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**Institutional mechanisms for providing economic, financial
and structural support to address climate change, reduce the
use of fossil fuels and protect biodiversity**

Public institutions and support for climate funding

Note by the Secretariat

The Secretariat has the honour to transmit to the Committee of Experts on Public Administration the paper prepared by Committee members Linda Bilmes and Mauricio Rodas in collaboration with fellow Committee members Geraldine Fraser-Moleketi, Devon Rowe, Aminata Touré and Lan Xue.

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Public institutions and support for climate funding

Summary

The authors emphasize that the world urgently requires trillions of dollars to invest in climate action and biodiversity protection to keep the global temperature rise below 1.5°C and to help countries to adapt to the worst consequences of climate change. They note, however, that despite some progress in securing financial resources for those purposes, the international community is falling well short of its formal pledges. Moreover, its commitments are far less than the total sum required to reduce global emissions and adapt to climate change.

The shortfall in funding related to climate adaptation – for example, funding used to help developing countries to adjust to the effects of climate change, such as rising sea levels, extreme heat and droughts, and severe storms – is especially pronounced. The majority of public and private climate finance mobilized to date has been directed to mitigation efforts in developed countries, such as renewable energy, electric vehicles and other projects designed to reduce emissions.

There are several institutional barriers that make it harder to mobilize the necessary climate mitigation and adaptation funds. These include: (a) a lack of direct access to climate funding at the subnational level; (b) a lack of human capacity to design well-structured, creditworthy projects; (c) the specific characteristics of adaptation projects, which make them less attractive to traditional financial investors; (d) the lack of widespread use of natural capital accounting to help to monetize values of ecosystem services; and (e) in some cases, deceptive accounting that has enabled some donors to reduce the actual funds committed below the amounts pledged.

The authors recommend steps to overcome barriers hampering access to climate finance, particularly those related to adaptation funding, where the gap between the needs and funding available is most pronounced and acute. They list selected examples of best practices in climate financing. They urge the international community to fulfil pledges already made and to commit additional funds to mitigating and adapting to climate change.

I. Introduction

1. The present paper builds on previous work undertaken by the Committee of Experts on Public Administration on public institutions and climate change. It will be focused on access to climate change finance, with a particular focus on climate change adaptation, including ways to overcome institutional barriers.

2. Despite the numerous initiatives to lower global greenhouse gas emissions, it is increasingly clear that such efforts alone will not be sufficient to blunt the impact of climate change. The Intergovernmental Panel on Climate Change (IPCC) warned in 2022 that, even under the best-case scenario of holding global warming to 1.5°C, reaching that temperature increase in the short term would still cause “unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans”. Climate change and climate hazards, the IPCC specifies, strongly contribute to humanitarian crises. Climate and extreme weather are increasingly driving displacement, disproportionately affecting small island developing States, and flood and drought-related acute food insecurity and malnutrition have increased strikingly in Africa.¹ Africa is the region most affected by climate shocks: 7 of the 10 most vulnerable countries to climate change are on that continent.² The rate of temperature rise across Africa, approximately 0.3°C per decade from 1991 to 2021, is higher than the global average.³ Climate change, therefore, poses substantial risks to the economies in question, threatening the lives and livelihoods of millions of people.⁴ Moreover, natural carbon sinks, such as rainforests and oceans, will likely decrease their ability to absorb carbon, while “natural capital”, such as water, soil, air, insects and fish stocks, which underpin agriculture and human life itself, are increasingly endangered.

3. Consequently, there is a growing awareness of the need to invest in both climate adaptation (adjustments in ecological, social and economic systems in response to current or expected climate changes) as well as mitigation (efforts to reduce emissions). The total sums required are substantial. Scientists estimate that some \$4 trillion per year (across all types of climate-related investment) is needed until 2030 to avoid the worst impacts of climate change.⁵ Climate adaptation is a growing part of this need, especially for poor countries. The United Nations Environment Programme estimates that by 2030, the cost of pure adaptation will reach \$340 billion per year, climbing to \$565 billion by 2050.⁶ In addition, an estimated \$57 trillion to \$95 trillion worth of infrastructure is expected to be built by 2030, part of which includes adaptation to make infrastructure resilient to climate change.

4. On the funding supply side, the record is mixed. Over the past decade, total global climate funding (for mitigation and adaptation) has almost doubled, to an average of \$480 billion per year. Support from multilateral development banks and

¹ Hans-O. Pörtner and others, “Summary for policymakers” in *Climate Change 2022: Impacts, Adaptation and Vulnerability*, Intergovernmental Panel on Climate Change (Cambridge, United Kingdom of Great Britain and Northern Ireland, and New York, 2022).

² African Development Bank Group, “Climate change in Africa”. Available at www.afdb.org/en/cop25/climate-change-africa (accessed on 9 January 2023).

³ World Meteorological Organization, “State of the climate in Africa”. Available at <https://public.wmo.int/en/our-mandate/climate/wmo-statement-state-of-global-climate/Africa> (accessed on 9 January 2023).

⁴ African Development Bank Group, Economic Commission for Africa and United Nations Development Programme, *African Economic Conference: 2021 Report – Financing Africa’s post-COVID-19 Development*. Available at https://aec.afdb.org/sites/default/files/2022/11/07/aec_2021_conference_report_a.pdf.

⁵ Climate Policy Initiative, “Global landscape of climate finance: a decade of data” (2022).

⁶ United Nations Environment Programme, *Adaptation Gap Report 2022: Too Little, Too Slow – Climate Adaptation Failure Puts World at Risk*.

bilateral donors for international climate funds, such as the Adaptation Fund, Green Climate Fund (GCF), Least Developed Countries Fund of the Global Environment Facility and the Special Climate Change Fund, has increased, with a focus on agriculture, water, ecosystems and cross-cutting sectors, primarily to address the effects of droughts and flooding. The private sector has also participated, with most climate funding raised domestically in countries of the Organisation for Economic Co-operation and Development and invested in mitigation in sectors such as transportation, renewables and electric vehicles.

5. However, the international community has not met its stated funding goals. In 2009, developed countries pledged to mobilize \$100 billion per year from 2020 to 2025 to support climate action in developing countries. The Organisation for Economic Co-operation and Development recently reported that in 2020, developed countries were still \$17 billion short of the \$100 billion annual funding goal.⁷ The true shortfall may be much larger. In some cases, Western donors have used questionable accounting methods to make themselves look more generous by, for example, exaggerating the amount of funds they had provided, treating loans as grants, counting pure commitments as actual disbursements, double-counting, imposing unreasonable conditions on the distribution of loans and failing to provide funds for operating expenses associated with capital projects so that it was too expensive for the recipient country to undertake them.⁸ Moreover, annual increases in climate finance have slowed, growing at less than half the rate achieved before 2017.⁹

6. Climate finance inflows to Africa, for example, have failed to match the commitments made by developed countries and have not met the continent's adaptation and mitigation needs. Africa's share in total global climate finance grew by only 3 percentage points on average in the period 2010–2019, from 23 per cent (\$48 billion) in the period 2010–2015, to 26 per cent (\$73 billion) in the period 2016–2019. Given the resources needed to meet Africa's nationally determined contribution targets – estimated at between \$118.2 billion and \$145.5 billion a year until 2030 – more concrete measures are needed to close Africa's annual climate finance gap.¹⁰

7. Failure to meet the original \$100 billion commitment and the related disappointment enabled developing countries to put the loss and damage issue squarely on the agenda at the twenty-seventh Conference of the Parties to the United Nations Framework Convention on Climate Change, which resulted in the historic agreement on a new loss and damage fund for vulnerable countries.¹¹ But even if the pledges had not fallen short, the amount would barely have scratched the surface of what is actually needed for climate change mitigation and adaptation.¹²

⁷ Organisation for Economic Co-operation and Development (OECD), *Aggregate Trends of Climate Finance Provided and Mobilised by Developed Countries in 2013–2020*, Climate Finance and the USD 100 Billion Goal (Paris, 2022).

⁸ Ian Mitchell and Nancy Birdsall, "The unkept promises of Western aid", *Foreign Affairs*, 14 September 2022.

⁹ Climate Policy Initiative, *Global Landscape of Climate Finance 2021* (December 2021).

¹⁰ African Economic Conference, "Context". Available at <https://aec.afdb.org/en/african-economic-conference-2022/context>.

¹¹ United Nations Climate Change Conference, "COP27 reaches breakthrough agreement on new 'loss and damage' fund for vulnerable countries", press release, 20 November 2022.

¹² Deirdre Cogan and others, "Where do we stand on COP26 climate promises? A progress report", World Resources Institute, 13 October 2022.

II. Climate adaptation funding

8. Funding for adaptation continues to lag behind that for mitigation. Although funding for adaptation increased to \$46 billion in 2020 (up from \$30 billion in 2018), the total available for adaptation remains far below the scale necessary to respond to existing and future climate change.¹³ In a recent report, the United Nations Environment Programme found that the finance gap in developing countries is likely 5 to 10 times greater than current international adaptation finance flows and will only widen if investments are not ramped up. The report identified financial shortfalls throughout the process that cascaded down to the implementation level.¹⁴

9. This shortfall is in part due to the characteristics of adaptation projects, which seldom produce a clear stream of returns. For example, an investment in a mitigation project such as renewable energy may reasonably be expected to produce a stream of revenues that at least partially offsets the initial sum invested. By contrast, an investment in adaptation, such as preserving a mangrove forest, may help to reduce flooding, but it is unlikely to produce tangible revenue returns. (The recipient country might be able to quantify some of the value of the mangrove project by using the System of Environmental-Economic Accounting framework for natural capital accounting; however, it needs to have the proper capacity to perform such an analysis, as described in paras. 30 and 31).

10. Given the nature of climate adaptation needs and the lack of easily identifiable returns, the public sector continues to provide most adaptation financing. To date, however, the public sector has neither been able to fulfil the adaptation goals as part of the original \$100 billion commitment, nor the more recent pledges for adaptation finance made at the fifteenth and twenty-seventh Conferences of the Parties.

11. With government budgets already strained by spending related to the coronavirus disease (COVID-19), energy shortages and other constraints, the private sector needs to play an important role, alongside the public sector, to mobilize the necessary investment resources. Data on adaptation finance from the private sector are difficult to find. However, it is clear that, to date, private financing has played a minimal role in climate adaptation, of which the majority occurs in developed economies.

12. There are serious institutional barriers preventing the global community from mobilizing climate finance in the amounts required. In addition, secondary factors prevent Governments from accessing the existing pools of climate finance for adaptation. These include: the imbalance between mitigation and adaptation projects, the acute climate funding needs at the subnational level in a global structure that is oriented towards national Governments, and the lack of capacity, data and metrics in this field – particularly with regard to adaptation. Moreover, although debt-based climate finance has been increasing, the need for grant-based and concessionary structures is greatest.

13. There are several challenges related specifically to investment in climate adaptation. For example, a major difficulty is that avoided costs are not the same thing as the clear revenue streams on which lenders typically rely for loan repayment. In addition, Governments frequently underestimate the costs of unpredictable calamities, which makes the likely returns appear too small. Furthermore, there is a lack of data on country-level climate risk and vulnerability that could be used to guide investment decisions. Governments seldom provide clarity about areas that need private capital to achieve their adaptation goals.

¹³ Climate Policy Initiative, *Global Landscape of Climate Finance 2021*.

¹⁴ United Nations Environment Programme, *Adaptation Gap Report 2022*.

14. Moreover, Governments are not well positioned to estimate and quantify the benefits of adaptation projects. The challenge with investing in adaptation is not a lack of returns, but rather the difficulty in measuring the benefits of those returns. Analyses by the Global Commission on Adaptation have, however, shown that the benefits would be significant. Investing \$1.8 trillion globally in five target areas from 2020 to 2030 could produce \$7.1 trillion in total benefits. Spending \$800 million on early warning systems in developing countries could reduce climate-related disaster losses by \$3 billion to \$16 billion per year.¹⁵

Case study: challenges faced by Caribbean countries

15. The challenges faced by countries in locating climate finance, particularly for adaptation, are illustrated by the case of the Caribbean Centre for Development Administration (CARICAD), which was set up to provide assistance to Caribbean countries for improving their administrative capability to accelerate social and economic development. CARICAD serves 17 member States, all of which are small island developing States or coastal developing States, and their number includes some of the world's smallest independent countries.

16. While Caribbean countries did not create the climate change problem, they are now dealing with its impact. They are particularly vulnerable to a range of natural hazards, such as hurricanes, floods, volcanic eruptions and earthquakes. Associated impacts and risks are being exacerbated by climate change, which is multidimensional, multisectoral and multilevel in its effects, with broad and long-lasting impacts. In addition, destructive climate-related events are now occurring with greater frequency. The regional capacity to conduct research, assess needs and develop mitigation and adaptation options and methods is limited in relation to the scale of the problem confronting the region. Moreover, Governments in the region are hamstrung by small taxable populations and narrow resource bases. In addition, economic impacts are nearly impossible to quantify monetarily.

17. Some States members of CARICAD have long-term mitigation plans, but others are accustomed to short-term planning and policy cycles that often coincide with the five-year constitutional limit set for a political administration. The effects of climate change and the need for adaptation and mitigation, however, will span many cycles, with no regard for political ideology. Multi-year bureaucratic hurdles (associated with accreditation of institutions, for example) delay implementation at a time when urgent action is required.

18. All of this means that climate change adaptation will prove to be a monumental challenge for Caribbean countries, especially as the need to design, develop and implement relevant projects on the required scale poses new demands. Replicating the experience from successful projects and programmes across Caribbean countries could increase efficiency and save costs. However, the unique circumstances of each country will require location-specific solutions and the ability of Governments to identify funding and staff capable of putting together projects that are cohesive and, where possible, creditworthy,

19. Regional political leaders accept that tackling climate change will require even greater collaboration, cooperation and joint action, but more tangible support is required. A sustained long-term effort to share and transfer expertise must be associated with access to greater financial resources. However, climate financing can be beneficial only if it does not add to the debt burden of developing countries.

¹⁵ Arame Tall and others, *Enabling Private Investment in Climate Adaptation and Resilience: Current Status, Barriers to Investment and Blueprint for Action*. World Bank Publications (2021).

III. Overcoming institutional barriers to access climate finance

20. For inclusive and resilient development, countries should strive to address the economic, social and environmental dimensions of sustainable development in an integrated way, avoiding a siloed approach that focuses on one of these three dimensions only at the expense of the two others. One way to approach this is to establish so-called climate-resilient development pathways: development trajectories that combine adaptation and mitigation and require an integrated assessment of both.¹⁶ Climate-resilient development pathways mitigate climate risks, protect countries and communities against losses and damage from climate events, boost economic growth, create quality jobs for citizens and improve their livelihoods and well-being concurrently. Development pathways that allow for equal consideration of the economic, social and environmental dimensions will be able to deliver sustainable and inclusive development, which benefits current and future generations.

21. There are several steps that Governments could take to access integrated financing for climate change mitigation and, eventually, adaptation. With time, investments that reduce emissions could be priced and credited through a carbon market, although efficient carbon pricing remains a distant prospect. More practically, multilateral development banks, such as the World Bank and regional development banks, could introduce mechanisms to make the necessary investments cheaper, less risky, or both. They could buy equity in projects, thus giving private financiers more confidence to offer lending, or agree to set up loan-loss reserves to absorb the first losses in the event of a default. Loan-loss reserves would provide an incentive for the private sector to participate in adaptation financing, especially if such projects were combined with mitigation investments.

Green bonds

22. Another instrument that might be leveraged more effectively are so-called green bonds, issued to finance projects with environmental benefits. To date, only some 16 per cent of the related \$1.5 trillion raised since 2007 has gone to adaptation. More than half of the deals involved a single entity, namely Fannie Mae, a mortgage lender in the United States of America. Yet, the Climate Bonds Initiative and others that certify bonds as green consider adaptation a perfectly acceptable use of funds, and greater international use should be encouraged. The African Development Bank has discussed the importance of prioritizing the use of innovative financing instruments, such as green, social, blue, transition, sustainable and sustainability-linked bonds, environmental, social and governance funds, and debt-for-climate swaps to provide the domestic resources necessary to propel Africa towards its net-zero transition by 2050.¹⁷

23. Many adaptation projects include some additional benefits beyond simply insulating people from climate change, which often may be easier to finance. For example, making new infrastructure more climate-resilient might add no more than approximately 5 per cent to the cost of construction, but those additional costs might

¹⁶ Fatima Denton and others, “Climate-resilient pathways: adaptation, mitigation, and sustainable development”, in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, United Kingdom of Great Britain and Northern Ireland, and New York, Cambridge University Press, 2014).

¹⁷ African Development Bank Group, Economic Commission for Africa and United Nations Development Programme, *African Economic Conference: 2021 Report*.

qualify for a subsidy or simply be incorporated into the public tender process.¹⁸ In the latter case, Governments often need help to develop the know-how to set and enforce the right specifications. The World Bank, for instance, is helping Cambodia to draw up contracts for the construction and maintenance of rural roads that include stipulations on flood-proofing.¹⁹ The integration of adaptation efforts into mitigation projects is likely to make the full project more attractive to lenders and to increase the use of concessional debt (i.e., loans with an original grant element of 35 per cent or more).

Developing a national adaptation investment plan with bankable projects

24. One concrete step that Governments can take to promote the flow of private investment is to develop a national adaptation investment plan with a portfolio of bankable projects that are potentially attractive to investors, such as multilateral development banks, impact investors and commercial lenders. Once a project has been identified as bankable, it needs good technical support, including technical and financial feasibility studies, project structuring and procurement, to prepare it to go to market and attract commercial financing. Capacity-building is a clear need in this area.

25. Lenders typically evaluate projects using three types of metrics: impact, compliance and financial risk. Financial risk evaluation is critical to determine whether the expected return on a proposed project is sufficient to compensate lenders or investors for the risks incurred. It is one of the main challenges in creating bankable projects for adaptation.

26. Financial risks fall into three broad categories:

(a) Macro risks, such as political and economic stability, legal system and bankruptcy protections. Such macro factors affect the legal security of property rights, the safety of local staff and the feasibility of project construction;

(b) Project-specific risks, such as sound technical design, qualified sponsors and suppliers, operational risks, project governance and the government regulatory regime;

(c) Financial metrics include capital structure, the participation of preferred creditors such as government or development banks, third-party guarantees, cash flow and rate of return. For example, a wind farm project with a long-term power purchase agreement signed with a local government would have a significantly lower financial risk than one without.

27. Currently, Governments have made progress in this area, but most have not yet developed a wide range of bankable projects. At least 84 per cent of the parties to the Convention have established adaptation plans, strategies, laws and policies, and about half of those have two or more planning instruments in place. Many have identified goals, but most do not capture the outcomes of adaptation action, such as the degree to which people and ecosystems become more resilient or less vulnerable to climate change. In addition, countries are making their adaptation planning instruments easier to implement by defining objectives, determining time frames, considering future climate change, strengthening the science base and improving the capacity and partnerships needed to ensure effective implementation.

¹⁸ James Rydge, Michael Jacobs and Ilmi Granoff, “Ensuring new infrastructure is climate-smart”, New Climate Economy Working Paper (Global Commission on the Economy and Climate, London and Washington, D.C., 2022).

¹⁹ World Bank, “World Bank financing will improve disaster and climate resilience of flood-damaged rural roads in Cambodia”, press release, 25 May 2022.

Strengthening linkages between climate change adaptation and mitigation projects

28. In interviews conducted with lenders, experts of the Committee have found that one of the most recommended strategies was to strengthen linkages between climate change adaptation and mitigation projects to better exploit synergies, for example, by strengthening interlinkages between renewable energy projects that will generate returns and conservation projects in the vicinity that will accrue adaptation benefits. This approach could make adaptation projects more attractive to private funders, while attracting public funding for environmental or social policy objectives.²⁰

29. Another potential innovation is to bundle a varied range of adaptation and mitigation projects into one investment marketed along the lines of mortgage-backed securities. Such projects could mitigate investor risks by diversifying in terms of sector, region, scale and other dimensions.

Natural capital accounting

30. Investors should look beyond short-term financial returns and use longer-term and multi-factor-informed investment strategies, as well as explore innovative financial mechanisms that could be deployed at scale. They should also adopt natural capital accounting to measure the stocks and flows of ecosystem assets and services in an ecosystem or region. With this method, the value of adaptation projects can be translated into physical or monetary terms. The System of Environmental-Economic Accounting is a framework for Governments.²¹ For many countries, the biggest hurdle to using the System's accounts has been the lack of geographical data, but the Artificial Intelligence for Environment and Sustainability (ARIES) tool, released in 2021, enables Governments to easily measure tree cover and find other information needed to help to quantify values of natural capital and related ecosystem services. The Natural Capital Protocol of the Natural Capital Coalition is a similar process created for the private sector that organizations can follow to identify, measure and value their direct and indirect impacts and dependencies on natural capital.²²

31. Although these techniques are not a panacea, it is important to understand that the expansion of national and local statistics to include environmental conditions makes it easier to demonstrate the impact of climate-related projects, particularly those related to adaptation.

Building government capacities

32. At both the national and local levels, it is critical to develop capacity for structuring projects that investors will find attractive. This includes developing competencies in basic project finance and in integrating projects into budgets, sustainable development and strategic plans; matching climate projects to funding sources and helping to catalyse private finance. It also requires building a strong cohort of individuals and teams that have the expertise to screen projects and investment opportunities, to define coherent projects, to assess the impact of projects on emissions and resilience, to estimate the value of natural capital and ecosystems affected by proposed projects, and to conduct risk assessments.

²⁰ OECD, "Strengthening adaptation-mitigation linkages for a low-carbon, climate-resilient future", OECD Environment Policy Papers, No. 23 (Paris, 2021).

²¹ The website of the System of Environmental Economic Accounting is available at <https://seea.un.org/>.

²² Natural Capital Coalition, *Natural Capital Protocol* (2021). Available at https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwp_filter_tabs=guide_supplement.

33. Local and central Governments should build relationships with public financial institutions and intermediaries, climate funds, bilateral aid agencies, project developers, banks, private equity, venture capital, infrastructure funds and institutional investors. They should develop a deep understanding of financial instruments, including debt, loan guarantees, grants, concessional debt, risk management guarantees and other types of arrangements.

34. Doing so requires building capacity to ensure that the needs of underserved communities and vulnerable groups, such as women, young people, the elderly, persons with disabilities and Indigenous Peoples are taken into consideration, as they will be affected by proposed adaptation ideas. They should be consulted and included in the project planning process.

IV. Subnational governments and access to climate adaptation finance

35. In the context of climate finance, it is important to recognize that it is often subnational governments, such as municipalities, counties, provinces and states rather than central Governments, that are on the front lines of the climate crisis and leading climate adaptation efforts.

36. Cities today are home to more than 50 per cent of the world's population, and by 2050 that number will have risen to nearly 70 per cent. Cities generate more than 80 per cent of the global gross domestic product and are responsible for over 60 per cent of total energy consumption and for nearly 70 per cent of total CO₂ emissions.²³ Countries will not be able to meet their nationally determined contributions and the goals of the Paris Agreement adopted under the Convention without an active and effective engagement of cities in tackling climate change. Accordingly, the Secretary-General of the United Nations, António Guterres, has noted that cities are where the climate battle will largely be won or lost, and has referred to mayors as the world's first responders to the climate emergency.²⁴

37. Subnational governments are in the best position to identify climate change adaptation actions that are adequate to address the needs and demands of their communities, while taking into consideration the fragility of their local ecosystems. Although they might have the mandate and responsibilities required to implement successful adaptation projects, they can be hampered by not having timely and direct access to climate adaptation finance. In order to play an effective role in the climate agenda, subnational governments require vast amounts of resources. According to the World Bank Group, more than 70 per cent of global low emissions and climate-resilient infrastructure will be built in urban areas, at an estimated cost of \$4.5 trillion to \$5.4 trillion per year.²⁵ However, subnational governments are facing an international financial system that was designed under the Bretton Woods agreements, which arose in the context of mid-twentieth-century nation States and is not fit for purpose in the urbanized reality of the twenty-first century.

²³ Department of Economic and Social Affairs, "68% of the world population projected to live in urban areas by 2050, says UN", 16 May 2018; United Nations, "Goal 11: Make cities inclusive, safe, resilient and sustainable", available at www.un.org/sustainabledevelopment/cities/ (accessed on 9 January 2023); World Bank, "Urban development", available at www.worldbank.org/en/topic/urbandevelopment/overview (accessed on 9 January 2023).

²⁴ United Nations Climate Change Conference, "Guterres: 'Cities are where the climate will largely be won or lost'", 11 October 2019. Available at <https://unfccc.int>.

²⁵ World Bank Group, *Low Carbon Cities: Exploring New Crediting Approaches to Deliver Carbon and Climate Finance* (Washington, D.C., 2018).

38. In many countries, cities face several obstacles that hinder their access to finance. Some are banned from international borrowing, others require a guarantee from their national Government, which is often not granted owing to political rivalries.

39. Many environmental challenges are local; however, subnational jurisdictions often suffer from low creditworthiness or political restrictions that limit their access to climate adaptation finance. Subnational governments and developing countries, including small island developing States, typically have weak institutional and technical capacities to design creditworthy projects, low levels of creditworthiness and financial stability, and inadequate regulatory and reporting frameworks. Yet, most ecosystem challenges exist at the regional and local levels, where subnational governments are the most relevant jurisdiction.

40. The World Bank Group estimates that fewer than 20 per cent of the largest 500 cities in developing countries are deemed creditworthy in their local context, which severely constricts their capacity to finance investments in public infrastructure.²⁶ This is particularly alarming as most of the future urbanization is foreseen to take place in medium-sized and small cities in developing countries that have limited financial stability and capabilities for climate-friendly development.

41. Most funding for urban-related climate infrastructure projects in developing countries is provided by development financial institutions. That funding covers only a very small portion of the amounts needed, especially given the pace and magnitude of the climate crisis. Moreover, the State-led governance structure of traditional development financial institutions provides little incentive to change a business-as-usual approach and channel the resources needed to subnational governments. This challenge is faced by many subnational governments.

Possible solutions

42. Therefore, there is a clear need for new financing instruments that directly meet the needs of subnational governments. Several funds already exist to facilitate access by subnational governments to climate adaptation financing.

43. The Local Climate Adaptive Living Facility, hosted by the United Nations Capital Development Fund, was designed to increase financing for climate change adaptation, particularly to build resilience in least developed countries. It supports those countries in reviewing and implementing their nationally determined contributions and national adaptation plans, and securing direct access to international finance from the Adaptation Fund and GCF.²⁷ Furthermore, the Adaptation Fund finances projects and programmes in developing countries that are part of the Kyoto Protocol to the Convention. Its direct access scheme gives subnational governments access to funding, but only through accredited entities (e.g., national implementing entities, regional implementing entities and multilateral implementing entities).

44. GCF is the world's largest climate fund. Its aim is to support developing countries in reaching their nationally determined contributions. It works directly with countries through their national designated authority or focal point, and through government agencies that are tasked to liaise with GCF in delivering climate solutions. However, it does not work effectively for subnational governments. GCF should consider having a unified framework for the local delivery of adaptation projects that would further build the leadership of urban actors and capacity for implementation, financing and fundraising. In addition, GCF could define a special

²⁶ World Bank Group, "City creditworthiness initiative: a partnership to deliver municipal finance".

²⁷ United Nations, "The Local Climate Adaptive Living Facility (LoCAL)". Available at www.un.org/ldportal/content/local-climate-adaptive-living-facility-local.

track for female empowerment at the local level, acknowledging the pivotal role women have in adaptation strategies. Moreover, GCF, like other international financial institutions, should ease the burden of the application process, which is hard to navigate for city governments, while fostering the transparency and accountability of funded projects through independent assessments, including publicly available financial reports.

45. Going forward, it will be fundamental to foster bold and disruptive reforms of the current financial architecture to make it fit for the purpose of facing the challenges of a mostly urbanized world. As highlighted in the Sharm el-Sheikh implementation plan, agreed upon at the twenty-seventh Conference of the Parties to the Convention, a global transformation to a low-carbon economy is expected to require investments of at least \$4 trillion to \$6 trillion per year, and delivering such funding will require a transformation of the financial system, its structures and its processes with the engagement of Governments, central banks, commercial banks, institutional investors and other financial actors.

46. Some ideas for creating a financial system that is more friendly to subnational governments have been discussed but are not fully developed. They include the proposal to create a global urban resilience fund,²⁸ a proposal for a green cities development bank²⁹ and a toolkit to mobilize funding and financing for inclusive and quality infrastructure investment in regions and cities,³⁰ among others.

47. The green cities development bank³¹ is a disruptive idea proposed in 2019 to create a new development finance institution for providing loans directly to cities and subnational governments with a focus on urban climate investment needs. Such a bank could complement existing approaches to help cities to finance climate investments. The idea combines the best elements of green banks and development banks.³² Particular emphasis is placed on adaptation projects as a response to the insufficient funding available for them in comparison with mitigation projects. A green cities development bank could become a meaningful mechanism for leveraging and blending private capital and to provide low-cost loans to cities. In addition, it could provide guarantees as well as technical assistance for project preparation and support for green bond issuances. Such services are currently offered by any of the international financial institutions. Moreover, it could develop innovative business models to finance urban adaptation initiatives through natural capital accounting systems to help investors to see the value in such projects and attract more capital.

48. Further exploring those and similar ideas may help to foster the much-needed transformation of a global financial scheme that has not been responding effectively to the increasing demands of subnational governments in addressing the climate crisis.

49. While initiatives for assisting subnational governments in developing bankable projects, building capacity, training local officials and providing technical assistance to access international finance have been growing, much more needs to be done. Most of the funding for climate change adaptation projects in cities is channelled through national Governments in insufficient amounts.

²⁸ Argam, “U20 proposes setting up global urban resilience fund”, 31 October 2020.

²⁹ James Alexander and others, *Financing the Sustainable Urban Future: Scoping a Green Cities Development Bank*, ODI Working Paper 552 (London, April 2019).

³⁰ OECD, *G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities* (2022).

³¹ James Alexander and others, *Financing the Sustainable Urban Future*.

³² Ibid.

50. At the same time, several initiatives are already helping African countries to adapt to and mitigate climate change. The focus has shifted from mitigation efforts, reducing emissions from deforestation and forest degradation, to adaptation, in line with the outcome of the fifteenth Conference of the Parties to the Convention, held in 2009. This trend has been reinforced by official commitments at successive conferences of the parties. In 2021, the Global Center on Adaptation and the African Development Bank joined forces to develop the Africa Adaptation Acceleration Programme to support all African countries in designing and implementing the transformational adaptation of their economies for post-COVID development.

V. Examples of best practices in climate mitigation and adaptation financing

51. Despite the barriers, many climate adaptation and mitigation projects have been successful in securing climate funding. Such projects typically are well-defined, are supported by their Governments and have included partnerships with a combination of not-for-profit organizations, Governments, multilateral institutions and private lenders. Examples include a marine protection project in Barbados, a project for a sustainable aviation fuel plant in Georgia, United States, and a project for a new flood-proof district in Bilbao, Spain.

Marine protection in Barbados

52. Under this project, approximately \$50 million is used to fund marine conservation and other environmental and sustainable development projects in Barbados.

(a) Benefits: the project will expand the marine protected areas in Barbados from virtually zero to approximately 30 per cent of its exclusive economic zone and territorial sea, improve the management of marine waters and thus help to secure a key component of the development of the blue economy;

(b) Financing structure: the project is the most recent in the “Blue bonds for ocean conservation” strategy of The Nature Conservancy, an ambitious plan to scale up ocean conservation around the world. Barbados issued \$150 million in so-called blue bonds in the capital markets, supported by a \$50-million guarantee from The Nature Conservancy and a \$100-million guarantee from the Natural Capital Lab of the Inter-American Development Bank. The proceeds were used to retire a similar amount of existing debt. As a result of the repayment guarantees, the new borrowing featured a significantly lower interest cost than the existing debt. 100 per cent of the resulting cost savings (some \$50 million over the next 15 years) will be channelled into marine conservation.³³

Sustainable aviation fuel plant in Georgia, United States

53. The LanzaJet Freedom Pines Fuels project is aimed at constructing the world’s first sustainable aviation fuel plant. The plant will be capable of producing 34 million litres of sustainable aviation fuel and 3.8 million litres of renewable diesel annually. The plant will roughly double the amount of sustainable aviation fuel produced in the United States. The project is an important first step in the future global scale-up of the LanzaJet technology for producing sustainable aviation fuel.

³³ Credit Suisse, *Credit Suisse finances debt conversion for marine conservation in Barbados*, press release, 21 September 2022. Available at www.credit-suisse.com/about-us-news/en/articles/media-releases/cs-finances-debt-conversion-for-marine-conservation-in-barbados-202209.html.

(a) Benefits: aviation accounts for 2 to 3 per cent of annual global greenhouse gas emissions.³⁴ Sustainable aviation fuels offer a way to decarbonize aviation using existing aircraft without having to make a huge investment in new engine technology. Sustainable aviation fuel could be produced from agricultural waste, municipal solid waste, energy crops or carbon captured from industrial processes or ambient air;

(b) Financing structure: high risks, in particular project risks, financial risks and macro risks, make it difficult to attract finance for first-of-a-kind projects based on emerging technologies. The LanzaJet solution to this problem was to blend grant capital from Breakthrough Energy with private equity capital. Breakthrough Energy, founded by Bill Gates, supports new technologies that reduce the impact of climate change. It provided a grant of \$50 million alongside private capital from Mitsui and Co., Suncor Energy, LanzaTech, British Airways and Shell.³⁵ This blend reduced the risk associated with the project, which unlocked private capital, lowered the cost of financing and made it feasible for the project to move ahead.

New flood-proof district in Bilbao, Spain

54. Climate-resilient infrastructure was established in the city of Bilbao, Spain. The project included a water canal, the elevation of the ground level of buildings, the establishment of green open spaces and the provision of storm water tanks.

(a) Benefits: the goal was to regenerate the Zorrotzaurre area in Bilbao as a new flood-proof residential quarter;

(b) Financing structure: the project was undertaken by the Zorrotzaurre Management Commission (Comisión Gestora de Zorrotzaurre), a public-private partnership. The current members of the Commission are the Regional Basque Government, the Bilbao City Council, the Port Authority of Bilbao and various private entities. In total, they own 65 per cent of the land in Zorrotzaurre. The Commission supervises the redevelopment plan, and the members contribute financially in proportion to the share of the land that they own.

Observations

55. Guarantees and co-guarantees can significantly lower funding costs. In the case of the Barbados blue bond debt conversion for marine conservation, the co-guarantor structure underlying the transaction offered significant protection for investors against non-payment. It also enabled Barbados to refinance its outstanding debt at a lower cost and channel the savings into climate adaptation projects.

56. Grant funding can be used to “crowd in” additional capital from the private sector. Grant funding from Breakthrough Energy lowered the cost of capital and reduced risks for private investors in the LanzaJet Freedom Pines Fuels project. The grants of the Urban Forest Fund of the city of Melbourne, Australia, play a similar role. In both cases, grant funding (where zero returns are expected) enables climate-adaptation projects to tap private capital and successfully access funding.

57. Risk-pooling can solve market failure problems. In the case of Bilbao, none of the individual participants had sufficient incentive to engage in regeneration projects alone. By pooling assets, the project benefited from risk-sharing in both financing as well as project execution and know-how, which created benefits for all participants that would not have been available otherwise. Individual knowledge-sharing can be a

³⁴ International Civil Aviation Organization (ICAO), “Introduction to the ICAO basket of measures to mitigate climate change” in *Destination Green: The Next Chapter – 2019 Environmental Report*; Jeff Overton, “Issue brief: The growth in greenhouse gas emissions from commercial aviation”, Environmental and Energy Study Institute, 9 June 2022.

³⁵ LanzaJet, “Breakthrough Energy makes first catalyst funding in LanzaJet”, 19 October 2022.

catalyst for private capital. Knowledge and experience with innovative technologies is valuable to private companies, which often find it difficult to develop such capabilities internally. It offers them competitive advantages in the market and enables them to mitigate the risks that disruptive technology poses for their business. Offering such insights may be a way to incentivize private participation in areas such as sustainable aviation fuel.

VI. Recommendations

58. In view of the institutional, financial and structural barriers hampering access to climate finance, the authors make the following recommendations:

- **Increase the focus on climate adaptation.** Given the urgent need to fund adaptation and the lack of success to date, climate funds, multilateral development banks and other lenders need to focus more on adaptation, which may include shifting to funding more grants, providing loan-loss reserves and merging projects into mitigation-adaptation hybrids that are more likely to be funded
- **Enhance the role of the private sector in mobilizing the resources needed for climate action.** Private investors should be encouraged and incentivized to use longer-term and multifactor-informed investment strategies, as well as explore innovative financial mechanisms such as green bonds, blue bonds and mini bonds that could be deployed at scale. Governments should improve legal frameworks for public-private partnerships, enabling concessional and other structures and engaging with non-profit partners to minimize risks and tap into a broader pool of private funds
- **Strengthen the use of natural capital accounting.** Governments should reform their economic statistics and accounting systems to embrace natural capital accounting that can be used to measure the stocks and flows of ecosystem assets and services in an ecosystem or region in physical and/or monetary terms. Doing so will enable Governments to begin to quantify the benefits of climate projects, in particular adaptation projects, in a way that makes these projects more clearly defined and attractive to donors. The private sector should be required to incorporate the value of ecosystem services and natural capital protection into its metrics and processes for evaluating project returns
- **Urgently address the need of cities and subnational governments to have greater access to climate finance.** The current international financial architecture was designed for countries and not for subnational governments. In a highly urbanized world in which 70 per cent of CO₂ emissions and 80 per cent of the world's gross domestic product are generated in cities, it is critical to foster reforms that reflect the prominent role city and other subnational governments play in tackling climate change. Without cities investing significant amounts in projects related to climate resilience, countries will not be able to honour the Paris Agreement and other international commitments. Multilateral development banks and other international finance institutions should prioritize urban adaptation projects, develop new mechanisms to significantly increase their lending to subnational governments and deploy funds in an expedited and flexible manner
- **Increase the number of bankable projects, and creditworthiness, at the subnational level.** Cities and other subnational governments need to transform ideas into bankable projects, update policy frameworks, embed climate change in urban planning exercises and improve financial stability and performance.

More technical assistance should be deployed to strengthen their capacities for project preparation and implementation, assessing climate risks and analysing data, particularly in cities in the developing world, which will be home to the majority of the world's population in the coming decades

- **Strengthen institutions for more integrated solutions in cities.** To achieve inclusive and resilient development, cities should avoid a siloed approach and aim at addressing the social, environmental and economic aspects of sustainable development in an integrated manner. The exorbitant cost of financing a green transformation in cities can be met through multistakeholder collaboration, bold and disruptive ideas to reform the current financial architecture to make it more city-friendly, and a cross-sectoral approach to overcome the imperfections of the financial ecosystem
 - **Increase capacity at the local and country levels for securing climate finance.** The United Nations, the International Monetary Fund, through its Institute for Capacity Development, and other international organizations should prioritize training and assistance for developing countries to improve their skills in analysing data and designing climate projects that can attract investments, including by ensuring that each country has a team that can outline project-specific and financial risks and ensure that the project in question minimizes those risks, avoids harm to other societal needs and fosters inclusivity. In addition, this kind of assistance and training needs to be expanded to city and other subnational government officials, who will frequently be on the front lines
 - **Ensure that international donors deliver on their financial commitments.** Donor countries should be held accountable for delivering on climate change pledges, in particular those related to supporting developing countries, including small island developing States, which are facing severe threats. Among other actions, the United Nations could consider appointing an inspector general for climate agreements to ensure that funding commitments are met and to conduct audits of major transfers to ensure transparency and accuracy.
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