Guidance on the GCF's vision, approach and scope for providing support to enhance climate adaptation

This document captures the policy as adopted by the Board in decision B.33/13, paragraph (a). The policy was sent to the Board for consideration at B.33 in document GCF/B.33/04 titled "Guidance on the approach and scope for providing support to adaptation activities".

All decisions and documents adopted at B.33 can be found in document GCF/B.33/19 titled "Decisions of the Board – thirty-third meeting of the Board, 17 – 20 July 2022".

GREEN CLIMATE FUND

I. The GCF's mandate and vision for promoting climate adaptation

The GCF is the largest multilateral fund dedicated to climate action, and is committed to dedicate half its programming to adaptation, with a focus on the particularly vulnerable to the adverse effects of climate change, including LDCs, SIDS and African States

1. The Green Climate Fund (GCF) is unique in terms of its institutional mandate and approach to providing climate finance. Established as a dedicated multilateral fund to support climate change adaptation and mitigation in developing countries, the GCF serves as an operating entity of the Financial Mechanism of the United Nations Framework Convention on Climate Change (UNFCCC), with the aim of promoting a paradigm shift towards low-emission and climate-resilient development pathways in developing countries. Its focus on balanced funding for adaptation and mitigation, direct access by countries and supporting the most vulnerable, at the hub of an expansive global partnership network, positions the GCF to contribute uniquely to global adaptation efforts.

2. The primary purpose of the GCF, captured in its Governing Instrument, is to make a significant and ambitious contribution to the global efforts towards attaining the goals set by the international community to combat climate change. Under the UNFCCC and the Paris Agreement, these goals have been articulated through a global goal on adaptation, of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the parallel goal to limit global temperature rise from climate change.

3. The Governing Instrument elaborates that in achieving its overall objectives, the GCF will strive to maximize the impact of its funding for adaptation and mitigation, and seek a balance between the two, while promoting environmental, social, economic and development co-benefits and taking a gender-sensitive approach. Allocation of resources for adaptation will take into account the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change, including least developed countries (LDCs), small island developing States (SIDS) and African States. The COP has also guided GCF to enhance support for national adaptation planning and the implementation of adaptation projects and programmes, and to continue providing financial resources for activities relevant to averting, minimizing and addressing loss and damage in developing country Parties. At the UNFCCC conference in Glasgow (COP26) Parties also agreed on the need for doubling adaptation finance, and GCF as an operating entity is set to assist in this effort.

4. The GCF's Strategic Plan for 2020-2023 (USP) reinforces the mandates and guidance set out above, looking to deliver greater mitigation and adaptation impact for developing countries compared with the initial resource mobilization (IRM) and deliver portfolio-level mitigation and adaptation results that exceed portfolio IRM results. The GCF looks to deliver balanced funding across mitigation and adaptation over time, as well as using minimum allocation floors as appropriate in allocating resources for adaptation, taking into account the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change, including LDCs, SIDS and African States in line with the Governing Instrument, decisions of the Board and the Fund's IRM outcomes. The Board will aim for appropriate geographical balance. The USP states GCF will support achievement of the global adaptation goal by strengthening support to developing countries to develop NAPs and to use climate information for improving understanding of long-term risks and adaptation needs, as well as continue to provide and facilitate access to resources for activities relevant to averting, minimizing and addressing loss and damage. It also calls for enhancing the role of the private sector in adaptation by supporting enabling environments, innovating business models for climate-resilient products and services and promoting use of climate data to inform private sector decision-making.

As the window for climate action narrows, GCF's vision is to deploy adaptation support inclusively and catalytically, to accelerate systemic adaptation responses

5. The Intergovernmental Panel on Climate Change (IPCC) Working Group II contribution to the sixth assessment report (hereafter AR6 WGII), "Climate Change 2022: Impacts, Adaptation and Vulnerability", Summary for Policy Makers, concludes with high confidence that human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability. Approximately 3.3 to 3.6 billion people live in contexts that are highly vulnerable to climate change, and there is a rapidly narrowing window of opportunity to enable climate resilient development.[1]

6. The current scientific thinking from the IPCC places a strong focus on "transformational adaptation" which can be defined as changing the fundamental attributes of a social-ecological system in order to address the root causes of vulnerability (as opposed to "incremental" adaptation projects which modify existing systems). To achieve transformation and enable climate-resilient development, five "systems transitions" are needed in: energy; land use and ecosystems; urban and infrastructure; transport; and societal/cross-sectoral. There is high confidence that integrated, multi-sectoral solutions that address social inequities and cut across systems increase the feasibility and effectiveness of adaptation and reduce the risk of maladaptation.

7. Effective adaptation options will often connect across all five systems. For instance, AR6 WGII gives high confidence that Ecosystem-based Adaptation (EbA) reduces a range of climate change risks to people, biodiversity, and ecosystem services with multiple co-benefits. EbA has increasingly been applied in urban areas and combined ecosystem-based and structural adaptation responses are being developed, with evidence of their potential to reduce adaptation costs and contribute to flood control, sanitation, water resources management, landslide prevention and coastal protection.

8. Climate change does not affect men and women, the poor and the rich, the empowered and the vulnerable alike. AR6 WGII notes with high confidence that vulnerability at different spatial levels is exacerbated by inequity and marginalization linked to gender, ethnicity, low income or combinations thereof. Vulnerabilities and climate risks are reduced through carefully designed and implemented laws, policies, processes, and interventions that address context specific inequities, including gender. Integrating considerations of gender into adaptation can help to ensure that adaptation is effective and implementable on the ground.

9. Women can act as agents of change at different levels of the adaptation process. For example, women comprise some 43 percent of the agricultural labour force in developing countries and play a critical role in supporting food and nutrition security as well as improving rural livelihoods. Yet women in agriculture have less access than men to land and other productive resources (energy, water, pasture, forests, agricultural inputs, credit and savings, agricultural extension services, information, technology, and markets), limiting their rights and capacities to build climate resilience. Closing the gender gap in agriculture in the context of a changing climate could increase yields on their farms by 20-30 percent[2].

10. Ensuring the equal participation of women and men in the decision-making and implementation phases of adaptation initiatives is critical to ensure that adaptation efforts will not exacerbate inequalities and other vulnerabilities but are effective and help address the specific requirements of the most vulnerable. The updated GCF Gender Policy, adopted by the

[1] https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf

[2] https://www.fao.org/3/i2050e/i2050e00.htm

Board in decision B.24/12, aims to foster gender equality through promoting a gender-sensitive approach to programming and, in turn, achieving greater and more sustainable climate results.

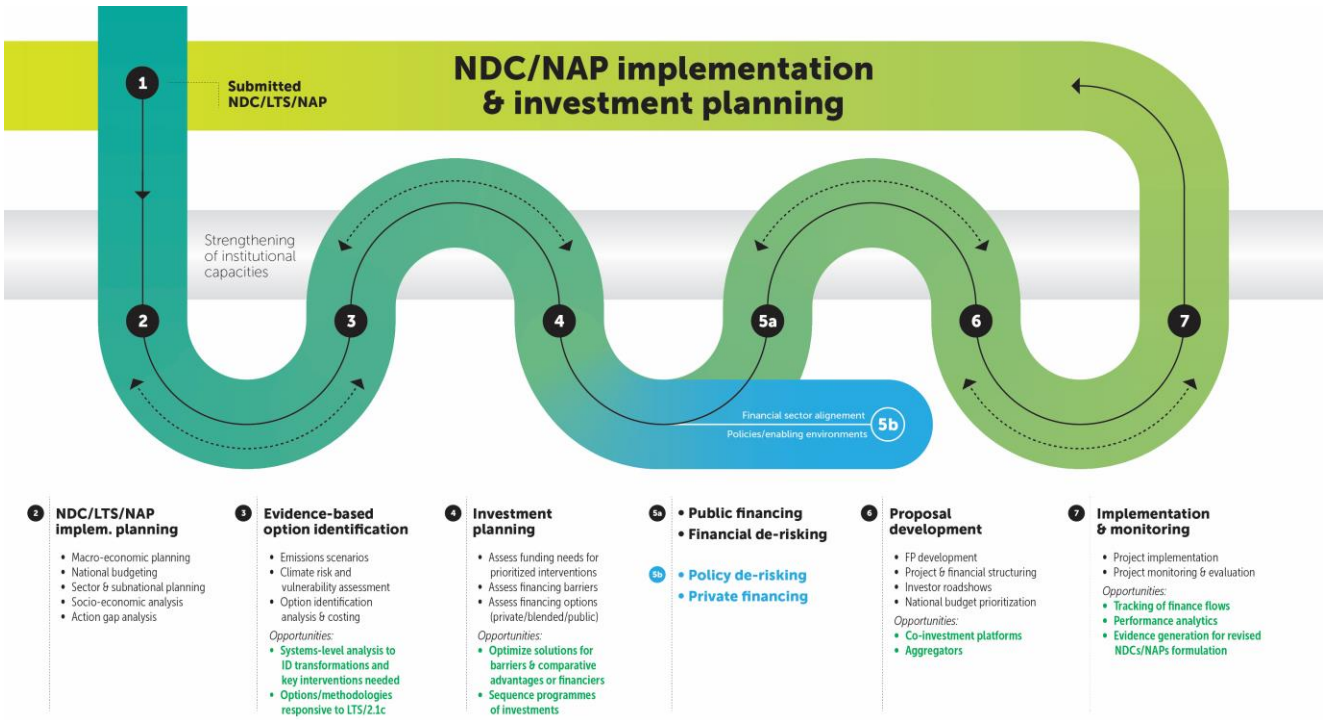
11. In sum, building on its mandate and the latest IPCC advice, the GCF's vision for adaptation programming is to leverage the Fund's comparative advantages to urgently accelerate adaptation investment planning and the scale-up of adaptation finance to help close the adaptation gap, in alignment with the priorities identified by developing countries in their NDCs, NAPs and long-term strategies, and promoting a gender-sensitive approach. To do this the GCF will aim to deploy its financial support:

(a) catalytically, and by using its significant investment risk appetite, to test and scale up approaches that accelerate the transition from incremental to transformational and systemic adaptation responses; and

(b) inclusively, to continue to meet the urgent needs of the particularly vulnerable countries, people and communities, targeting areas where conventional finance does not reach, and putting in place the building blocks for systemic adaptation investment.

12. Figure 1 illustrates the practical spectrum of activities that a country may work through in moving from articulation of its national adaptation priorities, as captured in an NDC, NAP or other long-term climate strategy, toward more downscaled climate risk and vulnerability assessment, into investment planning, funding proposal development and implementation. This process is not linear, and there are important feedback loops across different stages. Through its approach to adaptation programming, GCF can support countries at critical points all along this spectrum, starting from the early stages of adaptation planning, through evidence-informed investment planning and funding proposal development, all the way through to completing feedback loops from successful adaptation investments. The points of GCF intervention will vary depending on each country's needs, preparedness as well as roles played by other stakeholders. The following sections describe in more detail the GCF's strategic approach to adaptation programming (Section II), as well as the programming modalities, guidance and tools the GCF offers to deliver its adaptation programming approach (Section III).

Figure 1: Illustrative model of the adaptation planning and programming spectrum



II. The GCF's strategic approach to adaptation programming

13. To support the vision for promoting transformational adaptation and for catalyzing adaptation finance at scale, GCF follows a four-pronged approach:

(a) **Transformational planning**: creating an enabling environment for adaptation investment by promoting integrated strategies, planning and policy-making for systematic resilience assessment, to then inform investment planning;

(b) **Catalysing innovation in climate adaptation**: through investments in new and innovative technologies, business models, financial instruments, and practices;

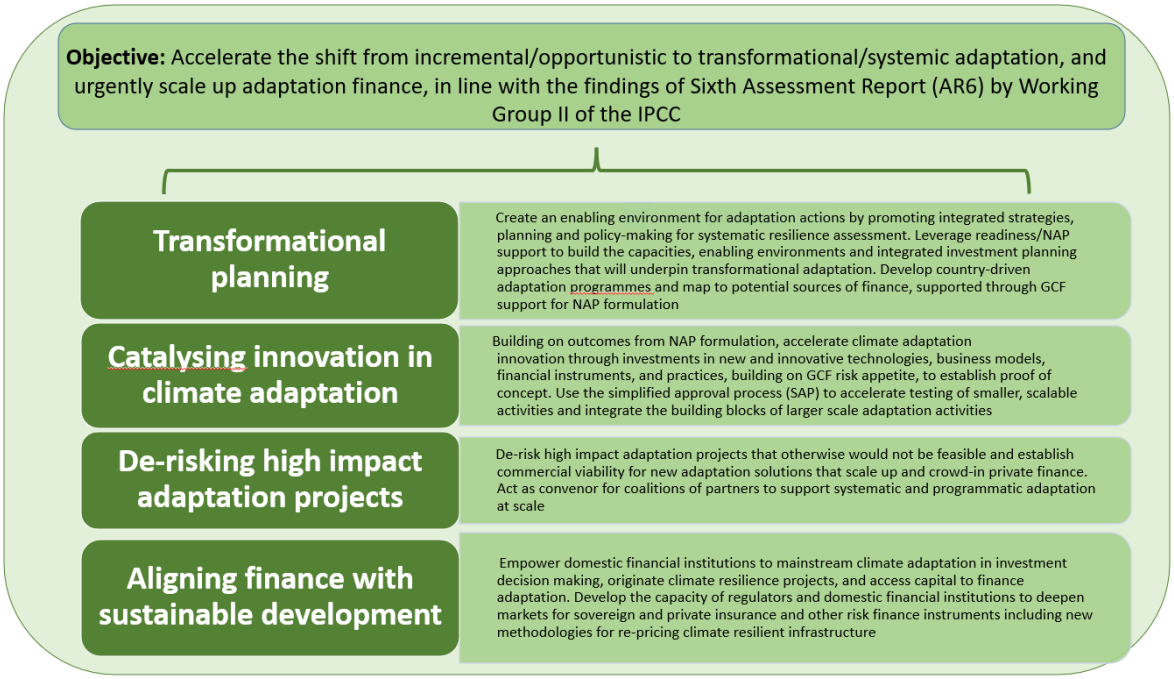
(c) **De-risking high impact adaptation projects**: establishing commercial viability for those new adaptation solutions that otherwise would not be feasible, and enable financiers to better assess and price risks; and

(d) **Aligning finance with sustainable development**: empowering domestic financial institutions and firms in developing countries to originate and finance the widespread adoption of commercially proven adaptation solutions.

14. This transformative approach – supporting adaptation solutions from emergence to diffusion – is applied to key paradigm-shifting pathways in each of the GCF results areas. It aims to optimize synergies between adaptation, mitigation and sustainable development. These different transformative pathways are illustrated in annex I, Supplementary Table 1, which maps the pathways onto the eight GCF results areas and the five IPCC system transitions. Further information on these transformative pathways is provided in the sector guidance for the GCF result areas. This adaptation programming approach will evolve as the draft sector guidance for the eight GCF result areas is finalized and as part of strategic programming for the second replenishment of the GCF.

15. The four elements of the GCF strategic approach are summarized in Figure 2, below, and the following section explains how each of these approaches works in practice.

Figure 2: Strategy for accelerating adaptation support and programming



Transformational planning

16. In line with the call from the Global Commission on Adaptation (GCA)[3] for a revolution in understanding and planning, GCF supports national and local efforts to ensure that the climate risks communities and economies face are fully understood and reflected in the decisions that public and private actors make. Addressing climate change requires also transformational planning to guide how policies, institutions and investments are assessed to ensure that they are building resilience and enhancing not only at the level of individual asset and service but system wide; identifying choices that are robust across a range of climate futures and avoiding maladaptation; involving all actors in planning and decision-making processes, especially the most vulnerable groups, including women and indigenous people; and implementing adaptation activities across sectoral and jurisdictional boundaries.

17. GCF fosters transformative planning by supporting the development of integrated climate adaptation and sectoral strategies, planning and policies making resilient to a range of climate outcomes, and converting them into portfolios of investable projects. Through its Readiness and Preparatory Support Programme, the GCF provides technical assistance support for (i) the preparation of systemic resilience assessment; (ii) development of adaptation plans; (iii) project development; (iv) exploration of innovative financing instruments to address the adaptation financing gap; (v) financial engineering to increase access long-term affordable finance; and (vi) capacity development of national institutions and delivery partners.

18. GCF readiness support is currently enabling the formulation of 74 NAPs, and the development of systemic resilience frameworks. This readiness/NAP support enables national designated authorities to build the capacities, enabling environments and integrated investment

[3] https://gca.org/wp-content/uploads/2019/09/GlobalCommission_Report_FINAL.pdf

planning approaches that underpin transformational adaptation, creating country-driven adaptation programmes, and mapping projects to potential sources of finance.

19. GCF also invests in improving the availability and reliability of climate data and analytical tools to assist transformational planning. Previously, investors could not easily integrate physical climate risks into decision-making and valuation due to the lack of consistent data and analytical tools to convert raw climate data into information that is relevant to investment decisions. Intervention from GCF is addressing this challenge and removing barriers to effective long-term adaptation planning. Currently, the GCF portfolio contains 50 projects involving climate information and early warning components, with USD 490.1 million allocated for these elements, or 5 per cent of the total GCF portfolio.

20. For example, FP074/World Bank: Africa Hydromet Program – Strengthening Climate Resilience in Sub-Saharan Africa: Burkina Faso Country Project aims to enhance and optimize the supply and demand side of climate information systems to strengthen the climate resilience of Burkina Faso. It involves improvement of hydrometeorological and early warning infrastructure and the enhancement of service delivery and warnings to communities to protect/diversify the livelihoods of rural communities and increased food security.

21. Support for capacity-building of national designated authorities, focal points, direct access entities and local private sector actors enables actors to better quantify climate risks and identify climate-friendly business opportunities. GCF is collaborating with two global coalitions to develop new valuation and labelling methodologies to better assess the risk–reward profile of low-emission, climate-resilient investments. The ambition of these methodologies is to accelerate the creation of new climate-friendly asset classes such as climate-resilient infrastructure and enable developing countries to attract private investment aligned with their nationally determined contributions and NAPs.

22. At COP26, the GCF and World Meteorological Organization (WMO) launched a suite of tools to assist stakeholders in incorporating climate science information into investments, plans and policies. These resources include an online Climate Information Platform, tools for calculation of climate indices from historical data, and technical guidance with country case studies. The GCF will continue the collaboration with the WMO and maintain and improve the information platform in response to stakeholder feedback. The next phase of collaboration aims to provide stakeholders with additional support through a combination of capacity development, hands-on support, and creating an online resource for easy access to a wider selection of authoritative methods, tools and climate information.

23. On World Meteorological Day (23 March 2022), the UN Secretary General set an ambitious new target for everyone on Earth to be protected against climate extremes by early warning systems within the next five years. Through several collaborative ventures the GCF is working with the WMO to help achieve this target.

24. Disaster risk management, and climate information and early warning systems (CIEWS) provide direct benefits across sectors as well as providing additional climate resilience to all adaptation plan and actions. For example, CIEWS services can benefit multiple users such as agricultural operations, water management, and systemic infrastructure development. With increasing global warming, losses and damages increase and become increasingly difficult to avoid, while strongly concentrated among the poorest vulnerable groups. CIEWS can combine with new and innovative insurance products [see annex I, Supplementary Table 1, pathways 21-23] to address losses and damages that are faced by developing countries even with the most effective adaptation.

25. GCF support for developing countries' national adaptation planning lays the foundation for transformational programming and optimizes synergies between mitigation and adaptation activities across all eight GCF's results areas.

Catalysing innovation in climate adaptation

26. GCF supports the acceleration of climate adaptation innovation through investments in new and innovative technologies, business models, financial instruments and practices, building on the GCF risk appetite, to establish proof of concept.

27. In the context of mature start-ups, a host of public and private start-up incubation and acceleration schemes make available offices, technical expertise, manufacturing know-how, information on marketing strategies, help in developing business plans, assistance in raising funds, mentoring, legal guidance, patent application support; and facilitate benchmarking against peers, and interfacing with universities and laboratories, or digital platforms.

28. There are estimated to be around 2,000 technology incubators and more than 150 accelerators worldwide. However, fewer than 70 are estimated to be climate technology incubators and accelerators. Due to fiscal constraints, just 25 of these are in developing countries. GCF is developing several proposals to establish dedicated incubators and accelerators in developing countries to help climate entrepreneurs refine their business models and develop partnerships with key market players. GCF is considering the launch of a Request for Proposals to scale up its support for incubators and accelerators, including for adaptation solutions.

29. Access to finance is another major impediment for innovators in developing countries. There is a gap in the availability of seed capital, as well as early-stage risk capital in a form that is appropriate for capital-intensive and slow-maturing climate ventures. In mature start-up businesses in Europe and North America, climate innovators and entrepreneurs meet their funding needs in the ideation and development stages with their own personal assets, investments from family and friends, angel investors, and/or start-up seed grants from public programmes. In emerging and frontier markets, most climate entrepreneurs face a much more difficult situation when launching a start-up because personal and family assets are usually very limited and start-up promotion programmes funded by governments are scarce.

30. To address these barriers, GCF is developing a range of speciality early-growth financing instruments, from development grant to early-growth debt or equity finance. For example, GCF project FP078: Acumen Resilient Agriculture Fund is providing early-growth financing to small and medium-sized enterprises engaged in climate-resilient agriculture in four African countries. In addition, GCF expects that recent updates to the simplified approval process (SAP) will enable a greater use of the SAP modality to pilot new climate solutions and to demonstrate their scalability to larger programmes of investment.

31. Local knowledge of communities and indigenous populations is critical to designing effective and inclusive climate solutions and GCF develops platforms that connects local communities, researchers and practitioners to co-develop innovative adaptation solutions. For example, within FP053: Enhancing climate change adaptation in the north coast and Nile Delta Regions in Egypt, GCF is partnering with United Nations Development Programme to leverage local knowledge to establish living shorelines to adapt to sea level rise in the Nile Delta. The living shoreline solution developed based on local knowledge proved more versatile and cost effective than the conventional grey structural solution piloted in parallel by the project. It is being replicated throughout priority areas of the delta.

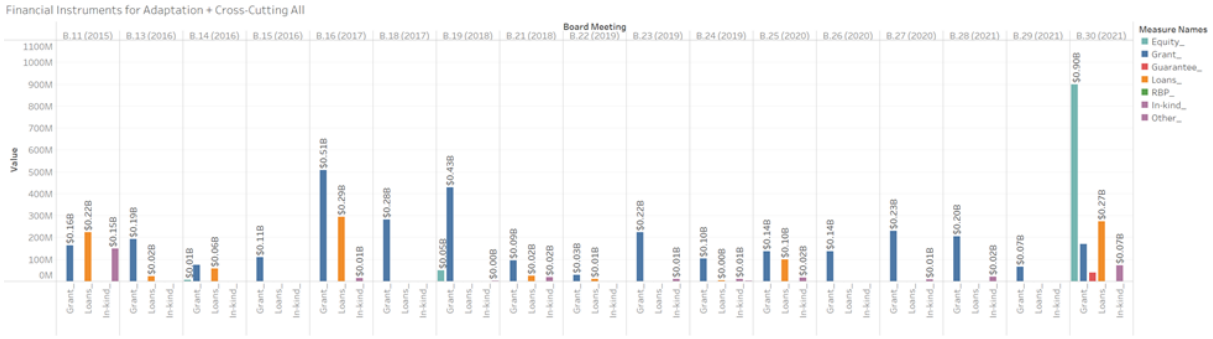
De-risking high impact climate adaptation investment

32. Finding that the economic case for resilience is strong but that money is not flowing at scale, GCA calls for a revolution in finance in addition to a revolution in understanding and planning[3]. Consistent with this call, the third prong of the GCF strategic approach to adaptation is to de-risk first of its kind high impact adaptation projects that otherwise would not be

feasible. A successful implementation of a first-move project demonstrates to other investors that the project is viable and thereby catalyzes private sector investment at scale.

33. Thanks to its partnership structure, flexible use of instruments, and risk appetite, GCF can act as convenor for coalitions of partners to support systematic and programmatic adaptation at scale. Capitalizing on its capacity to use a wide range of grant and non-grant instruments, GCF also explores new forms of blended finance that work better for adaptation, ecosystem-based approaches, and the most vulnerable communities. Figure 3 visualizes this evolution in diversity of financial instruments between B.11 and B.30.

Figure 3: Total adaptation financing by financial instrument per Board meeting year



34. Use of equity more than doubled in the GCF portfolio in only two years, from USD 0.19 billion over the period 2015–2019 (B.11 to B.24) to USD 0.57 billion over the period 2020–2021 (B.25 to B.30), and now makes up 22 per cent of the Private Sector Facility portfolio. Board meetings in 2021 allocated USD 360 million in GCF equity – almost the same amount as the sum of all previous Board meetings combined (USD 400 million). Applying the experience gained in providing support for mitigation activities, GCF has made considerable progress in moving from equity for mitigation towards equity for adaptation in least developed countries (LDCs), small island developing States (SIDS) and African States in 2020 and 2021.

35. Notably, GCF has capitalized on an increase in investor appetite for new asset classes in climate-resilient infrastructure. For example, FP152: Global Sub-national Climate Fund (SnCF Global), approved at the twenty-seventh meeting of the Board (B.27) and managed by Pegasus Capital Advisors, leverages USD 150 million in first loss equity investment from GCF to mobilize USD 600 million of private and institutional capital for mitigation and adaptation solutions at the subnational level. Almost half of the 42 countries participating in this project are LDCs and SIDS. GCF and Pegasus have already adapted this approach to support innovative adaptation technologies and ecosystem-based approaches and practices through FP180: Global Fund for Coral Reefs Investment Window (Coral Reefs Fund), approved at B.30. As the first GCF at-scale private sector programme in the blue (i.e., marine) economy, this programme will create a private equity fund to encourage investments in the blue economy, protecting coral reefs.

36. GCF also recognizes that guarantees can be an effective instrument to either reduce or transfer risk and enhance the credit profile of a borrower. While still the smallest proportion of the GCF portfolio, the use of guarantees doubled from USD 0.08 billion over the period 2015–2019 (B.11 to B.24) to USD 0.16 billion over the period 2020–2021 (B.25 to B.30). As for equity, this doubling in the use of guarantees all took place in 2021, with the approval of five new funding proposals by the Board, of which four are mostly investing in Africa. The Secretariat is currently reviewing programmatic options to increase the efficiency of the use of guarantees in the absence of a credit rating.

Aligning finance with sustainable development

37. Mobilizing adaptation finance at scale requires both to de-risk first mover projects to establish commercial viability for new adaptation solutions and enhance domestic adaptation finance architecture to support the widespread adoption of these new adaptation solutions. The final prong of the GCF approach to adaptation is to empower domestic financial institutions and firms to (i) mainstream climate risks into financial decision-making and re-price climate-resilient assets and services; (ii) originate and appraise climate resilience and adaptation projects;(iii) develop new financial products and services for climate resilience and adaptation; and (iv) access finance to support adaptation investments.

38. IPCC makes clear that climate action and sustainable development are interdependent, and that mainstreaming adaptation into existing governance and policy is essential for successful outcomes. To maximize the likelihood of project success it is important to not artificially separate adaptation and development at the operational level. Adaptation requires the best available information on risks and vulnerabilities to identify needs and appropriate adaptation options to reduce risks and build capacity. In framing an approach to adaptation, it is important to engage people with different knowledge, experience, and backgrounds in tackling and reaching a shared approach to addressing the challenges.

39. GCF can help financial institutions to mainstream climate risks into financial decision-making by assisting them to assess their exposure to climate risks and disclose the risks according to leading international standards. To support origination of climate adaptation investments, GCF can support existing institutions in establishing an internal climate facility to build a dedicated climate finance capacity to originate and appraise adaptation investments or help set up new green banks to enhance the domestic climate finance architecture and spearhead the transformation of the domestic banking industry. For example, FP098: Climate Finance Facility helped the Development Bank of Southern Africa to establish a dedicated climate investment facility and may also assist it in designing the first municipal bonds for recycled water in South Africa, creating a new asset class to foster adaptation to climate change.

40. New financial instruments and services will be required to service the most vulnerable communities. In this regard, GCF is focusing on developing the capacity of regulators and domestic financial institutions to deepen markets for sovereign and private insurance and other risk finance instruments. Support can also be provided to improve access to financial services for vulnerable communities (including micro-finance, micro-insurance, transfer and remittance facilities, etc.). An example of these efforts is FP162: The Africa Integrated Climate Risk Management Programme: Building the resilience of smallholder farmers to climate change impacts in 7 Sahelian Countries of the Great Green Wall, which implements an integrated approach to risk assessment (climate information and early warning systems), risk reduction (investments) and risk transfer (insurance) in agropastoralist communities across seven Sahelian countries. Notably, this programme supports the development of nascent domestic re/insurance markets in the Sahel, bringing innovative instruments (index-linked drought coverage) to smallholders, agropastoralists and governments. It also builds knowledge on financial instruments at the household as well as the sovereign level.

41. Finally, GCF aims to facilitate domestic financial institutions and firms to finance commercially proven new climate solutions. This can entail providing loans through local partner financial institutions to borrowers in climate-friendly investments and/or strengthening the capacity of financial institutions to access domestic and international markets. This approach is illustrated by FP183: Inclusive Green Financing Initiative (IGREENFIN). This programme covers 11 countries in the Great Green Wall plus Côte d'Ivoire and Ghana. The programme will enhance access to credit and technical assistance for local farmers, farmers' organizations, cooperatives and micro and small enterprises to build greater coherence and complementarity on climate action in Africa. Another example under this

heading is the readiness funding provided by GCF in support of the efforts of the Government of Jamaica to set up a Caribbean green bond listing on the Jamaica Stock Exchange, enabling it to list green bonds through a dedicated facility.

Complementarity and cooperation with other climate funds and investors

42. In implementing this approach, GCF is focused on playing a catalytic role complementary to other climate funds, including the Global Environment Facility (GEF), the Adaptation Fund (AF) and the Climate Investment Funds (CIF), as well as other relevant climate finance initiatives and financiers. GCF is working in tandem with other climate funds to strengthen cooperation mechanisms. For instance, the GEF-GCF long-term vision on complementarity will extend GCF collaboration through the two GEF climate funds: the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF).

43. Consistent with directions set in GCF USP, the GCF support to adaptation will complement efforts by other climate funds through support for transformational adaptation planning, looking to jointly strengthen policy, institutional and capacity conditions for adaptation. GCF comes to complement adaptation support from other climate funds and sources, like the LDCF, SCCF and Adaptation Fund, through scaling up and provision of blended finance for projects with paradigm shift potential. Additionally, the GCF support for adaptation looks to learn and collaborate with other climate funds programming, such as the GEF Challenge Program for Adaptation innovation, to catalyse innovation and private sector engagement for climate change adaptation.

44. Of particular relevance to adaptation finance, GCF and the AF are collaborating in a Community of Practice of DAEs that helps to promote capacity-building and the development of quality funding proposals, as well as providing an avenue for knowledge exchange, learning and experience sharing, collaboration and peer support within the community of DAEs involved in the programming of climate change adaptation and mitigation finance. Additionally, GCF and the AF are exploring avenues to build on the success of AF projects in many countries, including options for scaling up and maximizing the climate impact for recipient countries.

45. In the context of the UNFCCC, the GCF actively collaborates with the Adaptation Committee, the Least Developed Countries Expert Group, the Warsaw International Mechanism, among others. By decision B.13/11 the Board decided to hold an annual meeting, in accordance with paragraph 70 of the Governing Instrument, in order to enhance cooperation and coherence of engagement between the GCF and the constituted bodies of the UNFCCC.

III. Scope and modalities for providing support to adaptation activities

46. GCF delivers its strategic approach to adaptation programming through its three major programming modalities – the readiness and preparatory support programme (readiness programme), the project preparation facility (PPF) and funding proposal programming through both the regular proposal approval process (PAP) and simplified approval process (SAP). The GCF has also generated a suite of guidance and tools, including sector guidance, climate information tools and knowledge management resources to help stakeholders prepare adaptation projects and programmes for GCF funding. This section describes the scope of support offered through these modalities and tools.

Readiness and Preparatory Support Programme, including support for NAPs and adaptation planning processes and country programmes

47. Through the readiness programme, the GCF can provide up to USD 1 million per country per year to support activities and outcomes related to institutional capacity building, developing strategic frameworks, pipeline development, and knowledge sharing and learning. The readiness programme also supports development of NAPs and adaptation planning processes through a dedicated allocation of up to USD 3 million per country for the formulation of NAPs and/or other adaptation planning processes.

48. The five objectives adopted by the Board under the current Readiness Strategy (Decision B.22/11), namely on capacity building, strategic frameworks, national adaptation plans and adaptation planning processes, pipeline development and knowledge sharing and learning, provide a wide and flexible scope for GCF to support adaptation planning, adaptation investment planning and associated capacity-strengthening and stakeholder-engagement efforts. There were 84 proposals for support for NAPs under the Readiness Programme approved/endorsed as of 20 March 2022, for a total of USD 187 million, mostly in LDCs (32 per cent), SIDS (18 per cent) and African States (14 per cent). A review of these shows that they are mostly seeking to enable inter- and intra-institutional coordination and decision-making mechanisms; stakeholder engagement; national, subnational and sectoral adaptation plans; and climate hazard exposure, vulnerability, risk and impact studies.

49. Building on this first generation of support and the forward-looking needs identified by countries, there is opportunity for the GCF to enhance the value of its readiness and adaptation planning support in helping countries move along the 'planning to implementation' spectrum set out in Figure 1. In particular, GCF's support for NAPs and adaptation planning can set the foundation for implementing GCF's vision to help countries shift increasingly from incremental to transformational adaptation responses. It can do this through supporting the following:

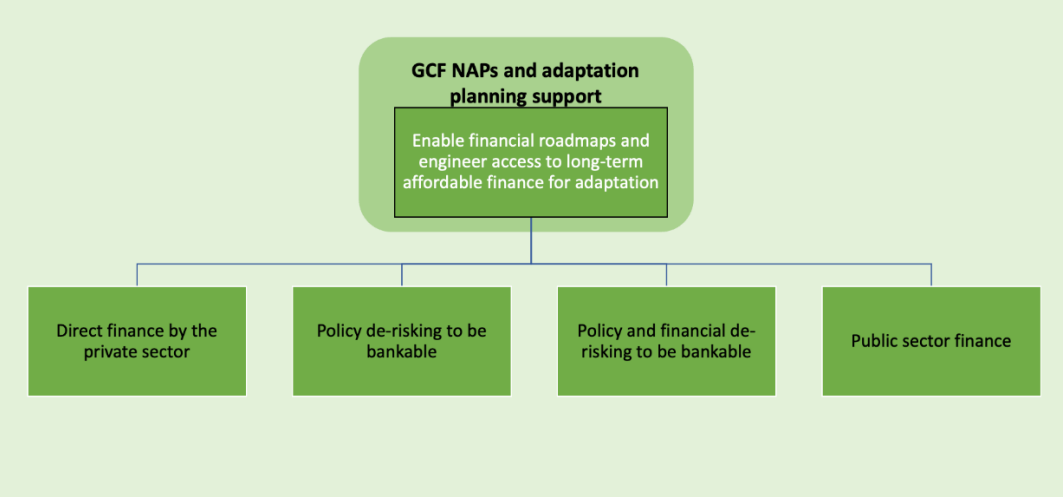
(a) Climate hazard exposure, vulnerability, risk and impact studies are the most frequently expressed needs under RPSP NAP outcome 2. This is a critical step to help countries deepen understanding of climate impacts and risks and provide the evidence-basis for effective adaptation planning and programming. There is opportunity to use these studies for systemic resilience assessments, which take account of cross-sectoral, cross-regional and short- and long-term climate risks to inform intervention design;

(b) Adaptation investment planning, including developing or implementing systems for prioritization, preparing financing strategies and drawing up concept notes are the most expressed needs under RPSP NAP outcome 4. Here, there is opportunity to more directly link the climate-evidence generated through outcome 2 to selection, design and prioritization of adaptive investments in concert with development planning. Systemic resilience assessments can in turn facilitate more integrated and programmatic approaches to adaptation investment planning. Where climate-evidence is well-integrated into the upstream design of interventions, this is likely to relieve the need for extensive review and iterations at the downstream funding proposal stage, which is often the case if climate responses are 'retrofitted' into pre-existing development plans;

(c) For financing strategies, NAP support can be used to deliver a 'financial engineering' approach, enabling countries to shift from incremental action towards systemic responses to adaptation. This involves identifying the best mix of grey and green options to systematically strengthen resilience; and engineer access to long-term affordable finance through optimizing public resources to either de-risk private investment that otherwise would not be seen as bankable investments in order to establish a commercial track record for new adaptation solutions, or directly finance transformative adaptation activities with high socioeconomic returns but limited

financial cash flows susceptible to attract private investment. Figure 4 illustrates this financial engineering approach.

Figure 4: Supporting consideration of options for adaptation finance through the NAP process



(d) Country programmes can also be used to articulate countries' adaptation investment plans (alongside mitigation investment plans), translating priorities set out in NDCs, NAPs and long-term strategies into a concrete and prioritized pipeline of projects and programmes appropriate for the GCF or other sources of finance. Country programmes can be designed to leverage the convening power and range of financial instruments of GCF to support multi-partner, multi-sectoral or multi-country co-investment platforms combining different sources of public and private finance.

(e) Enabling private sector engagement in adaptation planning and finance, including through addressing policy/ regulatory barriers and enabling environments represents the concentration of needs identified under RPSP NAP outcome 3. These areas are closely aligned with the recently adopted Private Sector Strategy, which examines how GCF can support countries to better engage the private sector in investment planning, promote methodologies for making better use of climate risk data to inform private-sector decision-making and asset pricing, and support policy de-risking to remove barriers to and incentivize adaptation investments.

(f) For institutional capacities, the readiness programmes enables NDAs and DAEs to build their institutional capacities, coordination mechanisms and governance structures to support effective and efficient measures towards climate resilience and adaptation. One opportunity to strengthen efforts to date lies in building resourcing plans for NDAs and DAEs to effectively draw in the specialist expertise required for adaptation investment planning, proposal preparation and execution throughout the Figure 1 cycle, particularly in countries with the least capacity. Readiness can also support monitoring of adaptation efforts, informing a feedback loop to regular review of NDCs, NAPs, and other relevant adaptation processes and instruments, to better reflect investment outcomes and climate risk trajectories.

Project Preparation Facility

50. The Project Preparation Facility (PPF) aims to provide support for adaptation project and programme preparation, helping promising ideas identified in country investment plans and concept notes move toward bankable funding proposals. The GCF provides up to USD 1.5 million to AEs (especially DAEs) for any single project or programme, especially for projects in the micro- to small-sized categories, in accordance with decision B.10/17, with a view to

enhancing the balance and diversity of the project pipeline. The PPF provides an opportunity to enhance adaptation action by providing resources for the technical preparation of funding proposals that are well designed as responses to adapt to climate impacts in the context of promoting sustainable development, providing resources to ensure these proposals are backed with relevant and sufficient data and evidence to move through the GCF investment process.

Funding adaptation projects and programmes through the project approval process, simplified approval process and requests for proposals

51. The main modality for developing countries to access investment for implementation of adaptation actions is through the submission of concept notes and funding proposals, building on the outcomes from their NAPs, adaptation planning and investment planning processes. GCF funding for adaptation projects and programmes is provided in line with the Fund's investment framework. In Decision B.05/05, the Board decided that, in relation to adaptation, resources will be allocated on the basis the ability of a proposed activity to demonstrate its potential to adapt to the impacts of climate change in the context of promoting sustainable development and a paradigm shift; and the urgent and immediate needs of particularly vulnerable countries, in particular LDCs, SIDS and African States. The Fund's investment criteria are further elaborated in Decision B.27/06, which sets out the Fund's investment policies, strategy, portfolio targets and guidelines for the Fund's first replenishment period. The Fund has developed a range of guidance and tools to help developing countries and their partner AEs prepare high quality adaptation proposals that are well-fitted to meet the Fund's investment criteria, as further detailed below.

52. The Fund operates two project approval processes: the regular project approval process (PAP) as well as the simplified approval process (SAP). The simplified approval process (SAP) pilot programme was adopted at the eighteenth meeting of the Board in decision B.18/06, and updated through Decision B.32/05, with the aim of simplifying and streamlining the approval of certain small-scale projects, particularly from DAEs. The updated SAP applies to projects or programmes requesting a GCF contribution of up to USD 25 million, with minimal social or environmental risks. The SAP modality reduces the time and effort required for both AEs and the Secretariat to go from project conception to implementation, providing the opportunity for AEs and DAEs to submit adaptation proposals with shorter and simpler templates and fewer documentation requirements, with a streamlined review and approval process, and accelerated disbursements. The SAP is particularly relevant for addressing urgent and highly replicable, low-risk adaptation needs and actions to minimize risks of loss and damage, such as interventions on climate information and early warning systems, and their application through tools to better inform public and private-sector decision-making on climate risks.

53. GCF also offers several pilot programmes which provide additional incentives to develop adaptation proposals with increased efficiency and impact. The EDA pilot programme was adopted at the tenth meeting of the Board in decision B.10/04, which approved an initial allocation of USD 200 million for at least 10 funding proposal pilots to utilize the EDA means of implementation.

54. The EDA pilot provides DAEs with opportunities to move beyond the financing of individual projects towards a more comprehensive and stakeholder-driven programmatic approach. It differs from other GCF access windows because individual sub-projects do not have to be presented in the funding proposal or subsequently submitted to GCF for approval. Instead, the decision-making mechanism for such sub-projects is devolved at the country level through pre-approved selection criteria. While both mitigation and adaptation proposals are eligible under this pilot programme, DAEs can take advantage of the EDA pilot, particularly for adaptation activities, because the flexible and context-specific nature of the EDA approach and its emphasis on a stronger involvement of local organizations and other stakeholders (including

Civil Society Organisations, CSOs) are both crucial in considering the design of adaptation proposals. CSOs often articulate and represent local interests and constituencies, and their direct relationships with communities can help to demonstrate the extent of impact of climate change on local communities as well as advocating effective responses.

Thematic tools and guidance supporting the GCF strategic approach to adaptation programming

55. **Sector guidance.** GCF has developed sectoral guidance that informs adaptation investments across a range of sectors. The sector guidance aims to assist NDAs and AEs on how to programme adaptation investments, taking into account country priorities and needs, and evolving financial and technological markets. The guidance also covers the challenges faced due to climate change for each sector and considers how climate impact potential would be elaborated into proposals. It aims to support countries to design transformational and paradigm-shifting proposals that can potentially deliver the greatest climate impact, serving vulnerable people and communities, while also considering programmatic approaches that go beyond one-off investments.

56. The sectoral guidance covers the following adaptation actions: climate information and early warning systems; health and well-being; agriculture and food security; water resources management for adaptation; climate-resilient infrastructure; ecosystems; and nature-based solutions. It was developed through extensive research and technical consultations with various stakeholders to ensure that these documents evolve based on the best available data and global expertise. The sector guides also recognize that many GCF projects are cross-cutting across sectors, and the GCF encourages proposals to optimize synergies between adaptation, mitigation and sustainable development in an integrated approach to investment design.

57. **Enhancing access to and use of climate information.** Access to and clear guidance on the use of climate information promotes the submission of higher quality funding proposals and ensures a consistent and transparent approach to their assessment. For adaptation activities, climate impact potential can be established by providing an evidence-based analysis to show that a proposed activity is likely to be an effective adaptive response to the risk or impact of a specific climate change hazard.

58. In "Steps to enhance the climate rationale of GCF-supported activities" (GCF/B.33/05), the Secretariat provides non-prescriptive, principles-based guidance for adaptation (also for mitigation) and provides recommendations that enhance the articulation of climate impact potential in proposals. The policy provides a systematic approach to helping AEs design adaptation proposals with a clear climate impact potential, based on the four principles of: identification, response, policy alignment, and monitoring and evaluation, using the best available information and data in the proposal context.

59. **Measuring impacts of adaptation activities.** The integrated results management framework (IRMF) of the GCF has replaced the existing initial results management framework and performance measurement frameworks (RMF/PMF). The IRMF manages to address two of the major weaknesses of the RMF/PMF, namely the weak linkages among the different adaptation results levels, as well as the limitations to the measurement of adaptation impact. The IRMF incorporates a new way for measuring paradigm shift towards resilient development, and also established a set of indicators that measure the effectiveness of an enabling environment to support adaptation activities. The IRMF retained the measurement of adaptation beneficiaries as the main approach for assessing adaptation outcomes, but it also introduced two additional indicators for measuring the value of assets made more resilient as well as the indicator on natural resources under climate-resilient management, thereby improving the ways of capturing various aspects of adaptation to climate change.

60. **Knowledge development and exchange.** GCF will continue to use the lessons learned from projects to inform national plans and policies, and to add value to its wider work. Exchanging experience and lessons learned in accessing adaptation finance, and in project preparation, implementation and results management, through the Readiness Programme and regional sectoral dialogues and workshops will inform future efforts. Existing GCF knowledge platforms (e.g., website, Direct Climate Action Platform) will help to identify and promote best practices, including South–South and triangular learning, and support regional and international networks for information-sharing and cooperation on adaptation support.

61. **Gender.** The GCF Updated Gender Policy, adopted by the Board in decision B.24/12, aims to foster gender equality through promoting a gender-sensitive approach to programming and, in turn, achieving greater and more sustainable climate change results. Each AE is required to have a gender policy that is equivalent to the GCF Gender Policy and to apply its own gender policy in GCF funded activities. GCF adaptation Concept Notes and Funding Proposals must contain a gender assessment and project-/programme-level action plan (Annex 8) for Secretariat review. PPF support can be made available to assist AEs develop gender assessments and action plans.

Annex I: Supplementary table 1 Accelerating Adaptation in Key Systems through Paradigm Shifting Pathways.

This table provides an overview of GCF paradigm shifting pathways vital to adaptation , mapped onto the 8 result areas of GCF and with an indication of how the pathway contributes to the five systems transitions from the IPCC WG II report using the key: (E) = energy systems transition, (L) = land use and ecosystems, (U) = urban and infrastructure, (T) = transport, (C) = cross-sectoral and societal. Further information on each pathway is provided in GCF's sector guidance.

Paradigm Shifting Pathways	Result areas
1. Promoting Resilient Agroecology (L) (C) *Climate change has adverse effects physiological effects on crops and livestock. It is also likely to increase soil erosion, losses of carbon and lower water retention capacity. Absent adaptation, climate change could depress growth in global yields by 5-10 percent by 2050. Food-insecure people (smallholder farmers, urban poor, etc.), who already spend more than half of their income on food, are particularly at risk. Resilient Agroecology can potentially reduce these threats. It does not mean a specific set of measures but increased focus on yield and stability rather than yield alone. It requires packages of measures tailored to local conditions that can include: Improved stress resistant seeds, crop varieties, and breeds; diversifying crops, aquaculture and livestock; sustainable farming practices and technologies; improved livestock management including improved diets, enhanced animal health, and grassland management* 2. Facilitating Climate Informed Advisory and Risk Management Services (L) (C) *Investments in climate information, extension and risk management instruments are critical to realize the benefits of research and development in climate smart technologies and practices and raise awareness of new solutions, facilitate access and reduce adoption risks. Priority activities can include digital agricultural advisory services to amplify traditional agricultural extension and provide critical weather information to farmers to make planting and harvesting decisions. Financial literacy training access to finance (e.g., mobile money), index insurance linking insurance payouts to predetermined index, and social safety nets for food insecure households and improving the rights and resource access of women farmers can prove critical to supporting innovation and accelerate adoption of new climate resilient farming solutions and practices.* 3. Reconfiguring Food Systems (L) (C)	Health, Food and Water Security Livelihoods of People and Communities Forests and Land Use

Paradigm Shifting Pathways	Result areas
Reducing food losses and waste is essential in a world where the number of people affected by hunger has been slowly on the rise since 2014, and tons and tons of edible food are lost and/or wasted every day. Globally, around 14 percent of food produced is lost between harvest and retail, while an estimated 17 percent of total global food production is wasted. Re-configurating food systems requires changing how food is stored, transported, sold and consumed. Synergies with mitigation can be further leveraged by improving energy efficiency of food systems and finding alternative energy sources	
4. Decarbonization and resilience of urban energy systems *Power generation and energy demand are highly affected by climate conditions. Extreme weather events are one of the main reasons for energy disturbances. Cities and urban areas play a significant role in the energy transition and the path towards sustainability. A successful decarbonization of urban energy requires adequate consideration of climate change impacts including extreme events to ensure the reliable performance of energy systems in the long run. Priority activities can include support to distributed renewable energy, including generation of energy from renewable sources at the community and household levels and the utilization of sustainable micro-grids.* 5. Energy efficiency and climate resilience in building stock *The IPCC AR6 WGI predicts that as the climate becomes warmer, heatwaves become more likely. This is a trend that can already be observed, and that will continue in the future. Retrofits of existing buildings and green standards in new buildings should not only aim at increasing energy but also reduce the impact of heatwaves on people and economies. New building codes can deliver a triple dividend: reduce GHG emission; adaptation to extreme weather events; greater energy security and reduce energy poverty.* 6. Compact and resilient urban development *Climate change is already bringing more damage, stresses and suffering to urban areas, home to more than half of the world's population. The greater threat of rising seas and greater storm surges alone could force hundreds of millions of people from their home in coastal cities. Furthermore, cities are often increasingly encroaching on floodplains, forests and wetlands that could have absorbed floods and reduce the impacts of droughts. Building compact, resilient and equitable cities is critical to reduce the number of people who are in harm's way over the world Resilient. It will require mainstreaming climate risks into urban planning; encourage climate resilient low carbon urban grey and green infrastructure; effective land use and low carbon, climate resilient transport in compact cities to improve energy efficiency and resilience of urban areas – focusing on ensuring benefits accrue to the most vulnerable. Repricing of climate resilient assets through*	Building, Cities, Industries, and Appliances Livelihoods of People and Communities

Paradigm Shifting Pathways	Result areas
mainstreaming climate risks into every financial decision-making, public private partners to de-risk investments and innovative financing instruments that capture the value from adaptation benefits might prove essential to address the acute financing gaps of many cities in developing countries. 7. Circular urban economy *A circular economy aims to employs, reuse, share , repair, refurbish, remanufacture and recycle existing materials and products as long as possible to minimize the use of resource inputs and the creation of waste, pollution and carbon emission. By preserving or regenerating ecosystems, reducing biodiversity loss, waste, and pollution, and creating green jobs, it is key to both urban climate adaptation and mitigation efforts.*	
8. Ecosystem-based Management of Terrestrial and Freshwater Ecosystems *Healthy ecosystems are a cornerstone of building resilience and scaling up adaption across all sectors. Climate change is accelerating the loss of ecosystems and natural assets, particularly affecting indigenous people, rural communities, and others who depend directly on ecosystems for their food, fuel and livelihoods. This paradigm shifting pathway aims to transform how terrestrial and freshwater ecosystems are protected, restore, and manage based on the principle of joint management of the coupled human-ecological system. These interventions maintain or enhance ecosystem function at a scale sufficiently large to be ecologically sustainable. Key aspects of ecological sustainability related to climate benefits is the ability of the landscape to store and/or sequester carbon and provide ecosystem services for adaptation.* 9. Ecosystem-based Management of Coastal and Marine Ecosystems *Planning and policy making about coastal and marine ecosystem management historically has been second to terrestrial systems. However, oceans are essential for human survival. They absorb roughly 30% of all carbon emissions produced by humans and more than three billion people depend on marine and coastal biodiversity for their livelihoods and primary protein source. In addition, ecosystems such as mangroves or coral reefs can provide for coastal communities and tame powerful storm surges that could otherwise destroy coastal communities. In ecosystem-based management in coastal and marine ecosystems, the paradigm shift pathway integrates protection (including through protected areas), restoration, and management of coastal and marine ecosystems into mitigation planning, adaptation planning, and infrastructure development*	Ecosystems and Ecosystem Services Livelihoods of People and Communities
10. Protecting natural forests and sustainable land use *Natural solutions like avoiding deforestation and forest and land restoration could, according to some estimates, provide one-third of the climate mitigation needed between now and 2030 to keep warming below*	Forests and Land Use Livelihoods of People and Communities

Paradigm Shifting Pathways	Result areas
2C. As discussed above, they are also critical for feeding people, shielding cities from extreme weather events and preserving livelihoods and cultures. It is much more efficient and effective to protect standing forest carbon stocks than to rebuild them. - Carbon sequestration and adaptation benefits are lost when forests are lost, and therefore the earlier critical land conversion is arrested, the greater the mitigation and adaptation benefits over the century. 11. Restoring degraded forests and other landscapes *. In complement to Restoring degraded lands and other landscapes as well as reforesting deforested areas – offers both significant mitigation potential because of the carbon uptake that increases over the next few decades and adaptation benefits in terms of sustainable livelihoods and protection from extreme weather events. Carbon markets, new forms of blended finance, payment for ecosystem services and other public private partnerships will be required to address the nature financing gap to support these efforts. Only 3 percent of nearly 2,000 companies reported using natural ecosystems as part of their climate adaptation strategies.* 12. Sustainable management of productive forest landscapes *The aim of sustainable forest management (SFM) is to ensure that forests supply goods and services to meet both present-day and future needs and contribute to the sustainable development of communities. Sustainably managing productive forest land to support people and the environment as well as value chains of key commodities - Integrating mitigation and adaptation objectives in sustainable forest management can significantly enhance carbon sequestration and storage and boost resilience while maintaining economic productivity and sustaining livelihoods. Many countries lack appropriate forest legislation, regulation and incentives to promote SFM as well as adequate funding and human resources to ensure the participation and involvement of all stakeholders in forest governance, planning and development. Inadequate valuation of forest services might also make other land uses appear more economically attractive to land managers than forest management, thus leading to forest degradation and deforestation. This paradigm shifting pathways aims to remove these barriers to SFM to preserve and amplify their adaptation, mitigation and sustainable development benefits.*	
13. Low Emission Energy Generation *Renewable energy technologies have become the most cost-effective energy generation solutions in many geographies across the world and can be rolled out very quickly (a solar plant can be commissioned in 6-12 months). Decentralized energy systems can also prove more resilient to extreme weather events, adverting*	Energy Generation and Access Livelihoods of People and Communities

Paradigm Shifting Pathways	Result areas
and minimizing losses while accelerating the socio-economic recovery. Accelerating the penetration of renewable energy technologies can enable 'triple wins' for energy access, mitigation and adaptation. Under this partway, GCF supports the widespread adoption of proven, cost-effective renewable energy technologies and models in nascent markets as well as the scaling up of emerging RE technologies such as offshore or floating wind, or green hydrogen in appropriate settings. GCF leverages its capacity to use grant and non-grant instruments to explore both nascent technologies in high potential markets and proven technologies in nascent markets 14. Efficient and Reliable Energy Transmission, Distribution, and Storage *Efficient and Reliable Energy Transmission, Distribution, and Storage are pre-condition for the widespread adoption of renewable energy technologies and the realization of the 'triple wins' for energy access, mitigation and adaptation. This paradigm shifting pathway supports innovative grid digitalization, system integration, and storage technology, innovation in long-distance RE transmission, offshore transmission, climate resilient sub-stations, anchor investments in new, scalable storage technologies, and climate resilient infrastructure for reliable power supplies.* 15. Promoting Access to Clean Energy *The relationship between energy access and climate change adaptation is often overlooked in policy and practice. However, energy access is often a pre-condition to transformative adaptation by supporting economic diversification, social development and building social capital (education, cultural activities, community engagement, etc.,), increasing access and resilience to health services (24/7 operating hours, cold storage, etc.), climate resilient agriculture (water pumps for irrigation; biogas digesters providing organic fertilizer, etc.); preserving ecosystems through and ; and clean cooking solutions to reduce firewood use. Under this transformative partway, GCF supports transformational business models for clean cooking, new business models for productive energy services such as cooling/milling or equipment, new clean energy access technologies including distributed generation and isolated RE energy sources*	
16. Enhance water conservation, water efficiency and water re-use *The world is already facing severe challenges to ensure that people, crops and the environment have the water they need. Climate change will compound these challenges. By 2050, the number of people who lack sufficient water at least a month per year will soar to more than 5 billion, from 3.6 billion today, causing unprecedented competition for water. There is growing awareness that water is central to climate change adaptation. Water is a top adaptation priority in 79% of the Nationally Determined Contributions. This pathway aims to support*	Health, Food, and Water Security Infrastructure and Built Environment

Paradigm Shifting Pathways	Result areas
demand management, smart digital water management, decentralized models, resources recovery and other critical context-based activities critical to lessen the anticipated increase competition for water and enable communities and societies to adapt to propound changes in the global, regional and local hydrological systems. 17. Strengthen integrated water resources management and water management *Harnessing the power of nature and improving water management and governance have the potential to increase the resilience of communities and economies to disruptions in the hydrological systems. Reversing ecosystems degradation can reduce run-off and increase water recharge of reservoirs and aquifers. Water resource agencies can develop fair and transparent mechanisms to reallocate water to society's highest needs and foster transformative adaptation to climate. This pathway aims to support ecosystem-based management, alternative water sources and integrated water resources management. Community engagement, regulatory development, water tariffs and other innovative pricing mechanisms such as PES or water trading will have to be deployed in a context-specific manner.*	
18. Promote climate-resilient health systems and services *Climate-resilient health infrastructure and services are crucial for efficient health system functioning. This includes ensuring that the planning, siting and building codes account for current and projected future climate risks. It also includes climate-resilience of essential services to health facilities, such as water, sanitation services, and power supplies which may be affected extreme weather events. It is essential to promote climate adaptive health systems and service and to build into health services preparedness and climate risk management for extreme events. Health systems constitute a significant share of many national economies so combining climate resilience with sustainable technologies can lead to both economic and environmental benefits.* 19. Facilitate climate-informed advisory and risk management services and community action *The direct damage costs to health are estimated to be between USD 2-4 billion/year by 2030. Between 2030 and 2050, climate change is expected to cause approximately 250 000 additional deaths per year, from malnutrition, malaria, diarrhea and heat stress. Climate-informed advisory and risk management services, and community action in climate and health can reduce the risks of climate-induced health shocks by using climate information to understand the risks and scale of these health threats and design solutions at the local level.*	Health, Food, and Water Security Livelihoods of People and Communities

Paradigm Shifting Pathways	Result areas
20. Accelerate the shift to low emissions climate resilient transportation *Reliable and resilient public transport is vital for people's livelihoods, and to ensure their equitable access to education, training, and health system services. Natural disasters cause direct damage to power generation and transport infrastructure, costing about $18 billion a year in low- and middle-income countries. Transportation both contributes to and will be impacted by climate change. The transportation sector is highly vulnerable to the physical impacts of climate change. Roads, rail lines, seaports, airports, and other transport infrastructure that is part of a network were not built to withstand increased sea levels, storms, or other extreme weather events. Adaptation to climate change will require adjusting how transportation infrastructure is planned, designed, financed, built and operated. This demands innovations in business and financial models for creating highly efficient public transport systems as backbones for mobility and the integration of modern, climate-resilient non-motorized transport and micro-mobility solutions with public transport. Governments can play a key role, supported by climate finance, in coordinating three priority actions: 1. Implement a whole-of-government approach to infrastructure resilience, building on existing regulatory systems; 2. Identifying critical transport infrastructure and defining acceptable and intolerable risk levels; 3. Ensuring equitable access to resilient transport for all.*	Transport
21.. Climate Information Services *Climate information services equip decision makers in climate-sensitive sectors with better information to help adapt to climate variability and change. Taking agriculture in Africa as an example, the sector contributes to around 30 per cent of GDP and employs up to 80 per cent of the population. Climate observing systems already show that rainfall in Africa is becoming increasingly erratic and since more than 90 per cent of our agriculture is rainfed, this sector stands to be one of the hardest hit by climate variability and change. The development of climate information services underpins systemic resilience and transformative adaptation– generating relevant, science-based information to guide how governments assess policies, institutions, and investments to build resilience not only at the level of individual projects but system wide. Gaps exist in climate information systems in infrastructure, capacity and digital technologies and there are opportunities to deploy blended finance at scale and increase the involvement of the private sector in the promotion of start-ups in data analytics and digital technologies to modernize and optimize the sector.* 22. Impact-Based Multi-Hazard Early Warning Systems and early action *Anthropogenic climate change is increasingly having a discernible influence on elements of the climate system by exacerbating extreme events and causing multiple hazards, often with compound or sequential*	Livelihoods of People and Communities Infrastructure and Built Environment

Paradigm Shifting Pathways	Result areas
characteristics. In turn these elements are interacting with vulnerability and exposure to trigger compound events and cascading impacts on people and on ecosystems (IPCC, AR6). Cascading impacts are particularly driven by the loss or disruption of critical infrastructure such as communications, transport, and power supply, on housing, dams and flood protection, as well as health provision. Repeated extreme and compound events are leading to critical transitions in social systems. Making robust early warning and early action services widely available will lead to the establishment of people-centred, end-to-end, and impact-based systems that will save lives, protect livelihoods, and manage climate-related risks more effectively. A good example is GCF SAP010, "Multi-Hazard Impact-Based Forecasting and Early Warning System for the Philippines" which strengthens the Philippines' ability to adjust to climate impacts, and implement long-term climate risk reduction and adaptation measures building on best practice in multi-hazard early warning systems and linking with forecast-based action to maximize impacts on the ground. This includes climate-resilient development planning and investment. 23. Climate Information and Early Warning Services (CIEWS) and innovative insurance products for investment and financial decisions to reduce long-term disaster risks *Improving availability of CIEWS data will help increase resilience against climate-induced damages. Early warning systems (EWS) are key elements of climate change adaptation and disaster risk reduction, and aim to avoid or reduce the damages caused from hazards. To be effective, early warning systems need to actively involve the people and communities at risk from a range of hazards, facilitate public education and awareness of risks, disseminate messages and warnings efficiently and ensure that there is a constant state of preparedness and that early action is enabled. The significance of an effective early warning system lies in the recognition of its benefits by local people. A successful climate early warning system saves lives, infrastructures, land and jobs and supports long-term sustainability. The development of CIEWS analytics for climate resilient infrastructure will support consideration of shocks (extremes) and stresses, across different decision timelines from day-to-day operations and management through to designing and planning for long-term climate change. It is also essential for accelerate the complementary role of insurance products to enhance existing risk management approaches to assist affected populations and enhance prevention and risk reduction.*	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