REPUBLIC OF ZAMBIA
MINISTRY OF GREEN ECONOMY AND ENVIRONMENT

NATIONAL ADAPTATION PLANNING FOR CLIMATE RESILIENT ZAMBIA PROJECT (NAP4CR)

Policy Guidelines to Incentivize Climate Change Adaptation Investments by the Private Sector and Financial Institutions.

January, 2022

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LIST OF ABBREVIATIONS

Abbreviation	Description
CCA	Climate Change Adaptation
ccGAP:ZM	Climate Change Gender Action Plan
CDF	Constituency Development Fund
DBZ	Development Bank of Zambia
EU	European Union
FAO	Food and Agricultural Organization
FISP	Farmer Input Support Programme
GEF	Green Environment Fund
GFDRR	Global Facility for Disaster Reduction and Recovery
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit German Agency for International Cooperation
GRZ	Government of the Republic of Zambia
GWP	Global Water Partnership
IAZ	Insurers Association of Zambia
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
LA	Local Authority
LGAZ	Local Government Association of Zambia
LGEF	Local Government Equalisation Fund
MCTI	Ministry of Commerce Trade and Industry
MDB	Multilateral Development Bank
MEL	Monitoring, Evaluation and Learning
MGEE	Ministry of Green Economy and Environment
MIHUD	Ministry of Infrastructure, Housing and Urban Development
MSME	Micro, Small and Medium Enterprises
NAP	National Adaptation Policy
NCC	National Construction Council
OECD	Organisation for Economic Co-operation and Development
PAV	Pan Africa Vision
PES	Payment for Environmental Services
PLC	Public Limited Company
PPP	Public Private Partnership
ROI	Return on Investment
SDG	Sustainable Development Goals
SME	Small and Medium Enterprise
SPV	Special Purpose Vehicle
UN	United Nation

Abbreviation	Description
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNISDR	United Nations Office for Disaster Risk Reduction
US	United States
WWF	World Wide Fund for Nature
ZACCI	Zambia Chamber of Commerce and Industry
ZCGS	Zambia Credit Guarantee Scheme
ZCSMBA	Zambia Chamber of Small and Medium Business Association
ZDA	Zambia Development Agency

1 BACKGROUND

1.1 CLIMATE CHANGE ADAPTATION (CCA)

Climate change adaptation focuses on building resilience to climate change occurrences and taking advantage of them to enhance livelihoods and / or reduce the adverse impacts of those occurrences. It therefore takes climate change as, more or less, a given and focuses on how to deal with its impacts and take advantage of climate change events.

The Government of the Republic of Zambia (GRZ) is formulating a medium to long term National Adaptation Plan (NAP) aimed at strengthening systems for integrating climate change adaptation into development planning and budgeting processes. Furthermore, once formulated the NAP is expected to facilitate the development of prioritized adaptation actions with clear strategies on how these would be financed. By so doing, Zambia would be able to systematically advance the implementation of prioritized adaptation actions, contribute to the Nationally Determined Contribution (NDC).

These guidelines focus on how to enhance investments into CAA "prioritized adaptation actions" as part of implementing the NAP. While the guidelines are focused on the private sector and financial institutions, they also broadly provide a process for addressing prioritized adaptation actions by using Public Private Partnerships and by the public sector.

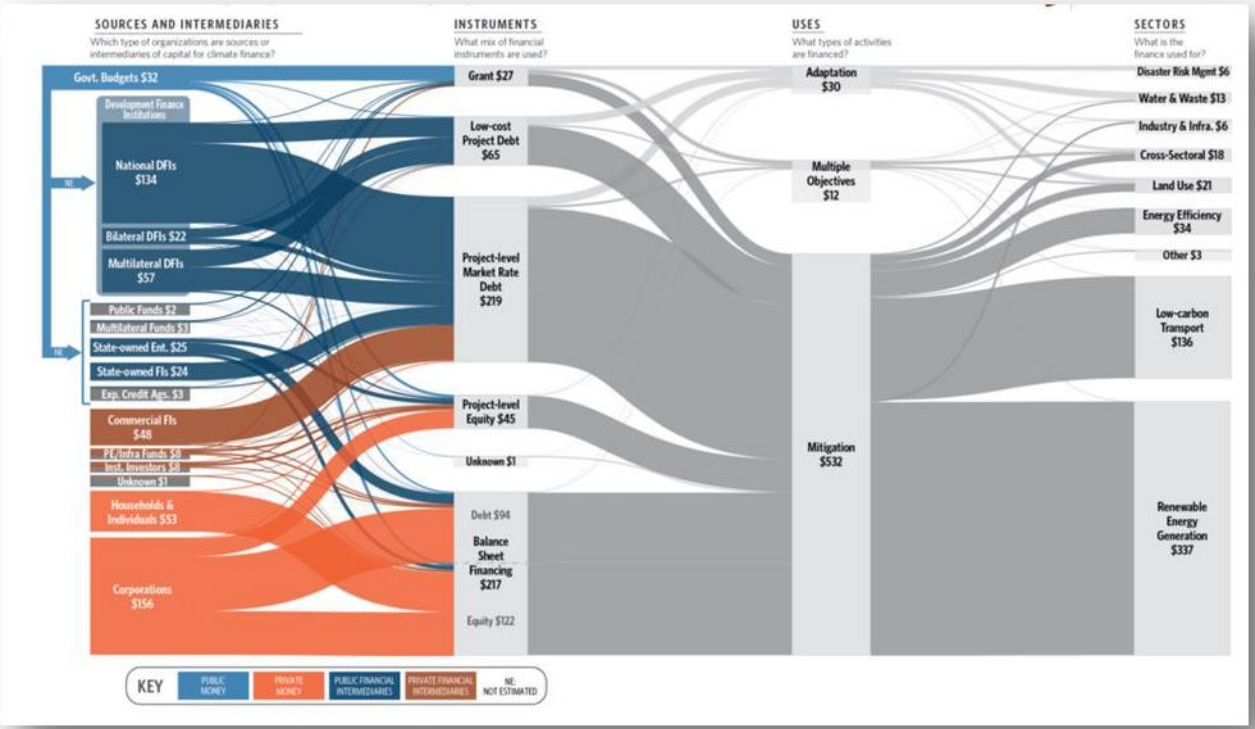
1.2 CURRENT STATUS

The private sector and financial institutions, as well as civil society organisations (CSOs), are already investing in CCA activities. However, as there are no nationally declared prioritized adaptation action areas, an assessment of how well the nation is doing generally, and the contributions of private sector and financial institutions, in particular, is not easily tenable as the framework against which to evaluate these investments is missing.

1.3 RATIONALE FOR POLICY GUIDELINES

The NAP will facilitate the development of prioritized adaptation actions with clear strategies on how these would be financed. These guidelines provide a process of how that financing can be enhanced through multi-stakeholder participation. Some adaptation actions are likely to be of a public nature and may require public sector investment, however, public resources are limited and therefore enhancing the participation of the private sector and financial institutions in investing in CCA actions is a key focus of these guidelines and are part of the operationalization of the NAP.

Further, the volume, diversity, rapid developments in climate change finance issues in general, and CCA in particular, and the diversity of stakeholders involved in CCA mean that some guidelines to optimise investments would be helpful in navigating the CCA financing landscape. Figure 1-1 gives some indications of how complex the CCA landscape is.



Source: (Macquarie, Naran, Rosane, Solomon, & Wetherbee, 2020, p. 12)

Figure 1-1: Landscape of Climate Finance 2017 /2018 -US $ Millions

1.4 APPROACH

The guidelines approach is to provide a framework through which:

a) the different prioritized adaptation actions will be triaged into three implementation categories;
    a. Private sector (including NGOs, FBOs, CBOs) for those actions that can provide some adequate return on investment or means of sustainability;
    b. PPPs for those actions that require leveraging of private and public sector resources to provide some adequate return on investment or means of sustainability; and
    c. Public sector for the residual actions that have positive economic returns and provide critical public goods but have limited or no financial returns
b) International and national resources will be mobilised; and
c) The mobilised resources will be deployed to the triaged actions

An outline of the process in depicted in Figure 1-2

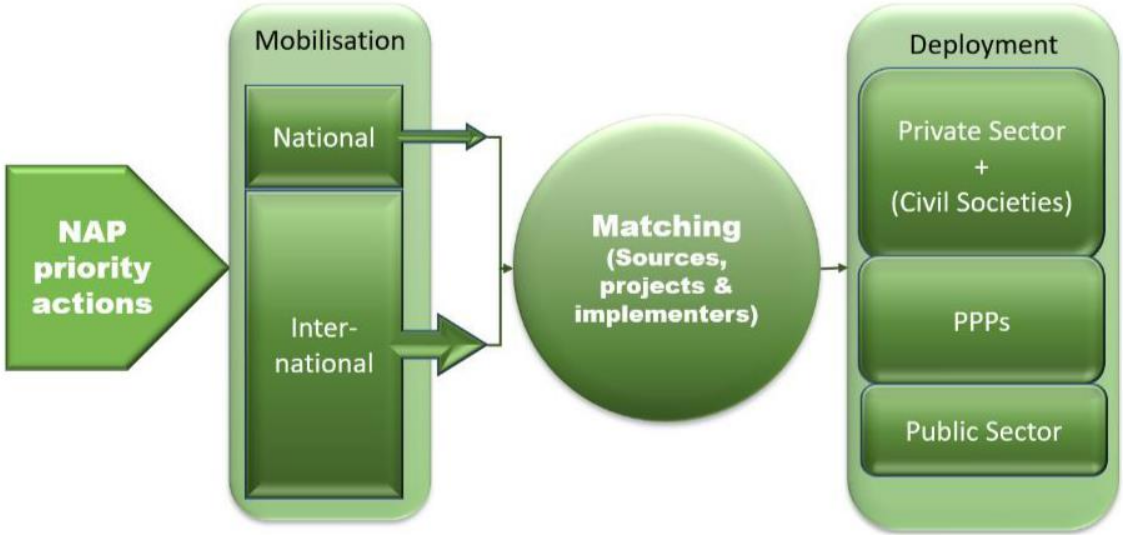


Figure 1-2: CCA Resource Mobilisation and Deployment

2 CCA INVESTMENTS

2.1 THE PRIVATE SECTOR

2.1.1 Why Invest

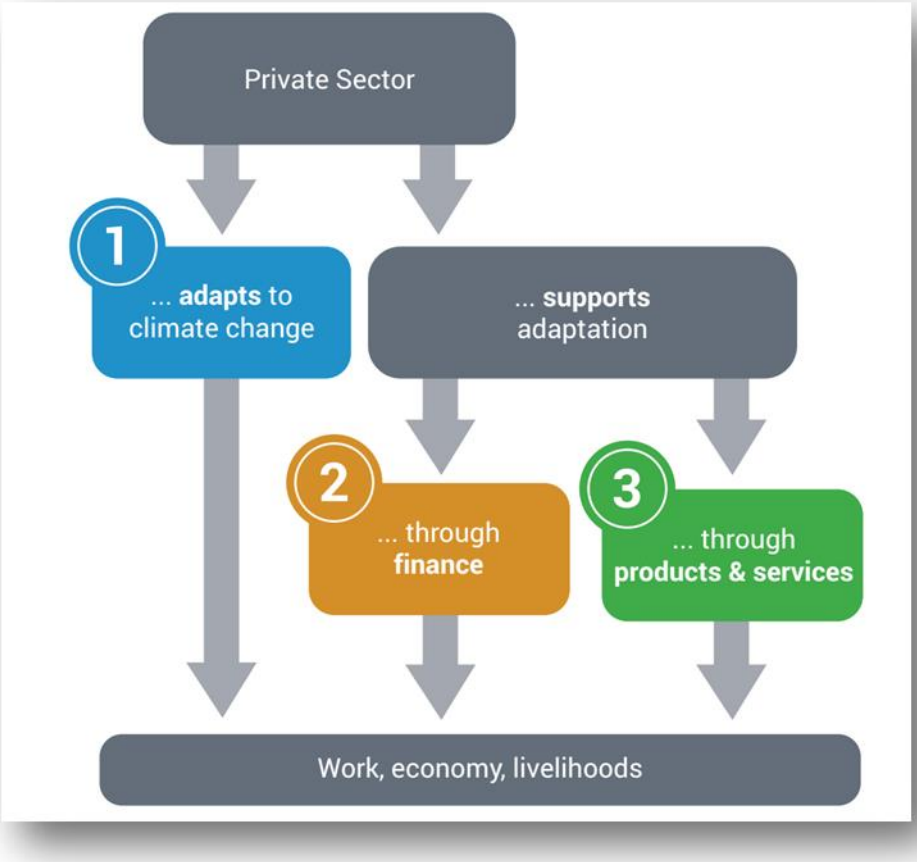
The reason why the private sector invest in CCA is simple, improved return on investment (ROI). This can arise by increasing revenues or reducing costs. Climate related impacts can adversely affect both revenues and costs and therefore the private sector can be motivated to invest in CCA activities.

Stenek et al state that "At its core, what motivates the private sector to take climate change adaptation action is simple: maintaining or increasing value (e.g., revenues, credit, reputation) and/or keeping costs down (e.g., loss and damage, business interruption, capital expenditures and operational expenditures), and following relevant regulation and policies." (Stenek, Amado, & Greenall, 2013, p. 9)

Tall et al add "The motivations of private sector investment in adaptation fall into three broad categories:

1) investing in their own supply chain resilience,
2) providing climate adaptation goods and services, and
3) investing in the adaptation of others." (Tall, et al., 2021, p. 16)

Figure 2-1 illustrates the above and how the private sector can be involved in CCA activities. It shows that provision of finance is just one of three ways in which the private sector could be involved in CCA activities.



Source: (Weigel, 2019)
Figure 2-1: Three key functions of the private sector in adaptation

However, to trigger private sector involvement in CCA activities they must have the data that enables them to visualise how climate change impacts can adversely affect their operations and information regarding what they can do about it.

2.1.2 Considerations for Leveraging Private Sector Investments

A 2021 World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR) publication, *Enabling-Private-Investment-in-Climate Adaptation and Resilience Current Status Barriers to Investment and Blueprint for Action*, observes that "Past research has identified several barriers to attracting the volume of private finance needed to advance most developing countries' adaptation agendas. They fall into three broad categories:

1) lack of country-level climate risk and vulnerability data and information services that can be used to guide investment decision-making;

2) limited clarity on the government's capital investment gaps to achieve adaptation goals, and/or on where private investment is needed; and

3) low perceived or actual returns on investment" (Tall, et al., 2021, p. 27)

Each of the above barriers suppresses information and data on one or more of the three broad categories outlined by Tall et al in which the private sector invests. Therefore, removing these barriers is likely to enhance private sector investments.

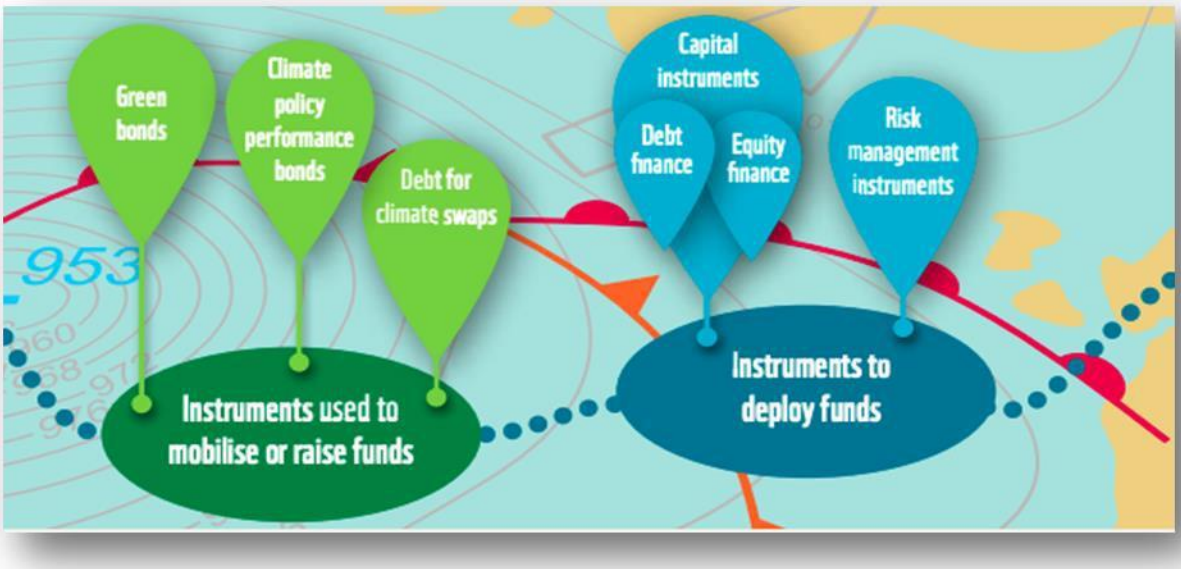
These guidelines provide a way of mitigating the last two barriers and therefore enhancing private sector investments. In addition, they provide some guidance on how the financial institutions can play the pivotal role of financial resource mobilisation and deployment in support of the private sector investments.

The first barrier can be addressed by specialised departments of government such as the Meteorological Department.

Appendix 1 gives examples of barriers and how they can be addressed while Appendix 2 gives sector specific examples of CCA challenges and the opportunities the create.

2.2 Resource Mobilisation and Deployment Instruments

A report published by WWF in 2018 "*Financial instruments used by governments for climate change mitigation*" suggested that climate finance could be efficiently addressed by splitting instruments into those that could be used by government to mobilize funds and those used to deploy these funds. Figure 2-2 from that report summarizes what has been used in 'best practice' approaches:



Source: (WWF, 2018)

Figure 2-2: Climate Change Financing Instruments

A scan of the instruments used globally and approaches that might be used to mobilise resources locally is presented below to provide a framework for the mobilisation side in Zambia.

2.3 Climate Change Adaptation Incentives

Incentives may be required in some cases to enhance investments. Because private sector activity is mostly motivated by ROI, it follows that for any incentive to have a chance of successful adoption, it should be under pinned by an ability to either increase return and/or decrease or prevent loss (both time and money). Incentives can be financial or non-financial.

2.3.1 Financial Incentives

These can be broken down into 6 main categories:

2.3.1.1 Risk sharing and transfer incentives

These include (but are not limited to):

- Insurance schemes: that protect adopters such as climate financiers or new technology users from loss from the 'new intervention'. It typically involves ongoing premium payments in exchange for coverage and post-event claim payments. They include micro-insurance, reinsurance, and risk pooling arrangements.
- Index-based insurance: which in contrast to indemnity-based insurance, insures the event (e.g., lack of rainfall), not the loss (Lal, et al., 2015).
- Guarantees: Where a third party guarantees to discharge the monetary liability of an adopter. Examples include credit guarantees, performance risk guarantees, revenue guarantees.

In many instances governments and government institutions play a key role as regulators, guarantors, insurers, or reinsurers. An example of this is can be taken from Malawi where crop micro-insurance was linked to loans to farmers who were exposed to severe drought. With the insurance guaranteeing potential loss of crops, farmers were able to grow higher-yield, yet, higher-risk crops, which in turn increased their incomes (Linnerooth-Bayer & Suarez, 2011)

Other instruments include guarantees and insurance that protect climate financiers against risk rather than providing direct financing. They enable/incentivise the mobilisation of commercial finance and the ability to provide it at acceptable costs. They include:

- Credit Guarantees
- Partial Credit Guarantees
- Performance Risk Guarantees
- Revenue Guarantees
- Structured Finance (as part of an overall investment package).

2.3.1.2 Price signals/markets

Traditionally used in the water sector, such markets can be used to facilitate the transfer of a scarce commodity (such as water) from lower to higher-valued users voluntarily and often for a price (Lachman, Resetar, Kalra, Schaefer, & Curtright, 2016). Similarly, emission trading schemes, where polluters that want to increase their emissions can buy permits from others who have used less and are willing to sell them. These have been used successfully for climate change mitigation and adaptation policy, air quality and energy policies.

2.3.1.3 Regulatory measures and incentives

These include but are not limited to:

- Zone planning and related incentives
- Environmental and/or energy taxes and charges
- Trading permits and other compensation mechanisms for business activities that, for example, result in pollution or water abstraction
- Differentiated pricing of a commodity such as water. This can be differentiated by user type or area e.g., higher pricing for commercial versus domestic usage or urban versus rural (Linnerooth-Bayer & Suarez, 2011)

Whilst regulatory measures can be economically efficient, they require political feasibility and will.

2.3.1.4 Payments for environmental services (PES)

These include but are not limited to payments to adopters such as landholders for actions that contribute to both climate change adaptation and mitigation (Chishakwe, Murray, & Chambwera, 2012). Another example is the Tradable White Certificates (TWC) for energy saving – where financiers develop innovative financing mechanism to promote energy efficiency investment in real estate (GNE Finance, 2021)

According to Ramos and Cifuentes, the common types of PESs are Private PES projects, Cap and trade projects (where a maximum total amount (cap) of pollution is established and those who exceed that limit buy the balance from those who have not) and Public PES projects. Of particular interest to Private Sector CCA action is the first category which is defined as "Autonomous projects between private entities, with the following characteristics:

- Direct payments by beneficiaries to service providers for protection or restoration of watershed services;
- Cost-sharing among stakeholders;
- Land is purchased and then leased back to the former owner to safeguard the watershed services originating from that land; or d. Purchase of land use rights that are separated from property right" (Ramos & Cifuentes, 2011, pp. 18-19)

2.3.1.5 Subsidies and grants (on products or practices)

These include but are not limited to direct payments, tax reductions, or price supports that enhance the rewards for adopting adaptation activity. There has been notable success in the provision of subsidies for reduced emissions of harmful gasses and/or the adoption of cleaner energy sources as well as input subsidies for ecology-friendly farming practices (Glauber, 2018).

Research and development subsidies and grants to encourage innovation, adaptation and investments have also been implemented successfully in many regions (Chambwera, et al., 2015). It stands to be noted however that subsidies can have an adverse effect on competitiveness (which tends to discourage private sector investment) and imply increasing budgetary allocations. They can also create increased dependency on aid (nationally and

internationally). As such, there is a general preference for taxes over subsidies in terms of efficiency (Barbier & Markandya, 2013).

2.3.1.6 Intellectual property rights

Providing for the ability to have patents and other intellectual property protection could encourage climate adaptation innovation. Patent buy-outs that involve third parties acquiring the marketing rights for patented product could promote investment into adaptation. However, patent buy-outs have been criticized for being sub-optimal for the environmental field (Tur-Sinai, 2018).

2.3.2 Non-financial incentives

Non-financial incentives include but are not limited to:

- Prizes for climate innovation and/advocacy (Tur-Sinai, 2018);
- Awareness campaigns and 'challenges' that aim to increase general public awareness and participation (WDCD, 2021) ;
- Awards for climate innovations and pioneers (Ashden, 2021)
- Promoting the inclusion of climate change risk under corporate disclosure regulations (NRTEE, 2012)

2.4 INTERSECTION OF GENDER AND CLIMATE

Climate change is said to be affecting life in Africa more than in many other parts of the world as livelihoods and food security get disrupted by changes in weather patterns (Bohjanen, Jones, Dlamini, Lambin, & Schraven, 2021) and it has been recognised that the causes and impact of changes in climate disproportionately affect women (IUCN, 2020). As a result, Climate change is not gender neutral, and to this effect Zambia has developed a Climate *Change Gender Action Plan* (ccGAP:ZM) (Ministry of Gender, 2016).

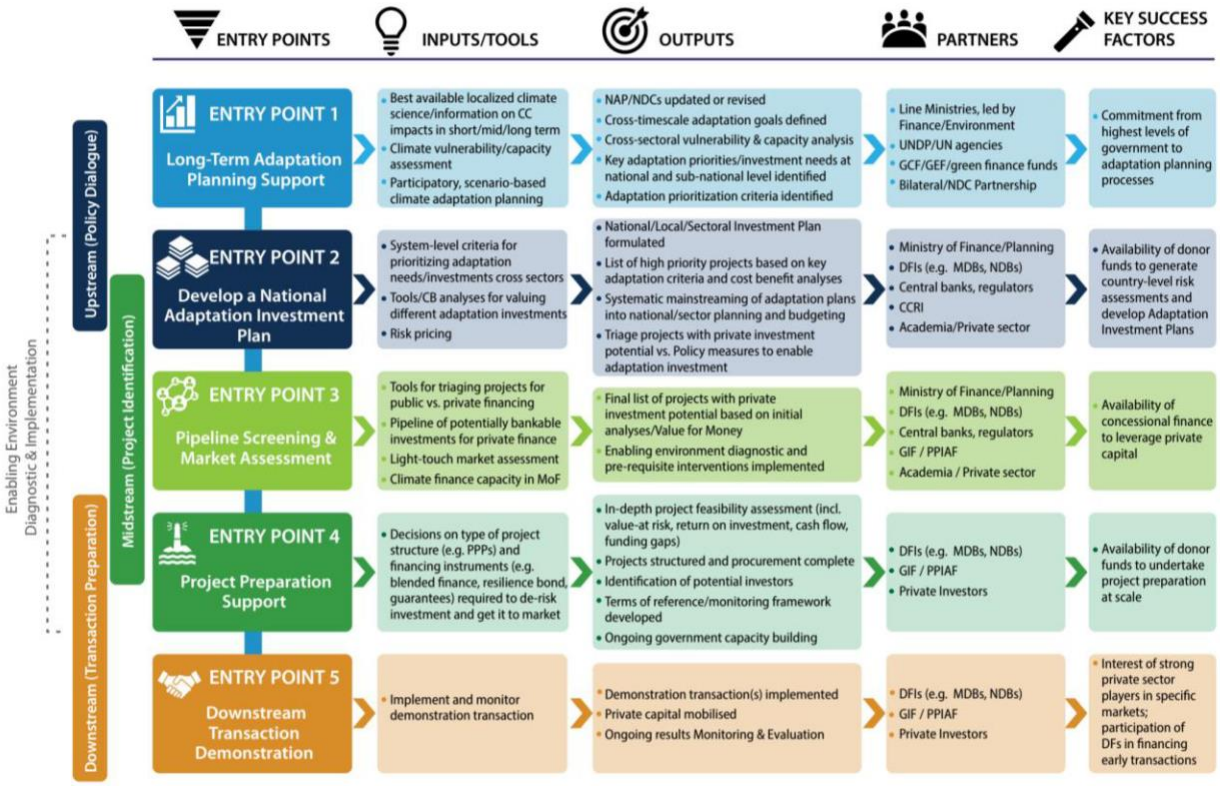
3 LEVERAGING PRIVATE SECTOR INVESTMENTS

Tall et al recommend five steps for leveraging private sector investments in CCA activities. These steps are outlined in Figure 3-1.

Source: (Tall, et al., 2021)

Figure 3-1: Steps for Enabling Private Sector Engagement in CCA Activities

Tall et al also propose an approach for implementing these steps and identifies tools, outputs, feasible partners and key success factors in implementing these steps that are outlined in Figure 3-2.



Source (Tall, et al., 2021)

Figure 3-2: Points in Leveraging Private Sector Investments

In the expectation that steps one, developing the National Adaptation Plan and two, developing the National Investment Plan with activities have been, or are being, undertaken, and in the view of the focus of this assignment, incentivising private sector investments, the discussions below start at *Entry Point 3: Pipeline Screening and Market Assessment* being the point at which private sector engagement can begin.

The steps outlined above by Tall et al focus on the deployment of mobilised resources. In these guidelines, procedures are outlined for mobilisation and for deployment. These are presented in the next chapter.

4 RESOURCE MOBILISATION AND DEPLOYMENT

4.1 IMPLEMENTING PRIORITY ACTIONS – THE OVERALL FRAMEWORK

The overall implementation of priority action involves the four interlinked phases outlined in Figure 4-1, kicked off by the articulated NAP priority actions.

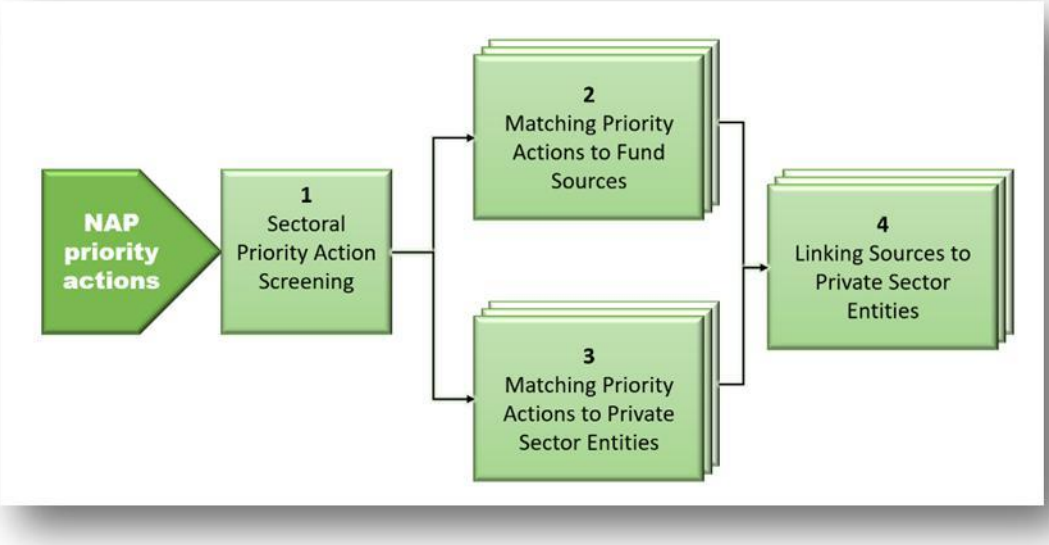


Figure 4-1: CCA Actions Implementation Framework

The screening of NAP priority actions in phase 1 informs both searches for funding sources (phase 2) and for feasible implementation partners (phase 3. The supporting activities for implementing these phases are outlined below

4.2 SCREENING

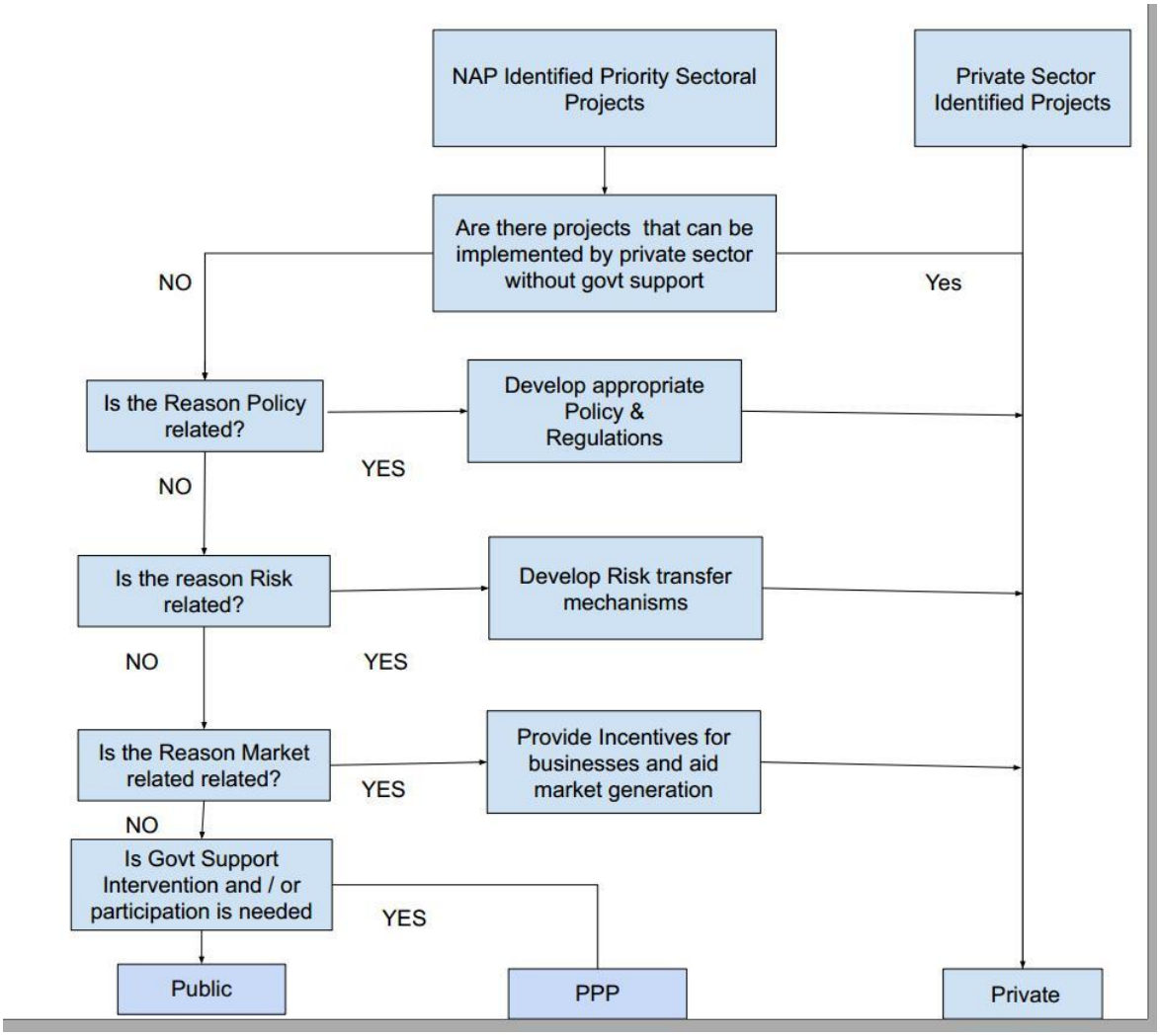
In order for DBZ and other financial institutions to mobilise (and deploy) the resources required for CCA investments they must have information related to the CCA activities that they would be mobilising resources for. This phase requires screening the pipeline of investment opportunities identified as the NAP Priority Actions and represents part of entry point 3 in Figure 3-2. In this case, the screening is undertaken in order to separate activities that can be implemented by:

- the private sector, (including NGOs, FBOs, CBOs) for those actions that can provide some adequate return on investment or means of sustainability with or without additional support and identifying what support might be required and providing such support;
- the private sector in partnership with the public sector (PPPs) where public sector involvement provides resources such as land or infrastructure that can address / compliment / leverage

private sector resources to provide some adequate return on investment or means of sustainability; and

- The public sector due to the public good nature of the actions for the residual actions that have positive economic returns and provide critical public goods but have limited or no financial returns

In view of the constrained fiscal state of the country, the proposed screening, based on the "Cascade and Creating Markets" approach (Tall, et al., 2021), is intended to screen all projects identified in the NAP investment plan through a series of steps in order to weed out and pass to the private sector everything that can be done by the private, or with the participation of the private sector, and to leave for the public sector only those projects that cannot not be done by the private sector even with support such as incentives and policy reform. The concept is depicted in Figure 4-2.



Source: Adapted from (Tall, et al., 2021)

Figure 4-2: The Cascade and Creating Markets Approach

There four main steps in the screening process using the cascade approach, as depicted in Figure 4-2, for arriving at which projects in the investment plan can end up in the public or private sector pots, these are:

a) Initial screening for financial viability;
b) Considerations for policy or regulatory support;
c) Considerations for risk mitigation support; and
d) Considerations for financial or economic incentives

This section covers the processes for undertaking those steps.

4.2.1 Initial screening for financial viability

4.2.1.1 The Screening

The initial screening is to weed out those projects that are obviously good business opportunities so they can go straight to the private sector pot. This preliminary screening addresses fundamental aspects of a project's financial viability, that is, whether the project revenues are sufficient to cover costs and provide a reasonable rate of return. Positive responses, or reasonable expectations that a feasibility study will provide positive responses, generally indicate that a project may have sufficient commercial appeal for delivery by the private sector.

An easy way to undertake this preliminary scan is to use a simple Likert scale type table to solicit responses from selected key stake holders. An example of such a table is given Table 4-1.

Table 4-1: Financial Viability Assessment

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
1 The project delivers infrastructure or services for which there is a n obvious need				
2 There is a clear and measurable demand for the infrastructure or services				
3 The demand for the infrastructure or services can be reasonably and credibly forecast				
4 End users pay for the infrastructure or service provided by the project.				
5 Projected end user fees are likely to be reasonably within the target population's ability and willingness to pay				
6 In addition to user fees, there are additional market-based revenue streams				
6 Revenues from end users and other market-based sources can be reasonably estimated and reliably forecasted				
8 The approximate cost of operation and maintenance / service delivery over the term of the project is known or reasonably estimable				
9 The estimated cost of operation and maintenance / service delivery is predictable				
10 The financing assumptions can be made based on				

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
similar projects, prevailing rates, or general practices.				

The responses can be aggregated by adding a weight to each response category, for instance Strongly agree could be 4 (or 100%) and strongly disagree could be 1 (0%) in which case an aggregate above 2.5 (50%) would tend to indicate some perception of viability and possible suitability for private sector investment. Further the Likert scale can be a five point or seven-point scale too, and is not restricted to the four-point scale above.

4.2.1.2 Action if Feasible

If a project appears feasible, some market sounding should be undertaken to validate the findings of the initial screening and to identify possible private sector entities that might be interested to undertake the project as part of their core business or as anew activity.

The next stage for such a project would be a full feasibility study. While for projects identified by the private sector, the private sector parties should fully fund the feasibility studies, in the case where the project has a public interest aspect, means of cost sharing, both to demonstrate private sector interest (by their contribution) and to promote public interest (from the public share / support), should be worked out. Additional support, for publicly identified projects, projects from the priority action areas, can be sought from international agencies, see section 4.4.1

Meanwhile public sector support here should be, if the private sector entity is not fully financing the project, to scan the climate financing sources identified in the next section for a possible fit for financing. Different projects and project configurations might suit different financing instruments. For deploying funds to specific projects DBZ and other financing institutions may already have suitable funds or may need, with support from MGEE, to reach out to local or global sources for green funding.

4.2.2 Considerations for policy or regulatory support

Policy or regulatory reform can improve some projects feasibility. Funding for reform from various MDBs could be sought, see Figure 4-5, and the text box to the right.

Examples of policy measures include but are not limited to the following:

2020 Joint MDB Report

Financial Resilience Programme

This programme has three policy commitments that seek to strengthen the integration of climate- and disaster-risk management into the country's core fiscal planning and public financial management.

The first policy facilitates the implementation of a reform to reduce contingent fiscal risks from natural hazards and climate change, increase efficiency in the use of public resources and support better planning and maintenance of public infrastructure.

The second policy strengthens the regulatory capacity of the country's insurance commission to increase private insurance coverage against catastrophe risks, reduce public contingent liabilities, deepen insurance markets and draw in additional financing, enhancing financial resilience.

Lastly, the programme facilitates the implementation of the country's risk-layering strategy to efficiently meet funding needs to address climate generated and natural hazards.

Financing Type: Policy Based Financing

Amount: US$ 400 million, financed entirely by the MDB

Source: (Joint MDBs, 2021, p. 34)

- Building codes and building standards taking into account changing climate conditions and the associated impacts on building design and operations (e.g., insulation for projected changes in temperatures and precipitation, updated intensity-duration-frequency rainfall information for stormwater, drainage, wastewater and flood management infrastructure).
- Local zoning regulations incorporating data/information about future changes in climate and their impacts on new and/or existing infrastructure and buildings.
- Land use/construction permitting rules promoting climate change adaptation measures (e.g., permits used to promote tree planting to cool urban areas or absorb more water where the Urban Heat Island effect[1] or flooding pose risks).
- Land tenure policies and laws/regulations that secure over the long-term the land rights of vulnerable populations who may be more at risk from expropriation and/or land loss due to climate change impacts (e.g., more severe floods) or due to actions by other groups (e.g., land purchase or leasing by organizations looking for more climate resilient locations).
- Stakeholder consultation and/or engagement requirements promoting disclosure and/or consideration of climate risks, opportunities and adaptation.
- Environmental and/or social impact assessment laws/regulations and/or government guidance with requirements to assess the impacts of changing climate conditions and consider adaptation measures
- Legal/regulatory obligation on operators of critical infrastructure (e.g., utilities) to incorporate and, where necessary, disclose climate change risks and opportunities in their strategic and operational plans (e.g., supply/demand forecasts, Integrated Resource Management Plans).
- Laws/regulations authorizing regulated utilities to offer differentiated tariff/service options making it possible to reflect customer choices on security of supply on cost of water/energy during periods of scarcity.
- Laws / regulations requiring inclusion of climate and environmental actions undertaken by corporate entities (mostly based on examples by (Stenek, Amado, & Greenall, 2013, p. 12)

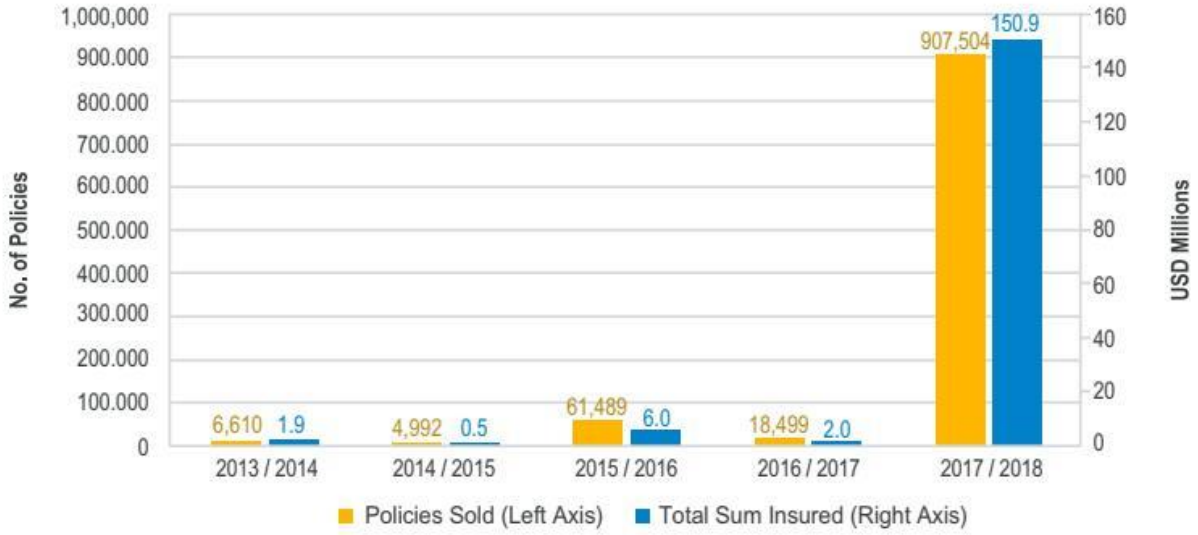
4.2.3 Considerations for risk mitigation support

The issue of risk and return is a key consideration in private sector activities, given their focus on ROI. Activities that can reduce risk would therefore be more appealing to private sector. With sufficient information on vulnerability and climate risk, the identified risks could be transferred to third parties and thus improve the variability of expected project outcomes.

There is already an insurance market for climate related insurance in Zambia, for instance in agriculture. However, the usage of weather index insurance in Zambia, before taking into account the Farmers Input Support Program (FISP) which has subsidised insurance, has at the most, during the period 2013/14 to 2017/18, not exceeded 62,000 policies in total and US $ 6 million in value, despite Zambia having around 1.5 million farming households. Thus, without

[1] "Urban heat islands" occur when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs (e.g., for air conditioning), air pollution levels, and heat-related illness and mortality.

taking into account the FISP subsidised insurance, only around 4% of farmers access insurance. *Figure 4-3* shows the number of policies weather-based index insurances sold in Zambia and the total sums insured in the farming seasons 2013/14 to 2017/18.



Source: (World Bank, 2019, p. 35)

Figure 4-3: Zambia: 2013 – 2019 Weather Index Insurance Policies and Aggregate Sums Insured

The rise in the 2017/2019 season, to more than 900,000 policies, representing around 60% of the farming households, worth US $ 150 million, is as a result of the activities of the FISP. Due to the increased national debt burden, the sustainability of FISP is not assured and therefore without further interventions, use of weather index insurance could be adversely affected should FISP outreach contract.

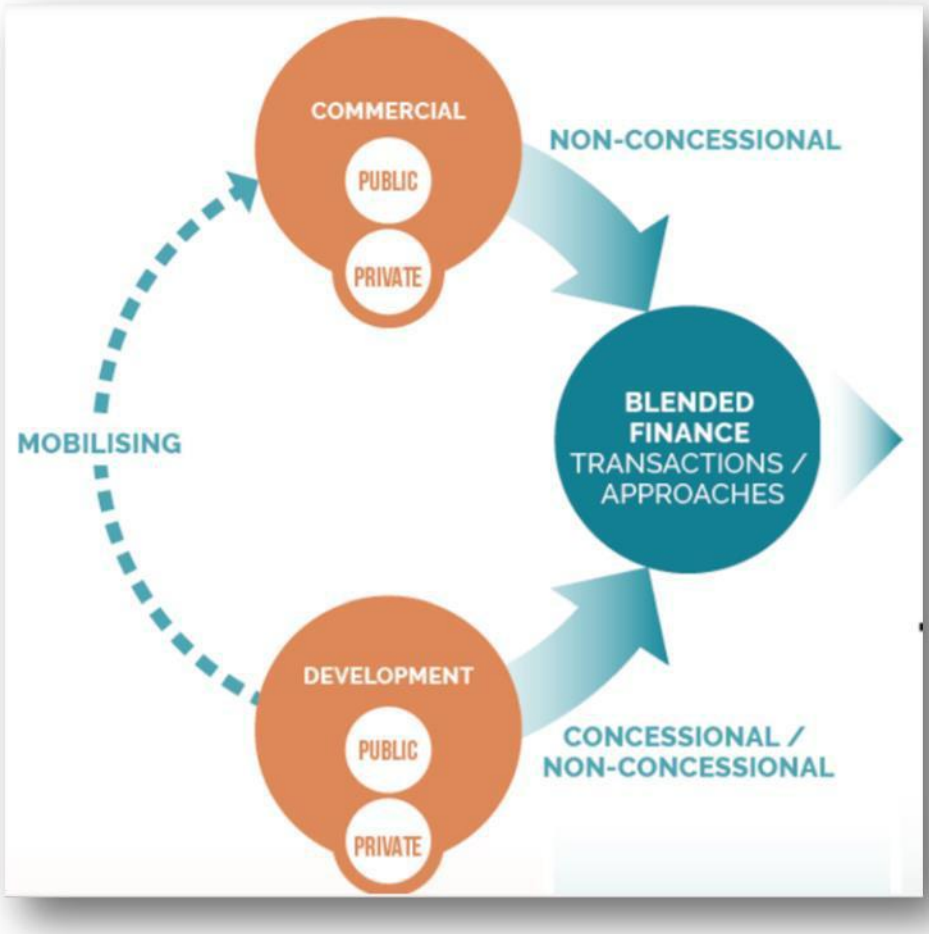
Efforts to help grow this market, not just for agriculture, would be beneficial. Credit Guarantee Schemes, such as the Zambia Credit Guaranteed Scheme are also risk reduction schemes as they reduce the cost of borrowing and therefore provide a boost to the ROI.

4.2.4 Considerations for financial or economic incentives

Incentives can be targeted at particular situations, enterprises and or locations. Types of incentives, which may also include risk transfer measures, are listed in section **Error! Reference source not found.** include financial and non-financial incentives. Examples the use of financial or economic incentives are given below.

- Incentives in support of purchases of climate change adaptation technologies and/or implementation of adaptation actions and/or R&D in the private sector (e.g., water efficiency incentives).
- Public and/or private financing instruments (e.g., loans, equity or guarantees) in support of climate change adaptation uptake in the private sector, including purchase of technologies, implementation of adaptation actions and/or R&D (e.g., loans for water efficiency investments).

- Microfinance programs for SMEs and smallholders in support of purchases of climate change adaptation technologies and/or implementation of adaptation actions and/or R&D (e.g., microloans for investing in drought-resistant crops).
- Charges and/or levies used to fund climate change adaptation works in the critical public infrastructure.
- Carbon finance supporting activities that improve climate change resilience while reducing greenhouse gas emissions.
- Environmental trading markets promoting efficient use of environmental resources under pressure from climate change impacts and generating additional revenue opportunities (e.g., water markets).
- Facilitating the creation of demand for climate adaptation products and services to create market sizes attractive to private sector actors.
- Use of blended financing instruments which reduces the cost of debt by using concessionary financing to leverage non-concessionary financing and blending the two.



Source: (OECD, 2018, p. 6)

Figure 4-4: Blended Financing

"Blended finance incorporates different types of financing into a single project or fund (e.g., grants; concessional and market rate debt; equity investment; and risk mitigation instruments, such as insurance or guarantees) to cover full costs and best allocate individual risks. Blended finance allows project proponents to manage project risks more effectively and use the more limited public finance to catalyse private investment." (World Bank, 2019, p. 24)

The above examples are not exclusive

4.2.5 Consideration for PPP

If an action can be structured to generate an adequate ROI by the private sector through leveraging of public sector capacities and /or resources, such as land and buildings, the consideration should be given to structuring a PPP so the priority action is implemented, and achieves the desired CCA outcomes, without use of public sector resources only.

4.2.6 Allocation to the Public Sector

If all the above considerations still leave some projects out, those projects are assigned to the public sector pot.

4.2.7 Creating Profiles of Feasible Implementing Entities for Priority Actions

Apart from the allocation of priority actions to feasible implementing options, Private, PPP and public, the screening process should also develop profiles of the characteristics of the feasible implementers or, for PPPs, implementing partners, for each priority action. Matching implementing entities to priority actions then becomes a process of scanning for entities with the closest characteristics identified as part of the screening process. For the public sector implemented actions, the government entity that is suited to implement an action should also be profiled and, if possible, identified.

These characteristics / attributes could sectoral and / or technical specialisation, geographical location, financial capacity, track record, gender or any other desirable attribute.

4.2.8 Investment Roadshows

After the screening, those actions suited for private sector or for PPP implementation should then be brought to the attention of the private sector through targeted approaches. Where the private sector required profile involves a few entities the said entities can be directly invited. For those actions that might have multiple suited entities that fit the developed profiles investment roadshows or conferences can be used for better outreach.

4.3 Moblising The Required Funding

The screening of priority CCA actions provides a basis for mobilising funds. These funds can be mobilised internally, within the country and externally by matching the priority action profiles to the funding criteria of various feasible sources. To do so, those sources must be identified, their criteria reviewed and matched to individual priority actions.

4.3.1 Internal

MGEE, DBZ and other financial institutions must create, and keep updated, an inventory of funds that are already available in the country, such as the EU supported Enterprise Zambia Challenge Fund which supports "Unlocking Green and Inclusive Growth in Agribusiness, Agroforestry and Aquaculture" (EZCF, 2021), ZANACO partnership with Kukula Capital and WWF to offer green financing and ZICB partnership with Prospero for a "climate finance facility to support climate change adaptation projects", which may fund some CCA activities. There are probably more such funds available and linking these funds to CCA activities might cover some of the funding gaps.

These sources should include various resident corporate entities whose corporate social responsibility budgets can support CCA actions in either producing goods and services, safeguarding their supply chains and improving the resilience of the communities in which they operate.

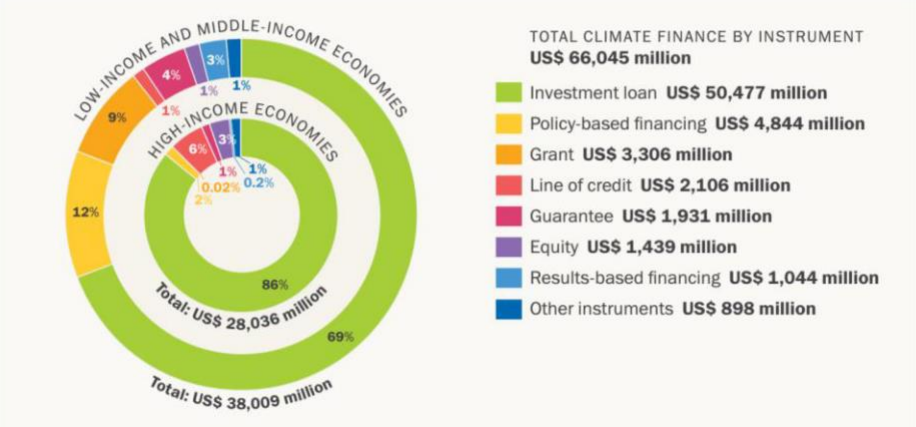
The local multinational and national private sector groups have funds that they may contribute to philanthropic causes if their attention was drawn to them. Some of the major ones; ZAMBEFF, MTN, AIRTEL, Zambian Breweries, the various mining companies, among others, have corporate social responsibility provisions in their budgets that may sometimes go begging as they focus on their core businesses rather than scanning their operating environments for social investments.

As examples, Zambian Breweries partnership with Lusaka City Council and the Zambia Environmental Management Agency in the Manja Pamodzi project, "a recycling initiative introduced, by Zambian Breweries, in 2016" (PAV, 2020) and the Chilanga Cement's Goecycle (a waste management business) has partnered with GIZ on a project to mitigate climate emissions are examples of such investment, among many, where even without overt incentives, a private sector entity invests in social services that relate to climate change and the environment.

Since there are frequent changes in available funding and funding opportunities, DBZ and MGEE must continuously scan the terrain to keep the inventory updated. That inventory must include all the key funding conditions and preferences of the identified feasible sources. Further, DBZ must develop the capacity to provide support to other financial institutions in identifying and creating working relationships with possible funding entities in the country/

4.3.2 External

There are massive and diverse sources of climate related funding globally with each having their own funding requirements. For instance, nine Multilateral Development Banks (MDBs) in 2020 financed $66 billion in climate funding in various ways as shown in Figure 4-5



Source: (Joint MDBs, 2021, p. 16)

Figure 4-5: Total MDB 2020 Climate Finance by Type of Instrument

Of which $38 billion was allocated to Low- and middle-income countries in one year. Even if only 1% of that came to Zambia, that would represent, at nearly $400 million, a considerable injection into the system.

There also other multilateral institutions and facilities, such as those under the UN umbrella, as well as bilateral relations and facilities that are already being utilized or can be utilized.

Having a list of prioritized actions provides a basis for mobilizing funds by matching the actions to feasible funding sources.

4.4 Resource Deployment – National Private sector Engagement

Resource deployment requires two key components; knowledge of entities that can implement CCA actions and supporting / facilitating their project preparation to assure compliance to funding conditionalities.

The screening process would already have provided characteristics of, and, through the roadshows and investment conferences already identified, the feasible implementing entities, including government departments.

4.4.1 Project Preparation Support

This part links to entry point 4 in Figure 3-2. Project preparation involves detailed feasibility studies to assure viability and structuring the enterprise (private sector, PPP, SPV, PLC, ….) to best suit the requirements of the feasible target funding institutions and financing structure.

While feasibility studies can be done internally, and the local institutions should be fully vested in the process, assistance from external sources that have a track record of working with the target institutions is well advised as they have insights into what is required and probably goodwill from the target institutions. The external sources may even be associated with the said target institutions.

The point of local institutions being fully vested in the process has three aspects:

a) It builds the capacity of the local institutions to undertake feasibility studies and enhances product ownership;
b) It enables the local institutions to bring their detailed knowledge of local policy, institutional and socio-cultural issues that may affect the project to bear on the feasibility study; and
c) Finally, and probably most important, it enhances networks and track records with the feasible target institutions.

4.4.2 Negotiating and Signing of Financing Agreements

At the conclusion of the feasibility study, the external sources should also assist in linking the project to suitable sources of funding and assuring that optimal financing conditions are availed. They should witness the signing of the financing agreement. All of these should be included in their terms of reference, as feasible.

4.5 Project Implementation

Downstream activities will involve monitoring project implementation and taking corrective actions if necessary. The Monitoring, Evaluation and Learning (MEL) framework would already have been formulated as part of the feasibility study preparation. The Government, and DBZ and other lending institutions, should, as interested parties, undertake these reviews.

4.6 Further Considerations

4.6.1 Need to Match Global Sources with Sustainable Local Private Sector Entities

While there are global resources for CCA private sector investments, the conditions they sometimes require take time, skill and resources to fulfil. Given the private sector high opportunity cost of time, the project proponents (GRZ, DBZ and other financial institutions) must bake in these issues as they approach the private sector and clarify upfront what assistance can be offered and what the timeline might be.

The private sector party must be clear of the cost benefit involved and must be motivated to add the project elements to its existing operations to leverage those existing operations by generating synergies or contributing to enhanced ROI in some way. These funds may therefore not be suited to start up entities unless those are created as special purpose vehicles by existing operational entities.

4.6.2 Need to Add Local Private Sector Sources

Local private sector entities can fund some local CCA activities. Access to these funds may be quicker to access than those from the global communities and therefore are likely to be suited to Small and Medium Enterprises (SMEs). In this regard, ZCSMBA may be a useful entry point.

4.6.3 Need to Have a Diverse Pipeline of Projects

Since it is not possible to know, beforehand, which projects would get funded from what sources using which instrument and incentives, it would be advisable to always have a pipeline

of diverse projects so that whatever opportunities arise can be aggressively and pro-actively pursued. The diversity of sources, instruments, incentives and applications suggests that on any of the stated issues, there can never be a one size fits all thus the need for flexibility and agility becomes paramount.

4.6.4 Continuous Environmental Scanning

Since instruments, incentives, funding sources and priority areas of attention are always evolving, the proponents should have a system of continuous CCA environmental scanning so that as new opportunities arise, they can be quickly matched with existing pipeline items.

5 MULTISTAKEHOLDER APPROACH

The nature and diversity of CCA actions mean that it requires a multistakeholder approach to address the multi-sectoral impacts of climate change. This chapter outlines some of the stakeholders and presents a stakeholder map developed, as a work in progress, with the participation stakeholders at a consultative workshop. Neither the list and functions nor the stakeholder map are exhaustive but they give some indication of the diversity of stakeholders.

5.1 PARTNERS IN THE PROCESS

Some partners in the process of implementing CCA actions, and their contributions to the process, include the following.

5.1.1 Ministry of Green Economy and Environment.

The ministry of Green Economy and Environment (MGEE) kick starts the whole process by spearheading the development and implementation of the Climate Change Adaptation Policy and its implementation plan. This can be done through their department of Climate Change and Natural Resources, which is “responsible for climate change and natural resources policy formulation and review, standards setting, and coordinating the implementation of climate change projects and programmes as well as coordinating conservation of Wetlands” -

5.1.2 The Ministry of Finance and National Planning

The Ministry’s mandates in development planning and resource mobilization are key to this process. Its specialised departments and statutory bodies are key to informing and guiding this process. These include, but are not limited to:

- The Zambia Credit Guarantee Scheme (ZCGS), to provide options for risk reduction / transfers
- The PPP Department, to identify and develop opportunities for PPPs
- The Development Bank of Zambia (DBZ), to assess feasible sources and target private sector entities for identified opportunities
- The Industrial Development Corporation (IDC);
- The Climate Change Secretariat

5.1.3 The Ministry of Commerce Trade and Industry

The Ministry's mandates as the "principal Government body responsible for administering national policy for private sector development. It coordinates industrial, commercial and trade matters and liaises with various public and private sector organisations to facilitate the implementation of government sector policies related to trade and industry" (MCTI) - puts it at the core of the process to screen the feasibility of private sector participation in implementing CCA activities. It can also offer incentives where these are deemed necessary through its departments and statutory bodies. These include, but are not limited to:

- The Department of Industry that has a mandate of facilitating investments and industrial development by initiating policies, programmes and projects for the development of the industrial sector. The Department is further mandated to identify necessary support to orient industries and strengthen their capacities in light of the liberal economy;
- The Zambia Development Agency (ZDA), which promotes investment in priority areas;

5.1.4 Zambia Chamber of Commerce and Industry

The whole purpose of the cascade approach is to filter all the projects in the CCA Investment Plan so that if projects could be implemented by the private sector with or without such support as policy instrument's, financial and economic incentives or regulatory actions, then they passed to the private sector. Effectively leaving only those that can't be done by the private sector to government.

The Zambia Chamber of Commerce and Industry (ZACCI), is the "umbrella organization representing businesses across the country and across all sectors of the economy" (ZACCI, 2021). It believes that "the promotion and enhancement of a vibrant private sector, through effective interest representation, service delivery and cooperation between the public sector and business is the foundation for building an economy which creates employment and equitable wealth" (ZACCI, 2021). Their participation in the cascade process is therefore critical.

5.1.5 The Zambia Chamber of Small and Medium Business Associations - ZCSMBA

The Zambia Chamber of Small and Medium Business Associations - ZCSMBA is a private sector, not-for-profit membership driven organization which has the mission to promote the sustainable growth and profitability of MSMEs through lobbying and advocacy for a supportive business environment and by facilitating demand- driven business development services.

Like ZACCI, it represents a key part of the private sector.

5.1.6 Local Government Association of Zambia (LGAZ)

Any project implemented is implemented in a district or districts represented by a local authority or local authorities which have various planning and regulatory powers and which can create opportunities for LA level PPPs, among others. To a large extent they all are land rich and can therefore offer project facilities. With decentralisation, now boosted by increased Constituency Development Fund (CDF) and Local Government Equalisation Fund (LGEF) transfers, they will be better poised to offer development opportunities.

5.1.7 The Ministry of Infrastructure, Housing and Urban Development

The Ministry of Infrastructure, Housing and Urban Development (MIHUD), in general, and its statutory body the National Council for Construction (NCC), in particular, are relevant to this process. The NCC is charged with the responsibility of providing for the promotion, development, training and regulation of the Construction Industry in Zambia. Its functions include:

- Advise and make recommendations to the Government on matters affecting or connected with the construction industry, and on the control of construction works and safety in construction;
- Advise and make recommendations to the Government on matters affecting or connected with the construction industry, and on the control of construction works and safety in construction;

They would therefore be a key partner in developing climate proof construction methods.

5.1.8 The Insurers Association of Zambia (IAZ)

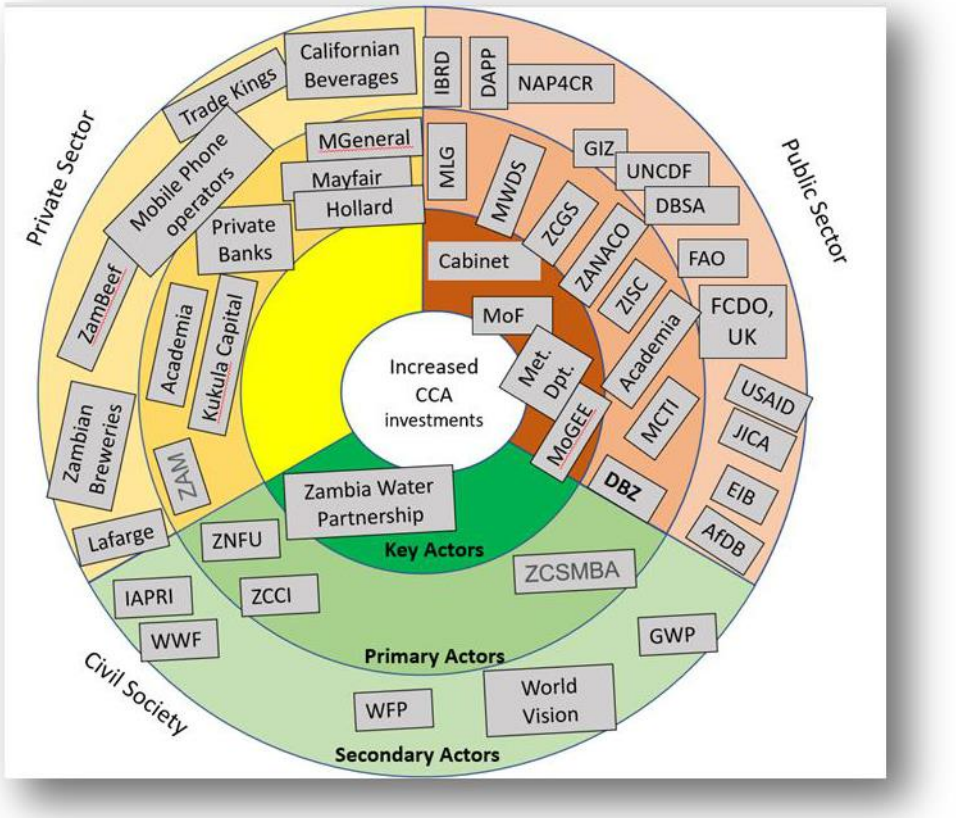
One of the mandates of IAZ is to "(f) consult, co-operate with, or be affiliated to, other associations or similar bodies within and outside Zambia with regards to matters of mutual interest;" is a key partner in the provision of risk transfer mechanisms.

5.1.9 Multilateral Development Banks and their Associated Entities

"Multilateral development banks (MDBs), and the World Bank Group in particular, have an important role to play as conveners and facilitators for this approach to take root" (Tall, et al., 2021, p. VII). They can offer technical assistance and financial support in navigating every step of this approach.

However, the activities in steps 3 to 5 are outlined below so that even as the MDBs are consulted, the local parties have an understanding of what may be involved and therefore can add value to the process by adding their deep understanding of the local context.

Figure 5-1 shows stakeholder map developed by CCA stakeholders which gives an indication of the diversity of stakeholders that CCA incentivisation process may have to deal with.



Source: Compiled at the CCA Policy Guidelines Validation Workshop, December 8th 2021

Figure 5-1: Zambia - CCA Stakeholder Map

Appendix 1: Barriers to Scaling Up CCA Financing by the Private Sector

Barrier type	Sub-Category	Barrier	Description	Proposed Approaches to Address Barrier	Who is Best Placed to Address this Barrier?
Data and information	Decision-making and climate data and information	Insufficient availability and adoption of climate risk data and tools	Lack of comprehensive risk data and tools to make informed investment decisions	Investment in data, analytics and technical knowledge to foster the development of quantitative and decision-relevant climate tools for investment selection and portfolio management	• Development partners
	Climate change planning horizons	Mismatch of timescales between climate change adaptation planning and investor planning	Short-term time horizons of investors (linked to investment/loan timeline) as the basis for making investment decisions is often mismatched with long-term/uncertain occurrence of climate events	Climate information services tailored for private investor decision-makers, knowledge sharing of emerging and best practices from across sectors, regions, and geographies which can help address planning uncertainties	• Development partners • Ultimately, shareholders
Institutional arrangements	Needs-driven adaptation planning	Lack of robust adaptation planning through NDCs, NAPs or planning strategies	Weak integration of national commitments for adaptation in NDCs, NAPs or adaptation strategies to guarantee that the climate-related needs are addressed	Capacity building and technical assistance to national ministries and subnational governments to enable them to develop robust adaptation plans inclusive of data and interventions which prioritize the needs of the most vulnerable	• Line ministries, ministries of finance • Development partners

Barrier type	Sub-Category	Barrier	Description	Proposed Approaches to Address Barrier	Who is Best Placed to Address this Barrier?
Institutional arrangements *(continued)*	Institutional capacity	Lack of institutional capacity for climate adaptation projects	Lack of government coordination, fiduciary/ technical capacity, and financial management to encourage private sector participation	Capacity building to ensure the right technical and financial expertise is available (either through training, technical assistance, or both) to governments and policy makers that ensures policies and institutions incorporate the objectives of catalyzing private financing for a country's adaptation plans; Institutionalization of specialized units (i.e., PPP units) with experience in developing and executing project adaptation initiatives across different regions	–
	Locally driven adaptation planning	Low stakeholder engagement	Low engagement of diverse stakeholders in adaptation-related discussions at planning stages	Support for multi-stakeholder coordination, including with private sector (developers and finance) as part of a country/subnational planning process	–
	Policies and regulations	Absence of policies, regulations, standards, and metrics	Weak or inexistent legal/ regulatory frameworks and formal metrics/ standards for the private sector to act for adaptation needs	Capacity building to develop the regulations, standards, and metrics that underpin climate-resilient investment in the context of local/regional climate-related impacts expected	• Policy makers • Ministries • Regulatory bodies
	Policy effectiveness	Low policy effectiveness	Inadequate transparent monitoring and compliance mechanisms from government institutions	Capacity building and technical assistance to ensure existing policies are monitored and where necessary enforced	• Policy makers • Ministries
	Investment planning for adaptation	Lack of clear adaptation investment plans and/or guidance	Insufficient information on where private participation will be critical for investments to be successful (who, what, where, when, how)	Capital investment plans that indicate public investment priorities, and carve out private investment opportunities	• Policy makers • Ministries

Barrier type	Sub-Category	Barrier	Description	Proposed Approaches to Address Barrier	Who is Best Placed to Address this Barrier?
Financial incentives	Incentives and behaviors	Absence of financial incentives	Lack of financial incentives to encourage the private sector to participate in adaptation projects. Financial incentives include instruments/products and programs that help to catalyze ex-ante investment and/or transfer/manage climate risk	Capacity building and technical assistance with the finance ministry that helps to develop sound public financing incentives that allow to crowd-in private investment; coordination with multiple stakeholders, including FDI investors who might support climate-resilient infrastructure investment, as well as actors within the country's own financial markets	• Policy makers • Ministries • Regulatory bodies
		Perverse Incentives	The provision of certain financial incentives can lead to maladaptation or simply discourage development that is resilient to climate change. Financial disincentives can take the form of subsidies and tax breaks, such as subsidized flood insurance, which may reduce the perception of need for resilience building in a flood-prone area.	Ensure that national climate strategies enable the integration of climate considerations and adaptation across multiple agencies and in regulatory and public spending policies. Ensure proper risk and cost modelling that integrates climate change in pricing structures, procurement policies, insurance standards, building codes, etc.	• Policy makers • Regulatory bodies

Appendix 2: Examples of Sector Specific Climate Adaptation Challenges and Opportunities

Sector	Climate Adaptation Challenges	Examples of Incremental Adaptation and Resilience Investments Needed	Examples of Business Opportunities
Agriculture	Rising temperatures, shifts in seasonal patterns, droughts, and unpredictable precipitation can all affect crop yields and may make some crops and varieties inviable, while extreme weather events, floods and other disasters can destroy crops. Climate change may also increase the incidence of pests and diseases.	• Switch to crop varieties that are resistant to heat, drought and/or floods, diversify crops, install irrigation, adopt water management practices, adopt climate-smart agriculture and regenerative farming techniques and practices, purchase crop insurance	• Create equity funds to invest in agri-producers to strengthen their climate-resilient practices • Develop lending products tailored to smallholder and larger-scale agri-producers to invest in climate-resilient farming practices • Provide index-based crop insurance • Provide technological solutions to farmers
Education	Increasing intensity and frequency of floods, droughts, tropical cyclones, and other storms have the potential to disrupt education as students lose their ability to access school facilities and communities take time to recover from such events (e.g. facilities may be significantly damaged and need to be rebuilt entirely)	• Incorporate climate-resilient design measures in the construction of school facilities (e.g. use of weather-resistant material or solar panels to create efficiency and independence from power shortages)	• Sell services for data recovery and backup systems to prevent data loss in the event of climate-related disasters • Design and build climate resilience education facilities • Provide distance education technologies to minimize disruptions from extreme weather
Energy	Energy infrastructure is vulnerable to climate change impacts, especially extreme events. Disruptions in the energy supply can harm economic development, and acute events can mean the loss of essential services for the broader public.	• Construct weather-proof lines/ underground cables to protect against climate risks; elevate substations or add drainage to reduce risk of flooding and use higher design standards for transformers to withstand climate-related hazards	• Design and provide energy storage equipment and systems to increase capacity to store energy from renewable sources and thereby ensure a consistent supply
Health	Climate change is increasing and shifting the incidence of vector-borne diseases, including malaria and dengue fever, and is leading to higher incidence of heat-related illnesses and water-borne illnesses alike. It is also leading to increased malnutrition and undernutrition, as food security is further threatened. Mental health may also be affected by extreme events, large societal challenges, and threats to livelihoods.	• Incorporate climate-resilient design measures in construction and/or rehabilitation of health facilities and invest in/improve the use of datasets on changes in disease incidences and vectors under climate change scenarios, meteorological/environmental conditions, etc.	• Develop early warning and monitoring systems to predict and track the spread of diseases linked to climate change

Sector	Climate Adaptation Challenges	Examples of Incremental Adaptation and Resilience Investments Needed	Examples of Business Opportunities
Infrastructure	Infrastructure designed for historical conditions can no longer withstand the stress and intensity of current climate conditions. Creating climate-resilient infrastructure is one of the most critical and pressing adaptation challenges and requires shifting engineering standards and incentives to enable firms to design in a resilient manner and remain competitive.	• Incorporate climate projections in design standards and use climate-resilient materials for roads, bridges, wind turbines, cell phone towers and transmission and distribution systems, protect and restore ecosystems that provide critical services, including water purification, erosion prevention, and coastal protection	• Design and provide climate-resilient practices and materials for new buildings, and retrofitting of old ones
Transport	Transportation systems have largely been designed based on historical climate conditions that no longer match the current climate. Extreme events are hampering, damaging or destroying critical infrastructure. System-based assessments and planning are needed to develop reliable, low-carbon, and resilient ways to transport people and goods.	• Adapt the design and location of roads, railways, bridges and other key infrastructure to reduce exposure to climate-related hazards, avoiding landslide-prone slopes, e.g., elevating infrastructure as needed, using materials and structures that can better withstand extreme events, and improving drainage	• Develop designs, materials and technologies to meet the transportation sector's resilience-building needs • Finance climate resilient transport systems (buses, railways, roads, etc.) and incorporate climate resilient standards within procurement and PPP requirements.
Urban resilience	As cities become more populous and urbanization continues to accelerate, the impacts of climate change and natural disasters increase. Those living in informal settlements are at much higher risk, with little in the way of protective infrastructure or climate-resilient housing; often settlements are also in flood zones, on steep slopes, or in other hazard-prone areas.	• Improve drainage and wastewater systems (including through the application of nature-based solutions); establish early warning and emergency response systems for climate-related disasters; integrate climate resilience in land use planning	• Develop green bonds for city resilience and continued municipal service delivery during climate-related disruptions (floods, storms, droughts, etc.) • Public-private partnerships to make infrastructure investments more resilient
Water	The water sector faces significant impacts as a result of climate change, including increasing frequency and intensity of floods and droughts, increased water scarcity, coastal erosion, sea level rise, and worsening water quality. Adaptation in the water sector is particularly challenging because of the transboundary nature of water resources, which necessitates transboundary coordination and planning.	• Build or upgrade dams, dikes, levees, and irrigation infrastructure to enhance resilience to climate impacts; undertake climate-smart design/ rehabilitation of sewerage and wastewater treatment and incorporate flood-risk considerations while constructing water supply infrastructure; protect and restore ecosystems that provide water purification services; improve long-term planning of water resources based on forecast availability.	• Provide climate-smart, efficient irrigation systems • Provide early warning systems for water shortages and floods due to increased extreme weather and precipitation variability • Develop and invest in desalination facilities to cope with decreases in precipitation for domestic and agricultural use

Sector	Climate Adaptation Challenges	Examples of Incremental Adaptation and Resilience Investments Needed	Examples of Business Opportunities
Cross-Sector Interventions	Of paramount importance to successful adaptation are interventions that cut across sectors to provide key synergies for successful adaptation action. These include nexus approaches as well as transboundary projects.	• Regional coastal resilience investments • Food-energy-water nexus investments and landscape management and resilience projects (e.g. watershed, river basin, ecosystem level interventions) • Nature-based solutions • Establish cross-ministerial coordination committees for climate and disaster risk management that link early warnings with early action	• Equity funds to invest in coastline tourist developments and fight erosion • Develop remote sensing, drone technologies and software for producing and using climate intelligence to plan and invest for climate resilience.

Source: (Tall, et al., 2021)

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