



# Closing the Finance Gap For Developing Economy Climate Needs

Columbia SIPA Capstone | Spring 2023



## **Capstone Workshop**

School of International and Public Affairs – Columbia University

**Client:** Climate Policy Initiative

**Authors:** Farah Aladsani, Neil Ke-Jian Chin, Calista Elvina Jesslyn, Serena Shione Hirayama, Mallika Pal, Henrike Ruth Raedler, Yunan (Beverly) Yang, Adeline Zhang

**Faculty Advisor:** Jeffrey Potent

**April 2023**

# Table of Contents

<b>Acronyms and Abbreviations</b>	<b>5</b>
<b>Acknowledgments</b>	<b>7</b>
<b>Abstract</b>	<b>8</b>
<b>1. Project Overview</b>	<b>9</b>
1.1. Project Background	9
1.2. Research Objectives	9
<b>2. Methodology</b>	<b>10</b>
<b>3. Case I: Colombia</b>	<b>13</b>
3.1. Country Background	13
3.1.1. Country Profile	13
3.1.2. Policy Context	14
3.2. Assessment of Climate Commitments and Needs	16
3.2.1. Summary of Colombia's Updated NDC 2020	16
Adaptation Goals	16
Mitigation Goals	17
3.2.2. Summary of French Development Agency (AFD) & Government of Colombia's Long-Term Climate Strategy	18
3.2.3. Summary of Center for Global Energy Policy (CGEP) Report	19
3.2.4. Key Findings	19
3.3. Climate Finance Needs Gap Analysis	20
3.3.1. Climate Finance Flows	20
3.3.2. Climate Finance Needs Gap	22
3.3.3. Climate Finance Mobilization Gap	23
3.3.4. Barriers to Climate Finance in Colombia	24
3.4. Evaluation of Transformative Impact	28
3.4.1. Thematic Impact Evaluation	28
Food Insecurity	30
Thematic Program: Food and Land Use (FOLU) Coalition	30
Biodiversity	31
Thematic program: BiodiverCiudades	32
3.4.2. Project-Level Evaluation	33
Project One: The Mainstreaming Sustainable Cattle Ranching Project	33

Project Two: The Carbon Neutral Cities project	36
<b>3.5. Conclusions and Recommendations</b>	<b>40</b>
3.5.1. Colombia Case Study Conclusions	40
3.5.2. Recommendations for Colombia	42
<b>4. Case II: Morocco</b>	<b>44</b>
<b>4.1. Country Background</b>	<b>44</b>
4.1.1. Country Profile	44
4.1.2. Policy Context	45
<b>4.2. Assessment of Climate Commitments and Needs</b>	<b>46</b>
4.2.1. Summary of Morocco’s Updated NDC 2021	46
Adaptation Goals	47
Mitigation Goals	47
4.2.2. Other Estimates of Climate Financing Needs: World Bank and CPI Reports	48
<b>4.3. Climate Finance Needs Gap Analysis</b>	<b>49</b>
4.3.1. Climate Finance Flows	49
4.3.2. Climate Finance Needs Gap	51
4.3.3. Climate Finance Mobilization Gap	51
4.3.4. Barriers to Climate Finance in Morocco	52
<b>4.4. Evaluation of Transformative Impact</b>	<b>53</b>
4.4.1. Thematic Impact Evaluation	53
Water Scarcity	54
Flood Resilience	54
4.4.2. Project-Level Evaluation	55
Project One: Project to Strengthen Drinking Water Production and Improve Technical and Commercial Performance (PRPTC)	55
Project Two: Koudia Al Baida Wind Farm Expansion Project	58
<b>4.5. Conclusions and Recommendations</b>	<b>60</b>
4.5.1. Case Study Conclusions	60
4.5.2. Recommendations for Morocco	61
<b>5. Recommendations for CPI</b>	<b>63</b>
<b>References</b>	<b>65</b>
<b>Annex</b>	<b>71</b>
Annex I: Colombia Stakeholder Profiles	71
Annex II: Colombia’s 2050 Strategy	74
Annex III: Morocco Stakeholder Profiles	75

## Acronyms and Abbreviations

Acronyms	Abbreviations
<b>ADEREE</b>	Agency for Development of Renewable Energy and Energy Efficiency
<b>AFD</b>	French Development Agency
<b>AFOLU</b>	Agriculture, Food, and Land Use
<b>CAF</b>	Development Bank of Latin America
<b>CEPAL</b>	The United Nations Economic Commission for Latin America and the Caribbean
<b>CGEP</b>	The Center on Global Energy Policy
<b>CICC</b>	Colombia's National Council on Climate Change
<b>CPI</b>	Climate Policy Initiative
<b>DWS</b>	Drinking Water Supply
<b>E2050</b>	Long-Term Climate Strategy
<b>EDF</b>	Électricité de France
<b>FAO</b>	Food and Agriculture Organization
<b>FELD</b>	Food, Environment, Land, and Development
<b>FOLU</b>	Food and Land Use
<b>GCF</b>	Green Climate Fund
<b>GDP</b>	Gross Domestic Product
<b>GEF</b>	Global Environment Facility
<b>GET</b>	Global Environment Facility Trust Fund
<b>GHG</b>	Greenhouse Gas
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>GLCF</b>	Global Landscape of Climate Finance
<b>IDB</b>	Inter-American Development Bank
<b>IMF</b>	International Monetary Fund

<b>IRENA</b>	International Renewable Energy Agency
<b>LAC</b>	Latin American and Caribbean
<b>MASEN</b>	Moroccan Agency for Sustainable Energy
<b>MRV</b>	Measurement, Reporting, and Verification
<b>NDC</b>	Nationally Determined Contribution
<b>NIS-GHG</b>	National Inventory System for GreenHouse Gas
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>ONEE</b>	National Office of Electricity and Drinking Water
<b>PES</b>	Payment for Ecosystem Services

## Acknowledgments

This report was produced for the Climate Policy Initiative in conjunction with Columbia University's School of International and Public Affairs (SIPA) as a Capstone Consultancy project. The authors Farah Aladsani, Neil Ke-Jian Chin, Calista Elvina Jesslyn, Serena Shione Hirayama, Mallika Pal, Henrike Ruth Raedler, Yunan (Beverly) Yang, Adeline Zhang are SIPA graduating students. Any views expressed herein are the author's own and do not necessarily represent those of SIPA.

We would like to express our deepest gratitude to our interviewees who provided us with valuable information to support our research. We would also like to extend our gratitude to our mentors, and advisors, Suzanne Hollmann, Director of the Columbia Capstone Program, Saleha J. Awal, Capstone Workshop Program Coordinator, and their team, who made this research possible. Special thanks to Nicole Pinko, Dr. Mauricio Cárdenas, Nicolás Galarza, and our Faculty Advisor, Jeffrey Potent, whose advising and review guided us throughout this research project.

## Abstract

The 'Closing the Financing Gap for Developing Economy Climate Needs' Spring 2023 Project supplements the Climate Policy Initiative's Global Landscape of Climate Finance (GLCF) 2021. In particular, the team analyzed whether financing flows tracked in the GLCF and elsewhere have corresponded to stated climate finance needs. Stated climate needs are sourced from national policy documents such as Nationally Determined Contributions (NDCs) and long-term strategies, as well as independent policy analysis reports.

Based on this analysis, the project also considers the extent to which global climate finance is being directed towards underserved markets and otherwise holds potential for transformative change outside of business as usual. These questions are explored through country case studies on Colombia and Morocco. These countries have been selected based on a series of filtering criteria, including granularity of national climate commitments, institutional capacity, and team access to country experts.

The project incorporates these case studies into a report which includes a needs gap assessment between national/sectoral climate finance needs and flows and an examination of how specific mitigation and adaptation projects have been previously financed. These project-level evaluations are utilized to granularly identify factors that support transformative impact and additionality. In summary, the project provides a new lens through which the data in the GLCF can be understood and a framework for how to measure the impacts of climate finance flows and initiatives in developing economies.

# 1. Project Overview

This capstone project aims to expand upon previous work done by the client, Climate Policy Initiative (CPI) in their publication *Global Landscape of Climate Finance: A Decade of Data*<sup>1</sup> by incorporating country case studies and a new set of research questions.

## 1.1. Project Background

CPI is an independent, not-for-profit organization founded in 2009 in San Francisco. It is an analysis and advisory organization with deep expertise in finance and policy, seeking to help governments, businesses, and financial institutions drive economic growth while addressing climate change.<sup>2</sup>

Since 2010, CPI has been tracking and analyzing global climate finance flows. CPI annually publishes the *Global Landscape of Climate Finance (GLCF)*, in which it monitors domestic and international climate finance flows from the public and private sectors.

## 1.2. Research Objectives

At the request of the client, two primary research questions are assessed:

Whether financing flows, as tracked in the GLCF or other sources, match stated national climate finance needs; and

Whether these flows are transformative with opportunities for greater scale and applicability.

Therefore, research objectives aim to extend CPI's Landscape methodology by analyzing sources and uses of climate finance at the national level, provide in-depth country research, incorporate additional analytical frameworks, and identify new perspectives or patterns.

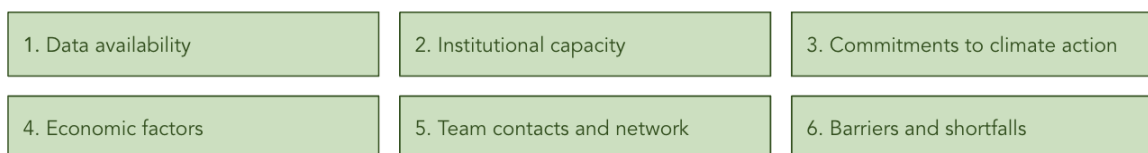
---

<sup>1</sup> [Global Landscape of Climate Finance: A Decade of Data](#)

<sup>2</sup> [Climate Policy Initiative](#)

## 2. Methodology

First, for conducting in-depth case studies, six selection criteria are defined to choose the country cases:



On the basis of these criteria and in consultation with CPI, a shortlist of 10 countries is created for further review: the African countries Morocco, Ethiopia, Kenya and Burkina Faso; Colombia and Brazil in Latin America; and the Asian countries Bangladesh, India, Indonesia, Pakistan.

After conducting the country assessments, Colombia and Morocco are selected as case studies, starting with Colombia as a pilot country.

Figure 2.1. Summary of country assessment on Colombia

Country assessment		
Criteria	Colombia	Morocco
1. Data availability	Monitoring, Reporting, and Verification (MRV) system   Updated NDC   Ranked #3 in OECD Digital Government Index 2019	Sector level climate finance data through CPI GLCF   Cost estimates of adaptation and project-level mitigation efforts in NDC
2. Institutional capacity	37th member of OECD   BNEF Climatescope ranks Colombia #3 among emerging markets and number #20 globally	Ranked #7 in Climate Change Performance Index   BNEF ranks #23 (fairly high amongst EMs   Governance and financial capacity building
3. Commitments to climate action	Significant climate commitments outlined in NDC   Supportive policy context	Significant climate commitments outlined in NDC   Climate change a national priority
4. Economic factors	50% of Colombia's export revenues come from oil and mining   7.2% of GDP from agriculture sector	76% GHG emissions from energy sector   Great economic potential for renewable energy
5. Team contacts and network	Notable connections within SIPA as well as within the team to Colombian policymakers	Notable connections through Columbia Global Energy Summit (April 12, 2023)
6. Barriers and shortfalls	Uncertainties due to current macroeconomic and political challenges	Limited fiscal capacity   Electricity mix heavily relies on coal   Limited private financing

Source: Author

The corresponding case study methodology which is divided into three parts.

- **Part I** of analysis involved an assessment of the case study country's climate finance commitments and current policy landscape. Furthermore, climate finance needs are

identified as stated in National Determined Contribution (NDC) and other relevant documents such as national climate strategies.

- **Part II** encompassed a needs gap analysis in which measured climate finance flows (as tracked in public databases) are assessed against climate finance needs. Using the data gathered, key shortfalls in climate finance flows identified and linked to likely barriers.
- **Part III** aimed at analyzing the potential for transformative change through thematic and project-level evaluations. The analysis focused on the potential replicability, scalability and impact of existing projects and initiatives. In the thematic impact evaluation, the evaluation process starts with identifying areas of key concern in each case study country. In the project-level evaluation, the objective is to identify climate projects with a novel design and assess their potential scalability.

In the data-gathering process, numerous documents and reports were consulted, ranging from national strategies and third-party research papers to local policy documents and specific project documents. For the case of Colombia, the three key documents analyzed were (1) the *Updated Nationally Determined Contribution of Colombia* (2020), (2) a study undertaken by the French Development Agency on the costs of implementing *Colombia's Long-Term Climate Strategy E2050* (2021), and (3) the research report *Climate Mitigation in Latin-America and the Caribbean: A Primer on Transition Costs, Risks, and Financing* (2022) published by Columbia Center on Global Energy Policy (CGEP). With regard to Morocco, reviewed documents include (1) the *Updated Nationally Determined Contribution of Morocco* (2021), (2) the World Bank's *Country Climate and Development Report* (2022), and (3) CPI's *Landscape of Climate Finance in Africa* (2022).

Sources of quantitative data on climate finance flows are the following: (1) Colombia's online Monitoring, Reporting, and Verification (MRV) which has tracked climate finance transactions since 2011, and (2) CPI's publicly available Africa Landscape data (Morocco case study) that contains the 2019-2020 annual average for climate investment flows broken down by sector, use, and institution type.

In addition to desk research and quantitative analyses, interviews and other in-person events were conducted with former and current government officials. These include (1) a February 16th, 2023, interview with Colombia's former Vice Minister for the Environment and Territorial Planning at the Ministry of the Environment and Sustainable Development of Colombia (2020-2022), Mr. Nicolás Galarza, (2) a guest lecture given by Mr. Galarza at Columbia GSAPP on Colombia's urban and climate action agenda on February 3rd, 2022, (3) a March 21st, 2023 interview with Dr. Mauricio Cárdenas who was Colombia's energy minister from 2011 to 2012 and finance minister from 2012 to 2018, and currently is a visiting professor at Columbia SIPA and Senior Research Fellow at CGEP, (4) an April 12th, 2023, panel discussion on "Meeting the Energy and Climate Needs of

Emerging Economies” that HE Dr. Leila Benali, the current Minister of Energy Transition and Sustainable Development in Morocco, participated in.

## 3. Case I: Colombia

### 3.1. Country Background

#### 3.1.1. Country Profile

**Colombia, Latin America's third-most populous country in Latin America, has made substantial socioeconomic progress over the past two decades and has received a lot of international attention for its high potential for implementing climate action.** Located in the northwest of South America, with extensive coastlines to both the Pacific Ocean and the Caribbean Sea, the country has a diverse range of natural resources, including oil, gas, coal, and agricultural products, and is also home to significant biodiversity. In 2020 the country officially became the 37th member of the OECD and due to its solid macroeconomic and fiscal management, Colombia has recovered well from the recent COVID-19 crisis (OECD, 2022). After exceptional economic growth (10.7% in 2021), however, Colombia's economy is projected to slow sharply due to price pressures, high-interest rates, and increased uncertainty due to the recent changes in Colombia's political landscape (World Bank, n.d.).

**Colombia is a country that is particularly vulnerable to the effects of climate change and thus, the country is deeply aware of the importance of climate policy and finance.** Due to its geography and climate conditions, natural disasters such as floods, landslides, and droughts are likely to become more frequent and severe, putting Colombia on rank 91 in the Climate Vulnerability Index (World Bank, 2021). Besides, with more than 50% of the country's emissions coming from the AFOLU sector, promoting sustainable practices in agriculture and ending deforestation are among Colombia's top climate priorities. In addition, overcoming the country's high dependency on fossil fuels is a key issue that Colombian governments have been, are, and will be dealing with in order to promote a transition towards a net-zero future.

Given this context and having evaluated Colombia against the six selection criteria, Colombia is found to be an interesting and promising candidate for analysis of climate finance flows.

#### Colombia's geography and climate

*Colombia is located in the northwest of South America and shares borders with Panama, Venezuela, Ecuador, Peru and Brazil. It is traversed by three mountain ranges of the Andes Mountains reaching up to 5,775 meters (18,947 feet) above sea level and hosting not only glaciers and volcanoes, but also unique ecosystems such as the Northern Andean 'paramos'. The country lies on both the Caribbean Sea and the Pacific Ocean and has a total coastline of 3,208 kilometers (1,993 miles). Due to its*

*proximity to the equator and its different heights, Colombia has three climate zones: a tropical climate zone in areas below 1,000 meters (3,280 feet), a temperate zone and a cold temperature zone in heights above 2,000 meters (6,562 feet). Furthermore, Colombia is highly influenced by the changing weather patterns “La Niña” (associated with cooler weather) and “El Niño” (associated with warmer weather). As a result, the country is regularly exposed to heavy rains and damaging droughts, but also to earthquakes, particularly in the mountainous regions. Such natural disasters have caused severe consequences for local communities in the past and continue to pose significant challenges for the country’s infrastructure and development (World Bank, 2021; International Committee of the Red Cross, 2021).*

*The Colombian government has implemented different policies to address the effects of natural disasters and mobilize financial resources, for example through its National Adaptation Plan (2016) or by the creation of the National Risk Disaster System which coordinates six different agencies. The importance and complexity of disaster and climate risk management also becomes evident in Colombia’s NDC. Out of 132 reported support needs (financial, technological and capacity building needs) for the country’s identified adaptation priorities, more than 20 specifically address the issue of natural disaster prevention and management (Government of Colombia, 2020).*

### 3.1.2. Policy Context

**Colombia has been recognized for its leading role among middle-income countries in developing climate policies over the past years.** Though contributing only 0.54% of global GHG emissions, due to its high vulnerability Colombia has a longstanding tradition of committing to multilateral agreements, which provided the bases for developing a robust policy framework for climate action. In 2011, the country introduced a National Strategy (CONPES 3700) to develop an institutional mechanism to incorporate climate change into sectorial and territorial decision-making, including the proposal of creating a National Climate Change System (SISCLIMA). This system was eventually established by Decree 289 of 2016 and with it Colombia’s Intersectoral Commission on Climate Change (CICC). In the same year a National Adaptation Plan (PNACC) was launched and in 2017 a National Climate Change Policy.

In 2018, the Colombian government issued a Climate Change Law (Law 1931 of 2018) setting guidelines and further detailing different instruments for managing climate change in both public and private entities, and across all governance levels, related to climate adaptation and mitigation. As part of the Paris Agreement, Colombia submitted its first Nationally Determined Contribution (NDC) in 2015 and resubmitted a more technically robust and ambitious NDC in 2020. Based on this Updated NDC and a thorough process of quantifying Colombia’s goals and required activities, under former President Iván Duque, a new Climate Action Act was issued (Climate Action Law

2169 of 2021) as well as a new Long-Term Climate Strategy (“E2050”) outlining a pathway to achieve carbon neutrality by 2050.

**These policy efforts show how Colombia has managed to organize itself and improve its institutional capacities necessary to ramp up climate action.** As a country known for its extractive economy, traditionally led by governments not necessarily taking strong stances on environmentalism, Colombia decided to tackle the issue of climate change and “lead by example” (N. Galarza, personal communication, February 9, 2023). Especially the country's Climate Change Law of 2018 has helped to mobilize the entire government and incentivize ministries and agencies from all kinds of sectors (industry, transportation, housing, among others) to identify voluntary climate activities. This has helped to evaluate already ongoing as well as new policy measures from a climate change mitigation and adaptation lens and ultimately, allowed the government to redefine its climate pledges. With these efforts, led by the Ministry of Environment, Colombia has been able to signal to the national and international community its ambitious commitment to achieving the Paris Agreement (ibid).

Table 3.1. Overview of Colombia’s most relevant climate policy instruments

Year	Policy instrument	Abbreviation	Regulatory instrument
2011	Institutional Strategy for the Articulation of Policies and Actions in Climate Change		CONPES 3700
2012	Colombian Low-Carbon Development Strategy	ECDBC	
2015	National Energy Plan 2050	PEN	
2016	National Adaptation Plan	PNACC	
2016	Creation of National Climate Change System	SISCLIMA	Decree 289 of 2016
2017	National Climate Change Policy	PNCC	
2017	National REDD+ Strategy   Integral Strategy for the Control of Deforestation & Forest Management	EICDGB	
2018	Climate Change Law		Law 1931 of 2018
2018	Green Growth Policy		CONPES 3934
2019	National Circular Economy Strategy	ENEC	
2020	National policy for the Control of Deforestation and Forest Management		CONPES 4021
2021	Colombia’s Long-term Climate Strategy to meet the Paris Agreement	E2050	
2021	Climate Action Act		Law 2169 of 2021

Source: Author

**Moreover, the country has been recognized as a pioneer for green finance in Latin America.** In 2021, Colombia not only has become the first country in the Americas to launch a National Green Taxonomy, but also the first emerging market to issue green bonds in local currency. After adopting the Colombia Sovereign Green Bond Framework (2021), the country raised an amount of

COP 1.5 trillion (equivalent to USD 400 million) in green bonds. With these recent developments as well as its regulatory framework, Colombia has built strong foundations to address climate change and position itself as an attractive recipient of further climate finance (World Bank, 2022).

### Colombia's Green Taxonomy

*Colombia's Green Taxonomy was published on April 11, 2022. It provides a classification system for economic activities and assets that seek to contribute to Colombia's national environmental objectives and commitments. The taxonomy is one of the first in the Western Hemisphere and is being used as a reference model for other emerging countries to adopt similar regulations. It is welcomed by investors and issuers as a tool to identify 'green opportunities' and thus, is hoped to facilitate the development of transparent and integral green capital markets and to mobilize private and public resources towards Colombia's climate activities. While following international standards, especially the EU's sustainable finance taxonomy, Colombia's taxonomy also incorporates country specific characteristics. It has a distinctive focus on land use, agriculture and forestry, and unlike the EU, does not classify nuclear energy and natural gas as sustainable economic activities. In total the Colombian taxonomy identified 47 economic activities that would classify as green activities (Azizuddin, 2022; Escobedo, n.d.).*

For further context on stakeholders relevant for Colombia's climate policies and finance, see Annex I.

## 3.2. Assessment of Climate Commitments and Needs

### 3.2.1. Summary of Colombia's Updated NDC 2020

**Colombia has long demonstrated efforts to reduce national emissions and adapt to the impacts of climate change, and thus, the government submitted its first NDC to the UNFCCC in 2015 and an Updated NDC in 2020.** With the revised NDC Colombia not only set more ambitious goals for reducing GHG emissions and achieving carbon neutrality, but also presented a more elaborate pathway for adaptation. Besides clear adaptation and mitigation goals, the 2020 NDC details the scale of commitments, types of financing required, and the means of implementation of various measures.

#### Adaptation Goals

**The NDC illustrates in detail why and how adaptation is crucial for Colombia's sustainable development.** As the country is highly vulnerable to the effects of climate change, Colombia needs to strengthen its risk management, improve the use of territory, reduce negative

environmental, economic and social impacts in each of the country's sectors, enhance capacity in vulnerable communities, and implement institutional arrangements in the adaptation process.

**Colombia's updated NDC specifies 30 adaptation goals in six priority sectors<sup>3</sup> of its economy.**

Through a top-down approach, the needed commitments for Colombia to achieve these adaptation goals would require a minimum of 0.2% of its annual GDP, which is equivalent to USD 600 million annually. Colombia also uses a bottom-up approach seeking to validate the cost of each adaptation goal by action type and has completed pilot costing of five goals, but the amount is undisclosed in the NDC.

**To achieve its adaptation goals, Colombia requires national and international support which is communicated through the Biennial Transparency Reports.**

As an emerging market, Colombia must provide information on support required and received through the Biennial Transparency Reports (Government of Colombia, 2020). Within the revised NDC, Colombia has identified 132 specific needs with respect to capacity building (35), technology development and transfer (41) and financing (56). The total amount of the 56 financing needs amounts to USD 242,427,663 which should be provided through different financial instruments such as grants, concessional or non-concessional loans, capital or guarantees.

## Mitigation Goals

**Colombia's Updated NDC has raised its GHG reduction target up to 51% compared to the previous target of 20%, and furthermore, set the target of reducing black carbon<sup>4</sup> by 40% by 2030.**

According to the 2020 NDC, the country plans to establish carbon budgets for the period of 2020-2030 by no later than 2023, and it sets reduction targets in emissions from deforestation equivalent to reducing the deforestation rate to 50,000 ha per year.<sup>5</sup> The NDC specifies a mitigation strategy with a total of 148 measures, including 32 national measures (led by ministerial portfolios), 89 sub-national measures (led by territorial entities), 24 company-led measures, and 3 measures specifically aimed at reducing black carbon. Financing needs for mitigation actions related to the goals are not specified.

---

<sup>3</sup> 1. transportation, 2. energy, 3. agriculture, 4. housing, 5. health, and 6. commerce, tourism, and industry.

<sup>4</sup> Black carbon is the sooty black material emitted from gas and diesel engines, coal-fired power plants, and other sources that burn fossil fuel. It comprises a significant portion of particulate matter or PM, which is an air pollutant (United States Environmental Protection Agency, 2011)

<sup>5</sup> The deforestation reduction goal considers the expected trend of deforestation of 155,000 ha/year in 2022 and 100,000 ha/year in 2025 (Government of Colombia, 2020).

### 3.2.2. Summary of French Development Agency (AFD) & Government of Colombia's Long-Term Climate Strategy

**In order to achieve Colombia's NDCs, the country has developed a Long-Term Climate Strategy ("E2050"), led by the Ministry of Environment and Sustainable Development, and with the support of the French Development Agency (AFD) and Expertise France.** AFD commissioned a study to analyze the available economic and financial instruments that could support the implementation of Colombia's E2050 that defines nine so-called "bets" (equivalent to strategic or thematic pillars) to achieve carbon neutrality and long-term adaptation, as well as to identify new financing sources. This study serves as an adequate, high-level, in-depth benchmark case for estimating Colombia's overall climate finance needs (Government of Colombia & Agence Française de Développement, 2021). See Annex II for an overview of Colombia's E2050 strategy.

**The AFD study comprises three analytical products, the last of which is an estimation exercise of the resources required to realize Colombia's E2050 and the financial resources available in the country to cover those costs.** To calculate an order-of-magnitude estimate of the E2050's costs, a 5-step costing methodology was developed combining both a bottom-up and a top-down approach. The result of this process was a total estimated cost close to USD 52 billion needed over a period of 30 years (equivalent to 16.1% of the GDP of 2020). For the first implementation period 2020-2030, Colombia would require about USD 20 billion. Table 3.2. presents the detailed breakdown of this cost estimate by E2050's nine "bets" and nine different intervention types for the 2020-2030 period (Government of Colombia & Agence Française de Développement, 2021).

Table 3.2. Total Estimated Cost for the Implementation of Colombia's E2050 - per Climate "Bets" and Types of Intervention (2020-2030)

Categories	Intervention types									Total
	Mission actions	Technical assistance	Human resources	Campaigns	Operation contracts	Consulting	Direct Investments	Investigation	Subsidies	
1 Climate knowledge and governance	3	192	-			2				198
2 Biodiversity & ecosystems management	113	704	5	11	223		32	45		1,134
3 Sustainable production and consumption	14	1,572	-	176	220	30	12	223	124	2,270
4 Just workforce transition	9	64	-	11		7			26	117
5 Rural, marine & coastal developmen	11	576	-	11	1,042	9			79	1,728
6 Resilient & sustainable cities	87	64	-			11	994	45	18	1,219
7 Diversification of the energy matrix	4	192	-			14	1,363	45		1,617
8 Sustainable mobility & infrastructure	5	128	-	11		11	234		9	398
9 Adaptation for human health	18	64	-			9	11,550	45	9	11,694
<b>Total</b>	<b>264</b>	<b>3,456</b>	<b>6</b>	<b>220</b>	<b>1,485</b>	<b>94</b>	<b>14,185</b>	<b>401</b>	<b>265</b>	<b>20,375</b>

Source: Author, based Government of Colombia & Agence Française de Développement, 2021.

### 3.2.3. Summary of Center for Global Energy Policy (CGEP) Report

**To further benchmark the NDC targets and estimated costs, these figures are evaluated against a research report published by the Center on Global Energy Policy.** The report is titled “Climate Mitigation in Latin America and the Caribbean: A Primer on Transition Costs, Risks, and Financing” (in the following referred to as CGEP report).<sup>6</sup> This report covers the climate mitigation goals and challenges for Latin American and Caribbean (LAC) countries. Based on their NDC documents, the CGEP report conducts country trajectories on emissions as well as the costs of a low-carbon transition for the LAC countries. The CGEP report specifies Colombia’s mitigation goal of reducing its GHG emissions by 51%.

**The CGEP report applied a top-down approach to estimate investment needs for the NDC targets.** The modeled costs represent a weighted average of emissions reduction costs from all sectors. The calculated expenditure required for Colombia to achieve its NDC is between 7.7% to 12.7% of its annual GDP. Multiplying it with the IMF’s projections of Colombia’s GDP from 2020 to 2027 (IMF, 2022), the low estimation of Colombia’s emission reduction cost is USD 28.27 billion annually with a high estimation of USD 46.63 billion. This calculation includes direct investment for Colombia to achieve its NDC goals, as well as costs of revenue losses (derived from the shrinking demand for fossil fuel and high-emissions products) and transition risks.

### 3.2.4. Key Findings

**The three documents analyzed present a comprehensive overview of Colombia's climate commitments, but they differ significantly in their estimation of the country's climate financing needs.** The NDC has only costed adaptation strategies, estimating that approximately USD 600 million annually (0.2% of Colombia's annual GDP) will be required for adaptation efforts. In contrast, the AFD study estimates that the country's Long-Term Climate strategies, which includes both adaptation and mitigation efforts, will require around USD 20 billion by 2030, with USD 14.2 billion needed for direct investments in developing climate infrastructure over the next decade to cover both adaptation and mitigation measures. This amount would represent 1.61% of Colombia’s annual GDP. The CGEP report provides the largest amount of potential climate finance needs as it also considers sectoral revenue losses and transition risks. The estimated expenditure required to achieve Colombia’s NDC, according to CGEP, would be equivalent to 7.7% to 12.7% of its annual GDP.

**Acknowledging the differences in the scope and methodologies of each study, it appears that AFD's estimate for direct climate infrastructure investment corresponds most directly with**

---

<sup>6</sup> See Cárdenas & Orozco-Sanchez (2022)

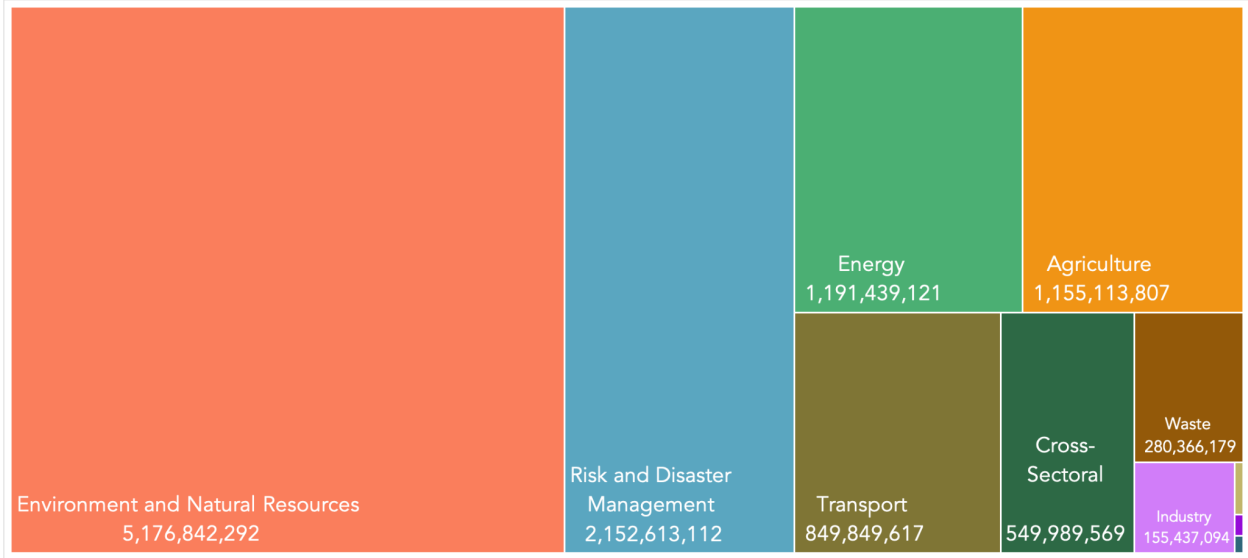
**climate finance needs.** However, Colombia's future climate finance solutions should also mobilize resources to address the wider spectrum of costs estimated by CGEP.

### 3.3. Climate Finance Needs Gap Analysis

#### 3.3.1. Climate Finance Flows

**Since November 2017, the Colombian government has maintained a Measurement, Reporting, and Verification (MRV) system for tracking climate finance flows, developed in collaboration with World Resources Institute (WRI).**<sup>7</sup> The MRV system records public and private financing, domestic and international, across the period 2011-2021 (National Planning Department, 2016). It covers both adaptation and mitigation, and categorizes financing flows by sector (Agriculture, Education, Energy, Risk and Disaster Management, Industry, Environment and Natural Resources, Waste, Transport, Cross-Sectoral, Tourism, Housing) (Fig. 3.3.).

Figure 3.3. Total Climate Finance Flows by Setor (2011-2021)



Source: MRV System Tracked Climate Finance Flows Data (2023)

<sup>7</sup> See GIZ & UNDP (2019). For more information on how the MRV system was developed also see:

- Partnership on Transparency (2019), "Tracking the financing of climate action: how Colombia developed and implemented a comprehensive national MRV framework for climate finance."
- Masullo, I.; Jun Ra, H.; Larsen, G. (2017), "Colombia's Climate Finance Tracking System Registers \$6 Billion Worth of Action"

**Tracked climate financing flows to Colombia over the period 2011-2021 exceeded USD 11.5 billion. Financing has favored adaptation (USD 5.3 billion) to date, exceeding mixed-use (USD 3.5 billion) and mitigation finance (USD 2.7 billion).** This is a somewhat unusual trend relative to the rest of the world, given that global climate finance flows have tended to favor mitigation over the same period (Climate Policy Initiative, 2022). However, this is likely explained by the fact that the power sector, which is globally the largest recipient of mitigation finance, is already mostly decarbonized in Colombia (IRENA, 2022).<sup>8</sup> Environment and Natural Resources and Risk and Disaster Management are the two sectors receiving the largest levels of investment, followed by Energy, Agriculture, and Transport. Moreover, tracked climate finance in Colombia has been overwhelmingly domestically sourced (USD 9.9 billion; 86%), with the vast majority coming from public financing sources (USD 7.4 billion; 64%).

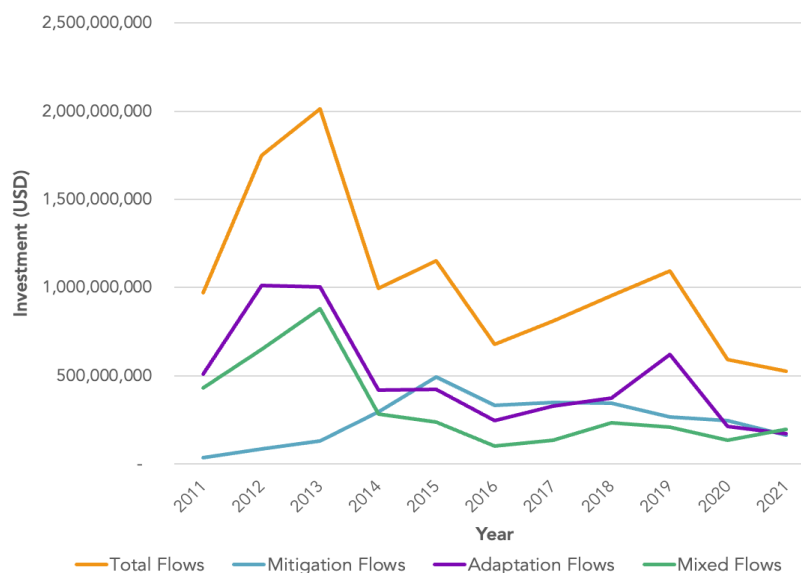
**The amounts of tracked climate financing flows are inconsistent from 2011-2021.** After a peak in 2012-2013 – which, at the transaction level, was primarily linked to disaster relief funding – flows slowed tremendously,<sup>9</sup> only to begin to increase in the period following the 2015 Paris Agreement. This is particularly the case for climate financing targeting adaptation and mixed-use.

---

<sup>8</sup> Large and small hydropower account for nearly 70% of Colombia’s installed capacity (Bloomberg New Energy Finance, 2023).

<sup>9</sup> Specifically, these transactions correspond to buildings and infrastructure reconstruction following massive flooding caused by an irregular La Niña cycle in 2010-2011. It is somewhat unclear the degree to which these flows can be categorized as “climate finance” – certainly, they are responding to climate change-induced damages, but based on MRV data it is unclear whether these investments increased the climate resiliency of the affected areas.

Figure 3.4. Climate Finance Flows to Columbia (2011-2021)



Source: MRV System Tracked Climate Finance Flows Data (2023)

However, the data also show decreasing climate finance flows in recent years, with a clear decline after 2019, likely associated with the 2020 onset of the COVID-19 pandemic (Fig. 3.4.). As a general trend, mitigation financing has remained relatively low throughout the entire time frame, although this should be contextualized against Colombia’s comparatively low greenhouse gas emissions.

### 3.3.2. Climate Finance Needs Gap

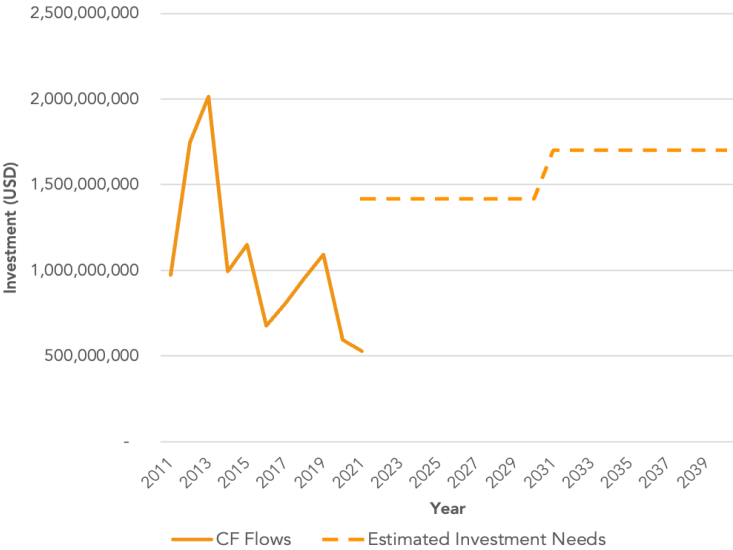
**Climate financing flows to Colombia fall well short of climate finance needs.** Analyzed against the annual average needs for projected direct investment across the period 2021-2040, it is clear that the current rate of climate investment is insufficient to meet the levels needed for the implementation of Colombia’s NDC and long-term strategy (Government of Colombia & Agence Française de Développement, 2021) (Fig. 3.3.).<sup>10</sup> While the climate finance needs gap in Colombia appears to be on the order of magnitude of close to USD 1 billion, or at the very least USD hundreds of millions, the exact dollar amount of this shortfall is uncertain. Due to the uncertainties in projected climate finance needs and tracked climate finance flows, this needs gap

<sup>10</sup> Climate finance needs are also projected for the period 2041-2050 but are much lower than the estimated investment required from 2021-2040, so this period is not considered in the needs gap analysis.

analysis is presented as more of an indicative statement that a significant gap in climate finance exists, rather than a concrete estimate.

Moreover, the recent trajectory of climate finance flows shows that a strong effort is necessary in order to drive Colombia’s climate investment back toward national targets for climate action. While, during 2012-2013, climate finance flows actually exceeded the necessary levels of investment projected for 2021-2040, this financing was largely disaster relief funding in response to massive flooding caused by an unusually extreme winter La Niña cycle (CEPAL, 2012). Although this suggests that Colombia can mobilize large-scale financial resources when necessary, it is evident from the data on more recent flows that further policies and instruments must be adopted to drive capital toward climate action objectives.

Figure 3.5. Climate Finance Needs Gap



Source: MRV System Tracked Climate Finance Flows Data (2023)

### 3.3.3. Climate Finance Mobilization Gap

**In addition to investment needs, the AFD et al. (2021) also project the availability of financing resources that can be directed toward Colombia’s climate goals, indicating that available resources far exceed current levels of mobilized investment.**<sup>11</sup> While these resources (USD 1.8 billion; 2021-2030) are — at an aggregate level — adequate to meet the projected levels of annual

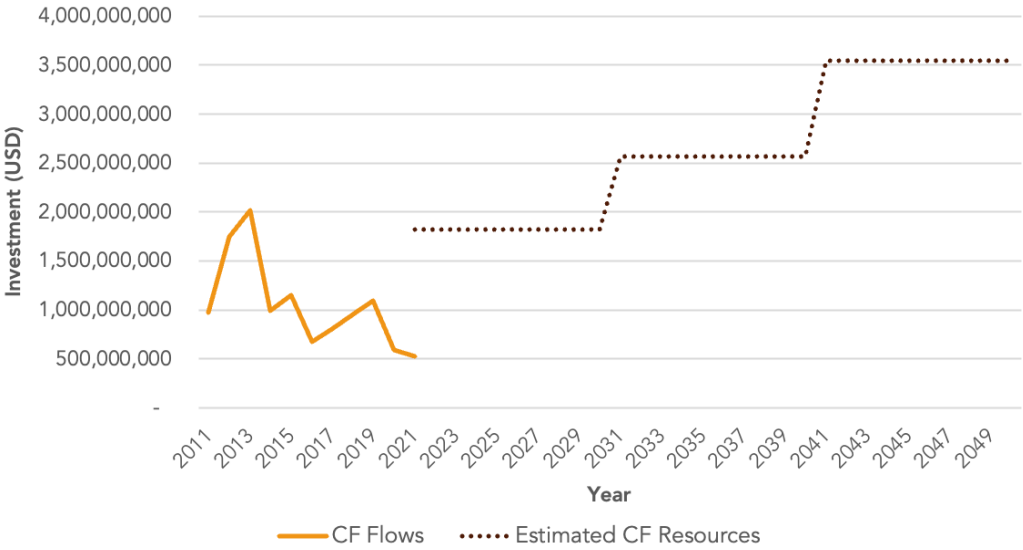
<sup>11</sup> These projections essentially extrapolate trends in private, public, and international climate investment from previous climate finance flows tracked by the MRV system. However, they also adjust for growth factors such as economic growth so that estimates are not simply a reflection of previous trends.

investment required for near-term implementation of Colombia’s climate pledges (USD 1.4 billion; 2021-2030), comparison against tracked climate finance flows show that current investment does not fully leverage available resources (Fig. 3.6.).

**Furthermore, additional efforts are needed to direct these resources towards specific climate sectors and activities with lesser resource availability and/or greater financing barriers.**

According to AFD et al (2021), national climate strategy components relating to sustainable production, grid diversification, and adaptation face a deficit of potential resources relative to expected costs, in addition to inadequate tracked investment flows.

Figure 3.6. Climate Finance Mobilization Gap



Source: MRV System Tracked Climate Finance Flows Data (2023)

### 3.3.4. Barriers to Climate Finance in Colombia

**In order to implement its NDC and long-term strategy, Colombia needs to rapidly accelerate its rate of climate investment.** Given that potential climate financing resources are estimated to be largely adequate for meeting this challenge, policy efforts should focus on addressing barriers that have restricted the actualization of these resources into climate finance flows.<sup>12</sup>

<sup>12</sup> In a few sectors the AFD study notes that estimated resources fall short of needs. In these instances, extra effort will be needed to push capital flows to the levels needed for implementation.

### ***Barrier 1: Reluctant Private Sector Investment***

Between 2011-2021, private finance only provided 22% of total tracked climate investment in Colombia. By comparison, tracked global climate finance flows over a similar period show a nearly even public and private investment (Climate Policy Initiative, 2022). In order to close Colombia's gap between climate finance needs and current investment levels, large-scale financial mobilization of private sector actors is needed across a variety of sectors and projects.

This will require overcoming a few key pitfalls. At the present, Colombia's financial sector is limited in its knowledge of relevant climate sector technology trends and market risks (Climate Finance Accelerator, 2022). Moreover, financial institutions do not face stringent requirements to incorporate climate change into investment decisions. Additionally, corporate balance sheets are rarely utilized to provide primary financing for new climate projects, suggesting that the commercialization of green projects is largely viewed as too nascent to be incorporated into company asset planning (Climate Finance Accelerator, 2022). Underlying all of these issues, however, is a lack of project proponents' capacity to structure commercially-viable projects that can successfully attract financing.

From 2011-2021, the shares of public and private financing vary considerably across sectors (Table 3.7.). Notably, the energy sector is the only sector where private financing exceeds public financing. While the public share of financing is most extreme in sectors receiving low levels of climate finance (e.g., education, housing, waste, etc.), even in sectors receiving relatively large amounts of climate investment (e.g., environment and natural resources, risk and disaster management, transport) funding is heavily public.

Table 3.7. Sectoral Public-to-Private Financing Ratios (2011-2021)

Sector	Public-to-Private Financing Ratio	Public Finance (USD m)	Private Finance (USD m)
Agriculture	2.6:1	729.1	283.3
Education	All Public	6.9	0
Energy	0.5:1	408.6	746.0
Risk and Disaster Management	8.2:1	1,861.4	227.9
Industry	1.7:1	92.8	54.7
Environment and Natural Resources	2.9:1	3,036.9	1,040.0
Waste	10.1:1	254.1	25.3
Transport	3.9:1	654.9	167.6
Cross-Sectoral	9.1:1	318.1	34.8
Tourism	7.3:1	1.6	0.2
Housing <sup>13</sup>	All Public	0.5	0

Source: MRV System Tracked Climate Finance Flows Data (2023)

### **Barrier 2: Energy Access and Grid Infrastructure as a Bottleneck for Renewables and Clean Transportation Investment**

Despite a historically clean grid due to large existing hydropower capacity, the power sector is currently one of Colombia's fastest-growing areas of climate finance, as international development banks have spurred major investment towards wind and solar projects in recent years to meet rising demand and displace fossil generation (Climate Finance Accelerator, 2022; Bloomberg New Energy Finance, 2023). Additionally, as a major source of current emissions, the transport sector is identified as a key area of climate action within Colombia's NDC. However, the acceleration of climate finance flows towards either of these sectors requires expanded electricity and transportation infrastructure, which is currently viewed as outdated and a major barrier to investment (Climate Finance Accelerator, 2022).

In light of this challenge, Colombia has recently closed an investment agreement with Climate Investment Funds (CIF), which will provide USD 70 million in concessional financing to be leveraged towards raising larger amounts of capital for improvements in grid infrastructure and development of energy storage (Climate Investment Funds, 2023). In addition to unlocking investment opportunities in renewables and clean transport, resolving the pitfall of limited

<sup>13</sup> According to Dr. Mauricio Cárdenas, it seems like climate finance tracking in the housing sector could be subject to data gaps, in particular for private investment. Most investment in the Colombian housing sector comes from private sources; however, no private transactions are recorded in the MRV climate finance tracker. A possible explanation could be the difficulty separating private climate financing amounts from broader housing investment, while public subsidy programs for climate activities such as energy efficiency retrofits are included. This and other data gaps are addressed in the recommendations for the MRV system (M, Cárdenas, personal communication, March 21, 2023).

transmission in Colombia will also improve the well-being of the numerous communities currently residing in locations without consistent grid access.<sup>14</sup>

### ***Barrier 3: Underdeveloped Climate Financing Structures for AFOLU Sectors***

While AFOLU sectors (i.e., agriculture, environment, and natural resources) receive a substantive share of financing among tracked climate finance flows, lack of information about low-carbon technologies and practices, as well as potential financing mechanisms for a transition to sustainable practices, impedes further progress. In particular, there is a dearth of private finance in the sector, which would indicate that the current financing and commercial structures of sustainable enterprises are insufficient to attract private capital. Nevertheless, current agricultural and land use practices in Colombia have large estimated inefficiencies, and enterprises within AFOLU sectors already benefit from access to specialized public financing institutions,<sup>15</sup> suggesting that there is indeed a strong commercial and institutional basis for scaling finance for the transition to sustainable land and agriculture practices (Climate Finance Accelerator, 2022).

Despite this promising foundation, structuring investments towards AFOLU climate action is complex and often requires the coordination of numerous communities and small-scale enterprises, as well as bespoke financing design, to accommodate the commercial cycles of various commodities and environmental services. Building the capacity of public and, especially, private, entities to develop and implement these financing structures is a key step toward unlocking climate finance in AFOLU sectors.

### ***Barrier 4: Commercializing Adaptation***

Colombia is one of the world's most vulnerable countries to physical climate risk, necessitating large-scale investment in order to manage exposure to climate damages and bolster resilience (Government of Colombia, 2020). While tracked adaptation finance flows have constituted the largest investment area by climate use to date, adaptation actions within Colombia's climate strategy also face the largest shortfall in currently projected available resources to meet implementation costs (Government of Colombia & Agence Française de Développement, 2021).

---

<sup>14</sup> Currently, 100% of Colombians have electricity access, with 96% directly connected to the power grid. For the remaining 4%, however, power supply largely comes from diesel mini grids (Climate Investment Funds, 2023). Investments in transmission will both ensure that existing connection is more secure and reduce reliance on fossil fuel-powered mini grids.

<sup>15</sup> The AFOLU sector in Colombia has unique access to FINAGRO, a national development bank, and Banco Agrario, a government-funded commercial bank. These banks often service smallholder agriculture enterprises, and have a history of financing sustainable projects in crop management and forestry. However, outside of these institutions, private commercial banks largely do not finance AFOLU sector projects in Colombia.

Attracting investor interest in adaptation projects has proven to be a challenge globally, particularly among private sector finance, as informational asymmetries, knowledge gaps, and other technical pitfalls make it difficult to fit adaptation actions around a commercial structure (Stout, 2022). Resolving these technical capacity issues, particularly a dearth of climate risk and vulnerability data, will be a key first step in paving the way for market-ready adaptation projects (World Bank, 2021).

## 3.4. Evaluation of Transformative Impact

### 3.4.1. Thematic Impact Evaluation

**Colombia has incorporated several considerations that run parallel to climate change action into its overall climate strategy and updated NDC.** The NDC defines nine “cross-cutting and integrating elements” (Government of Colombia, 2020, p. 4) that are key to a decarbonization approach that is fair and inclusive. Cross-cutting elements include food security, biodiversity, human rights, gender equality, and sustainable production and consumption, among others.<sup>16</sup> Several of these themes are mirrored in Colombia’s E2050 Long-Term Climate Strategy. Furthermore, the MRV system includes similar themes based on an extensive vulnerability and risk analysis<sup>17</sup> presented in the country’s Third National Communication to the UNFCCC (Fig. 3.8).<sup>18</sup>

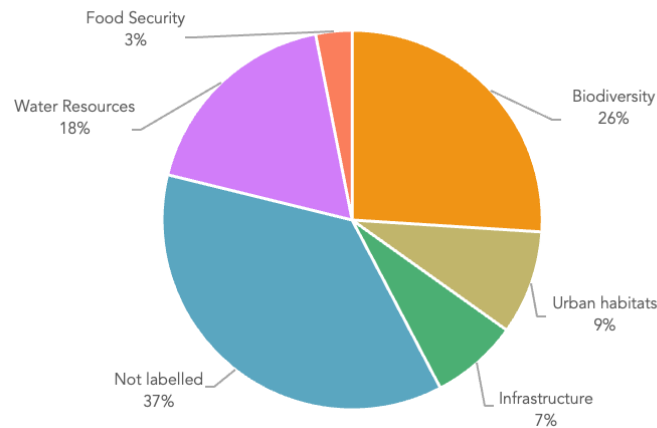
---

<sup>16</sup> The other four elements are just workforce transition, intergenerational equity, and territorial inclusions, differential approach with ethnic and vulnerable communities, circular economy, and implementation in the context of COVID-19.

<sup>17</sup>The vulnerability and risk analysis is based on 113 indicators distributed across the components Threat, Sensitivity, and Adaptive Capacity, which are further subdivided into six dimensions: Food Security, Water Resources, Biodiversity, Ecosystem Services, Health, Human Habitat, and Infrastructure. The Human Habitat dimension refers to variables associated with housing and services associated with human settlements, including elements of territorial management and institutional interaction.

<sup>18</sup> As the MRV is published in Spanish, these are translations of the action areas described.

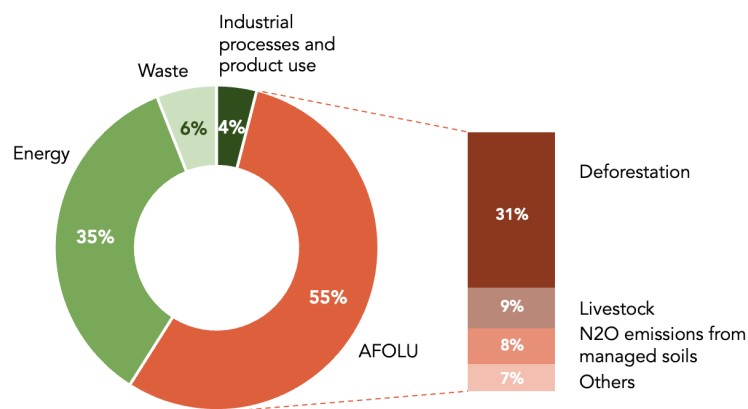
Figure 3.8. Climate Finance Flows by Vulnerability and Risk Dimensions



Source: MRV System Tracked Climate Finance Flows Data (2023). Data reflects aggregate 2020-2021. Note: Categories are as defined by the MRV System.

**This thematic impact evaluation looks at two themes defined in Colombia’s climate efforts: food insecurity and biodiversity.** Both of these cross-cutting themes are deeply embedded in the country's agriculture, food, and land use sector (AFOLU), which is responsible for more than 50% and, according to The Nature Conservancy, for even 62% of the total GHG emissions of the country (The Nature Conservancy, 2020). The following evaluation focuses on the country’s efforts to address these two themes by first, defining the theme in the context of Colombia and providing a brief description of the policy background and national strategy; and second, highlighting an initiative that has leveraged an innovative structure or strategy to overcome some of the climate financing barriers highlighted previously.

Figure 3.9. Colombia’s GHG emissions as of 2014



Source: Climate Focus, 2021

## Food Insecurity

**In Colombia, food insecurity is a multifaceted problem that can be attributed to armed conflict, poverty, inequality, environmental degradation, and climate change, among other factors.**

Colombia has one of the world's most unequal land ownership structures as a result of decades of conflict. About 81% of agricultural land is owned by only 1% of farms and the remaining 19% of land is divided by numerous small farms that are barely profitable (Climate Focus, 2021). The 2016 Peace Agreement made progress toward addressing rural inequality and alleviating food insecurity by incorporating a comprehensive rural reform (FAO, 2019). Yet, food insecurity still affects over half of Colombian households (Global Alliance for the Future of Food, 2022). About a fifth of Colombia's population (10 million inhabitants) lives in rural areas, 47% of which is poor. Rural families largely depend on agricultural production, but the agricultural sector suffers from very low land<sup>19</sup> and labor<sup>20</sup> productivity, particularly in post-conflict areas. Even in areas not affected by the conflict, inefficiencies exist that result in almost a third of food being wasted each year.

**Measures to promote sustainable agriculture and improve food security are embedded in the NDC such as a water irrigation initiative, the “Enhancing Climate Resilience and Reducing Emissions in Colombian Agriculture” project by the Ministry of Agriculture and other agro-climatic monitoring and capacity building projects; however, financing needs are unclear and implementation is lagging.** Colombia's NDC identifies agriculture as a high priority for adaptation and mitigation, with 10 of the 30 adaptation targets focused on the AFOLU sector. In tandem, the country has developed a legal, institutional, and political framework that can support the sector's sustainable development (UK Government & Climate Finance Accelerator, 2022). Despite the fact that achieving the NDC targets is highly dependent on reducing land-use emissions, deforestation levels remain high and agricultural policies have not aligned with climate and biodiversity policies.

### Thematic Program: Food and Land Use (FOLU) Coalition

**FOLU coalition<sup>21</sup> has deployed a multi-stakeholder, multi-level approach to developing regional roadmaps.** Colombia's local chapter of the international FOLU Coalition aims to transform food

---

<sup>19</sup> Colombia produces USD 33,000 per km<sup>2</sup> of arable land whereas OECD countries produce an average of USD 179,000 per km<sup>2</sup> (UK Government & Climate Finance Accelerator, 2022).

<sup>20</sup> In Colombia, the labor productivity of farmers is less than a third of the average labor productivity in other sectors (Global Alliance for the Future of Food, 2022).

<sup>21</sup> FOLU is funded by a number of philanthropic organizations and funders including Nature Conservation, the UK Foreign, Commonwealth, and Development Office (FCDO), The IKEA Foundation, Meridian institute and others (Food and Land Use Coalition, n.d.).

systems and land use into drivers of sustainable growth and a regenerative economy. In 2018, FOLU brought together over 120 stakeholders<sup>22</sup> to develop a national roadmap (FOLU Colombia, 2022). Food systems sustainability was not a national priority at the time, rather the government placed a greater emphasis on productivity and how the agricultural sector could be of greater economic significance in the country. Therefore, the national government largely overlooked FOLU's recommendations. In response, FOLU Colombia began conducting smaller-scale state-level diagnoses that were directly supported by local governments and championed by a diverse group of ambassadors (Global Alliance for the Future of Food, 2022). This resulted in the publication of territorial roadmaps in regions of Antioquia, Quindío, and Valle del Cauca. The roadmap development forged new strategic alliances across sectors and communities. For example, the Bancolombia S.A. has been a part of both the diagnostic phase for the roadmaps and financing for specific initiatives (Ibid).

**In addition to the roadmaps, the FOLU platform has leveraged its network and knowledge to support tangible policy change and provide government recommendations.** The regional roadmap influenced changes in Colombia's food and waste laws and policies which were then supported by FOLU's members (FOLU Colombia, 2022). Through FOLU's 'Food, Environment, Land, and Development (FELD) Action Tracker<sup>23</sup>, further recommendations have been provided to the government for redesigning its support to the agricultural sector to promote low-emission farming and improve climate-smart agricultural practices (Climate Focus & FOLU, 2021). FOLU has succeeded in developing a participatory governance process to build a roadmap for agroecological and regenerative approaches to farming and fishing that directly engage smallholder farmers and communities.

## Biodiversity

**Colombia is the most biodiverse country in the world per square kilometer and as such, Colombia must ensure that it preserves its ecosystems, biodiversity, and water resources.** The NDC adaptation and mitigation measures focus on protected areas as well as to the conservation and restoration of strategic ecosystems such as Colombia's páramos (alpine tundra ecosystems), mangroves, wetlands, coral reefs, glaciers, oceans, and tropical forests.

**Colombia has set ambitious targets to support and expand its bioeconomy.** Colombia aims to harness its biodiversity as an economic resource and develop a bioeconomy that will contribute

---

<sup>22</sup> Including stakeholders from public and private sectors, peasant and Indigenous communities, academics, trade associations and international organizations.

<sup>23</sup> This initiative is led by the UN Sustainable Solutions Network and is dedicated to providing practical support to countries' transformation of food and land use systems.

to 2.5%<sup>24</sup> of its GDP by 2030. This effort is recognized in the NDC which highlights the value provided by nature-based solutions, the bioeconomy, sustainable infrastructure, and climate-smart agriculture. Colombian cities also stand out for their high urban biodiversity compared to other cities globally: 27 of the 32 department capitals are settled by rivers and 152 Colombian cities are located in six of its natural regions<sup>25</sup>.

Thematic program: BiodiverCiudades

**BiodiverCiudades (BiodiverCities) is a policy program by the Government of Colombia to integrate the urban development of the country's cities within the natural world.** In the pilot phase, the government has identified 14 cities<sup>26</sup> to base their developmental models on harmony with nature and biodiversity. The cities under the pilot project span the country's six regions, and the projects are adapted to meet the cities' physical, environmental, and economic conditions.

As of 2021, financing for BiodiverCities reflects a total of USD 133 million identified for 86 prioritized projects in 14 BiodiverCities<sup>27</sup>. Of this, USD 122 million has been guaranteed for 26 projects, and five projects are in the implementation phase. According to Mr. Nicolás Galarza, former Vice Minister of Environment and Territorial Planning (2020-22), the Environment Ministry allocated USD 8 million<sup>28</sup> from a Global Environmental Facility (GEF) grant to finance green infrastructure under BiodiverCiudades. This included the disbursement of:

- USD 2.7 million to build a national network of 20 air quality monitoring stations and USD 350,000 towards air quality modeling in 10 BiodiverCities;
- USD 1.2 million towards planting 140 tree nurseries in schools to educate students about Colombia's local flora and fauna in 14 BiodiverCiudades;
- USD 350,000 raised from a carbon tax for a citizen monitoring network in eight BiodiverCities.

**Building on Colombia's leadership, the World Economic Forum (WEF) and the Government of Colombia have partnered to scale a global initiative: BiodiverCities by 2030.** The model is

---

<sup>24</sup> Colombia's national survey on its biodiversity is among the most ambitious (The Economist, 2018).

<sup>25</sup> The six regions are the Amazon rainforest, the Andes mountains, the Caribbean sea, the Pacific Ocean, the Orinoco river basin, and the insular region.

<sup>26</sup> The 14 pilot cities are Medellín, Bucaramanga, Barrancabermeja, Manizales, Armenia, Pereira, Quibdó, Pasto, Barranquilla, Montería, Villavicencio, Yopal, Leticia, San Andrés.

<sup>27</sup> Ministry of Environment and Sustainable Development, Government of Colombia.

<sup>28</sup> These figures were shared in a presentation by Mr. Galarza at The Columbia Climate School, and a subsequent interview conducted with him by the SIPA Capstone team.

based on the principle that “cities that recognize biodiversity as the axis of their development”<sup>29</sup> directly contribute to urban sustainability, climate resilience, and human well-being.

### 3.4.2. Project-Level Evaluation

With resources from multilateral funds including GEF and GCF, Colombia has completed a number of projects addressing climate risks. These projects have demonstrated innovative and scalable features.

#### Project One: The Mainstreaming Sustainable Cattle Ranching Project

The Mainstreaming Sustainable Cattle Ranching project (the MSCR project) to promote Silvopastoral systems (SPS) was launched in 2010 with the goal of converting 48,000 hectares of open pasture in Colombia to SPS and thereby reducing deforestation as well as alleviating poverty and food insecurity.

##### Silvopastoral Systems

*Silvopastoral Systems (SPS) are a sustainable agricultural practice that combines trees with pasture, for the greater benefit of farmers, livestock and the environment. SPS also serve an effective adaptation measure to climate change, because they use deeply rooted perennial, native and naturalized, multi-purpose and timber tree species that are drought tolerant and retain their foliage in the dry season. This ensures a consistent supply of high quality fodder, which results in more stable milk and beef production, maintaining the animals' body conditions and securing farmers' assets. Furthermore, SPS also fixes significant amounts of carbon in the soil and in the standing tree biomass, providing an effective carbon sequestration strategy. Overall, SPS is an approach that promotes biodiversity, enhances ecosystem services, and strengthens the resilience of farming systems (R.M.Mauricio, 2019).*

Specifically, the MSCR project aimed at providing financial and technical support to induce wider adoption of SPS and is being implemented at seven sites<sup>30</sup> in different regions of the country, selected for their high levels of biodiversity and proximity to strategic ecosystems and protected areas.. The project was initially financed by a USD 7 million grant from GEF and USD 33 million from partner contributions. In 2014, the project received additional financing of USD 21.7 million from the UK Department of Energy and Climate Change (UK DECC).

---

<sup>29</sup> BiodiverCities by 2030: Transforming Cities' Relationship with Nature ([The World Economic Forum](#), 2022).

<sup>30</sup> (i) the Cesar River Valley region, (ii) the Magdalena River region, (iii) the Boyacá-Santander region, (iv) the coffee-growing eco-region, (v) the Piedemonte Orinocense region, (vi) the La Guajira region and (vii) the El Meta region.

## Co-financing Structure

**The Project was originally initiated by GEF in 2010, and was co-funded by the Colombian Cattle Ranching Federation (FEDEGAN), the Center for Research on Sustainable Farming Systems, The Fund for Environmental Action and Childhood, and The Nature Conservancy.** The Project has three key components: 1) to apply SPS in cattle ranching farms as part of a land management system; 2) to develop markets for green and sustainable cattle products in project areas; 3) to develop agrotourism in the project areas. During 2010~2014, GEF granted USD 7,000,000 of seed funding and the co-financiers provided funding of USD 34,950,000 (GEF Database, 2022). UK DECC injected additional funding of USD 21,700,000 into the project in 2014 (UK DECC, 2022).

Table 3.10. The Mainstreaming Sustainable Cattle Ranching Project Details

Project Component	Project Outcomes	GEF Amount (USD)	Co-Financed Amount (USD)
1. Integrated farm management	Apply Silvopastoral Systems in cattle ranching farms as part of a land management system that includes forests, live fences and watershed corridors	1,700,000	29,290,000
2. Green Markets Development	1. Develop a functioning long-term Payment for Ecosystem Services programs 2. Promote environmentally friendly certified beef and dairy products	3,800,000	2,610,000
3. Agritourism Development	Develop agrotourism in 10% of farms involved in project execution	800,000	660,000
4. Project Management	Share project knowledge	700,000	2,390,000
<b>Project Costs</b>	<b>Sub Total (USD)</b>	<b>7,000,000</b>	<b>34,950,000</b>

Source: GEF Database (2022)

**Notably, the private sector contributed not only in the implementation of the project but also provided funding.** While the largest bulk of co-financing came from the Colombian Government, private sector represented by FEDEGAN, individual cattle ranchers and local sector organizations committed USD 9,300,000 to the project, accounting for 26.6% of total co-financing.

Table 3.11. The Mainstreaming Sustainable Cattle Ranching Project Co-Financing Breakdown

Name of Co-financer	Type of Co-financing	Amount (USD)	% of Total Financing
Government Contribution	Loans	22,000,000.00	62.9%
Colombian National Cattle Ranching Federation	Grant	3,300,000.00	9.4%
Center for Research on Sustainable Agricultural Production Systems	In-kind Donation	630,000.00	1.8%
Environmental and Childhood Action Fund	Grant	1,550,000.00	4.4%
The Nature Conservancy	In-kind Donation	1,470,000.00	4.2%
Other cattle ranchers and local sector organizations	In-kind Donation	6,000,000.00	17.2%
<b>Total (USD)</b>		<b>34,950,000.00</b>	<b>100.0%</b>

Source: GEF Database (2022)

### Project Highlights

**The project demonstrates an example of an effective Public Private Partnership (PPP).** The project's main partnership (for implementation and co-financing) is an alliance between public sector and private sector actors. With financial and technical support from the partnership, about 32,000 hectares have been converted to the silvopastoral system to date, increasing incomes by up to USD 523 per hectare per year, and boosting milk productivity by an average of 36.2%. This has helped farmers plant more than 2.6 million trees of 80 different species and sequester more than 1.2 million tons of carbon (World Bank, 2019).

**By leveraging Colombia's Payment for Ecosystem Services (PES) framework<sup>31</sup>, the project has successfully implemented PES schemes, which indicates further potential to attract additional private funding in the future.** A key project component was the provision of PES to farmers for measurable increases in biodiversity and carbon sequestration through SPS adoption. Encouraging progress was achieved during the project, with positive indicators tracking increased land area and farms benefiting from PES schemes. This component of the project was also instrumental in the development of two long-term funding mechanisms: the "Agua Vivo" water fund, which aims to increase tree cover in the watershed that supplies water to the city of

<sup>31</sup> Colombia's Payment for Ecosystem Services (PES) framework is established by Decree 870 of 2017, the CONPES 3886 of 2017, and Decree 1007 of 2018. Its primary objective is to provide payments for activities related to strategic ecosystem services, such as ensuring the quality of water, conserving biodiversity, and providing recreational opportunities. PES can also serve as a financial mechanism to support the substitution of illicit crop production. Between 2016 and 2019, a total of 111 PES schemes were established (Climate Focus, 2021).

Manizales, and the "green seal" certification scheme proposed by the Marketing Board of Colombian Angus and Brangus Cattle Producers. The latter scheme could lead to SPS farms selling produce to consumers at a premium. Although PES provision in the project was primarily funded by grants, efforts to establish a market for ecosystem services and green products could enable funding for PES to come from the premium paid by consumers.

**The project could potentially be scaled and replicated via multiple channels.** With the support from FEDEGAN, replicability can be supported by sharing project knowledge to all FEDEGAN members. Moreover, capacity-building efforts could reach beyond direct beneficiaries. By training neighboring farmers, by FEDEGAN's technicians and producer associations in SPS, the project established best production practices for all cattle ranches.

### Project Two: The Carbon Neutral Cities project

The GEF-led project Energy Efficiency for the Transition to Carbon Neutral Cities in Colombia ("The Project") stands out with its significant co-financing component. The Project seeks to reduce CO2 emissions by increasing energy efficiency in the construction sector in Barranquilla, Montería, and Pasto through the development of actions that involve the different stages of the life cycle of buildings and interventions in public space.

#### Co-financing Structure

**The Project was initiated by GEF, and was co-executed by the Development Bank of Latin America (CAF), Inter-American Development Bank (IDB), and Colombia's Ministry of Environment and Sustainable Development.** The Project has three key components: 1) establish a standard of governance for energy efficiency in buildings and public spaces; 2) implement energy efficiency programs in buildings and public spaces; 3) disseminate project knowledge and experience. To implement the three components, GEF granted seed funding of USD 7,925,135 and the co-financiers provided funding of USD 100,905,560.

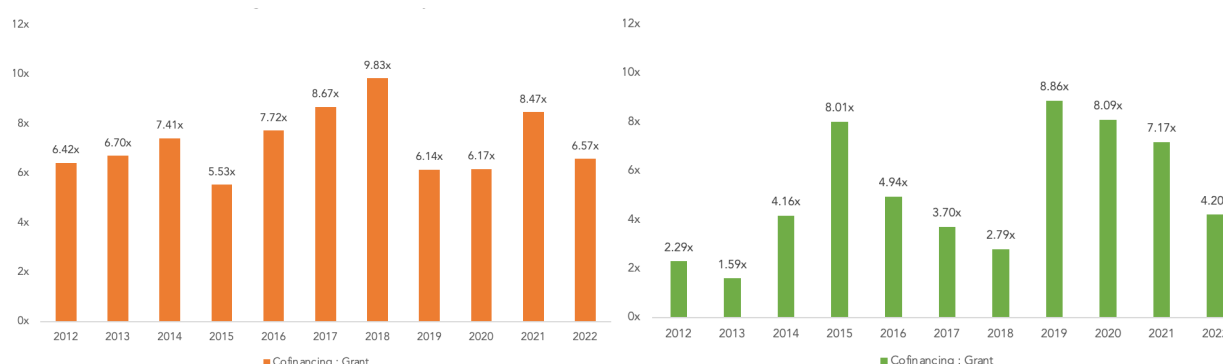
Table 3.12. Carbon Neutral Cities Project Details

Project Component	Financing Type	Project Outcomes	GEF Amount (USD)	Co-Financed Amount (USD)
1. Governance for Energy Efficiency in Buildings and Public Spaces	Technical Assistance	The capacity of local institutions strengthened with technical, normative, and methodological tools to implement strategies for enhanced energy efficiency	1,294,647	16,871,409
2. Pilots of Energy Efficiency in Buildings and Public Spaces	Investment	GHG emissions reduced, and improved energy efficiency associated with buildings and public spaces in the project intervention area	5,498,575	69,211,124
3. Dissemination of Project Knowledge	Technical Assistance	Informed and adaptive project management	764,049	9,777,749
<b>Project Costs</b>		<b>Sub Total (USD)</b>	<b>7,557,271</b>	<b>95,860,282</b>
		<b>Global Environment Facility Trust Fund (GET)</b>	<b>377,864</b>	<b>5,045,278</b>
		<b>Total (USD)</b>	<b>7,935,135</b>	<b>100,905,560</b>

Source: GEF Database (2022)

**The Project's Grant-to-Co Financing ratio reached 12.72x which is higher than the average Grant-to-Co Financing ratio of all GEF Colombia projects and the global average Grant-to-Co Financing ratio of all GEF's projects.** As shown in figures 3.13. and 3.14., over the period of 2012-2022, the average Grant-to-Cofinancing ratio of GEF Colombia projects has been under 9x, and the global average of Grant-to-Cofinancing ratio of all GEF's projects has been under 10x.

Figures 3.13. and 3.14.: Annual Average Co-Financing Ratios for all GEF Projects (left) and Colombia-only Projects (right)



Source: Global Environment Facility (2022)

**Huge financial support from municipal governments of the project cities may explain the high Grant-to-Cofinancing ratio.** The breakdown of co-financing shows that the Barranquilla City Council and the Pasto City Council combinedly committed USD 64,476,989 to The Project, accounting for 63.9% of total co-financing funds.

Table 3.15. Carbon Neutral Cities Project Co-Financing Breakdown

Name of Co-financer	Type of Co-financing	Amount (USD)	% of Total Financing
Barranquilla City Council (Local government)	Public Investment	61,619,846.00	61.1%
Pasto City Council (Local government)	Public Investment	2,857,143.00	2.8%
Colombia Ministry of Environment and Sustainable Development	Public Investment	3,428,571.00	3.4%
Development Bank of Latin America (CAF)	Loans	10,000,000.00	9.9%
Inter-American Development Bank (IDB)	Loans	15,000,000.00	14.9%
Development Promotion Fund of the Spanish International Cooperation Agency for Development	Grant	8,000,000.00	7.9%
<b>Total (USD)</b>		<b>100,905,560.00</b>	<b>100.0%</b>

Source: GEF Database (2022)

**Indeed, the high co-financing ratio could be due to The Project complementing Colombia's BiodiverCiudades strategy.** The BiodiverCiudades strategy, detailed in section Thematic Impact Evaluation (Section 3.4.1), is a national policy led by the National Government to transform Colombian cities into urban spaces where nature is part of sustainable urban development. The three project cities (Barranquilla, Montería, and Pasto) are pilot cities under Colombia's BiodiverCiudades Strategy. The connection with the BiodiverCiudades strategy makes it easier to mobilize resources, including funding, for the project.

#### About Barranquilla

*The city of Barranquilla, officially Barranquilla's Special, Industrial and Port District, is the capital of the department of Atlántico. Barranquilla lies strategically next to the delta of the Magdalena River, serving as a port for river and maritime transportation within Colombia. The city is the core of the Metropolitan*

*Area of Barranquilla, with a population of over two million, which also includes the municipalities of Soledad, Galapa, Malambo, and Puerto Colombia. Barranquilla is the fourth most populated city in the country and the largest city in the Caribbean Coast region.*

*Barranquilla is one of the cities in Colombia with highest exposure to climate risks. Lying on the Northern coast of Colombia in a low floodplain next to the Magdalena River Delta, Barranquilla faces substantial flood risks from storm surges and riverine flooding (i.e. when streams and rivers exceed their natural capacity). Moreover, located in a hot and humid climate zone, residents of Barranquilla make extensive use of air conditioning systems, which further contributes to the already high climate risks. The situation is made worse by limited government planning and responses to address these risks. This combination of climate-exposure risks and state mismanagement of these risks has led economists from the World Bank and the Organisation for Economic Co-operation and Development (OECD) to identify Barranquilla as one of the top coastal cities globally expected to have the largest increase in flood risk by 2050 (Hallegatte, 2013).*

### Project Highlights

**Multiple instruments have been utilized in the co-financing of The Project:** three cash public investments from the city councils of Barranquilla, the city council of Pasto, and the Ministry of Environment and Sustainable Development, two loans by CAF and IADB, and one grant by Development Promotion Fund of the Spanish International Cooperation Agency for Development.

**The Project's financing mechanism engages private funding through creation of a resource multiplier.** Based on initial resources, the resource multiplier proposed by The Project finances new subprojects through credit lines to motivate the intermediary commercial banks to place medium-to-long-term credit.

**The Project shows great scalability through Colombia's BiodiverCiudades Strategy.** Under BiodiverCiudades Strategy, the lessons and initiatives will be upscaled to the 14 pilot cities through the "Network of pioneering cities in sustainable construction," which allows the exchange of experiences and knowledge transfer.

*A program by the World Bank's BioCarbon Fund aims at incentivizing private sector engagement through emissions reduction payments. Here is how:*

*The Orinoquía Sustainable Integrated Landscape Program (OSILP) aims at facilitating the adoption of sustainable and low-carbon natural resources management practices in Colombia's largest agricultural frontier, the Orinoquia region. By helping to transition to low-carbon development, the project also aims at improving livelihoods and protecting water sources and biodiversity. The project is led by the Colombian Ministry of Agriculture and Rural Development and is financed through a USD 20 million*

grant from the World Bank's BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL). Furthermore, ISFL funding includes USD 1 million to "support sustainability by private sector enterprises in the livestock and dairy sectors" (BioCarbon Fund, n.d.) and USD 7.3 million for technical assistance. It also has received co-financing of USD 5.93 million by GEF. A core feature of the program is engaging the private sector in order to accelerate climate-smart agriculture solutions. To achieve this, the program will potentially reward efforts that reduce emissions by purchasing up to 10 million tons of carbon dioxide equivalent (tCO<sub>2</sub>e). According to the BioCarbon Fund this could open the door for payments of up to USD 50 million for verified carbon emission reductions. To generate these payments the World Bank has issued its proposal for The BioCarbon Emissions Reduction Program in 2022 (BioCarbon Fund, 2022).

## 3.5. Conclusions and Recommendations

### 3.5.1. Colombia Case Study Conclusions

**Conclusion 1: Colombia has a robust climate policy development and implementation process, which engages a wide variety of stakeholders and incorporates extensive internal and external research. Overall, this process allows for a granular accounting of climate commitments and corresponding climate finance needs.**

Colombia delivers clear climate commitments through its NDC, and the Colombian government is currently implementing and reviewing more detailed adaptation and mitigation plans with multilateral and international organizations. Colombia's climate finance reports and this report's shareholder mapping analysis demonstrate multiple funding sources that offer climate finance through different intermediaries to a wide range of recipients and implementing agencies that support these commitments. Through a transparent system of identifying goals, carrying out policy and economic programs, estimating costs of implementation, and projecting future climate finance objectives and other results to reflect on, Colombia has established a process that links climate commitments to corresponding climate finance needs, at a granular level.

**Conclusion 2: While the exact amount of climate finance needs is subject to some measurement uncertainty, depending on the scope of costs considered, it is evident that current climate finance flows fall short of necessary investment levels.**

Tracked climate finance flows in Colombia fall short of the investment levels needed to meet near-term (2021-2030) climate commitments. While there is considerable uncertainty, data

suggests that the shortfall is close to USD 1 billion annually. Moreover, the need for deploying climate finance instruments is likely even greater when considering further economic consequences of meeting climate commitments, such as lost oil and gas revenue and other transition risks. Finally, declining rates of climate investment in recent years adds to the urgency of addressing this gap.

**Conclusion 3: Although, for some sectors and climate actions, financing resources are simply insufficient to meet needs, often a lack of mobilization of adequate existing resources prevents climate investment from reaching targeted levels, rather than constrained resources alone.**

Projected financing resources exceed climate finance needs, at least at an aggregate level, during the period 2021-2030 but are yet to be realized as climate finance transactions. The “mobilization gap,” can be attributed to four key barriers: i) need to increased private sector financing across all sectors (except for the energy sector), ii) outdated and insufficient energy and transportation infrastructure inhibiting the acceleration of renewables and clean transportation investments, iii) underdeveloped climate financing structures in the AFOLU sector and iv) limited projected availability of resources to finance adaptation actions. These barriers affect climate projects and potential investors, potentially explaining why financing resources have not been effectively mobilized to meet climate investment needs. Addressing these barriers will be critical to accelerating the pace of climate finance in Colombia and will require creative financing solutions specific to sectors and enterprises.

**Conclusion 4: Colombia has seen initial success in mobilizing climate finance by linking enterprise-level climate action to broader thematic interests and parallel policy programs. These transformative synergies not only de-risk climate projects for investors, but also position projects to maximize impact and scalability.**

As both the FOLU Coalition and BiodiverCiudades strategies showcase, climate action that has been detailed at a cross-sectoral, and regional level, have effectively driven greater policy action and creating actionable implementation plans with the direct involvement of stakeholders. In FOLU’s case, participatory governance processes were key in creating and implementing a territorial roadmap.

**Overall, a strong national climate policy framework is a necessary but not sufficient basis for delivering climate finance, but this foundation can be leveraged in combination with quality data, broad-based stakeholder engagement, and innovative/entrepreneurial solutions to accelerate the pace of climate investment.**

### 3.5.2. Recommendations for Colombia

**Recommendation 1: Leverage Colombia's Green Taxonomy to mobilize climate finance, particularly for the AFOLU sector, and to increase private sector participation.**

The new green taxonomy launched by the Colombian government in 2022 is expected to be a promising tool to attract more resources from companies, issuers, local and international investors and other entities towards sustainable and green projects and assets. It is unique in its focus on land use, providing specific eligibility criteria for the agriculture, livestock and forestry sectors, which are critical for the country's economy and the livelihoods of millions of Colombians depending on these sectors. Therefore, identifying projects and ensuring their monitoring should be a key priority for Colombia's new government. Early lessons would be also relevant for the development of a LAC wide common green taxonomy. Colombia could play a leading role in the construction of a sustainable finance framework in LAC and in harmonizing its own efforts with the EU and US efforts.

**Recommendation 2: Leverage MRV system climate finance tracking data to identify climate finance challenges and learn from success stories.**

The gap between climate finance flows and estimated needs, at least to the extent such a gap reflects slow mobilization of financing resources, is directly related to a lack of investor awareness of opportunities to finance climate projects as well as available financing structures. This is particularly salient for private investors, who are unlikely to finance climate projects on their climate merits alone if preferred risk-adjusted returns are unmet. Using the MRV system data, the Colombian government may be able to identify successful transactions and supportive financing structures (e.g., public-private partnerships, credit guarantees, concessional, etc) and utilize these data points to replicate project pipelines and raise the interest of investors in future climate projects.

**Recommendation 3: Continue to improve the quality of data tracked by the MRV system.**

Currently, Colombia's MRV system is a best-practice model for national tracking of climate finance flows. However, expert interviews indicate that there is still room for improvement. For example, climate finance tracking in the housing sector may be subject to data collection gaps, as distinguishing housing climate investments from total investments in housing can prove challenging. Additionally, recording the financial instruments (e.g., debt, equity, grants, etc.) associated with tracked climate finance transactions will allow for further insight into the optimal financing structures for projects across different sectors. This is a critical attribute to climate finance data, as it will be indicative of sectors and projects where greater risk appetite is found

(i.e., high proportion of equity) and where concessionality is needed (i.e., high proportion of grants), among other important investment characteristics.

**Recommendation 4: Align national climate goals and NDC targets with targeted cross-sectoral policies and strategies.**

Out of the 32 measures put forward in the NDC by sectoral ministries, only one – reducing deforestation – is designed to be implemented in a collaborative, cross-sectoral manner. Interviews conducted by the Global Alliance for the Future of Food have revealed that policy development within the government often takes place in silos (2022). By matching climate goals with targeted cross-sectoral policies and strategies, the government can provide greater long-term clarity, reduce market risk and build an enabling environment for greater mobilization of private investment capital.

**Recommendation 5: Develop a roadmap for private sector involvement in financing climate projects, detailing sector-level guidance and policy support.**

Underlying Colombia's climate finance needs gap is that public sector investment in climate projects far outpaces private sector investment in all sectors except for energy. While the role and scope of private sector investment differs by sector, MRV system data shows that private finance has been involved – to varying degrees – in climate investment transactions across nearly every tracked sector over the past decade. Engaging private sector actors with a sector-specific roadmap, providing guidance on how they can ramp up financing efforts – as well as project origination – while also outlining how these efforts can be carried out in conjunction with policy implementation is a potential starting point for broader private sector mobilization.

In particular, roadmaps should build upon Colombia's Green Taxonomy, which establishes green bond issuance eligibility criteria for mitigation and adaptation projects. In addition to eligibility, roadmaps should offer guidance that points to the key commercial opportunities and risks, as well as the potential financing structures (e.g. public-private partnerships, loan guarantees, concessional financing, etc.), that private investors should look for when investing in climate enterprises across sectors. According to Convergence, a global network of blended finance, Colombia shows potential for scaling blended finance and should continue building on its first blended finance transaction experiences. The country could engage its regional and national development banks, including Finagro or Findeter, to create new blended finance vehicles (Thayil, 2022). This is a particularly crucial measure for increasing the pipeline for sustainable projects in decentralized sectors such as AFOLU, where the commercial benefits of adopting sustainable practices are less commonly understood and nuanced financing structures are needed to overcome the coordination challenges among small-to-medium enterprises.

## 4. Case II: Morocco

### 4.1. Country Background

#### 4.1.1. Country Profile

**Morocco, Africa's fifth largest economy, has a robust, diversified economy and is facing a growing population.** Key economic sectors include agriculture, tourism, phosphates, textiles, and clothing. The service sector accounts for over half of the GDP and employs 42.6% of the country's workforce. Around a quarter of its GDP focuses on industry, and the rest relies on agriculture. It is the world's largest phosphate producer, contributing to up to 26% of Morocco's export (World Bank, 2021). Apart from phosphates, the country boasts diverse renewable energy sources like solar and wind power that are slowly being introduced to the country's energy mix.

**Morocco has experienced a dramatic improvement in energy access rates in the last two decades.** Morocco has followed a utility-driven approach in which the national utility, ONEE, is responsible for the energy access program of the country. ONEE is also responsible for providing electricity to remote communities through either diesel or renewable-powered mini grids or PV kits via a fee-for-service. As a result of its electrification strategies that focused on decentralized renewable options, rural electrification rates reached 99.6% in 2018 (Jacquot et al., 2020). Still, Morocco has a carbon-intensive power sector and is heavily dependent on fossil-fuel imports for its energy needs - in 2021, coal-fired generation was responsible for 63% of total electricity generation (Bloomberg Climatescope, 2021). Decarbonizing the sector would require a gradual phase-out of coal-fired generation and further deployment of renewable energy.

**Amongst the world's lowest emitters, Morocco produces only 0.2% of global GHG emissions. However the country is considered 'very vulnerable' to the effects of climate change according to the UN IPCC.** The geographical position of Morocco<sup>32</sup> makes it vulnerable to the exacerbating effects of climate change, such as desertification, floods, and water scarcity.<sup>33</sup> Most of the country is affected by droughts, temperature increases, changing rainfall patterns, floods, and sea level rise. Morocco is one of the world's most water-scarce countries with an increasing incidence and severity of droughts. Rainfed agriculture represents 80% of the country's cultivated land, as such, droughts represent a severe threat to food security at the national level.

---

<sup>32</sup> Despite its small contribution to global GHG emissions, Morocco has a carbon-intensive power sector. Decarbonizing the sector would require a gradual phase-out of coal-fired generation and deployment of renewable energy.

<sup>33</sup> Quote from Ministry of Energy in [Morocco World News](#).

## 4.1.2. Policy Context

**Morocco has been a front-runner on climate action in its region and a first-mover across the Middle East and North African (MENA) region.** In 2021, it was one of the few countries in the world that submitted a revised NDC to reduce its greenhouse gas emissions to 45.5% of baseline levels, of which 18.3% was unconditional, and the remaining 27.2% dependent on receiving international financial assistance. Beginning in 2014, the country committed to removing subsidies on fossil fuels and reducing its reliance on fuel imports to redirect those funds towards strategic investments in building out its renewable energy capacity. As a result, Morocco has developed various national-scale projects on solar, wind, hydro, and other renewable energies, which comprise approximately 42% of its electricity capacity, with an aim to achieve 52% by 2030 (International Energy Association, 2019).

**Morocco has also developed a robust policy framework and expanded its institutional capacities to achieve its climate goals.** This began with the creation of the Moroccan Agency for Sustainable Energy (MASEN) and the Agency for Development of Renewable Energy and Energy Efficiency (ADEREE) in 2010, and climaxing with the Moroccan Competence Center for Climate Change (4C Maroc) in 2016, a partnership between the Secretary of State in Charge of Sustainable Development (SSSD) and the German development agency (GIZ). 4C Maroc has been instrumental in enabling cross-ministerial and inter-regional coordination on climate change policy, improving data collection on emissions with the development of a National Inventory System for GreenHouse Gas (NIS-GHG), and enabling South-to-South cooperation by facilitating dialogues with African countries to explore the possibility of a regional carbon market in Africa.

**Morocco's policy innovations in attracting climate finance have made it the second highest recipient (19%) of international climate funding in the WANA region.** For example, Morocco's issuance of sovereign green bonds at the domestic and international levels has allowed it to finance USD 2.45 billion of its investment in the Ouarzazate Solar Power Station project (NOOR I, II, and III). After hosting COP22 in 2016, Morocco announced that it would be piloting the World Bank's Transformative Carbon Asset Facility (TCAF), a policy-based carbon financing and crediting mechanism for emerging markets. The TCAF is a model of results-based finance, by which countries receive payments based on policy impacts, i.e. if a policy change proves emissions reduction. For instance, countries could receive payments for introducing carbon pricing instruments like emissions trading systems and carbon taxes, or other reforms such as simplifying renewable energy regulations or enforcing low-carbon policy standards. As of 2018, Canada, the UK, Germany, Norway, Sweden and Switzerland have contributed to the \$200mn TCAF fund.

Table 4.1. Overview of Morocco's most recent climate policy instruments

Year	Policy Instrument
2009	The Moroccan Solar Plan
2009	National Plan Against Climate Change (2020)
2009	National Water Strategy
2010	Moroccan Agency for Sustainable Energy (MASEN)
2010	Renewable Energy Law
2010	The Moroccan Wind Power Plan
2010	Agency for Development of Renewable Energy and Energy Efficiency (ADEREE)
2013	National Action Programme to Combat Desertification in Morocco
2014	National Strategy of Sustainable Development 2020 and 2030
2016	National Adaptation Plan (NAP)
2016	Green Investment Plan (PGV)
2016	First Green Bond Issuance
2017	National Climate Change Strategy (SNCC)
2017	Wood and Energy Strategy
2019	National Plan Against Climate Change (2030)
2019	Climate Change Policy of Morocco
2019	The National GHG inventory system
2020	Updated Nationally Determined Contribution (NDC)
2020	National Climate Change and Biodiversity Commission
2020	Forests of Morocco 2020-2030
2020	Generation Green 2020-2030
2020	National Water Plan
2021	National Roadmap for Green Hydrogen

Source: Author's Creation

## 4.2. Assessment of Climate Commitments and Needs

### 4.2.1. Summary of Morocco's Updated NDC 2021

**Morocco has focused on setting up policies to reduce national emissions and adapt to the effects of climate change; as such, the Government submitted its first NDC to the UNFCCC in June 2015 and a revised NDC in 2021.** With the revised NDC, Morocco enhanced its emissions goals toward carbon neutrality, presented more comprehensive adaptation commitments, expanded its mitigation goals to more sectors (including the cement and phosphates sectors, Morocco's main export products), and created and continued to carry out national programs that contribute to the implementation of the NDC (including programs on water, energy efficiency,

waste, building, logistics, and more). The revised NDC also details the scale of Morocco's financing needs and means of implementation of different measures.

## Adaptation Goals

**The NDC illustrates in detail why and how adaptation is a priority for Morocco's sustainable development.** As the country is highly vulnerable to the effects of climate change, Morocco needs to strengthen its risk management, improve the use of land, reduce negative environmental, economic, and social impacts in each of the country's sectors, enhance capacity in vulnerable communities, and implement institutional arrangements in the adaptation process.

**Morocco's updated NDC specifies 36 adaptation goals in eight priority sectors.**<sup>34</sup> Through a top-down approach, the needed commitments for Morocco to achieve these adaptation goals would require approximately USD 40 billion by the end of 2030 (which is approximately USD 4 billion annually)<sup>35</sup>. The implementation costs of adaptation programs will be distributed to the most affected sectors, particularly water, agriculture, fishing and aquaculture, forestry, health, housing, and the most vulnerable environments and ecosystems: oases, coastlines, and mountains.

## Mitigation Goals

**Morocco's revised NDC introduced nine new mitigation actions, bringing the total number of mitigation goals<sup>36</sup> to 61, spanning across seven sectors<sup>37</sup> and aims for a total emissions reduction of 45.5% by 2030<sup>38</sup>.** According to the 2021 NDC, a total of USD 38.8 billion is needed for implementing mitigation goals, with USD 21.5 billion focused on conditional objectives. The NDC also specifies a mitigation strategy with a total of 34 measures on unconditional mitigation objectives.

**Morocco's existing and newly-created national programs cover different sectors to achieve its mitigation goals.** The 2009 National Energy Strategy aims to increase the share of renewables in total power capacity to 52% by 2030. The Morocco government also sets up the National Logistics Strategy to reduce logistics costs for consumer benefits, as well as the National

---

<sup>34</sup> 1. Meteorology, 2. Agriculture, 3. Water, 4. Fisheries and Aquaculture, 5. Forest, 6. Sensitive Environment Sector (coasts, mountains, and oases), 7. Housing, Land Use Planning and Town Planning, and 8. Health.

<sup>35</sup> This number is an estimation mentioned in the NDC. However, there is no specific sectoral financial needs mentioned. The NDC also does not mention whether this will all be through national effort or international support.

<sup>36</sup> This number includes 34 unconditional goals and 27 conditional goals.

<sup>37</sup> 1. Electricity Production, 2. Industry, 3. City, Housing, and Tertiary, 4. Transport, 5. Waste, 6. Agriculture, and 7. Land Management and Forestry.

<sup>38</sup> This includes 18.3% on unconditional objective and 27.2% on conditional objective.

Strategy for Waste Reduction and Recovery and the National Liquid Sanitation and Wastewater Treatment Program to tackle the issues of water scarcity in Morocco.

**Most importantly, Morocco's revised NDC directs innovative approaches to meet its climate goals, and its updated mitigation goals cover the cement and phosphates sectors, which are Morocco's largest export production.** Its conditional measures intend to reduce carbon emissions in the cement industry through carbon capture and storage, and it set the goal of achieving a reduction of 20% of emissions for the entire phosphate sector.

#### 4.2.2. Other Estimates of Climate Financing Needs: World Bank and CPI Reports

**The World Bank's Country Climate and Development (CCD) Report provides a novel modeling exercise to analyze the interplay between Morocco's development goals and climate change.** The study's aim was to quantify the key mitigation and adaptation investments needed to support the transition to a 'resilient and low-carbon (RLC) economy. In undiscounted terms, total costs for 2022-2030 in mitigation and adaptation amount to USD 32.2 billion, or USD 4.0 billion annually. This increases to USD 60 billion and USD 127 billion for the following two decades (Table 4.2.).

Table 4.2. CCD Report Estimates for Total Investments Needed for a RLC Transition

	Present Value in USD Billion (*)				En proportion du PIB (**)			
	2022-2050	2022-2030	2031-2040	2041-2050	2022-2050	2022-2030	2031-2040	2041-2050
<b>Mitigation</b>	52.8	8.3	16.7	27.8	2.4%	1.0%	2.2%	4.6%
Power sector (***)	10.8	6.1	10.7	15.9	1.5%	0.7%	1.4%	2.6%
E-mobility	32.8	0.0	1.9	8.9	0.5%	0.0%	0.3%	1.5%
Green hydrogen	9.2	2.2	4.0	3.0	0.4%	0.3%	0.5%	0.5%
<b>Adaptation</b>	24.9	14.9	8.3	1.6	1.1%	1.8%	1.1%	0.3%
National Water Plan	23.4	14.2	7.8	1.4	1.1%	1.7%	1.0%	0.2%
DRM & DRF (15 percent AAL)	1.4	0.7	0.5	0.3	0.1%	2.7%	0.1%	0.0%
<b>Total</b>	<b>77.7</b>	<b>23.3</b>	<b>25.0</b>	<b>29.5</b>	<b>3.5%</b>	<b>0.1%</b>	<b>3.3%</b>	<b>4.9%</b>

Notes: (\*) Real US dollars in 2022 terms. Uses a 6 percent discount rate.

(\*\*) Net present value (NPV) of investments divided by the present value of baseline GDP

(\*\*\*) Difference between decarbonization and business as usual (BAU). Includes transmission and distribution.

Source: CCD Report, 2022 (p. 41)

**The CCD Report assumes that a large share of financing would come from the private sector.** In total, it estimates that more than 85% of the investment needed to decarbonize the economy would be covered by the private sector. On the other hand, adaptation investment would primarily be financed with public resources. However, the report notes that there is room for private

operators on specific adaptation interventions such as sea-water desalination, climate-smart agriculture, and climate risk insurance (World Bank, 2022).

**CPI's Landscape of Climate Finance in Africa estimates that Morocco (among other countries) faces an investment gap of 1-5% of its GDP** (Climate Policy Initiative, 2022). Using IMF GDP forecasts for 2023-2027, the range of investment needed is calculated as USD 1.6 to USD 7.8 billion annually (IMF, n.d.).

## 4.3. Climate Finance Needs Gap Analysis

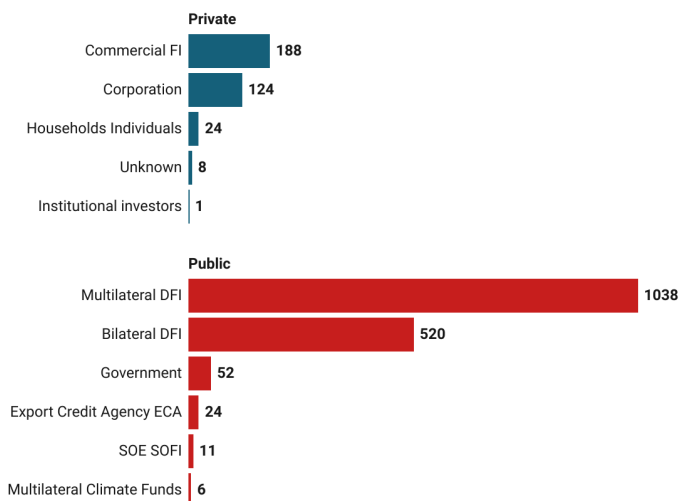
### 4.3.1. Climate Finance Flows

**Leveraging a supportive investment ecosystem, Morocco has successfully attracted climate finance relative to peer developing economies.** Morocco is the second-highest recipient of climate investment in WANA, receiving 19% of international climate funding in the region. Overall, multilateral institutions have concentrated their climate finance efforts towards a few countries, including Morocco, citing differences in socio-political and economic stabilities, regulatory and governance issues, microeconomic conditions (i.e. pipeline of bankable projects), counterparty risks, lack of technical capacity, and perceived risks due to information asymmetries (CPI, 2022).

**Climate financing has followed an upwards trend in the last decade.** The CCD Report states that between 2011 to 2018, climate financing increased by 5.3% annually, and, on average, Morocco has invested - both from public and private sources - USD 1.5 billion on climate action annually (around 1.3% of GDP). However, given the lack of climate-tagging on the public side and a lack of a green taxonomy on the private side, this headline figure is expected to vary widely. CPI's Landscape of Climate Finance in Africa estimates that the annual average climate finance flows between 2019 and 2020 is USD 2.0 billion. Flows predominately correspond to mitigation measures (USD 1.1 billion) and, to a lesser extent, adaptation (USD 800 million) and mixed-use (USD 135 million). Most investments support energy, water, and transport sectors, and to a lesser extent the agricultural sector (Fig. 4.4.).

**Between 2019-2022, the majority of climate investment comes from public sources.** Within public sources, the vast majority of financing comes from multilateral and bilateral development finance institutions (Fig.4.3.) with the caveat that there are significant data gaps in tracking domestic public and private climate finance flows. Furthermore, Morocco has not yet adopted climate budget tagging into its budgeting processes. Within private sector financing, a UNEP study reveals that most of the existing involvement is backed by public funds and is in hard currencies (UN Environment Programme, 2022).

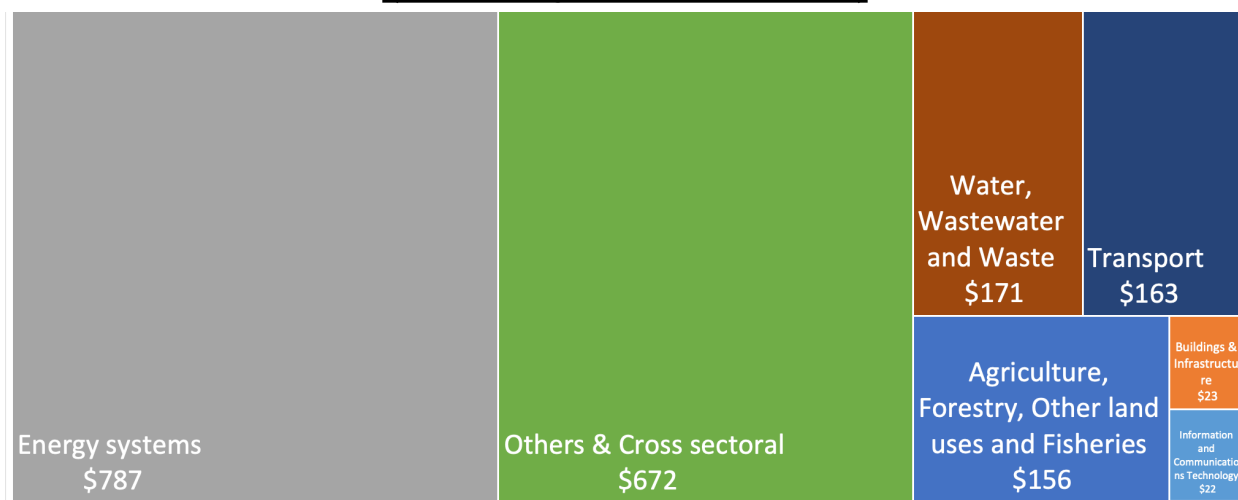
Figure 4.3. Public and Private Actor Shares of Climate Finance  
(Annual Average 2019-2020, USD Million)



Source: CPI, 2022.

**Climate investment flows are concentrated in sectors at the core of Morocco's decarbonisation strategy, such as energy, water, and transportation.** The largest portion of climate investment went to support the energy sector (39%), followed by cross-sectoral investments (34%), water (9%), transport (8%) and agriculture (8%) (Fig. 4.4).

Figure 4.4. Total Climate Finance Flows by Sector  
(Annual Average 2019-2022, USD million)

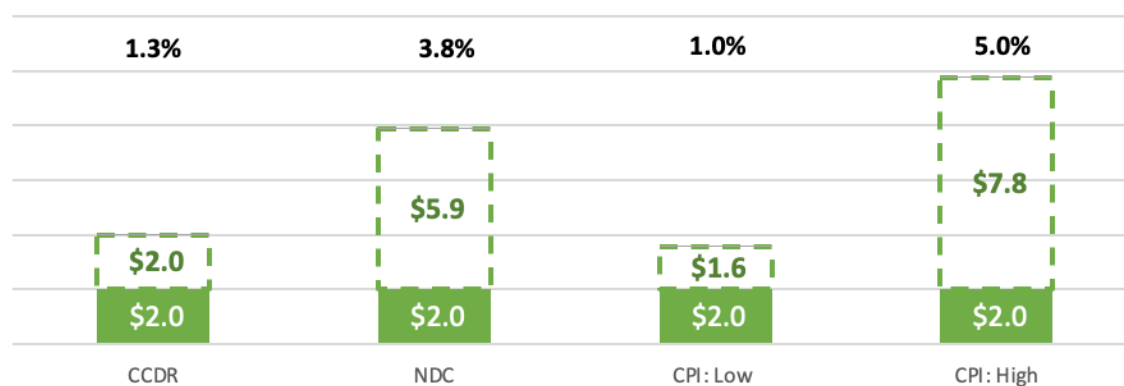


Source: CPI, 2022.

### 4.3.2. Climate Finance Needs Gap

**Despite recent improvements, climate finance flows fall short of climate finance needs.** Across various sources, projected annual investment needs for Morocco’s climate goals range from USD 4.0 to USD 9.8 billion (Fig. 4.5.). This range largely aligns with CPI’s estimate that the investment gap represents 1 to 5% of the country’s GDP. Investments in adaptation in particular are falling short: average annual climate finance flows to adaptation reached USD 734 million in 2020, however, the NDC flags USD 4 million needed annually to reach the country’s adaptation targets. Given the range in estimates provided, the following needs-gap-analysis is more an indicator of a significant gap in climate finance rather than an attempt to size the exact dollar amount.

Figure 4.5. Range of Annual Financing Gap Estimates (USD billion, Investment Needs as a % of GDP)



Source: CCD Report, 2022; NDC, 2021; and CPI, 2022.

### 4.3.3. Climate Finance Mobilization Gap

**Although an exhaustive accounting of the financial resources available to climate projects in Morocco is not available,<sup>39</sup> assessments of recent climate finance indicate that status quo resource mobilization is insufficient to meet climate goals.** In particular, private finance is mainly absent from climate investment in Morocco, and when private finance has been mobilized, it largely requires public financing partnerships and “hard currency” transactions (UNEPFI, 2022).

In general, this indicates that the risk-return profile of climate projects generally in Morocco is not favorable enough to attract major private investment - particularly for climate sectors such as sustainable agriculture and water management where the private sector can play a greater role in bringing about innovation and efficiency. Moreover, given that some projects would ideally be

<sup>39</sup> Unlike Colombia, where AFD and the Colombian government collaborated to project total financing resources available to implement the national climate strategy, no such study has been published for Morocco.

financed in local currencies, the development and mobilization of domestic private financing institutions towards climate enterprises is crucial in ensuring that adequate financial resources are committed.

#### 4.3.4. Barriers to Climate Finance in Morocco

##### ***Barrier #1 Structural constraints facing the private sector, particularly in the power sector***

Morocco's business environment is not fully conducive to new firm entrants and diversification due to weak competition frameworks and legacy existing market operators – mostly state-owned enterprises (SOEs) (World Bank Private-Sector Diagnosis). This is most pertinent in the energy sector, where the state utility ONEE holds a near complete monopoly over the transmission network, although third-party construction of transmission is allowed in a few particular cases (Bentaibi et al., 2021).

ONEE accounts for a third of the total generation and more than half of the distribution and retail sector. ONEE also has exclusive ownership over storage assets (Bentaibi et al., 2021). As such, generation and, to a lesser extent, distribution, are the only segments of the energy supply chain that afford an opportunity for private developers to initiate new power projects.

##### ***Barrier #2 'Brown' tax expenditures and subsidies hinder fiscal revenue mobilization***

Morocco underwent a series of fuel subsidy reforms between 2014 to 2016 that ended subsidies on gasoline and fuel oils and reduced subsidies on diesel. However, due to tax exemptions, Morocco still forgoes a substantial amount of public revenues that could be collected from fuel imports and consumption. While some exemptions are strategic such as exemptions on fuels used for water and electricity generation, others for commercial transport, such as shipping and aviation, contribute to foregone fiscal revenues (estimated at 0.34% of GDP).<sup>40</sup>

The last remaining price subsidy exists for butane gas. In 2022, the subsidies cost the government USD 2.1 billion in the face of higher global gas prices (approximately equivalent to the low end of the annual financing gap) (Rahhou, 2023). Without the subsidy, rural households might revert to wood and charcoal for cooking, which harms human health and could lead to more significant deforestation. Alternatively, the government can promote less harmful clean cooking substitutes, such as electric or solar-powered stoves.

Ideally, these foregone revenues from tax exemptions would be collected and used to advance climate projects, although welfare considerations may require that exemptions are phased out based on need.

---

<sup>40</sup> Minister of Finance estimate of average foregone revenues generated by the reduced VAT between 2018 and 2021.

### **Barrier #3 Lack of a national green taxonomy**

Morocco does not have a nationwide classification of economic activities that can be considered environmentally sustainable and in line with the broader national strategy. In addition to structural constraints, a lack of guiding policy frameworks also impedes private sector participation in climate action, as potential project developers are unsure of the eligibility criteria to receive policy support.

### **Barrier #4 Barriers to entry for adaptation projects, particularly in the water management sector**

Similar to the power sector, Morocco's water supply is primarily managed by the state utility ONEE, with private-sector water companies only operating in a few urban areas (United Nations, 2014). This leaves few entry points for enterprises to commercialize services that make water use more efficient and climate resilient.

Given pressing adaptation challenges represented by sea level rise and diminished rainfall on arable land, creating opportunities for innovative actors to explore solutions such as desalination and high-efficiency irrigation is critical. Moreover, recent projects have demonstrated the potential for pairing desalination efforts with renewable power development (Eljehtimi, 2022). These projects have often been developed using a PPP model, which could point to a replicable solution towards attracting private project developers and investors.

## **4.4. Evaluation of Transformative Impact**

### **4.4.1. Thematic Impact Evaluation**

**The thematic impact evaluation looks at one of the most critical climate themes in Morocco: its water management sector.** Morocco's two major water-related concerns are water scarcity and the risk of floods. On one hand, Morocco suffers from serious drought, as in some other neighboring countries. The CCD Report suggests that water scarcity can influence almost all aspects of Morocco's future socio-economic development. According to the World Resources Institute, globally Morocco ranks 22nd most at risk of water shortages (ITA, 2022). In the CCD Report, it is predicted that the reduction in water availability and the drop in crop yields due to climate change could reduce its GDP by up to 6.5% from a longer-term perspective. As there are many rainfed agricultural workers, the report also predicts that up to 1.9 million such workers may have to migrate to urban areas. On the other hand, Morocco is also vulnerable to floods and sea level rise. Over 65% of the population and 90% of industry are concentrated on the country's

coastline. Historically, floods are estimated to cause average direct losses of USD 450 million annually (World Bank, 2022).

## Water Scarcity

**Measures to address the water problems are embedded in the NDC; however, financing needs are unclear.** Morocco's NDC mentions the adaptation objectives of the water management sector for 2030, 2040, and 2050 regarding both water scarcity and the flood threat, identifying the related national plans. However, financial plans are not clearly stated in the NDC.

**The Moroccan government set the "National Water Plan" in 2020 to invest nearly USD 40 billion into the water sector through its subset plans or programs (ITA, 2022).** One of the subset programs is "the National Priority Program for Drinking Water and Irrigation," designed to improve water management, increase water supply, and expand irrigation areas. It is set for 2020 to 2027 with a budget of USD 11 billion (ITA, 2022). The plan is based on the following five axes (Ministry of Equipment and Water Directorate General of Hydraulics, n.d.):

1. the development of water supply through construction of dams, seawater desalination stations, and other equipment,
2. demand management and water recovery mainly related to drinking water distribution operators and irrigation networks,
3. strengthening the supply of drinking water in rural areas,
4. the reuse of purified wastewater,
5. communication and awareness.

However, in the CCD Report, the World Bank suggests that Morocco's current policies may not be enough due to a lack of "soft" measures like water demand management and governance which complement direct investment in infrastructure.

## Flood Resilience

**The government developed the "National Disaster Risk Management Strategy" (2021–2031) with its subset plans (World Bank, 2022).** One of its major subset plans is the "National Flood Protection Plan" (2016-2036) which targeted more than 1,000 flood-prone sites with USD 1.5 billion worth of investments (World Bank, 2022). It is updated from the previous National Flood Protection Plan launched in 2002, covering the period from 2003 to 2017, with USD 2 billion. However, funds are insufficient to support its Disaster Risk Management scheme (World Bank, 2022).

**There is an existing resiliency initiative; "Integrated Disaster Risk Management and Resilience Program" (2016-2021), launched by the World Bank (2022).** It is intended to "improve the

institutional framework to finance disaster risk reduction activities and strengthen financial resilience to natural disasters for targeted populations” in the form of Program-for-Results Financing, which uses the institutions and processes of its own country and links disbursement of funds directly to the achievement of specific program results (World Bank, 2022). The World Bank decided to offer additional funding in 2021, bringing the total project cost to USD 230 million.

While it is too early in the implementation process to assess the effectiveness of these plans, the large financing commitments suggest that the Moroccan government is proactive in mobilizing resources addressing water management challenges and has engaged supportive stakeholders to do so.

#### 4.4.2. Project-Level Evaluation

**Climate financing flows to Morocco have predominantly focused on the energy and water sectors, bolstering the country’s efforts to achieve sustainable development and climate resilience.** These investments have directly impacted project-level financing, enabling the development of renewable energy and water sector projects throughout the country. Two projects from these sectors are selected for analysis, with an evaluation of how they contribute to the country's climate resilience and pursuit of its mitigation goals, as well as their potential as scalable models for raising climate investment in the future.

##### Project One: Project to Strengthen Drinking Water Production and Improve Technical and Commercial Performance (PRPTC)

**The PRPTC project is a vital initiative addressing water supply challenges in Morocco's urban areas, supported by a public-private partnership.** Approved in December 2021, the Project to Strengthen Drinking Water Production and Improve Technical and Commercial Performance (PRPTC) aims to increase drinking water production and enhance the technical and commercial performance of the Drinking Water Supply (DWS) network in targeted urban areas of Morocco. The project addresses the water demand in locations such as Tissa, Missouri, Outat El Haj, and Meknes. Morocco's National Office of Drinking Water (ONEE) leads the project's implementation, working closely with KfW, the African Development Bank (AfDB), and other partners.

**The primary objective of the PRPTC project is to address several key challenges to water management and conservation in targeted urban areas, which are generally supplied by unstable groundwater resources that fluctuate in quality and rate (source (African Development Bank, 2021).** The project will help improve the efficiency of drinking water services

and optimize water demand by households and end users through the implementation of these five components:

Table 4.6. Components of the PRPTC project

Components	Description
A	Increased production of drinking water in several towns:
	A.1 – Tissa and neighboring rural areas, starting from the Idriss I dam (Taounate Province);
	A.2 – Towns of Missouri and Outat El Haj and neighboring towns, starting from the Hassan II dam (Boulemane Province); and
	A.3 – Meknès Prefecture, starting from the Idriss I supply system (Unit 1 & 2)
B	Improvement of technical performance (priority programme in the Fès- 10.6 Meknès region and management meters in the towns of Benslimane,
C	Improvement of commercial performance (priority programme for the remote reading of billing meters at the national level)
D	Technical support, which includes validation of studies, works control and supervision, procurement audit and environmental and social audit.
E	Project management as well as land acquisition and compensation for PAPs

Source: AfDB

Table 4.7. Details of Financing for the PRPTC project

Source	Amount (EUR million)	%	Instrument
African Development Bank (AfDB)	70	48.92%	AfDB Loan
ONEE	3.7	2.59%	Counterpart contribution
KfW (German Development Bank)	69.4	48.50%	Parallel financing
<b>Total Project Cost</b>	<b>143.1</b>	<b>100%</b>	

Source: AfDB

**Employing innovative financing mechanisms, the PRPTC project strengthens its development impact and displays scalability for other developing countries.** The project employs parallel financing<sup>41</sup> that strengthens its development impact in the concerned regions. It also aims to attract future funding by improving service providers' sustained service delivery performance and introducing smart meters to replace traditional ones.<sup>42</sup> This project also features an innovative financing approach where the ONEE's counterpart contribution is limited to 2.5% due to several considerations, such as, budget austerity due to the aftermath of COVID-19, proven improvement in public institution efficiency, ease of doing business, and commitments to the development of other projects co-financed with AfDB (African Development Bank, 2021). This approach enables the leveraging of substantial external financing with a minimal initial investment. This relatively small share of initial financing shows that similar arrangements can benefit developing and emerging countries with limited fiscal space.

**The PRPTC project is expected to significantly enhance the quality of life for more than 4 million inhabitants, representing 10% of Morocco's population.** The project seeks to improve the supply of drinking water to more than 4 million inhabitants (10% of Morocco's population), which will directly contribute to improved quality of life, public health, and overall well-being. The PRPTC project also promotes sustainable development and responsible resource use in the country by addressing water scarcity issues and optimizing water management practices.

**This project has an estimated IRR of 7.4% and a positive Net Present Value (NPV) (African Development Bank, 2021).** The project will generate returns from the improvement of technical and commercial performance of the DWS network, with total net benefits (i.e., NPV) estimated at MAD 234.1 million. The commercial improvement will be achieved through the installation of smart meters and remote reading systems.<sup>43</sup> The project's rate of return is measured through additional revenue from increased sales, increased rates of return in the production-supply-distribution process, and economies of scale (African Development Bank, 2021).

**The PRPTC project is a crucial step in addressing Morocco's pressing water supply challenges by increasing drinking water production, enhancing technical and commercial performance, and promoting efficient resource management.** By leveraging innovative financing mechanisms and engaging key stakeholders such as ONEE, KfW, and the African Development Bank, the

---

<sup>41</sup> "Parallel-financing" shall mean an arrangement whereby the Bank and one or more co-financiers other than the Borrower finance separate packages of the same project, or separate packages of the same part of a project, each under its own procurement rules.

<sup>42</sup> The smart meter will help prevent water leakage and adapt supply to demand, minimizing loss and improving efficiency of the DWS network.

<sup>43</sup> Remote reading systems will strengthen ONEE's capacity to calibrate, monitor and control its facilities remotely and in real time.

project not only addresses immediate water supply concerns but also sets the stage for future climate financing and sustainable water management initiatives. With its estimated development impact and potential to improve the lives of millions of Moroccans, the PRPTC project serves as a vital component of the country's ongoing efforts to ensure sustainable water resources and bolster climate resilience.

**Laying the groundwork for future financing, this project is the first phase of a more extensive DWS improvement program by ONEE.** This project will be continued with a second phase of a larger DWS improvement program, which is planned to be co-financed with the GCF. With the help of concessional finance from AfDB, ONEE is preparing a financing proposal to the Green Climate Fund (GCF). The second phase of this project represents a milestone for ONEE, as it marks the institution's first foray into GCF co-financing. This strategic move reflects ONEE's initiative to diversify its funding sources and attract more resources for similar projects, while also setting an example for other similar institutions.

#### Project Two: Koudia Al Baida Wind Farm Expansion Project

**The Koudia Al-Baida Wind Farm expansion project, approved in March 2022, contributes to Morocco's green energy transition by doubling the existing wind farm's capacity from 50 MW to 100 MW of renewable energy.** In line with Morocco's Nationally Determined Contribution (NDC) mitigation goals, this expansion is expected to reduce CO<sub>2</sub> emissions by approximately 308,000 tonnes annually (Moroccan Agency for Sustainable Energy, 2022). The European Bank for Reconstruction and Development (EBRD), the Clean Technology Fund (CTF), and a consortium of local and international banks support the project.

**A Special Purpose Vehicle (SPV) will be established for the implementation of this project.** The SPV is a 50-50 joint venture between MASEN and EDF Renewables, a subsidiary of the French utility company, Électricité de France (EDF). The company will own, construct, and operate the expanded wind farm.

Table 4.8. Details of Financing for Koudia Al Baida Wind Farm Repowering Project

Type of Financer	Financer	Amount (EUR Mn)	Instrument	Recipient	Purpose
Development Bank	EBRD	35	Senior Secured Debt Financing	SPV Koudia AL Baida Energy	Project Investment
Development Bank	EBRD	13.5	Subordinated Loan	SPV Koudia AL Baida Energy	Project Investment
Multilateral Funds	CTF	4.5	Loans	MASEN	Finance equity contribution to the project SPV
International & Local Private Banks	Société Générale, Attijariwafa Bank, Banque Centrale Populaire and Bank of Africa	77	Loans	SPV Koudia AL Baida Energy	Project Investment
<b>Total Project Cost</b>		<b>130</b>			

Source: EBRD

**The total cost of the project is estimated at EUR 130 million, funded by a diverse set of sources, including development banks, international and local private banks, and multilateral funds.** The financial instruments include senior secured debt financing, subordinated loans, and additional local commercial loans, with the recipients being the SPV Koudia Al Baida Energy and MASEN. The loans from EBRD and the consortium of international and local private banks will fund the investment for this project's wind turbine replacement, from 90 old wind turbines to 20 new wind turbines with a capacity of 5 MW each (Marks, 2022). The consortium of banks covers 59% of the funding, which is generated from one international bank, Société Générale and three local banks, which are Attijariwafa Bank, Banque Centrale Populaire (BCP), and Bank of Africa. As the only international lender, Société Générale, led the structuring process of the funding (Société Générale, 2022). CTF will provide MASEN with additional loans to increase its SPV equity.

**This project marks the first repowering of a wind farm in Africa, showcasing the potential for similar regional projects.** Replacing the existing wind turbines with newer, more efficient models will significantly boost the performance and capacity of aging wind farms. The project sets a precedent and financing structure for other wind farms in the region approaching the end of their operational life seeking similar renovations. In particular, this innovative approach enables the renewal and expansion of renewable energy generation capacity without the need for acquiring additional land, thus maximizing the use of existing resources and promoting a more sustainable and efficient development of the renewable energy sector in Morocco. Given that these benefits

appear to be applicable in other contexts, similar initiatives could be adopted by other countries and regions.

## 4.5. Conclusions and Recommendations

### 4.5.1. Case Study Conclusions

**Conclusion 1: Morocco is among the most successful developing economies in terms of attracting large-scale climate investment. It has leveraged its robust renewables potential and collaborated with multilateral institutions to deliver greater financing.**

Morocco has a robust climate policy development and clear climate commitments through its NDC, and the Moroccan government continues to deliver updates on more detailed adaptation and mitigation plans based on its energy and climate focus. Within Morocco's climate finance plans and reports, it is evident that most of Morocco's climate finance is funded, designed, and monitored by its national government. It continues to be actively involved in international climate change negotiations and has taken steps to mobilize domestic climate finance. Through a national system of identifying goals, building a supportive policy environment, and delivering climate finance investments, Morocco has effectively recorded its climate commitments and the corresponding financial requirements.

**Conclusion 2: Nevertheless, current climate finance flows to Morocco fall short of estimated needs, although the exact size of the climate finance "needs gap" remains uncertain.**

Morocco's tracked climate finance flows show an upward trend in its investment, which support both adaptation and mitigation goals, and it focuses majorly on energy, water, and transportation sectors. However, Morocco falls short of the investment levels estimated as necessary for meeting the 2030 climate commitments that are listed in its NDC. Given the potential uncertainties in the estimates, an exact dollar amount is not fixed to the size of this gap. Yet, data analysis shows that the shortfall is in the range of USD 2.0 to 7.8 billion annually.

**Conclusion 3: Further improvement in raising climate finance appears to be impeded by structural obstacles, in particular competing policy objectives.**

Since 2014, Morocco has undergone a series of successful fossil fuel subsidy reforms that eliminated most explicit fuel subsidies. The country successfully maintained support that largely benefitted poor and rural communities (i.e. butane gas subsidies) while reducing government support for fossil fuels. However, as noted, the current tax regime is still far from internalizing environmental and health externalities associated with fossil fuels. Strategic sectors such as

water, electricity generation, and refueling for ships and planes, are all exempt from fossil fuel consumption taxes. Moving forward, a reform of the country's environmental taxation could achieve the dual objective of maintaining fiscal sustainability while also promoting behavioral changes that are aligned with the country's climate objectives. Unlocked public revenues can be equitably channeled into cash transfers or investment in adaptation to support the most affected populations.

**Conclusion 4: Despite these challenges, climate programs and projects in Morocco have deployed innovative financing structures to tackle pressing issues such as water stress and to ensure continued climate investment into the future.**

Despite the challenges that Morocco faces in addressing climate change and its impacts, the country has been successful in implementing climate-related projects that utilize innovative financing structures. By leveraging diverse funding sources, such as loans from local and international private investors and concessional finance from development banks, Morocco mobilized the necessary financial resources to implement key projects in the renewable energy and water sectors. Furthermore, the country has been working to attract private sector participation and investments in climate initiatives by creating an enabling environment and promoting public-private partnerships.

**In all, Morocco has a strong national climate policy framework and unique climate enterprise opportunities which allow it to deliver climate finance investments. However, it is not sufficient enough to meet all climate finance needs. A more detailed green taxonomy, robust data collections, expansions of stakeholders, and other innovative tools will help Morocco to drive more climate investments faster and in more effective ways.**

#### 4.5.2. Recommendations for Morocco

**Recommendation 1: Develop a national green taxonomy to drive financing towards a broader range of climate projects.**

A national green taxonomy would provide a useful tool that identifies economic activities, and thus commercial enterprises, that are formally defined as producing environmental benefits. Accordingly, commercial actors in Morocco will be able to assess policy incentives tied to those benefits, and develop corresponding business models supporting the development of climate projects. Moreover, a national green taxonomy with stringent quantitative criteria and alignment with international standards will create opportunities for Moroccan climate enterprises to attract financing from international green/climate lending, in addition to domestic policy support.

**Recommendation 2: Collect data on successful climate financing transactions to identify effective climate finance mobilization strategies, particularly in hard-to-finance areas such as adaptation and resilience.**

Given the broad range of climate sectors and associated barriers to financing, maintaining a tracking system for completed climate finance transactions provides a strong basis for learning and replication of previous success. Furthermore, this data would allow Moroccan policymakers to better define the universe of financing entities, both public/private and domestic/international, that can be mobilized to scale climate investment. In particular, Morocco can look to the CPI GLCF and the Colombian MRV system as models for developing a domestic climate finance tracking framework.

**Recommendation 3: Utilize broad stakeholder engagement to develop models of climate investment that allow for both scalable investment and achievement of economic welfare priorities.**

Currently, Morocco's climate finance and policies mainly rely on its national efforts and international support. Expanding stakeholder engagement can help better identify the needs and preferences of Morocco's climate finance and design useful financial instruments and mechanisms tailored to these needs. With a broader stakeholder engagement, Morocco will be able to develop more scalable climate finance investment which can improve its investment efficiency, profitability, flexibility, and future potential to launch similar climate finance projects quickly.

## 5. Recommendations for CPI

Based on the case study conclusions, CPI may consider the following recommendations for expanding its impact in accelerating global climate finance efforts:

**Recommendation 1: Identify best practices in measurement and monitoring of financial flows to determine benefits of ambitious NDC development and implementation.**

Colombia and Morocco, among many other developing economies, are in the process of converting NDCs into a series of large-scale, bankable projects. The country case studies in this report explore a number of these projects and identify clear benefits and potential scalability. Moreover, systematic climate finance tracking enables a broader identification of projects and measurement of benefits. In Colombia's case, the MRV platform and the quantification of project-level NDC implementation costs with a description of the financing required at national, international, public, and private levels provide a strong basis for this exercise. In Morocco's case, GCLF data is revealing of how the country's NDC and accompanying initiatives have led to a greater mobilization of climate finance.

Similarly, CPI's Landscape data can be leveraged in other contexts to further understand whether a country's NDC and accompanying initiatives have led to increased climate investment and corresponding economic and environmental benefits.

**Recommendation 2: Similar to recommendation 2 for Colombia, leverage the GLCF and other CPI data to identify "success stories" in climate finance, particularly in sectors and climate use areas that face shortfalls in finance levels. The thematic impact and project-level evaluation sections of the case study offer a potential template for analyzing how these success stories have unfolded and their potential for scalability and replication.**

The thematic impact and project-level evaluations show that, within Colombia and Morocco, particular programs and policies have succeeded in mobilizing stakeholders and finance towards climate solutions based on their potential for impact and carefully structured design. These evaluations specifically target initiatives within climate action areas that have been difficult to finance historically.

CPI's Landscape data likely contains similar insights of "success stories" found in these case studies, but with greater potential for generalizability due to its global coverage and more granular financing information. As such, CPI can leverage this report as a potential template for identifying and analyzing other initiatives within climate action areas.

**Recommendation 3: Develop methodologies that assess the scalability of climate finance instruments and programs, particularly in developing economy and emerging market contexts.**

In many developing economies and emerging markets, first generation climate projects have already been successfully financed and placed into operation. This can be seen in the ample renewable energy investment flowing to both Colombia and Morocco, as well as the piloting of projects in other climate areas such as green urban development, biodiversity services, water management, etc. That said, the market and policy conditions of developing economies and emerging markets tend to be idiosyncratic to their respective development priorities and accordingly – as found in the case studies – are characterized by barriers that can slow the successive financing and deployment of climate projects.

Given its previous work in similar contexts through the Global Innovation Lab for Climate Finance and other initiatives, CPI can draw upon its unique expertise to identify commercial structure and supporting policies that allow for accelerated project uptake under these conditions.

**Recommendation 4: There is a further research opportunity to explore how developing economies and emerging markets, which tend to have comparatively low emissions, can be compensated for mitigation contributions that go beyond their respective carbon footprints.**

In discussions with current and former government stakeholders from both case study countries, it was reiterated that relatively low national emissions place mitigation action behind other policy priorities, namely economic development. However, there are many cases where utilization of mitigation opportunities in developing economies and emerging markets could potentially catalyze faster mitigation in high-emissions advanced economies. For example, Morocco has recently signed agreements with Spain and Germany to leverage its abundant renewable resources to supply green hydrogen, a key energy solution to reducing emissions in Europe. Accordingly, mechanisms incentivizing accelerated mitigation efforts in developing economies and emerging markets by compensating these countries for going beyond their individual responsibilities could lead to a faster low carbon transition globally.

As an organization that operates in both these regions and developed economies, CPI is well-positioned to explore and develop institutional frameworks that coordinate the compensation of climate initiatives across borders. Overall, the possible mechanisms to support this compensation are quite varied and include but are not limited to: international carbon pricing, voluntary offset markets, bilateral investment agreements, climate-for-debt swaps, etc. Given that a “one-size-fits-all” solution is unlikely due to the wide range of potential projects and national priorities, CPI can lean on its expertise and past experience facilitating cross-border financing to develop an understanding of *which mechanisms* work best in *which contexts*.

## References

- African Development Bank. (2021, September). *Project to Strengthen Drinking Water Production and Improve Technical and Commercial Performance*. Project Appraisal Report. Retrieved April 20, 2023, from [https://www.afdb.org/sites/all/libraries/pdf.js/web/viewer.html?file=https%3A%2F%2Fwww.afdb.org%2Fsites%2Fdefault%2Ffiles%2Fdocuments%2Fprojects-and-operations%2Fmorocco\\_-\\_project\\_to\\_strengthen\\_drinking\\_water\\_production\\_and\\_improve\\_technical\\_and\\_commercial\\_](https://www.afdb.org/sites/all/libraries/pdf.js/web/viewer.html?file=https%3A%2F%2Fwww.afdb.org%2Fsites%2Fdefault%2Ffiles%2Fdocuments%2Fprojects-and-operations%2Fmorocco_-_project_to_strengthen_drinking_water_production_and_improve_technical_and_commercial_)
- Azizuddin, K. (2022, April 13). *Colombia launches first LatAm green taxonomy, excludes nuclear and gas*. Responsible Investor. Retrieved April 10, 2023, from <https://www.responsible-investor.com/colombia-launches-first-latam-green-taxonomy-excludes-nuclear-and-gas/>
- BioCarbon Fund. (n.d.). *Orinoquía Sustainable Integrated Landscape Program | ISFL*. BioCarbon Fund. Retrieved April 10, 2023, from <https://www.biocarbonfund-isfl.org/programs/orinoquia-sustainable-integrated-landscape-program>
- BioCarbon Fund. (2022, December 2). *Colombia partners with World Bank Group and agribusinesses to scale up climate-smart agriculture | ISFL*. BioCarbon Fund. Retrieved April 10, 2023, from <https://www.biocarbonfund-isfl.org/result-stories/colombia-partners-world-bank-group-and-agribusinesses-scale-climate-smart>
- Bloomberg Climatescope. (2021). *Climatescope 2022 | Morocco*. Climatescope. Retrieved May 11, 2023, from <https://www.global-climatescope.org/markets/ma/>
- Bloomberg New Energy Finance. (2023). *Climatescope 2022 | Colombia*. Climatescope. Retrieved April 4, 2023, from <https://www.global-climatescope.org/markets/co/>
- Cárdenas, M., & Orozco-Sanchez, S. (2022). *Climate mitigation in Latin America and The Caribbean: A primer on transition costs, risks, and financing*. Center on Global Energy Policy. <https://www.energypolicy.columbia.edu/publications/climate-mitigation-latin-america-and-caribbean-primer-transition-costs-risks-and-financing/>

- Climate Focus. (2021). *Shifting finance towards sustainable land use: A case study from Colombia*. Climate Focus, ODI, United Nations Sustainable Development Solutions Network. <https://s3.amazonaws.com/feldactiontracker.org/green-finance/Shifting+Finance+Colombia+Case+Study.pdf>
- Climate Focus. (2022, September). *Unlocking naturebased solutions through carbon markets in Colombia*. Climate Focus. <https://climatefocus.com/wp-content/uploads/2022/09/Unlocking-Nature-based-Solutions-Colombia-Deep-Dive-Final-1.6b.pdf>
- Climate Focus & FOLU. (2021, July). *Shifting finance towards sustainable land use: A case study from Colombia*. FELD Action Tracker. <https://feldactiontracker.org/green-finance/reorienting-public-finance-for-land-use-a-case-study-from-colombia>
- Climate Investment Funds. (2023, February 6). *Green Light for Colombia on Renewable Energy Integration Funding*. Climate Investment Funds. Retrieved April 4, 2023, from <https://www.cif.org/news/green-light-colombia-renewable-energy-integration-funding>
- Climate Policy Initiative. (2021, December 14). *Global Landscape of Climate Finance 2021*. Climate Policy Initiative. Retrieved March 2, 2023, from <https://www.climatepolicyinitiative.org/wp-content/uploads/2021/10/Global-Landscape-of-Climate-Finance-2021.pdf>
- Climate Policy Initiative. (2022, September 21). *Landscape of Climate Finance in Africa - CPI*. Climate Policy Initiative. Retrieved April 24, 2023, from <https://www.climatepolicyinitiative.org/publication/landscape-of-climate-finance-in-africa/>
- Department of National Planning. (2021). *Measurement, Reporting, and Verification (MRV) [Data set]*. <https://mrvapp.dnp.gov.co/Descargas/>
- Escobedo, A. (n.d.). *Colombia's Green Taxonomy: a First in Latin America*. Greenomy. Retrieved April 11, 2023, from <https://greenomy.io/blog/colombias-green-taxonomy>
- European Bank for Reconstruction and Development. (2022). *EBRD and CTF to repower Africa's oldest wind farm*. EBRD News. Retrieved April 19, 2023, from <https://www.ebrd.com/news/2022/ebrd-and-ctf-to-repower-africas-oldest-wind-farm.html>

- FAO. (2019). *Colombia Peace Support* [Implementing Colombia's Peace Accord and Comprehensive Rural Reform at local level]. FAO. <https://www.fao.org/3/ca3866en/CA3866EN.pdf>
- FOLU Colombia. (2022). *Colombia: Food and Land Use*. Food and Land Use Coalition. Retrieved March 12, 2023, from [https://www.foodandlandusecoalition.org/wp-content/uploads/2019/10/Colombia-Food\\_and\\_Land\\_Use.pdf](https://www.foodandlandusecoalition.org/wp-content/uploads/2019/10/Colombia-Food_and_Land_Use.pdf)
- Food and Land Use Coalition. (n.d.). *Governance & Funding*. Food and Land Use Coalition. Retrieved April 24, 2023, from <https://www.foodandlandusecoalition.org/governance-funding/>
- GIZ & UNDP. (2019, September). *Tracking the financing of climate action: How Colombia developed and implemented a comprehensive national MRV framework for clim*. Partnership on Transparency in the Paris Agreement. Retrieved May 10, 2023, from [https://transparency-partnership.net/system/files/document/200114\\_GPD\\_Colombia\\_RZ.pdf](https://transparency-partnership.net/system/files/document/200114_GPD_Colombia_RZ.pdf)
- Global Alliance for the Future of Food. (2022). *Untapped Opportunities for Climate Action [An Assessment of Food Systems in Nationally Determined Contributions]*. In *Country Assessment: Colombia*. Future of Food. [https://futureoffood.org/wp-content/uploads/2022/03/GA\\_NDC\\_CountryAssessments-2-Colombia\\_EN.pdf](https://futureoffood.org/wp-content/uploads/2022/03/GA_NDC_CountryAssessments-2-Colombia_EN.pdf)
- Global Green Growth Institute. (2015, December 01). *Germany, Norway, United Kingdom, and Colombia announce agreement to support Amazon green growth*. Global Green Growth Institute. Retrieved March 13, 2023, from <https://gggi.org/press-release/united-kingdom-germany-norway-and-colombia-announce-agreement-to-support-amazon-green-growth/>
- Government of Colombia. (2020). *Update of the Nationally Determined Contribution of Colombia (NDC)*. NDC Registry. <https://unfccc.int/NDCREG>
- Government of Colombia & Agence Française de Développement. (2021). *Análisis prospectivo de los instrumentos económicos y financieros en el marco de la Estrategia de largo plazo de Colombia para la carbono neutralidad y la adaptación E2050*. In *Analysis of economic and financial instruments within the framework of Colombia's long-term strategy for carbon neutrality and adaptation E2050*. Studies.

- <https://e2050colombia.com/wp-content/uploads/estudios/EstudioHAnalisisProctectivoDeLosInstrumentosEconomicosYFinancieros.pdf>
- Government of Morocco. (2016, June). *Implementing the First Nationally Determined Contribution (NDC) of the Kingdom of Morocco*. 4C Maroc. <http://www.4c.ma/documents>
- Grant, P. (2011, July 13). *Climate Change Financing and Aid Effectiveness Morocco Case Study*. OECD. Retrieved April 24, 2023, from <https://www.oecd.org/environment/environment-development/48458464.pdf>
- Green Climate Fund. (2023, March 4). *Second Performance Review of the Green Climate Fund*. Independent Evaluation Unit | Green Climate Fund. Retrieved April 24, 2023, from [https://ieu.greenclimate.fund/sites/default/files/evaluation/02-morocco-country-case-study-report-top-web\\_0.pdf](https://ieu.greenclimate.fund/sites/default/files/evaluation/02-morocco-country-case-study-report-top-web_0.pdf)
- IMF. (n.d.). *Morocco and the IMF*. International Monetary Fund. Retrieved April 24, 2023, from <https://www.imf.org/en/Countries/MAR>
- IMF. (2022). *World Economic Outlook Database*. <https://www.imf.org/en/Publications/WEO/weo-database/2022/October/weo-report?c=233&s=NGDPD,&sy=2020&ey=2027&ssm=0&scsm=1&sc=0&ssd=1&ssc=0&sic=0&sort=country&ds=.&br=1>
- International Committee of the Red Cross. (2021). *Country-level Climate fact sheet: Colombia*. ICRC Climate Center. <https://www.climatecentre.org/wp-content/uploads/RCCC-ICRC-Country-profiles-Colombia.pdf>
- International Energy Association. (2019, October 10). *Morocco Renewable Energy Target 2030 – Policies*. IEA. Retrieved April 20, 2023, from <https://www.iea.org/policies/6557-morocco-renewable-energy-target-2030>
- Jacquot, G., Perez-Arriaga, I., Nagpal, D., & Stoner, R. (2020, May). *Reaching universal energy access in Morocco: A successful experience in solar concessions*. MIT Energy Initiative. Retrieved May 11, 2023, from <https://energy.mit.edu/wp-content/uploads/2020/05/MITEI-WP-2020-03.pdf>
- Marks, J. (2022, August 8). *Morocco: Repowering of Koudia Al-Baida wind farm in place*. African Energy. Retrieved April 19, 2023, from

<https://www.africa-energy.com/news-centre/article/morocco-repowering-koudia-al-baida-wind-farm-place>

Masullo, I., Ra, H. J., & Larsen, G. (2017, November 28). *Colombia's Climate Finance Tracking System Registers \$6 Billion Worth of Action*. World Resources Institute. Retrieved May 10, 2023, from <https://www.wri.org/insights/colombias-climate-finance-tracking-system-registers-6-billion-worth-action>

Moroccan Agency for Sustainable Energy. (2022, July 18). *Communiqué de presse Rabat, le 18 juillet 2022 MASEN ET SON PARTENAIRE EDF RENOUVELABLES BOUCLÉNT LE FINANCEMENT EN VUE DU LANC*. Masen. Retrieved April 19, 2023, from [https://www.masen.ma/sites/default/files/documents\\_presse/Communiqu%C3%A9%20de%20presse\\_KOUDIA\\_LANCEMENT\\_REPOWERING.pdf](https://www.masen.ma/sites/default/files/documents_presse/Communiqu%C3%A9%20de%20presse_KOUDIA_LANCEMENT_REPOWERING.pdf)

The Nature Conservancy. (2020, May 25). *Solutions for Climate Change in Colombia*. The Nature Conservancy. Retrieved March 12, 2023, from <https://www.nature.org/en-us/about-us/where-we-work/latin-america/colombia/solutions-for-climate-change-ncs-for-ndc-colombia/>

OECD. (2022). *OECD Economic Surveys: Colombia 2022*. OECD Publishing. <https://doi.org/10.1787/04bf9377-en>

Rahhou, J. (2023, January 23). *Morocco's Finance Minister: Gas Subsidies Reached \$2.1 Billion in 2022*. *Morocco World News*. <https://www.moroccoworldnews.com/2023/01/353686/moroccos-finance-minister-gas-subsidies-reached-2-1-billion-in-2022>

Société Générale. (2022, November 15). *Repowering treatment for the oldest wind farm in Africa*. Wholesale Banking. Retrieved April 19, 2023, from <https://wholesale.banking.societegenerale.com/en/news-insights/clients-successes/clients-successes-details/news/repowering-treatment-for-the-oldest-wind-farm-africa/>

Thayil, S. (2022, December 5). *Colombia Emerges as Andean Hub for Blended Finance - Blog - Convergence News | Convergence*. Convergence Blended Finance. Retrieved April 12, 2023, from <https://www.convergence.finance/news-and-events/news/6JIQmTQFe01G1dlxRgwOK/view>

- UK Government & Climate Finance Accelerator. (2022, March -). *Climate Finance Landscape In Colombia*. PwC. Retrieved March 2, 2023, from [https://www.pwc.com/co/es/cfa/docs/CFA%20-%20Climate%20finance%20landscape%20mapping%20-%20Colombia%20Summary%20Report%20\(1\).pdf](https://www.pwc.com/co/es/cfa/docs/CFA%20-%20Climate%20finance%20landscape%20mapping%20-%20Colombia%20Summary%20Report%20(1).pdf)
- UN Environment Programme. (2022, March). *A New Approach to Unlocking Private Finance for Climate and the SDGs in Egypt & Morocco*. UN Environment Program - Finance Initiative. <https://www.unepfi.org/publications/a-new-approach-to-unlocking-private-finance-for-climate-and-the-sdgs-in-egypt-morocco/>
- World Bank. (n.d.). *Colombia Overview: Development news, research, data*. World Bank. Retrieved March 13, 2023, from <https://www.worldbank.org/en/country/colombia/overview>
- World Bank. (2004, NA NA). *World Bank Group | World Bank - Global Environment Facility | What is the role of World Bank in GEF?* World Bank. Retrieved March 13, 2023, from <http://web.worldbank.org/archive/website00528/WEB/OTHER/WHATISTH.HTM>
- World Bank. (2021). *Climate Risk Country Profile: Colombia*. Climate Change Knowledge Portal. Retrieved March 13, 2023, from [https://climateknowledgeportal.worldbank.org/sites/default/files/2021-07/15520-WB\\_Colombia%20Country%20Profile-WEB%20%283%29.pdf](https://climateknowledgeportal.worldbank.org/sites/default/files/2021-07/15520-WB_Colombia%20Country%20Profile-WEB%20%283%29.pdf)
- World Bank. (2022, September 7). *Colombia: Leading the Path to Sustainability in Latin America*. World Bank. Retrieved March 14, 2023, from <https://www.worldbank.org/en/news/feature/2022/08/31/colombia-leading-the-path-to-sustainability-in-latin-america>
- World Bank. (2022, November 3). *Morocco Country Climate and Development Report*. World Bank. Retrieved April 24, 2023, from <https://www.worldbank.org/en/country/morocco/publication/morocco-country-climate-and-development-report>

# Annex

## Annex I: Colombia Stakeholder Profiles

Figure I: Stakeholder Map of Climate Financing in Colombia



**Achieving the goals of transitioning to a low-carbon, climate-resilient economy requires a collective effort.** As such, a stakeholder mapping exercise for Colombia builds understanding of ongoing efforts to coordinate national climate change actions and to identify interlinkages between the different entities involved. There are four main roles in the scope of climate financing, namely:

### 1. Funding Sources

**The primary stakeholders in climate financing are funding sources.** Funding sources for climate financing in Colombia originate from various entities such as the government, international organizations, private sector actors, or donor countries.

**The government of Colombia is the largest stakeholder in climate finance.** The government draws funding for climate financing from the national budget, department budget, and municipal budget. The government has increased its commitments to climate financing in the form of tax

incentives for renewable energy and energy-efficient projects, such as sustainable transportation (UK Government & Climate Finance Accelerator, 2022). MRV data also suggests that the government is the largest contributor to climate financing; government financing amounted to 63% of total financing from 2011 to 2021.<sup>44</sup> The Government of Colombia will allocate resources from the national budget according to Colombia's updated implementation costs of the transition, indicating huge support from the government.

**The continuity of international cooperation is key to the implementation of the NDC, including support for capacity-building and technology transfer.** International cooperation related to climate change has increased since 2015 in issues such as the fight against deforestation, implementation of renewable energies, and sustainable mobility in cities, which has allowed Colombia to move towards a more ambitious NDC (Government of Colombia, 2020).

**Colombia has established partnerships with numerous donor countries, including Norway, Germany, and the United Kingdom.** These countries have also pledged support for Colombia's REDD program (Global Green Growth Institute, 2015). The private sector in Colombia is also involved in climate financing as several companies are investing in renewable energy projects, sustainable infrastructure, and other climate-friendly activities.

## **2. Intermediaries**

**Intermediaries function as a link between the funding source and the ultimate funding recipient.** These are the organizations that facilitate the disbursement of flows for various reasons, including their established expertise, legal requirements, and the need to pool resources or benefit from economies of scale.

**These intermediaries encompass various entities, such as multilateral funds.** The Global Environment Facility (GEF) and the Green Climate Fund (GCF) are entities that have helped disburse funding from countries and private sectors. These funds collaborate with international organizations such as the United Nations and World Bank, which serve as their implementing agencies (World Bank, 2004). In addition, government agencies such as GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) of Germany and France's AFD (French Development Agency) provide technical assistance and support for the development of climate change strategies, while also disbursing grants for Colombia.

## **3. Recipient and Implementing Agents**

**There are specific agencies that provide implementation assistance for climate finance projects, these are often also the end recipients of the financing.** They comprise central and

---

<sup>44</sup> Estimated from MRV data, retrieved from <https://mrvapp.dnp.gov.co/Descargas/>.

local government agencies, national or international nongovernmental organizations (NGOs), and private actors. In some instances, funding recipients themselves may act as implementing agents, which can include government entities, community organizations, or private sector companies possessing the necessary technical expertise and organizational capacity to execute climate projects on the ground effectively.

#### ***4. Local Community and Civil Society***

**The final stakeholder in climate financing is the local and public community, which play an important role by providing insight into the design and execution of projects.** In the process of developing the Updated NDC 2020, this stakeholder group was actively involved through various means such as public consultations, surveys, and dialogues (Government of Colombia, 2020). These measures were conducted with diverse groups, including Afro-descendant communities, peasants, indigenous groups, youth organizations, and women to ensure that the Updated NDC is inclusive, transparent, and reflects local needs and priorities. These consultations and surveys yielded proposals and inputs that were instrumental in shaping the technical and decision-making bodies' work on the NDC update.

## Annex II: Colombia's 2050 Strategy

Table 2.1. Colombia's E2050 Strategy

<b>E2050 Colombia's long-term climate strategy to meet the Paris Agreement</b>	
<p><b>What is Colombia's E2050?</b>            A State policy instrument that seeks to define socioeconomic development objectives and realistic long-term goals to reduce greenhouse gas emissions in order to strengthen Colombia's climate resilience by building a carbon-neutral development with high adaptability.</p>	
<b>E2050's nine "bets"</b>	
<ol style="list-style-type: none"> <li>1. Climate knowledge and governance</li> <li>2. Biodiversity &amp; ecosystems management</li> <li>3. Sustainable production and consumption</li> <li>4. Just workforce transition</li> <li>5. Rural, marine &amp; coastal development</li> </ol>	<ol style="list-style-type: none"> <li>6. Resilient &amp; sustainable cities</li> <li>7. Diversification of the energy matrix</li> <li>8. Sustainable mobility &amp; infrastructure</li> <li>9. Adaptation for human health</li> </ol>
<b>E2050' three implementation phases</b>	
<ul style="list-style-type: none"> <li>→ Phase of significant increase in ambition (2020-2030)</li> <li>→ Multidimensional transformation phase (2030-2040)</li> <li>→ Phase of consolidation of a climate-resilient future (2040-2050)</li> </ul>	

Source: Author, based on Colombian government (2021): E2050. Executive Summary.

## Annex III: Morocco Stakeholder Profiles

**For the second case study, Morocco, a stakeholder mapping exercise similarly builds understanding of ongoing efforts to coordinate national climate change actions** and to identify interlinkages between the different entities involved. There are three main roles in the scope of climate financing in Morocco, namely:

### 1. Funding Sources

**The primary stakeholders in climate financing are funding sources.** Funding sources for climate financing in Morocco originate from various entities such as the government, international organizations, private sector actors, or donor countries.

**The government of Morocco has given a high priority to climate change, however, government funding comprises only a small percentage of total public financing to climate action.** Morocco has a public-sector-led development model. The Ministry in charge of the Environment is the designated focal point for coordinating the climate change agenda and programming for the country. Within this ministry, the Department of Climate Change assumes the coordination role of climate change issues and the preparation of national policies such as the 2030 National Climate Plan, the National Adaptation Plan, and the NDC (World Bank, 2022). However, the climate financing commitments are not reflected in the country's public finance management system. As such, there is no tool to monitor climate-related programs and expenditures. Government public financing comprised 3% of total public financing between 2018 and 2019 (Climate Policy Initiative, 2022).

**Bilateral and multilateral development finance forms the majority of public financing for climate change investments.** The top development partners for adaptation investments between 2016 and 2019 are the World Bank (USD 611 million); the African Development Bank (USD 391 million); France (USD 210 million) and the European Bank for Reconstruction and Development (USD 146 million) (Green Climate Fund, 2023). In the same time period, development finance commitments targeting climate mitigation have been led by Germany (USD 1.02 billion), followed by the European Investment Bank (USD 746 million), the World Bank (USD 360 million), the African Development Bank (USD 333 million), and France (USD 215 million) (Ibid.).

**The private sector's level of engagement on climate issues and financing remains at a low level.** According to the CPI, private sector financing represents 17% of total climate financing between 2018 and 2019 (amounting to USD 345 million) (Climate Policy Initiative, 2022).

**Given its middle-income economic status, the level of concessional development assistance to Morocco is relatively low.** Morocco is not an aid dependent country, as such the level of concessional development assistance is relatively low - estimated at 1% of GDP (Grant, 2011).

## ***2. Recipient and Implementing Agents***

**In Morocco's case, the most prominent recipient and implementing agents include Clean Technology Fund and Global Environment Facility.** External finance that is provided through the donors mentioned above delivers their financing as grants, loans, and technical assistance to the recipient and implementing agents. The major instruments are the Clean Technology Fund and Global Environment Facility. While there is no formal commitment from donors to align their climate change support alongside government priorities, individual donors have been seeking to do so (Grant, 2011).

**The German-funded public interest group, 4C Maroc, has played a vital role in streamlining climate change efforts.** 4C - i.e. climate change competence center - Maroc has supported the country's efforts to adapt to climate change. The Center was established by the German Ministry of the Environment and the German Development Corporation (GIZ). The center has served as a platform for dialogue and capacity building on climate change by bringing together the government, the private sector, civil society, and academia (Government of Morocco, 2016).

## ***3. Local Community and Civil Society***

**Organizations play an important role in the climate agenda at both local and national levels.** There are a large number of civil society organizations that work in areas of sustainable development and climate change. On the local level, they cover activities such as resilient rural development to energy efficiency. Furthermore, they are involved in awareness raising and information sharing as such they play a crucial role in advancing the climate agenda (World Bank, 2022).