

CHALLENGES OF IMPLEMENTING THE PRINCIPLE OF CLIMATE ADAPTATION: THE CLIMATE GAP AS A MODEL

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Abstract:

The 2015 Paris Agreement serves as the legal foundation for the principle of climate adaptation. This agreement aims to establish a new global system based on principles designed to confront the risks of climate change beyond the year 2020. Achieving this goal requires cooperation among all countries to reduce greenhouse gas emissions, adapt to climate change, transfer technology, and finance related measures, primarily by developed countries to assist developing nations. This has led to the formulation of international obligations described as common but differentiated, reflecting disparities in countries' capacities and responsibilities for supporting and implementing the principle of climate adaptation. Given the nature of these responsibilities, the issue of the challenges in implementing the principle of climate adaptation has emerged—commonly referred to as the "climate gap," as highlighted in reports by relevant international bodies such as the United Nations Environment Program (UNEP). This article seeks to shed light on this issue by examining the concept and manifestations of the climate gap, its underlying causes, and the necessary measures to manage or mitigate it.

Keywords: *Principle of climate adaptation, climate gaps, common responsibilities, differentiated responsibilities.*

Introduction:

The issue of climate change is considered one of the most pressing international concerns due to its multiple environmental, legal, social, and economic dimensions. To confront climate risks, particularly in developing countries, it has become essential to establish an effective legal framework. Indeed, several relevant international agreements have been adopted, such as the 1992 United Nations Framework Convention on Climate Change (UNFCCC)¹, the 1997 Kyoto Protocol², and the 2015 Paris Agreement³. The latter serves as a legal framework that establishes the principle of climate adaptation⁴.

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Article 7 of the agreement states that adaptation is a global goal and challenge with multiple dimensions—local, national, regional, and international. Accordingly, all member states are required to take the necessary measures to mitigate the impacts of climate change, considering the needs of developing countries, which are more severely affected by the serious consequences of climate change, and recognizing the differences in the circumstances and capabilities of each party to the agreement. This reflects the principle of common but differentiated responsibilities in supporting adaptation measures through funding, information exchange, and knowledge sharing.

In reality, the issue is not as straightforward as described in the provisions of the Paris Agreement. Implementing the principle of climate adaptation requires a system's ability to adapt to climate change, including climate variability and extreme weather events, in order to minimize the severity of damage, benefit from available opportunities, or cope with consequences. This cannot be achieved without international cooperation among all parties to support adaptation efforts through the exchange of information and experiences, funding, enhancing knowledge, and advancing adaptation plans to improve their effectiveness.

For this reason, the principle faces many challenges arising from the unequal nature of obligations and the disparity in bearing the risks of climate change. The challenges of implementing the principle of climate adaptation have thus been described as the climate gap. This gap requires stronger commitments and actions, as confirmed in various sessions of the United Nations Climate Change Conference, as well as in periodic reports and affirmations issued by the United Nations Environment Program.

Significance of the Study:

The importance of this research paper stems from its examination of the obstacles and challenges to implementing the principle of climate adaptation, which has been referred to as the climate gap. Therefore, through this article, we aim to shed light on the concept of this gap, its forms and causes, and how it impacts this principle. The paper also aims to highlight the most important legal measures recommended by relevant international governmental bodies that could help reduce it.

Research Problem:

The focus is placed on the following main research questions:

What are the legal challenges faced by the principle of climate adaptation?

This central issue gives rise to several sub-questions related to the main problem:

- *What is meant by the climate gap?*
- *What are the legal reasons behind its emergence?*

- *What international legal measures are necessary to reduce it?*

Research Methodology:

This research paper is primarily based on the descriptive method, which was used to describe the challenges and causes of the climate gap. The descriptive method dominates this study through an analysis of various related UN reports. We also employed the analytical method to examine the nature of international obligations associated with the implementation of the principle of climate adaptation, and how the nature of these obligations contributes to the creation of the climate gap.

Structure of the Study:

To answer the main research question and its sub-questions, this article is divided into two sections:

The first section addresses the concept of the climate gap and its impact on the principle of climate adaptation, while the second section discusses the internationally recommended legal measures to reduce the climate gap.

Part One: The Concept of the Climate Gap and Its Impact on the Principle of Climate Adaptation

The term “climate gap” refers to the needs, deficiencies, and obstacles that hinder the activation and implementation of the principle of climate adaptation. The discussion of the climate gap is usually linked to issues of climate finance aimed at supporting climate adaptation plans, especially in poor or developing countries⁵.

The climate gap also refers to the lack of sufficient readiness and investment plans to confront climate change and achieve climate adaptation. This topic is also connected to the challenge of reducing greenhouse gas emissions by developed countries⁶. Developed countries bear the greater responsibility for climate change due to their larger contribution to greenhouse gas emissions. Moreover, the capacities, conditions, and capabilities vary among member states, which creates the climate gap in this context.

Section One: The Problem of Applying the Principle of Common but Differentiated Responsibilities Creates the Climate Gap

In fact, the challenges related to achieving and implementing the principle of climate adaptation, or what is referred to as the climate gap, were not accidental. Rather, they have long been the subject of debate and discussion among the parties to the United Nations Framework Convention on Climate Change (UNFCCC). These challenges are closely linked to the nature of common but differentiated responsibilities in international law.

Developing countries have emphasized the idea of equivalence between mitigation and adaptation, asserting a relationship between the two concepts whereby adaptation-related actions and measures require the provision of

resources, capabilities, and financial assistance through the Green Climate Fund, which is to be supported by developed countries. However, the latter have opposed this notion.

The nature of this cooperation and the commitments—which vary among countries based on their economic, scientific, and material capacities—has led to the emergence of challenges and obstacles that hinder the implementation and success of the climate adaptation principle. This has resulted in what is known as the climate adaptation gap.

Thus, what exactly is meant by the principle of common but differentiated responsibilities, how does it affect the implementation of the climate adaptation principle, and how does it contribute to the emergence of the climate gap?

A. The Principle of Differentiated Responsibilities as a Legal Basis for Implementing the Climate Adaptation Principle

The principle of common but differentiated responsibilities is based on the notion that all countries—regardless of their circumstances or level of resources—share responsibility for environmental problems. However, these responsibilities vary due to several factors, such as differences in the level of development, the size of available resources, and the intensity of environmentally impactful activities.

This principle, therefore, implies substantive inequality between developed and developing countries. Under this framework, developed countries are obligated to provide the financial and technological assistance necessary to help developing countries strengthen their capacity to fulfill their international environmental obligations, including the implementation of the climate adaptation principle.

I. Consolidation of the Principle of Common but Differentiated Responsibilities ⁷ in the International Commitment to Climate Adaptation Financing

The principle of common but differentiated responsibilities enshrined the commitment of developed countries to climate finance. It imposes disparities among countries regarding their responsibilities in implementing the climate adaptation principle. This creates many issues, including the so-called weakness and volatility of funding.

1. Commitment of Developed Countries to Climate Finance in the United Nations Framework Convention on Climate Change

The idea of providing financial and technical assistance, including technology transfer, to address climate change originates primarily from the United Nations Framework Convention on Climate Change (Rio Convention 1992). On this legal basis, developed countries voluntarily and unconditionally commit to providing financial aid to developing countries to

undertake mitigation and adaptation actions, with climate finance being additional to previous efforts. These countries are also required to periodically report every two years on the quantity and quality of funding provided.

It is noteworthy that the Rio Convention 1992 did not specify the required amount of climate finance from each member state, nor the source of funding—whether public governmental funds or private funds from companies, institutions, or associations. It also did not clarify the legal nature of these funds, whether they are loans or grants⁸.

2. Commitment to Establish International Funds for Climate Finance

Several funds have been established to finance climate adaptation, such as the Green Climate Fund, the Adaptation Fund, and the Global Environment Facility. The Green Climate Fund⁹ is the largest global fund dedicated to adaptation and mitigation in developing countries.

The legal basis for contributions to the Global Environment Facility¹⁰ lies in the obligation of the countries listed in Annex II of the Framework Convention to renew the resources of the Global Environment Facility. These countries are also required to provide financial contributions to the climate change fund established in 2001, tasked with funding activities and programs related to climate change in energy, industry, agriculture, and forestry sectors in developing countries. The Global Environment Facility is funded through the Clean Development Mechanism project¹¹.

The Copenhagen Accord also decided to establish the Green Climate Fund as a financial mechanism of the Framework Convention to support projects, programs, and policies of developing countries and to finance mitigation measures.

Thus, the commitment to climate finance is subject to a disproportionate obligation based on the capacities of each country, distinguishing developed from developing countries, the latter of which are not required to provide financial support or assistance.

3. Commitment to Climate Finance in the Kyoto Protocol 1997

Article 10 of the Kyoto Protocol 1997 affirmed respect for developing countries' commitments regarding effective implementation of financial assistance, emphasizing that these commitments should consider economic and social circumstances.

4. Commitment to Climate Finance in the Paris Agreement 2015

Article 7 of the Paris Agreement on Climate Change provides a legal framework establishing the principle of adaptation, stating: "Adaptation is a global goal and challenge with multiple local, national, regional, and international dimensions. Parties commit to taking necessary measures to reduce the adverse impacts of climate change while contributing

to sustainable development, taking into account the needs and circumstances of developing countries that may be affected by climate change damages, and considering the different situations of each party under the Agreement."

II. Consolidation of the Principle of Common but Differentiated Responsibilities in the International Commitment to Reducing Greenhouse Gas Emissions

The most important obligation on developed countries listed in Annex I of the Framework Convention is to reduce their emissions by at least five percent. These countries also submit data specifying their carbon credit levels ¹², applying the principle of common but differentiated responsibilities to adapt to the different situations faced by countries.

1. Commitment to Reducing Greenhouse Gas Emissions in the Paris Agreement 2015

A heated debate arose concerning the nature of obligations to reduce greenhouse gas emissions. One of the main challenges was including the goal of mitigation according to the recommendations of the Intergovernmental Panel on Climate Change to limit warming to 2 degrees Celsius.

Article 4 of the Paris Agreement stipulates the obligations of parties: paragraph 1 highlights the need to achieve a balance between anthropogenic emissions and their removal by sinks. Paragraphs 2 and 3 emphasize enhancing national efforts to reduce emissions ¹³, while paragraphs 5 and 6 provide support to developing countries and assist them in preparing their plans ¹⁴.

The Paris Agreement acknowledges that maximum emission reduction will take longer for developing countries due to limited capacities, necessitating the principle of common but differentiated responsibilities. Each party must report on its nationally determined contribution and implement necessary measures at the local level according to its capacities, reporting every five years ¹⁵. Reports are submitted to the Conference of Parties, as reaffirmed in paragraphs 7 and 8, which discuss economic diversification plans and emission reductions.

Paragraphs 9, 10, and 11 refer to the procedural system for registering contributions by the parties ¹⁶.

2. Commitment to Reducing Greenhouse Gas Emissions in the Kyoto Protocol

The Kyoto Protocol identified the targeted gases ¹⁷ and requires developed countries to make progress in reducing greenhouse gases to varying degrees, focusing on voluntary contributions based on each country's capabilities and political will.

Thus, the Kyoto Protocol requires developed countries to achieve progress in reducing greenhouse gases at different levels.

III. Consolidation of the Principle of Common but Differentiated Responsibilities in the International Commitment to Achieve Adequate Preparedness and Planning for Climate Adaptation

International efforts for climate adaptation continue based on obligations arising from relevant international agreements such as the United Nations Framework Convention on Climate Change and the Paris Agreement. Among the most important international obligations is the development of investments and adequate plans to address climate change, through technological support for developing countries. This includes applying methods to reduce greenhouse gases and identifying climate-friendly technologies.

Technological support involves increasing efficiency in energy supply and generation and preparing plans and programs to mitigate and adapt to the effects of climate change. Developed countries are obligated to commit to these efforts according to the Framework Convention, which urges developed countries listed in Annex II to take all possible measures to enhance the transfer of environmentally sound technologies to developing parties ¹⁸, through comprehensiveness, feasibility, integration, monitoring, and evaluation.

Section Two: Forms of the Climate Gap

Climate adaptation has now become an integral part of climate policy measures around the world. This is achieved through the adoption of national, subnational, and sectoral adaptation planning tools, to avoid what cannot be managed and manage what cannot be avoided. In recognition of the urgent need for climate adaptation policies, international efforts have intensified to prevent the worsening of severe impacts caused by either nature or human activity, aiming to control the climate crisis as much as possible.

Despite the dual policies of both mitigation ¹⁹ and adaptation ²⁰, most UN reports indicate the emergence of what is known as the climate adaptation gap. To further elaborate on the forms of this gap, the following points provide a detailed explanation:

A. The Climate Finance Gap

The finance gap refers to the quantitative identification of adaptation needs, that is, the difference between the estimated financial needs for adaptation measures and the actual funding available.

Despite the importance of climate finance, it remains insufficient and delayed. Funding from developed countries and multilateral agencies continues to favor mitigation over adaptation, which fails to meet the immediate adaptation needs of the most vulnerable countries. This represents a major challenge to climate adaptation.

Many UN reports have noted that there remains a significant gap between adaptation funding, which so far represents only about 20% of total climate finance—and the estimated adaptation costs in developing countries, which are five to ten times higher than current adaptation finance flows ²¹.

I. The Funding Gap for Adaptation Measures in Developing Countries

When comparing the financial needs for climate adaptation measures with typical costs and public international financial flows dedicated to adaptation in developing countries, international public climate finance flows have decreased by 15%, with a 66% drop recorded over the past five years. This is due to barriers specific to adaptation, such as a lower proportion of grants compared to loans, and a lack of knowledge of adaptation policies. This situation has necessitated a doubling of financial flows to reach 40 billion USD; a commitment made during the 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change²².

II. Limited Financing from the Four Main Funds

Several funds were established to support climate adaptation finance, but many factors hinder their effective financing role. The current system of lending money to countries for climate and sustainable development is flawed—being “short-sighted, crisis-prone, and disconnected from today’s economic reality,” especially since it was created before the emergence of climate change as a phenomenon ²³.

III. Lack of Gender Equity and Social Inclusion in Climate Finance

Climate change affects social identities, including gender, origin, age, race, or migration status. A report by the United Nations Environment Program (UNEP) explored the relationship between climate adaptation costs and the integration of gender equity and social inclusion. It concluded that only 20% of funding was allocated to such activities—a very low amount. The report also found that other aspects of social inclusion received little attention in financial flows. Therefore, it called for climate finance to be directed toward supporting gender and social inclusion, to foster a more just and equitable adaptation process.

B. The Gap in Readiness Capacity

Readiness refers to a country’s use of all available resources and necessary measures—such as planning processes, strategies, policies, or legislation—to respond to global climate change, as outlined in the **Paris Agreement**. International efforts to adapt to climate change continue based on countries’ international obligations, especially the adherence to global standards such as inclusivity, enforceability, integration, monitoring, and evaluation.

I. Insufficient Investment and Planning for Climate Adaptation

This refers to the growing need for new adaptation plans and effective measures. The actions taken so far are inadequate and fall short of meeting

the goals set out in the Paris Agreement. This is due to a decline in adaptation measures supported by the four major climate funds, and weak standards for appropriate climate adaptation planning—such as inclusivity, risk treatment options, integration, and stakeholder participation.

II. Lack of National Instruments for Adaptation Planning

Five out of every six parties to the United Nations Framework Convention on Climate Change (UNFCCC) have only one adaptation plan or strategy. Half of them possess only one or two national instruments that require governments to develop adaptation plans. Although these plans are effective to a certain extent, they remain weak in addressing climate change. Additionally, 15% of countries still lack a national adaptation planning instrument ²⁴.

C. The Gap in Rapid Greenhouse Gas Emissions

The emissions gap refers to the difference between projected global greenhouse gas emissions resulting from the full implementation of the most recent nationally determined contributions, and the emissions levels required by the least-cost pathways that align with the long-term temperature goal of the Paris Agreement²⁵.

I. Failure to Take Strict Measures to Reduce Emissions in Developed Countries

Reports by the United Nations Environment Program (UNEP), known as the Emissions Gap Reports, highlighted the reasons for this gap and its record-high levels. The gap is due to inadequate climate action and a lack of transformation, in addition to record levels of greenhouse gas emissions. Although countries have been urged to revise their 2030 targets, the progress remains insufficient. Nationally determined contributions are still inadequate, the emissions gap remains very wide, and the credibility and feasibility of achieving net-zero emissions remain uncertain. This is evident in the following²⁶:

- A new record level of 57.1 gigatons of CO₂-equivalent emissions was recorded.
- A failure to fulfill global pledges to reduce emissions by 2030.
- The absence of a peak in greenhouse gas emissions prolongs the gap until 2035.
- The emissions gap between 2030–2035 remains large compared to pathways that limit global temperature rise ²⁷.

II. Inability to Control Natural Disasters and Heatwaves Caused by Greenhouse Gases

The effects of climate change are increasing globally. Prolonged droughts in Africa, unprecedented floods in South Asia, and extreme heatwaves in South Asia are all worsening climate risks across multiple regions ²⁸.

Despite the existence of climate adaptation plans and programs, the world still faces a natural disaster gap. Reports by both the United Nations Environment Program (UNEP) and the Intergovernmental Panel on Climate Change (IPCC) identified the causes of this gap, attributing it to global surface temperature changes and either weak or absent adaptation measures. Thus, diligent work toward climate adaptation is critically important, especially when combined with mitigation efforts. However, even ambitious investment cannot prevent climate change impacts entirely, and losses and damage remain inevitable ²⁹.

Part Two: International Legal Measures Recommended to Bridge the Climate Gap

Bridging the climate gap is of utmost importance and stems from states' commitment to implement the principle of climate adaptation and to confront its challenges and obstacles. This can only be achieved through the deployment of more necessary tools and the adoption of all measures and procedures aligned with the current or anticipated situation.

Section One: International Measures to Bridge the Finance Gap

Given the magnitude of the challenge posed by the adaptation finance gap, bridging this gap will require the adoption of innovative approaches to mobilize additional financial resources. Enhancing enabling factors is crucial to unleashing innovative financing for adaptation. Similarly, investment will be necessary in strategic and transformative adaptation in the more difficult-to-finance areas. Climate adaptation financing must shift from short-term, reactive, project-based measures to proactive, strategic, and transformational adaptation interventions.

A. The New Climate Finance Goal

The new financial target aims to direct more funding toward the urgently needed climate action in developing countries. This would enable developing nations to elevate their climate ambitions. The amount of financing needed is enormous, estimated at approximately 2.4 trillion US dollars annually by 2030 to achieve climate goals—four times the current investment levels. Around 1 trillion US dollars should be raised annually.

I. Adoption of the New Collective Quantified Goal (NCQG)

Another climate finance commitment emerged from the Paris Agreement³⁰, known as the New Collective Quantified Goal (NCQG), which is to be agreed upon at the 29th Conference of the Parties (COP29). This will determine the

volume of financial resources that developed countries must provide and mobilize after 2025 to support developing countries in their climate actions³¹.

This goal was a central demand at the 29th **Conference of the Parties** in 2025, also known as the Climate Finance Conference. Developed countries committed to doubling their adaptation finance—a crucial step to address the imbalance between mitigation and adaptation finance. This includes increasing public support to 1 trillion dollars annually for the post-2025 NCQG³².

II. Doubling Climate Adaptation Finance

The United Nations Secretary-General has called for doubling adaptation finance, ensuring it is distributed fairly and without imposing additional constraints. Alarming, more than 60% of adaptation financing comes in the form of loans rather than grants—a percentage that continues to rise. This intensifies the burden on developing countries, which may need to spend up to 387 billion US dollars annually by 2030 and significantly more by 2050, according to the United Nations Environment Program (UNEP)³³.

A. Enhancing the Role of Multilateral Funds

Climate finance from multilateral funds helps countries meet their Nationally Determined Contributions (NDCs) and implement National Adaptation Plans. Therefore, significant progress toward achieving the goals of the Paris Agreement requires sufficient financing through these funds. Developed countries are expected to provide at least 100 billion US dollars annually to combat the climate crisis. However, the global gap remains enormous, reaching 850 billion dollars annually by 2030³⁴.

Thus, it is essential to enhance the role of multilateral climate finance funds. The Secretary-General has called for reforming the international financial system to make climate finance more accessible and capable of responding to the scale of the climate crisis.

I. Climate Finance for Smallholder Farmers and Landholders

Smallholder farmers are on the frontlines of climate change, living in the most vulnerable natural environments—such as hillsides and floodplains—and depending on fragile natural resources for their livelihoods. Rising temperatures, erratic rainfall, and sea level rise threaten their survival. To address this, the Green Climate Fund (GCF) launched a flagship adaptation Program for smallholder agriculture.

By the end of September 2021, the GCF had committed 990 million US dollars in climate finance across 70 projects, with an additional 300 million dollars allocated. The Program reached six million vulnerable producers in 41 countries through its adaptation efforts for smallholder agriculture³⁵.

II. Designating Fund Operations for Loss and Damage

The countries most affected by loss and damage are vulnerable developing nations ³⁶, suffering disproportionately and unfairly. These impacts include destroyed infrastructure, depleted economies, and the loss of vast land areas due to rising sea levels.

Targeted finance for loss and damage helps cover the costs of climate-related impacts through various financial tools. In 2022, the Loss and Damage Fund was established and activated in 2023, hosted by the World Bank, with initial pledges totaling approximately 700 million US dollars to begin capitalizing the fund ³⁷.

Section Two: New Climate Pledges to Reduce Greenhouse Gas Emissions

Achieving the goal of keeping global warming within 1.5°C remains technically feasible, but it requires improvements to current policies. Without fulfilling the existing commitments by 2030, the world could face a catastrophic temperature increase of up to 3.1°C. So, what are the most important new pledges to reduce emissions?

A. Proper Design of Nationally Determined Contributions (NDCs)

The full implementation of unconditional NDCs under the Paris Agreement would place the world on a trajectory of global temperature rise between 2.5°C and 2.9°C. However, full implementation of conditional NDCs could reduce this to 2.5°C ³⁸.

I. Defining Proper Design of National Contributions

Nationally Determined Contributions (NDCs) aim to maintain the possibility of achieving the long-term objective of the Paris Agreement, which is to limit global warming to below 2°C while striving to reduce it to 1.5°C. This can only be achieved by working toward the reduction of greenhouse gas emissions by 2030.

Thus, NDCs are linked to overcoming the emissions gap by addressing governance, policy, institutional and technical barriers, financial support from developed countries, and the design of the international financial structure ³⁹. Among the most important recommendations adopted by the United Nations Environment Program (UNEP), which countries should adhere to when preparing their NDCs, are:

- 1. **Meeting the highest standards:** Include all gases listed in the Kyoto Protocol, cover all sectors, and set quantifiable targets, clarifying conditional and unconditional elements.*
- 2. **How to develop national plans:** Prioritize sustainable development and its goals, including resilience, adaptation, and a just transition, aligned with international efforts to reduce emissions.*
- 3. **Ensuring transparency and clarity:** Countries must be transparent in presenting their contributions to global warming.*

4. ***Relying on detailed and executable plans:*** Sectoral benchmark criteria and all mitigation potentials must be considered. The plans should show how they contribute to renewable energy deployment and include review and accountability mechanisms ⁴⁰.

II. The Primary Responsibility of the G20 in Closing the Emissions Gap

The Paris Agreement provides flexibility in translating global milestones into national targets. Global models can help determine what is needed from national contributions to reach the temperature goals outlined in the agreement. This will only be achieved through:

- The G20 must act faster and further to fulfill NDC goals.
- Some G20 countries must reduce emissions at a faster pace than others.
- Intensifying international cooperation, including climate finance, to meet global mitigation goals.
- Applying transparency and clarity by each country regarding how it will implement its NDCs ⁴¹.

To overcome emissions gap challenges, ambitious sectoral targets and plans must be included. G20 has a decisive role in this stage, with many opportunities to achieve this objective.

Thus, realizing mitigation potential requires the swift and unprecedented implementation of political measures through a whole-of-government approach, focused on sustainable development, resilient to climate change, effectively addressing barriers, and stimulating public and private sector action.

Increasing investments in mitigation efforts by at least six-fold⁴², alongside investment in and focus on mitigation activities and properly directed climate financing, is crucial to closing this gap.

B. Pledging to Rely on Nature-Based Solutions

Nature-based solutions refer to the activation of national biodiversity action plans developed by countries under the United Nations Convention on Biological Diversity, aimed at reducing impacts on species and ecosystems. These plans integrate nature-based solutions in adaptation, finance, and implementation efforts, including scaling up renewable energy capacity, phasing out fossil fuels, increasing available financing, and advancing technology for developing countries. Among the most important nature-based proposals to close the emissions gap:

I. Relying on Photovoltaic and Wind Energy

Relying on both solar photovoltaic energy and wind energy could contribute to 27% of total greenhouse gas reduction potential by 2030 and 38% by 2035. In the forestry sector, reducing deforestation, reforestation, and improving forest management can reduce emissions by 19–20% in 2030–2035. This is in

addition to transitioning to electricity and alternative fuels across many sectors.

II. Accelerating Implementation of Disaster Risk Reduction Measures

*This involves fully utilizing the potential of ecosystems to provide adaptation benefits. Based on analysis and discussions with experts in ecosystem-based adaptation, five broad categories of actions have been proposed to overcome current barriers and scale up global implementation of ecosystem-based adaptation*⁴³.

III. Supporting Parties and Funding Agriculture and Food System Actions

*This aims to enhance resilience to climate change and address the food crisis affecting more than 300 million people, leading to food insecurity*⁴⁴.

IV. Ecosystem-Based Adaptation

*This refers to enhancing the ability of communities to adapt to the effects of climate change and can be a key part of national and global adaptation efforts. It supports the role of ecosystem-based adaptation in helping societies adapt to climate change while also contributing to biodiversity conservation, climate mitigation, and sustainable development*⁴⁵.

Conclusion

The greatest obstacle hindering the realization of the principle of climate adaptation, also known as the climate gap, has long been associated with weak climate finance and the inability to reduce greenhouse gas emissions. Despite the international and national efforts exerted to achieve this principle, the desired outcomes have yet to be attained. The nature of international commitments linked to the principle of Common but Differentiated Responsibilities (CBDR) has led to what is known as the ambiguity of responsibilities, resulting in the climate adaptation gap.

As a summary of what has been presented in this article, a set of findings and recommendations are outlined as follows:

Findings

- *The climate gap has constituted a barrier to activating the principle of climate adaptation at both national and international levels.*
- *The importance of climate finance in supporting climate adaptation measures and emission reductions.*
- *Nationally Determined Contributions (NDCs) to operationalize climate adaptation remain insufficient to meet the goals of the Paris Agreement.*
- *High financing costs lead to national debt burdens, necessitating financial borrowing.*

- *The greatest threat or challenge creating the climate gap is weak financing and the inadequate activation of international and national mechanisms based on this policy.*
- *Lack of control over natural phenomena and poor reliance on nature contribute to the emissions gap.*

Recommendations

- *Raising awareness of the risks of the climate gap and its negative impacts on the implementation of the climate adaptation principle.*
- *Developing innovative methods and policies to provide necessary financing to support adaptation plans, with an emphasis on proactive adaptation.*
- *Enhancing the role of Paris Agreement Parties' funds.*
- *Prioritizing support for climate adaptation programs in developing countries.*
- *Proper design of Nationally Determined Contributions (NDCs) to reduce emissions.*

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¹*United Nations, United Nations Framework Convention on Climate Change (UNFCCC), adopted at the Rio de Janeiro Earth Summit, 1992, entered into force in March 1994, available at: <https://unfccc.int/resource/docs/convkp/conveng.pdf> (consulted on 22/05/2025 at 10:00).*

²*The Framework Convention was adopted at the Rio de Janeiro Conference in 1992, serving as a fundamental reference for global efforts to combat the rise in Earth's temperature. It entered into force in March 1994 and was ratified by 194 countries.*

³*The Kyoto Protocol, named after the city where it was concluded, aims to regulate the legal protection of the climate with a commitment period from 2008 to 2012.*

⁴*The Paris Agreement of 2015.*

⁵*The United Nations defined the principle of climate adaptation as: "Adjusting to the consequences of climate phenomena and working to protect people and communities from their effects, which include fires, floods, droughts, unusual heat or cold, or rising sea levels." See Climate Dictionary; What is the difference between mitigation and adaptation? Article published online at <https://alain.com/article/mitigationadaptationclimatechangedefinitio>, accessed 26/04/2025 at 10:20.*

⁶**Sandrine Maljean-Dubois**, Mathieu Wemaere, *COP21! La diplomatie climatique de RIO1992 à Paris2015*, Editions A. PEDONE, Paris, 2015, p.11.

⁷*Ibid.*

⁸It means that countries commit to environmental protection based on different foundations and standards. This disparity is estimated considering the special needs of countries and the future of economic development, holding countries that contribute significantly to causing any environmental problem largely responsible through financial support and technology transfer. See **Sabah Al-Ashawi**, *International Responsibility for Environmental Protection*, 1st edition, Dar AlKhaldounia, Algeria, 2010, p.180.

⁹**Faris Alawi**, "International Efforts to Confront Greenhouse Gases between Responsibility for Welfare Gases and the Right to Survival Gases," *Journal of Literature and Social Sciences*, Mohamed Lamine Debaghine University, Setif 2, Vol.18, No.01, 2021, Algeria, p.206.

¹⁰Established under the United Nations Framework Convention on Climate Change (UNFCCC), the fund aims to support a radical shift in the global response to climate change, dedicating resources to low-emission and climate-resilient projects and programs in developing countries. The main fund is located in Incheon, South Korea, governed by a 24member board supported by a secretariat, founded in 2010.

¹¹The Global Environment Facility contributed to financing investments and technology, providing \$13.5 billion in collaboration with other sources to support 3,900 projects worth \$65 billion in more than 165 countries for energy control, renewable energy, and low-carbon technologies. See: *Climate Finance and Justice*, United Nations, Climate Action, website <https://www.un.org/climate-finance>.

¹²The Clean Development Mechanism allows Annex I countries under the Climate Change Convention to implement projects reducing greenhouse gas emissions within Annex I countries. The emission reductions can be used by Annex I parties to help meet their commitments. For more information, see **Amal Fikiri**, "Clean Development: An International Investment System to Promote Environmental Sustainability," *Afaaq Journal of Sciences*, University of Lounici, Blida, Vol.06, No.3, 2021, p.334.

¹³Regarding the reduction amounts, they vary from country to country depending on pollution levels, as follows: European Union countries, Central European countries, and Switzerland reduce these gases by 8%; Canada, Japan, and Poland reduce by 6%; Norway reduces by 1%.

¹⁴See paragraphs three and four of Article 3 of the Paris Agreement.

¹⁵See Articles 5 and 6 of Article 3 of the Paris Agreement.

¹⁶See Articles 5 and 6 of Article 3 of the Paris Agreement.

¹⁷See Articles 7 and 8 of Article 3 of the Paris Agreement.

¹⁸The targeted gases for reduction in the Kyoto Protocol included: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Reduction amounts vary by country depending on pollution levels, as follows: EU countries, Central Europe, and Switzerland reduce by 8%; Canada, Japan, and Poland by 6%; Norway by 1%.

¹⁹See paragraph five of Article 4 of the United Nations Framework Convention on Climate Change.

²⁰The European Agency defines mitigation as: "Measures aimed at reducing climate change by preventing or lowering greenhouse gas emissions. For example, many mitigation measures include renewable energy projects relying on clean sources such as solar and wind power to reduce traditional energy sources that produce carbon emissions, or afforestation projects that help absorb carbon." For more details, see Climate Dictionary, What is the difference between mitigation and adaptation? Op. Cit.

²¹Many measures are considered adaptation, such as early warning systems helping to predict natural disasters for proactive response, climate-smart agriculture projects that develop drought-resistant or heat-tolerant seeds, or coastal barriers to protect coastal cities. For more information, see Climate Dictionary, Op. Cit.

²²According to the "Adaptation Gap" report issued by the United Nations Environment Program (UNEP), annual adaptation costs in developing countries are estimated between \$160 billion and \$340 billion by 2030, and between \$315 billion and \$565 billion by 2050. The report noted a 5% increase in adaptation funding compared to the previous year, but stressed that this increase is insufficient and that there is an urgent need for political will and long term investments in adaptation. Similarly, the Climate Policy Initiative reported that from 2011 to 2020, the world provided approximately \$571 billion in climate finance for mitigation versus only \$46 billion for adaptation. Another report from the initiative last year found that annual climate finance flows to Africa in 2020 did not exceed \$30 billion, only 11% of its \$277 billion annual needs to meet climate goals by 2030. The report called for a sixfold increase in adaptation funding and a thirteenfold increase in mitigation funding for Africa. For more information, see UNEP, Adaptation Gap Report 2023, Executive Summary, Nairobi, <https://www.unep.org/adaptationgapreport2023>.

²³*United Nations Environment Program, Adaptation Gap Report 2023, Op. Cit.,.*

²⁴*Ibid.*

²⁵*Ibid.*

²⁶*United Nations Environment Program, Emissions Gap Report 2023, "Closing the Gap on Climate Action," Executive Summary, Nairobi, <https://www.unep.org/adaptationgapreport2023>.*

²⁷*Ibid.*

²⁸*United Nations Environment Program, Emissions Gap Report 2024, "Closing the Gap on Climate Action," Executive Summary, Nairobi, <https://www.unep.org/adaptationgapreport2023>.*

²⁹*United Nations Environment Program, Making Little and Slow Progress, Failure to Adapt Exposes the World to Danger, Executive Summary, Adaptation Gap Report 2022, Nairobi, <http://www.unep.org/adaptationgapreport2022>.*

³⁰*United Nations Environment Program, Adaptation Gap Report 2020, The Looming Threat: Climate Adaptation in a Post Pandemic World, Executive Summary, Nairobi, <https://www.unep.org/adaptationgapreport2020>.*

³¹*Ibid.*

³²*United Nations Environment Program, Adaptation Gap Report 2021, The Looming Threat: Climate Adaptation in a Post Pandemic World, Executive Summary, Nairobi, <https://www.unep.org/adaptationgapreport2021>.*

³³*Ibid.*

³⁴*Ibid.*

³⁵*Ibid.*

³⁶*Partners play a crucial role in providing climate finance to small producers. The fund is accredited by the Adaptation Fund, the Green Climate Fund, and the Global Environment Facility. From 2019 to October 2021, the fund received \$283.6 million from these funds, marking progress toward providing \$500 million in climate finance. See: Adaptation Program, United Nations, <https://www.ifad.org/ar/>*

³⁷*An analysis conducted in 2023 found that between 2000 and 2019, the world incurred at least \$2.8 trillion in losses and damages caused by climate change, at an estimated cost of approximately \$16 million. See Adaptation Program, United Nations, Op. Cit.*

³⁸*United Nations Environment Program, Adaptation Gap Report 2020, Op. Cit.*

³⁹*United Nations Environment Program, Emissions Gap Report 2024, Op. Cit.*

⁴⁰*Ibid..*

⁴¹*Ibid.*.

⁴²*Global investments required to achieve NetZero emissions are estimated at about \$0.9 to \$1.2 trillion annually between 2021 and 2050. This is a large amount but manageable in the broader context of the global economy and financial markets estimated at \$110 trillion. See United Nations Environment Program, Emissions Gap Report 2024, Op. Cit.*

⁴³*Ibid.*.

⁴⁴*United Nations Environment Program, Making Little and Slow Progress, Failure to Adapt Exposes the World to Danger, Executive Summary, Adaptation Gap Report 2022, Nairobi, <http://www.unep.org/adaptationgapreport2022>.*

⁴⁵*Ibid.*.