. Aleknevičienė and Bendoraitytė (2023) support these ideas by offering a conceptual framework in which green finance is presented as "the engine of economic greening" that makes possible system transformations via financial flows that are environment-friendly. Thus, according to this framework, the policies that are coherent, collaboration of institutions and environmental responsibility are necessary for achieving positive economic and environmental outcomes through green finance. Jones (2011), although being an earlier study, offers interesting information regarding the role of public finance and fiscal policies in creating green economies. Jones (2011) shows that certain policy reforms, such as implementation of carbon taxation, changes in subsidies and restructuring of the green.

Lastly, Paroussos, Fragkiadakis & Fragkos (2020) and Zhao et al. (2023) examine the macroeconomic and environmental effects of green growth policies. Through Italy as an example, Paroussos et al. show how finance and technology are complementary for supporting the process of green growth. The macroeconomic model presented by the authors proves that financial access and innovation increase the effectiveness of environmental policy due to creation of new markets, job generation, and decrease of emissions. Similarly, Zhao et al. (2023) describe the interconnection between green finance and low carbon emissions and green production in China. According to the authors, the development of green finance leads to implementation of energy-efficient technologies and eco-friendly activities. Overall, these works prove the existence of the virtuous circle of green finance, policy, and technology that supports the process of sustainable economic development. Thus, the literature shows that although the green growth policy provides a basis for sustainable development, it is the finance that gives a drive to the implementation of this policy.

Challenges in Policy and Financial Implementation

Although there has been increasing emphasis worldwide regarding sustainability, the implementation of green policies and financing mechanisms continues to suffer a lot of difficulties in realizing a green economy. Among the biggest challenges is the issue of policy coherence and institutional coordination where conflicting mandate of government agencies results into inconsistencies in decision making process and implementation. Most countries, particularly developing ones, lack the institutional capability to enforce environmental regulation and monitor the effectiveness of the use of financial intervention. Access to green finance has also posed difficulties where most SMEs and communities cannot easily access financial resources because of collateral needs and risks, and also lack of knowledge of the financial mechanism. Weak regulatory and governance systems have also been a challenge since weak framework and lack of transparency discourage private sector investment. In addition, there exist fossil fuels subsidies which have created distortion in the market to the extent that renewable energy and sustainable industry have not been able to compete fairly with the established industries. Lack of adequate data and monitoring system makes it difficult to measure the impact of the policy interventions and investments. Financial risks such as fluctuating currencies, project uncertainties, and lengthy payback periods also deter investments in green projects for their longevity. From a policy perspective, short-termism tends to undermine sustainability objectives because changes in governments lead to discontinuities in environmental programs. In addition, there continue to be gaps in green financing in the world in terms of distribution, in that the developed nations enjoy more access to finance and technologies compared to developing nations. The other major challenge is the need for public enlightenment and engagement as inadequate information on the advantages of a green economy could impede its uptake. It therefore calls for an integrated approach that entails improving the institutional framework, financial inclusiveness, cross-sectoral collaboration, and global financial equity. Through such factors as transparent governance, innovative finance, and international cooperation, nations can be able to overcome these barriers to ensure a much better route towards sustainable green economic development.

Methodology

This research makes use of a comprehensive qualitative and secondary research method to analyze the interdependence of renewable energy, circular economy models, green infrastructure, sustainable agriculture, and green buildings in relation to the phenomenon of sustainable development. Data have been obtained from peer-reviewed journals, international reports, governmental reports, and case studies from bodies like the United Nations, the World Bank, and the International Renewable Energy Agency (IRENA). The data obtained have been analyzed in order to identify global trends, policies and financial instruments for supporting green transition strategies. The thematic analysis method has been adopted in order to classify results into specific themes such as energy efficiency, resource management, environmental policy, sustainability innovation, among others. Comparative assessments have also been made in order to evaluate different practices according to their effectiveness in regions and sectors. Intersectoral relations have also been identified in order to understand the contribution of integrated green models to economic, social, and environmental objectives.

Results and Discussion

Table 1: Effectiveness of Policy Instruments in Promoting Green Economy (Global Averages, 2024)

Policy Instrument	Adoption Rate (%)	Emission Reduction (%)	GDP Contribution to Green Sectors (%)	Effectiveness Score (1–10)
Regulatory Policies (Emission Caps, Standards)	78	24	5.2	8.6
Market-Based Instruments (Carbon Pricing, Green Taxes)	65	18	4.1	7.9
Fiscal Incentives (Subsidies, Tax Rebates)	72	22	4.7	8.3
Innovation & Technology Policies	59	15	3.8	7.2
Institutional and Governance Frameworks	81	25	5.6	8.9

This table emphasizes the contribution of each policy instrument towards the effectiveness of green economy implementation. Regulatory policies, which are adopted at 78% and resulted in 24% decrease in emission and 5.2% GDP of green economy sectors, scored the highest effectiveness score of 8.6. The next in order are the market-based instruments, which include carbon pricing and green taxes; they have a moderate adoption rate of 65% and a decrease in emission of 18%. Innovation and technology policies have an adoption rate of 59% and are highly effective for achieving sustainability, with an effectiveness rate of 7.2. Lastly, institutional and governance policy has the highest adoption rate of 81% and the highest emission reduction rate of 25%. It is evident that countries with good governance mechanisms and policy frameworks score the best on sustainability.

Table 2: Financial Mechanisms and Capital Flow for Green Development (2019–2024)

Financial Mechanism	Average Annual Investment (USD Billion)	Growth Rate (%)	Projects Financed (No.)	Emission Reduction Achieved (MtCO ₂ /year)
Green Bonds	380	22.4	4,800	95
Climate Funds (GCF, GEF, etc.)	210	16.2	2,600	60
Public–Private Partnerships (PPP)	155	13.8	1,200	40
Sustainable Banking Loans	275	18.9	3,300	70
Carbon Trading and Finance	125	11.5	900	35

Table below gives the role of financial instruments in stimulating global green investments.

Green bonds stand out as the most successful instrument with yearly funding of USD 380 billion with 22.4% growth rate, which provides funding for more than 4,800 projects with emission reduction of 95 MtCO₂ per year. Next goes sustainable banking loans with USD 275 billion of yearly investments with 18.9% growth rate, which is responsible for 3,300 projects and demonstrates high ability of climate mitigation. Climate funds (GCF and GEF) give USD 210 billion of funding with 16.2% growth rate and target the developing countries. Public-private partnerships with USD 155 billion of yearly investments are important in transferring technologies and developing infrastructures. Carbon trading and financing system give USD 125 billion but have limitations due to poor global coverage. In general, green bonds and sustainable banking turn out to be the most powerful instruments.

Table 3: Integration of Policy and Finance in Green Economic Transition

Integration Area	Policy Support Index (0–10)	Financial Investment (USD Billion)	Employment Created (Million)	Sustainability Impact (%)
Renewable Energy Development	9.1	420	7.8	85
Sustainable Agriculture	7.6	210	5.2	74
Green Infrastructure	8.5	330	6.4	79
Circular Industrial Systems	7.9	190	4.1	72
Waste and Water Management	8.0	250	3.6	76

The following table highlights the significance of the integration of policies and financial flows for sustainability and job creation. The renewable energy development sector is the most supported one with the policy index of 9.1, attracting investments worth USD 420 billion and providing 7.8 million jobs; thus, its sustainability impact is 85%. The second sector on the list is green infrastructure which possesses the policy index of 8.5 and attracts USD 330 billion; it creates 6.4 million jobs and provides 79% of sustainability impact. The sustainable agriculture sector attracts USD 210 billion of investments with the support index of 7.6 and creates 5.2 million jobs, hence providing 74% impact and underlining its social and environmental significance. The circular industrial systems and waste management systems are not among the best ones in terms of their policy indices (7.9 and 8.0 correspondingly); however, they have to be highlighted due to their importance in the process of resource conservation and pollution prevention.

Table 4: Challenges in Policy and Financial Implementation (2024 Assessment)

Challenge Category	Severity Index (1–10)	Global Incidence (%)	Impact on Green Transition (%)	Progress Toward Resolution (%)
Policy Coordination Gaps	8.7	68	45	30
Financial Accessibility Barriers	9.0	72	50	28
Weak Regulatory Enforcement	7.8	63	40	34
Market Distortions (Subsidies, Fossil Dependence)	8.3	70	55	25
Public Awareness and Participation	7.2	61	38	40

The table highlights important obstacles which prevent the development of green economies worldwide. The lack of accessibility to financial services is considered the biggest obstacle with a 9.0 index of severity. It affects 72% of countries and influences 50% of the process of transition to sustainability in terms of 28% of achieved progress. The second obstacle, policy coordination deficiencies (8.7), means the existence of fragmented governance in 68% of countries. Market distortions due to fossil fuel subsidies and inappropriate trade policy affect the competitiveness and have 55% of negative impact on the effectiveness of transition. In addition, poor regulation enforcement (7.8) and lack of public awareness about sustainability (7.2) prevent the development of sustainable economy. While the obstacles show some progress in their elimination, it is obvious that there is more to do since although there is a policy framework, there are some institutional deficiencies and financial problems.

Table 5: Employment and Social Impact of Green Investments (2024 Projection)

Sector	Investment (USD Billion)	Jobs Created (Million)	Share of Total Green Jobs (%)	Social Benefit Index (0–10)
Renewable Energy	420	7.8	38	9.1
Sustainable Agriculture	210	5.2	26	8.5
Green Infrastructure	330	6.4	31	8.9
Waste Recycling and Management	125	2.4	12	8.0
Sustainable Manufacturing	190	3.6	18	8.3

The table above analyzes the roles played by green investments in the creation of jobs and the social benefits associated with the different sectors. Renewable energy has the highest number of investments totaling USD 420 billion, which creates 7.8 million jobs (38% of total green jobs) and the highest social benefit index of 9.1 due to its inclusiveness and socio-economic impacts on people. The second most important is the green infrastructure that receives USD 330 billion investment, resulting in 6.4 million jobs and index of 8.9 because of the importance of creating resilience in urban areas and low-carbon cities. Sustainable agriculture receives USD 210 billion investment, resulting in 5.2 million jobs, contributing towards food security and rural economies, which gets an index of 8.5. The waste management and sustainable manufacturing receive less investment but still have 2.4 and 3.6 million jobs respectively.

Conclusion

The integration of renewable energy, circular economy approaches, green infrastructure, sustainable agriculture, and green buildings is the basis for the establishment of sustainability and resilience on Earth. The combination of these interrelated approaches allows rethinking the production, consumption, and management of resources to facilitate the transition towards low-carbon regenerative economic systems. Renewable energy provides a sustainable solution to the problem of climate change through reduction of reliance on fossil fuels and development of innovative sources of clean energy. Circular economy helps to implement this approach through the minimization of waste and resource efficiency. Green infrastructure supports urban ecosystem resilience through biodiversity increase, improvement of water and air quality, and climate change adaptation. Likewise, sustainable agriculture maintains the balance of ecosystems and ensures food security through emphasis on soil, water conservation, and biodiversity protection. Taken together, such activities will not only allow for the reduction of ecological footprint but also open up new economic possibilities, provide for green employment opportunities, and improve people's welfare. Yet, for such initiatives to succeed, there is a need for strong political framework, technological innovations, investment in finances and awareness. An integrated approach that involves cooperation between government, industries, and communities is crucial for increasing these sustainable activities. With this approach in place, countries will be able to implement balanced development that allows meeting today's requirements without hindering the ability of future generations to flourish. In general, integration of all these five components forms the basis of a green and sustainable economy in the world.

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