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The Financial Challenges of Developing Countries for Climate Change Mitigation and Sustainable Development Under UN Agenda 2030

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Abstract

The study seeks to analyze the financial obstacles confronting poor nations in mitigating the effects of climate change and shifting towards sustainable development trajectories, as outlined in the 2030 Agenda. The paper examines Iraq to highlight difficulties and possibilities pertinent to its context, while the analysis and policy implications extend to several other nations in other areas with analogous concerns. The study employs a quantitative analytical methodology using secondary data on sustainable development indicators, emissions, mortality rates, and finance sources for a sample of 18 developing nations from 2010 to 2020, together with projected data for specific economic indicators extending to 2050. The findings indicate that emerging nations, particularly impoverished ones, would encounter the most significant dangers from climate change while not being accountable for its causation. Developing nations are experiencing escalating environmental concerns due to climate change, including floods, droughts, pollution, desertification, and declining water levels. Consequently, these nations must intensify their efforts to address these difficulties and develop measures to safeguard the environment and natural resources. Numerous developing nations depend significantly on the agricultural sector for revenue and employment, confronting emerging difficulties from climate change that result in diminished agricultural output and land degradation, impacting food security and the local economy. Climate change may adversely affect emerging nations' economies, leading to agricultural land degradation and heightened expenses for infrastructure reconstruction.

Keywords: *Climate Change, Sustainable Development, Economic Development, UN Agenda 2030, Climate Change Funding.*

Introduction

Climate change is expected to exacerbate economic inequality, diminish income growth over the next 50 years, and elevate poverty among the most vulnerable nations and populations. Notwithstanding these facts, climate change mitigation strategies and related factors, such as food security, remain inadequate to guarantee sustainable development (Leichenko & Silva, 2014). Therefore, nations should amplify their efforts on climate action and promote sustainable development. Nonetheless, these two commodities are public goods. When considering international spillovers, the advantages of initiatives that foster climate change mitigation and sustainable development surpass the aggregate benefits to individual nations. The relevant literature indicates that a nation will cooperate if it anticipates a favorable projected revenue. Consequently, collaboration and the equitable sharing of benefits may foster global trust. Due to the urgency of the matter, which precludes significant delay, and assuming that all nations are, in practice, essential under the United Nations 2030 Agenda, all countries have concurred to enact preventive policies and measures to enhance the efficacy of these resources (Juste Ruiz, 2020). The anticipated budgetary requirements to execute the initiatives surpass global financial resources, particularly for emerging nations. The community subsequently recommended the formation of a multi-stakeholder alliance, the Global Partnership. The Paris Agreement stipulates that wealthy nations must provide financial resources for mitigation efforts in poor countries, which are expected to contribute to this budget. It is deemed foolish to assume that sustainable development—ensuring the well-being of present populations without jeopardizing future generations—can be accomplished alone by establishing such a partnership. Additional steps are required. In December 2015, the United Nations General Assembly ratified the resolution titled "Transforming our world: the 2030 Agenda for Sustainable Development." This was the first occasion on which the United Nations agenda thoroughly included environmental and developmental issues. The 17 Sustainable Development Goals and 169 associated goals aim to eliminate poverty and hunger while promoting sustainable social, economic, and environmental development (Cf, 2015). The financial resources necessary for successful climate change mitigation need coordinated worldwide action, particularly within the global monetary and financial institutions. Nonetheless, despite financial help, the

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challenges of under-debt and indebtedness persist. Official development aid, foreign debt, and financial crises are recurrent obstacles in the domestic development process. Concerning climate change, a significant share of the necessary financial resources must be allocated to poor nations via international financial mechanisms. Multilateral development banks, the International Development Association, the Green Climate Fund, and the Global Environment Facility are entities committed to offering concessional and soft loans to developing nations to bridge the financial gap and promote low-carbon, environmentally sustainable economic development (Songwe et al., 2022). Evidence consistently indicates that G15 members should emphasize human capital with social, economic, territorial, and environmental elements when choosing the project portfolio for implementation with help from international financial institutions. This research examines the financial obstacles poor nations face in mitigating the effects of climate change and shifting towards sustainable development, as outlined in the 2030 Agenda. The paper examines Iraq to highlight difficulties and possibilities pertinent to its context. At the same time, the analysis and policy implications extend to several other nations in other areas with analogous concerns.

Literature Review

Following the Copenhagen Climate Finance for Developing Countries Conference, many climate funds have been created to support climate action objectives in developing nations (Yamineva, 2016). Of the $331 billion in climate funding pledged in 2015, just $29.5 billion was allocated to the Climate Fund, with 72% being loans and investments in commercial sectors and a limited fraction in grants and concessional loans (Lopes da Costa, 2020). This fact succinctly indicates that the financial sector encounters numerous challenges regarding climate change and development finance within the framework of the UN 2030 Agenda, as developing nations possess substantial requirements for reconstruction, resilience enhancement, climate change adaptation, and greenhouse gas mitigation concurrently. A primary difficulty is the need for reciprocal alignment of interests between investors or climate financing institutions and state authorities in poor nations. The significant risk and uncertainty inherent in climate finance projects and the external policy landscape encountered by agencies managing these projects in underdeveloped nations obstruct the implementation of distinctive standards in financial initiatives. The current evaluation of climate investment funds presented two insights about their favored private sector investment model: funded projects are devoid of policy risks, and risk barriers are eliminated. Iraq, as an emerging nation, is endeavoring to use climate-compatible technology. Nonetheless, these resources are unavailable to several other growing and developing nations. The developing nations do not consistently adhere to the protocols established by recognized implementing agencies. Furthermore, the agreements serve as a crucial foundation for principal stakeholders to resolve their apprehensions about the financing of growing greenhouse gas emissions. The agreement aims to strengthen the capacity for climate-ready technologies, distinct from the financial component, to meet the assessment and support requirements for finance, technology, and capacity development in poor nations. Developing nations need substantial economic resources to adopt and advance climate change mitigation strategies, while the efficacy of the international assistance method is cautiously evaluated (Fekete et al., 2021). This encompasses industrialized nations, often succumbing to the fallacy and the conditional supply scenario. Their association with the mortgage system is ambiguous. These judgments address the need to foster capabilities in developing nations as collaborators in climate change mitigation and sustainable development planning. The eradication of poverty is intrinsically linked to the implementation of sustainable climate change mitigation and development policies, which must be integral to the decision-making processes of developing nations both now and in the future.

Financial Needs for Climate Change Mitigation and Sustainable Development

Each nation utilizes its own economic, social, and technical resources and competencies, ultimately dictating its financial ability to fulfill its nationally specified commitments and attain the UN 2030 Agenda. (Yu et al., 2020). Much of the expenditures required to combat climate change are directly associated with developmental necessities, including capacity building, infrastructure, transportation, and healthcare. Establishing systematic connections in financial processes is essential to address investment requirements at both national and local levels. Simultaneously, it is crucial to acknowledge that numerous developing nations, least developed countries, and small island developing states may continue to face challenges in

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accessing the comprehensive array of financial services from multilateral climate funds at the international level, owing to demanding administrative processes for application submission and insufficient national institutional capacity in the developing world. Consequently, specific categories of developing nations, such as least developed countries and small island developing states, which will encounter heightened difficulties during the transition phase, will require financial and technological assistance or differentiated allowances in finance, technology, and capacity building to maintain economic growth while transitioning to alternative energy and implementing measures to mitigate greenhouse gas emissions.

National conditions include the economic structure, sectoral composition, and overall economic magnitude. All developing nations who submitted economy-wide NDCs are assessed to have recognized the costs of implementing their NDCs (Siriwardana & Nong, 2021). Nonetheless, hardly 8% of developing nations have recognized these expenses in their Nationally Determined Contributions (NDCs). External assistance for mitigation is required. All developed nations require sector-specific assistance; 46% of non-LDC developing countries have recognized agricultural needs averaging US$175 billion, while 11% have identified water-related needs averaging US$22.5 million (Colyer, 2021). The anticipated yearly expenses for verifying, reporting, and accounting for emissions are US$882 million for non-LDC poor nations and US$182 million for non-LDCs on average. The reporting expenses are often disregarded and not included in the financial talks. This paper concentrates on financing sources for greenhouse gas mitigation, the primary objective of the Paris Agreement, despite the diverse costs associated with adapting to climate change, including heightened energy demands for cooling and altered health burdens from vector- and water-borne diseases. In the context of GHG reduction, expenses may be broadly categorized as "incremental" costs associated with pricier mitigation efforts and "structural" transition costs, which can include assistance for nations to adopt cleaner technology directly. Various scholars use distinct methodologies for these classifications and their scales; nonetheless, all concur that the existing estimations of these charges are excessively burdensome for emerging nations to shoulder alone (Nation III, 2020). This amounts to tens of billions of US dollars annually, given the magnitude of expenses necessitating state development aid and concessional credit. Furthermore, while the shift towards sustainable development is expected to yield benefits that significantly surpass the costs, including enhanced human health from cleaner cooking and diminished local pollution, most of the necessary funding must be secured in advance. However, in instances of concessional lending, a portion of the projected costs and required funds may be sourced from ex-post or priority lending to support ongoing investments.

Current Financing Mechanisms and Initiatives

The discourse on development finance centers on providing capital for substantial economic sectors and facilitating investment flows to correspond with diverse international objectives or agreements (Skalamera Groce & Köstem, 2023). Actions and debates include strategies to enhance the overall investment climate, augment resource allocation, and assist low-income nations and those in fragile or conflict-affected circumstances with limited investment capacity. The aggregate volume of foreign direct investment and the global market capitalization of securities are typically considered adequate to produce sufficient financial resources for substantial investments made by nations, such as in various international public goods or their contributions to economic growth and stability (Vivares & Stanley, 2022). Two distinct perspectives have emerged during the last fifteen to twenty years concerning the issues posed by climate change. In 2009, after the establishment of the Copenhagen Global Climate Change Agreement, high-income developed nations initiated fast-start financing, amounting to a minimum of €30 billion and a maximum of €100 billion, to assist low-income developing countries in mitigating and adapting to climate change (Bernards, 2024). Nevertheless, since the minimal target was not achieved in 2009, the FSF faced increasing criticism, and skepticism over its capacity to produce "larger amounts" intensified. Consequently 2011, the Green Climate Fund was established, using a combination of public and private resources from wealthy and developing nations (Bracking & Leffel, 2021). The minimum commitment of €10 billion for the period 2015-2018 would escalate to much more significant commitments, culminating in a total combined investment and leverage capability of €100 billion by 2020 (Naumenkova et al., 2023). Nevertheless, the resemblance to the somewhat earlier FSF numbers did not diminish the concerns over

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the magnitude of the Green Climate Fund. Creating the finance system under the United Nations Framework Convention on Climate Change is an essential and significant matter for climate change mitigation, adaptation, and sustainable development. International institutions and mechanisms, including multilateral development banks and climate funds, have established financial resources to offer funding, technology transfer, and capacity building to assist developing countries in executing their nationally determined contributions and national action programs. A significant number of projects have been supported in this domain, particularly those pertinent to the least developed and most vulnerable nations, facilitating the development of initial characteristics regarding access to financial resources for specific small island developing States and the necessary institutional arrangements for their establishment, which are crucial for the most vulnerable countries. The UNFCCC and developed nations are endeavoring to allocate resources to developing countries, primarily focusing on public funds from national governments in the least developed and most vulnerable nations for the mitigation and adaptation components of their nationally determined contributions and for addressing loss and damage experienced by those countries. International financial assistance in the climate sector is crucial for fostering global engagement, aiding poor nations in mitigation and adaptation efforts, and enhancing capacity development. Climate funds provide diverse financial products (Amzallag, 2022). These funds aim to achieve common goals while addressing the national needs and priorities of the most vulnerable nations, mainly focusing on the least developed and small island developing states. The Green Climate Fund and the specialized funds of the Global Environment Facility have implemented programs to support vulnerable nations at both national and local levels within the development aid framework of their pertinent operations.

A growing method for fundraising involves establishing a national finance institution dedicated to transmitting climate technologies. (Ballesteros et al., 2010). The objective is to finance the technology and its implementation related to carbon-emitting applications. This capital may be allocated to other sectors of the economy not addressed by foreign assistance. The framework must safeguard investments against the vulnerabilities impacting emerging nations. A Venezuelan initiative is introduced and examined. A minimal quantity of economic capital is allocated as collateral to illustrate the additionality of the Venezuelan process. The decrease in emissions generates revenue from the sale of emission credits and transforms governmental unemployment liabilities into entitlements. This assistance highlights the supplementary function of national financial mechanisms for needs, values, and ecosystems and their entitlement to steady development in principle.

Challenges In Accessing Climate Finance

An essential implementation concern is accessing relevant resources (Schroeder, 2018). This is a significant impediment to advancing the transition necessary for achieving climate change objectives, which get a robust endorsement from developing nations, especially those identified as the most susceptible to this peril. Despite the substantial allocation of resources towards mitigation efforts in developing and developed nations, those most accountable for climate change persist in evading their historical obligation to provide significant financial support to assist affected developing countries (Silva et al., 2017). A discussion arises among those in need instead of uniting to build a more formidable coalition that opts to advance despite the persistent lack of ambition resulting from the rigorous talks year after year that fail to provide a fair framework for advancement. In this terrible situation of self-destruction, poor nations have disproportionate financial challenges to execute mitigation and adaptation strategies amid severely limited economic and financial circumstances. Investments that disregard environmental considerations or actively harm environmental assets are selected to garner private savings or, due to economic pressures, to offset insufficient direct government funding, whether bilateral or multilateral, to bolster climate policy frameworks (Alexander, 2016). The absence of domestic institutional capacity development in affluent nations to manage and use these resources is particularly concerning since it obstructs structural changes and reinforces implementation and project-based efforts. The sluggish mobilization of resources anticipated from global agreements to combat climate change is a troubling indication for the future, revealing a disparity with the climate policy efforts of industrialized nations. Developing nations collectively are expected to have significant obstacles in executing the 2030 Agenda (Carpentier & Braun, 2020). A specific difference must be made among the four domains of capacity restrictions. The initial

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concern is the deficiency in fundamental administrative and institutional capabilities necessary for policy implementation. This raises questions regarding the proposal to broaden development cooperation among countries at similar developmental stages, thereby establishing international cooperation on the principle of "common but differentiated responsibilities." The second section highlights the hazards associated with a segment of administrative and institutional capability in executing climate change-related assistance (Khan et al., 2020). The third and fourth aspects pertain to the deficiency in targeted growth, adaptive ability, and innovation. To execute the UN 2030 Agenda and realize substantial mitigation advantages, nations must expedite economic growth while integrating the development of national tax systems and enhancing the administrative and institutional capabilities of the State (Shulla & Leal-Filho, 2023). The significant reliance on foreign assistance, particularly in the region's most impoverished nations, reflects the lack of a contemporary fiscal compact incorporating national resources, especially amid rising public expenditure. This prompts inquiries into the significance of establishing enough domestic fiscal capacity, which is crucial for each nation to consider in the political organization about the magnitude of public goods to be generated and the distribution of the tax burden. Data and information ought to guide the creation and oversight of public policy. Financial obligations to assist poor nations in confronting the issues of sustainable development and climate change are predicated on assumptions. The hypothesis space about these topics is characterized by a simplistic portrayal lacking specificity. Conventional databases account for broad ideas, such as a country's developmental status. The SDGs need an exact and comprehensive database including various connected indicators and criteria, both temporally and geographically, along with frequent updates to assess their multifaceted character, variations in implementation, and outcomes (Lafortune et al., 2018). Future agreements about financing the 2020/25 gap and implementing add-ons highlight the need to enhance the hypothesis space concerning the drivers (both inhibitors and facilitators) and the interconnections of these problems (Ofori et al., 2022). The 2030 Agenda presents an opportunity to establish a platform for the formal documentation of financial flows, incomes, and expenditures associated with the SDGs and their implications for capital demand and the sustainability of multilateral development banks (Shulla & Leal-Filho, 2023). The absence of country-specific data for most linkages in the hypothesis space creates a chaotic environment for assessing and validating factors that may influence sound funding. The premise that "Financing (or the absence thereof) for the execution of policy commitments is anticipated to influence their realization (or postponement)" is a general hypothesis; nonetheless, its validation necessitates the modification of current data and databases for this objective.

Methodology

The comparative quantitative analysis method was used to measure the study variables and test their relationship. The main objective of the research is to analyze the financial challenges of developing countries committed to promoting resilient, sustainable development through climate change adaptation, mitigation, impact reduction, and early warning under the 2030 Agenda. This specific objective addresses the sustainable development policy narrative. Discussions on the role of development finance and the potential impacts on the structure of public finance are conducted in the same context. Another specific objective is to discuss the unity or disagreement in climate action transmission and emissions data updates. The research adopts a quantitative analytical approach using secondary data on sustainable development indicators, emissions, deaths, and sources of finance for a sample of 18 developing countries from 2010 to 2020, as well as projected data for some economic indicators up to 2050.

Results

Table 1 shows deaths and people affected by climate disasters in LDCs in 2019. Over the past 50 years, 69% of all deaths were caused by extreme weather. In the first half of 2019 alone, droughts, floods, landslides, and storms killed 11 million people in LDCs, affecting an estimated 1,263 million. The loss of life is a considerable cost. Only 20% of climate disasters in these countries in the past five years have had an estimated total cost of $7.2 billion. For example, the 2016 storms in Haiti caused $2 billion in damage, more than 25% of the country's GDP. The total cost of the 2017 floods in Nepal was $595 million, and the 2015 drought in Ethiopia cost $1.4 billion, more than 2% of each country's GDP in those years.

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Table 1. Deaths And Casualties from Climate Disasters

States	No, of affected	No. of deaths
Mozambique	671	705,600
Afghanistan	155	129,661
Nepal	119	82,541
Uganda	84	132,541
Bangladesh	76	5,028,061
Malawi	67	886,655
Angola	30	5,330
Mali	15	507
Brundi	10	
Haiti	8	3.108
Yemen	8	80,000
Comoros	8	345,311
Tanzania	5	2,005,000
Zambia	4	
South Sudan	3	65,352
Somalia		1,500,000
Myanmar		6,200
Sudan		6,198
Total	**1,263**	**10,982,077**

The first overarching challenge facing developing countries is climate finance flows' inadequacy, imbalance, and unpredictability. Although developed countries pledged to mobilize $100 billion annually by 2020 to support mitigation and adaptation in developing countries, calculations show that pledges fell short of the 2020 target, with some Middle Eastern countries experiencing political conflicts that have contributed to the lack of appropriate institutions and systems to address climate issues and changes. UNEP reports have indicated that the economic cost of addressing the impacts of climate change in the Middle East and North Africa ranges between 0.4 and 1.3 percent of GDP, and this figure could rise to 14 percent if mitigation and adaptation measures are not implemented effectively.

Table (2) shows that the total climate finance provided and mobilized by developed countries to developing countries in 2020, the initial target year, amounted to $83.3 billion. This represents a 3% increase over 2019. This means that rich governments failed to provide $100 billion in climate finance annually, which developing countries promised by 2020, as the level of climate finance remained $16.7 billion short of the target. Actions become more constrained and less effective as temperatures rise, making the time needed for adaptation measures run out quickly. When countries cannot adapt to climate change, they suffer devastating losses and damages as climate-related hazards such as heat waves, droughts, and storms increase. The lack of financing also forces low-income countries to take on more debt to solve climate change problems.

Table 2. Climate Finance for Developing Countries

years	2013	2014	2016	2017	2018	2019	2020
Funding	**52.4**	**61.8**	**58.5**	**71.6**	**79.9**	**80.4**	**83.3**

Developing nations have a climate financing dilemma characterized by escalating debt vulnerabilities. Notably, 72% of climate financing allocated and mobilized by developed nations for climate initiatives in poor countries from 2016 to 2020 was in the form of loans, whilst grants constituted just 26%.

Table (3) indicates that the volume of finance allocated as loans significantly exceeds that allocated as

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grants, which serves as a detrimental indication, compelling impoverished nations to incur extra debts that would have been unnecessary had the money been provided as grants. The chart illustrates the allocation of funds designated to assist poor nations in mitigating and adapting to climate change. The criticisms about climate finance debt are dual in nature. From a public finance standpoint, loans often need repayment of both principle and interest. Consequently, increasing debt payment obligations result in diminished fiscal capacity to allocate funds for other critical government expenditures, including public health and recovery efforts after climate-related disasters. Secondly, from the standpoint of climate fairness and justice, affluent nations owe climate debts to poor countries due to their contribution to the climate problem. The burden of mitigation and adaptation to a climate disaster, which developing nations did not instigate, engenders a perception of unfairness. The predominant share of climate funding need to be allocated as grants. Consequently, climate funding encounters several obstacles for developing small island nations.

Table 3. Loans And Grants Provided to Developing Countries to Finance Development

Years	Type of Financing			
	Macro Funding	loans	awarded	Other
2016	46.4	33.3	12.3	0.8
2017	53.3	38.6	13.8	0.9
2018	61.5	46.5	13.9	1.1
2019	63.2	45	16.7	1.5
2020	68.1	48.6	17.9	1.6

The Paris Agreement aims to balance mitigation projects with those that help people adapt to the effects of climate change. Table 4 shows that most climate finance has gone to projects that reduce greenhouse gas emissions. Only $10.1 billion was allocated to adaptation out of $58.5 billion in 2016, compared to $42.2 billion for mitigation in the same year, a considerable difference when balancing the two. However, while adaptation finance rose in 2020 to $28.6 billion from $83.2 billion, it is still far behind mitigation finance, which was $48.6 billion in the same year. Therefore, the risks of climate change are expected to escalate so dramatically that they could overwhelm the capacity of both nature and humans to adapt unless decisive and rapid action is taken to reduce greenhouse gas emissions. According to the Swiss Re Institute's Climate Economics Index, the global economy is expected to lose around 10% of GDP by 2050 if climate change continues on the current projected path of 2-2.6°C by mid-century and the Paris Agreement pledges to keep temperature rises below two °C are not met. In a severe scenario of 3.2°C, the loss of global GDP could be even higher, reaching 18%. Southeast Asian (ASEAN) economies will be the most brutal hit, followed by Africa, the Middle East, and Latin America.

Table 4. Local Distribution of Climate Finance in Developing Countries

Year	Positional distribution of climate finance amounts		
	Mitigation	Adjustment	shared
2016	42.2	10.1	6.2
2017	52.8	13.3	5.6
2018	55.9	16.9	7.1
2019	51.4	20.3	8.7
2020	48.6	28.6	6

Climate investing falls under environmental, social, and governance (ESG) investing, which seeks to generate positive social benefits and profits. Asset managers have been working to create a broader niche for investors looking for ethical ways to grow their wealth in recent years. Climate investing endorses technology or enterprises that are anticipated to be essential as the globe shifts from fossil fuels and carbon-heavy sectors. Effectively tackling climate change in both affluent and poor nations need immediate legislative intervention to facilitate extraordinary economic, social, and technical transformation. This necessitates aggressive climate change objectives and a substantial enhancement of

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existing support for climate initiatives to tackle the issue of escalating greenhouse gas emissions and mitigate them to the greatest extent feasible. Investment choices in infrastructure will be pivotal in effectively tackling climate change. To mitigate emissions, it is imperative to redirect current investments from carbon-intensive infrastructure to low-carbon alternatives, as emissions are projected to escalate significantly in the forthcoming years and decades, particularly in developing nations, where the pursuit of development and growth frequently correlates with an absolute increase in emissions. Aside from climate change issues, investment in infrastructure in the coming years must be significantly increased to support the development agenda.

Table 5 shows the clear contrast between the emissions released by regions that include most developing countries and Europe, especially in the Asian continent, which contains the largest developing countries in terms of population development and growth, such as China and India. Emissions are expected to rise until they peak in 2030, reaching about 20,882 million tons of carbon dioxide, then decline to about 12,455 million tons in 2050. However, despite the decrease in emissions from the Asian continent, it is still very far from what European countries have achieved in reducing their carbon dioxide emissions levels, as it is expected to reduce their emissions to only 986 million tons of carbon dioxide by 2050. The reason is the correct planning followed by developed countries to eliminate dependence on fossil fuels for energy, find more sustainable alternatives, and impose carbon taxes. Unlike developing countries, which will continue to rely on fossil fuels in their quest for development, Asia's population is significantly larger than Europe's, another reason developing countries' emissions are higher than developed countries. Addressing the increasing infrastructure demands due to population and economic expansion necessitates substantial private investment. Public funding alone will be inadequate to fulfill these investment requirements; rather, substantial private sector involvement will be necessary to address the demands of the transition towards emission reduction. Restricted public financing should serve as a temporary incentive to augment private investment and focus on cost-effective initiatives that are unlikely to get enough private funding, such as capacity building, education and training, and technical research and development. An analysis will be conducted on the financial flows and investments necessary and anticipated for certain industries that aid in emission reduction, particularly in developing nations.

Table 5. Projected Scenario for Carbon Dioxide Emissions

Year	Region			
	Asia	Africa	Latin America	Europe
2010	14953	1140	1690	4469
2020	18540	1286	1478	3546
2030	20882	1751	1700	2499
2040	17563	2106	1647	1481
2050	12455	3247	1377	986

In the mitigation scenario, a substantial enhancement in energy efficiency lowers energy demand, thus necessitating that energy users in the industrial, construction, and transport sectors adopt energy efficiency measures to meet the anticipated investment in energy supply infrastructure.

Table (6) indicates that investment in global energy supply infrastructure in 2030 is projected to total $695.3 billion, which is $67 billion short of the necessary amount. Over fifty percent of the global energy investment need by 2030 is concentrated in emerging nations, which require around $407.8 billion. Demand and production are increasing faster. China alone needs $131.5 billion in investment, but it has exceeded the expected investment by 3%. Regarding power generation, the expected investment will exceed the required investment, especially in developing Asian countries and Africa, except for Latin American countries, where the expected investment will be -2% less. The most significant increase in power generation investments will be in China, at about 63.8% of what is required. This is due to the comprehensive development that China is witnessing, especially in the industrial sector, which requires huge amounts of energy. Accordingly, China is adopting a set of strategies to increase the efficiency of power generation by relying on modern technology to reduce dependence on expensive fossil fuels on the

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one hand and contribute to reducing emissions on the other hand, as well as the increase in China's population, which requires an increase in power generation to cover the growing population's needs. As for transmission, distribution, and fossil fuel supplies, expectations in all regions were less than required. This is due to the continued reliance on power transmission and distribution lines due to the lack of the necessary funding to develop this sector. The reason for this is that this type of investment is low-profit, so reliance remains on national governments to develop this sector. Because most developing countries are poor, developing power transmission and distribution will not be their priority, so they will rely heavily on coal, oil, and gas, as renewable energy technology has not yet reached the point where it is possible to dispense with fossil fuels, especially fuel supplies for buildings.

Table 6. Energy Investment in Developing Countries

Region	energy generation			Power Distribution Transmission			Fossil fuel supply			Total		
	Required	**Expected**	**Change %**	**Required**	**Expected**	**Change %**	**Required**	**Expected**	**Change %**	**Required**	**Expected**	**Change %**
Global	208.3	302.4	45.1	231	129.8	-44	322.4	263.4	-18	761.6	695.3	9-
China	39.6	64.8	63.8	64.5	46.4	-28	27.5	24.1	-12	131.5	135.3	3
India	18.3	24.9	36.4	26.3	19.6	-26	5.5	4.8	-12	50.1	49.4	1-
Indonesia	3.7	5	35.9	4.7	3.4	-26	5.7	5	-13	14.1	13.4	5-
Other Developing Asia	11.3	11.8	4.4	13.3	5.4	-59	16	11.8	-26	40.5	29	28-
Latin America	13	12.7	-2.4	17.3	10.3	-40	25.1	17.3	-31	55.5	40.3	27-
Brazil	4.4	3.4	22.5 -	4.6	1.9	-59	7.1	4.5	-37	16.2	9.8	39-
Other Latin American countries	8.6	9.3	8	12.7	8.4	-34	18	12.8	-29	39.3	30.5	22-
Africa	9.5	14.1	49.2	13.4	9.9	-27	35.4	27.5	-22	58.2	51.5	12-

The industrial sector accounts for around 27% of worldwide energy consumption, 19% of carbon dioxide emissions, and 7% of other greenhouse gas emissions. Consequently, prospective absolute reductions in emissions, as well as minor changes in energy or greenhouse gas intensity, might substantially impact emissions levels.

Table 7 shows that the additional global investment required in the industrial sectors by 2030 is approximately $35.7 billion, with the most significant investment being in carbon capture and storage and energy-related reductions. China had the largest share of this, being among the world's largest producers and consumers and operating mainly from coal-fired power plants. It needs about $12.2 billion in total investment, distributed between $8,621 million for carbon capture and storage and $3,157 million for energy investment, while China needs $421 million for methane reduction. India ranks second in terms of required investment. With such a large population and low living standards for the majority, the majority resort to cheap biomass fuels for cooking, in addition to factories relying on coal as a primary source of energy generation, which ultimately leads to this problematic situation of environmentally destructive emissions. India must invest large amounts in energy, carbon capture and storage, and other gas reductions

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to reduce these emissions. Table (7) shows that most other developing countries need significant investments to help reduce greenhouse gas emissions, much more than the rest of the world. Developing countries' share of the required investment was about $19.6 billion, more than half of the world's required investment. This is evidence that future emissions will be mostly from developing countries with large populations and rapid economic growth.

Table 7. Additional Investments Required According to The Mitigation Scenario for The Industrial Sector (2030)

Region	Energy Related Investment	decrease Methane	NOx reduction	Reduction of gases with high global warming potential	Carbon capture and storage	Total
Global	19,502	2,027	8	5	14,124	35,664
China	3,156	422	3	2	8,622	12,203
India	726	155	1	1	983	1,864
Indonesia	201	42	1	1	215	456
Other Developing Asian Countries	801	74	1	1	874	1,752
Latin America	797	124	2	1	277	1,203
Brazil	392	22	1	1	198	615
Other Latin American countries	404	103	1	1	81	587
Africa	411	216	1	1	274	903

The motorization of transportation and the rates of automobile ownership are rising in emerging nations undergoing significant economic expansion. The demand for travel across multiple transportation modalities is consistently rising in both established and emerging nations, with economic globalization propelling growth in international shipping and air transport. In the next years, investments in transportation equipment, infrastructure, energy-efficient technologies, biofuels, and research and development will profoundly influence greenhouse gas emissions from the transportation industry.

Table 8 indicates that the overall supplementary investment needed in the global transport industry in 2030, including hybrid cars and biofuels under the mitigation scenario, amounts to $88 billion. Developing countries in Asia, Latin America, and Africa accounted for about $39.6 billion, just under half of the global investment required, including $31.9 billion for hybrid vehicles and vehicle efficiency improvements, a large proportion compared to the global need of $79 billion. The investment required for biofuels was about $7.7 billion out of the $9 billion required in the rest of the world.

Table 8. Additional Investments Required According to The Mitigation Scenario for The Transport Sector (2030)

Region	Hybrid vehicles and improved efficiency in vehicles	Biofuels
Global	78.6	9.3
China	10.5	0.7
India	3	3
Indonesia	1.6	0.3
Other Developing Asia	4.6	0.5
Latin America	4.5	3
Brazil	2.3	3

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Other Latin American countries	2.4	1
Africa	3.5	0.4

The buildings sector include residential structures and any commercial or service-related activities within the economy. The majority of emissions in this sector stem from the burning of fossil fuels used for cooking, heating, or commercial and service operations. In 2004, the global buildings industry used about 2,296 billion metric tons, with emerging nations representing 25% of the entire consumption.

Table 9. Investment Flows in The Building Sector

Region	2005	2010	2015	2020	Projected 2030	Annual Growth Rate (%)	Additional investment required in 2030
Asia Development China, India,) (Indonesia	432	770	1,069	1,422	2,383	7.10	9
Middle East	42	88	144	200	343	8.80	1.3
Latin America	88	117	158	201	306	5.10	1.1
Africa	33	49	67	91	167	6.70	2.8
Europe	1,154	1,527	1,850	2,156	2,340	2.90	13
World	4,438	5,894	7,097	8,444	11.191	3.80	50.8

Table 9 shows the expected investment by region in the residential and commercial buildings sector from 2005 to 2030. Investment in emerging nations is increasing yearly by 5% to 7%, indicative of rapid population and economic development, urbanization, and escalating per capita income. Nevertheless, emerging nations need more investment by 2030, amounting to around $14.2 billion, which includes an extra $9 billion for China, India, and Indonesia.

Conclusions and Discussion

Climate change undoubtedly adversely affects, although to different and sometimes unknown extents, the capacity of nations, particularly developing ones, to attain the global objectives of sustainable development. The tremendous industrial progress in Europe, America, and the countries of East and South Asia, which began in the middle of the last century, and the accompanying increase in the use and generation of energy from its fossil sources, which are the most polluting to the environment through carbon dioxide, which contributed significantly to the worsening of the phenomenon of climate change, and thus the loss of all development efforts in these regions. Therefore, developing countries must participate effectively in determining the global climate action agenda. Developing countries must also unify their efforts regarding their international demands, not only for adaptation but also for mitigation, to understand the main priorities facing developing countries to implement climate strategies and integrated development. In addition to allocating financial resources to combat climate change worldwide and directing financial flows to developing nations to assist them in addressing climate change, one of the primary obstacles in funding sustainable development in these countries persists.

This article examines the financial obstacles associated with implementing the UN 2030 Agenda. The emphasis is on the difficulties encountered by impoverished nations. The absence of financial resources significantly hinders poor nations' capacity to optimize the synergies between climate change mitigation and other sustainable development objectives. The discussion of prospective policy solutions is categorized into five sections, with the first category being debt-based alternatives that may be transformative if effective. When there are cost-effective methods to get double-digit returns, it is essential to capitalize on them. The issue is more severe for sub-Saharan Africa and tiny island developing nations.

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The Addis Ababa Agenda acknowledges the interconnection between the UN 2030 Agenda, which encompasses the Sustainable Development Goals, and the Paris Agreement. Finance is essential to the overall sustainable development dialogue and is crucial for executing both accords. Moreover, extending financial and technical support to the impoverished becomes an issue of global solidarity and a historical obligation. These obligations are underscored throughout both contracts. Currently, evidence indicates that net resources are being misdirected. The process has acknowledged the critical significance of non-DFI financial sources for Iraq. This acknowledgment may also contribute to the discourse, emphasizing the collaborative enhancement of ambition in Nationally Determined Contributions (NDCs).

Our estimations indicate that reconciling INDCs with conditional NDCs and the SDGs is a significant challenge for developing nations. They need substantial investment to facilitate rapid and sustainable economic growth but often encounter budgetary limitations and restricted funding options. Several countries of interest, including Botswana, Seychelles, Burundi, Chad, and Cape Verde, with index sizes of 3–5 and 6–8 silent countries, are anticipated to necessitate external financing inflows of 10–15 percent to align their conditional NDCs with the 2030 SDGs. The influx of resources and competition for assistance amid pressing humanitarian and economic demands in recipient nations highlight the critical need to align safety margins in development and climate funding. The preliminary findings have significant implications for global collaboration in facilitating climate change mitigation and sustainable development in the world's least economically developed regions, advancing the establishment of structural frameworks for development agreements and climate finance with multilateral and bilateral donors, as well as private sector investors, to ensure effective alignment between Nationally Determined Contributions (NDCs) and the Sustainable Development Goals (SDGs) of the 2030 Agenda. The preliminary SMI estimates enabled us to identify and prioritize developing nations of interest that offer significant and pertinent insights, initiating discourse on the increasing necessity to address conventional trade-offs in the planning of developing countries between NDCs under the Paris Agreement on Climate Change and the SDGs established in the post-2015 development agenda.

This section identifies six research gaps and possibilities for future studies related to the effects of climate change and sustainable development. Despite the evident significance of money in climate action and sustainable development, less effort has been allocated to empirical studies concerning the financial monitoring of fund disbursement within the capacity-building framework for developing nations. Subsequent research must focus on critical inquiries: what was provided, what was used efficiently, how were resources distributed across nations according to varying criteria, what was the trajectory of the funds, how were they organized, and what outcomes were attained for what objectives? Secondly, evaluate the reciprocal learning among nations about financial management pertinent to providing funding and reporting financial flows in their Nationally Determined Contributions (NDCs). Given that finance encompasses mitigation, adaptation, and capacity development, a comprehensive examination of capacity building regarding progress reporting in the financial sector is crucial. Ultimately, the extent of financial assistance for mitigation and sustainable development may indicate global solidarity, potentially influencing reputation and transferring the responsibility of mitigation to present and future generations of industrialized nations, thereby encouraging a more ambitious global mitigation effort. This debate on stabilization objectives is crucial; nevertheless, financial assistance is often neglected, perhaps due to significant resistance from donor nations. Further study is required to monitor and ascertain the elements that significantly affect the extent of financial assistance and the effect of such support on attaining the Paris Agreement objectives and the UN 2030 Agenda.

References

Alexander, F. H. (2016). Saving investors from themselves: how stockholder primacy harms everyone. Seattle UL Rev., 40, 303.

Amzallag, A. (2022). Fund portfolio networks: A climate risk perspective. International Review of Financial Analysis, 84, 102259.

Ballesteros, A., Nakhooda, S., Werksman, J., & Hurlburt, K. (2010). Power, responsibility, and accountability: Rethinking the legitimacy of institutions for climate finance. Climate L., 1, 261.

Bernards, N. (2024). Where is finance in the financialization of development? Globalizations, 21(1), 88-102.

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Bracking, S., & Leffel, B. (2021). Climate finance governance: Fit for purpose? Wiley Interdisciplinary Reviews: Climate Change, 12(4), e709.

Carpentier, C. L., & Braun, H. (2020). Agenda 2030 for Sustainable Development: A powerful global framework. Journal of the International Council for Small Business, 1(1), 14-23.

Cf, O. (2015). Transforming our world: the 2030 Agenda for Sustainable Development. United Nations: New York, NY, USA.

Colyer, D. (2021). Agriculture and the Public Sector. In Agriculture And Economic Survival (pp. 267-299). Routledge.

Fekete, H., Kuramochi, T., Roelfsema, M., den Elzen, M., Forsell, N., Höhne, N., Luna, L., Hans, F., Sterl, S., & Olivier, J. (2021). A review of successful climate change mitigation policies in major emitting economies and the potential of global replication. Renewable and Sustainable Energy Reviews, 137, 110602.

Juste Ruiz, J. (2020). The process towards a Global Pact for the Environment at the United Nations: From legal ambition to political dilution. Review of European, Comparative & International Environmental Law, 29(3), 479-490.

Khan, N. A., Gao, Q., & Abid, M. (2020). Public institutions' capacities regarding climate change adaptation and risk management support in agriculture: the case of Punjab Province, Pakistan. Scientific Reports, 10(1), 14111.

Lafortune, G., Fuller, G., Moreno, J., Schmidt-Traub, G., & Kroll, C. (2018). SDG index and dashboards detailed methodological paper. Sustainable Development Solutions Network, 9, 1-56.

Leichenko, R., & Silva, J. A. (2014). Climate change and poverty: vulnerability, impacts, and alleviation strategies. Wiley Interdisciplinary Reviews: Climate Change, 5(4), 539-556.

Lopes da Costa, J. C. (2020). Environmental financial assurance: current coverage, institutional challenges, and alternative financial guarantee arrangements University of British Columbia].

Nation III, G. A. (2020). The Valuation of Medical Expense Damages in Tort: Debunking the Myth That Chargemaster-Based" Billed Charges" Are Relevant to Determining the Reasonable Value of Medical Care. Tul. L. Rev., 95, 937.

Naumenkova, S., Mishchenko, V., Chugunov, I., & Mishchenko, S. (2023). Debt-for-nature or climate swaps in public finance management. Problems and perspectives in Management, 21(3), 698-713.

Ofori, I. K., Osei, D. B., & Alagidede, I. P. (2022). Inclusive growth in Sub-Saharan Africa: Exploring the interaction between ICT diffusion, and financial development. Telecommunications Policy, 46(7), 102315.

Schroeder, H. M. (2018). Implementing accessibility initiatives at the Michigan State University libraries. Reference Services Review, 46(3), 399-413.

Shulla, K., & Leal-Filho, W. (2023). Achieving the UN Agenda 2030: Overall actions for the successful implementation of the Sustainable Development Goals before and after the 2030 deadline. European Union Parliament.

Silva, C., Bertolini, L., te Brömmelstroet, M., Milakis, D., & Papa, E. (2017). Accessibility instruments in planning practice: Bridging the implementation gap. Transport Policy, 53, 135-145.

Siriwardana, M., & Nong, D. (2021). Nationally Determined Contributions (NDCs) to decarbonise the world: A transitional impact evaluation. Energy Economics, 97, 105184.

Skalamera Groce, M., & Köstem, S. (2023). The dual transformation in development finance: western multilateral development banks and China in post-Soviet energy. Review of International Political Economy, 30(1), 176-200.

Songwe, V., Stern, N., & Bhattacharya, A. (2022). Finance for climate action: Scaling up investment for climate and development. London: Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science.

Vivares, E., & Stanley, L. E. (2022). The global political economy of development finance: myths and new realities in Latin American development finance. Handbook on the politics of international development, 218-230.

Yamineva, Y. (2016). Climate finance in the Paris outcome: why do today what you can put off till tomorrow? Review of European, Comparative & International Environmental Law, 25(2), 174-185.

Yu, S., Sial, M. S., Tran, D. K., Badulescu, A., Thu, P. A., & Sehleanu, M. (2020). Adoption and implementation of sustainable development goals (SDGs) in China—Agenda 2030. Sustainability, 12(15), 6288.