



Finance Guide for Implementation of Technology Action Plans

Canu, Federico Antonio; Pedersen, Merete Villum; Hinojosa Garza, Jorge; Trærup, Sara Lærke Meltofte; Dhar, Subash; Jehl Le Manceau, Léa

Publication date:
2020

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Canu, F. A., Pedersen, M. V., Hinojosa Garza, J., Trærup, S. L. M., Dhar, S., & Jehl Le Manceau, L. (2020). *Finance Guide for Implementation of Technology Action Plans*. UNEP DTU Partnership. TNA Guidebook Series

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Finance Guide for Implementation of Technology Action Plans



Finance Guide for Implementation of Technology Action Plans



Technology Needs Assessments

Finance Guide for Implementation of Technology Action Plans

ISBN 978-87-93458-86-4

AUTHORS: Federico Antonio Canu, Merete Villum Pedersen, Jorge Hinojosa Garza, Sara Lærke Meltofte Trærup, Subash Dhar

Author support: Léa Jehl Le Manceau

The graphic design was prepared by Kowsky.
Cover photo: Leaving the Dam. Domiriel/Flickr

UNEP DTU Partnership

DISCLAIMER

Mention of a commercial company or product in this document does not imply endorsement by UN Environment or the authors. The use of information from this document for publicity or advertising purposes is not permitted. Trademark names and symbols are used purely editorially, with no intention to infringe trademarks or copyright laws. The views expressed in this publication are those of the authors and do not necessarily reflect those of the United Nations Environment Programme. We regret any errors or omissions that may have been unwittingly made.

September 2020

UNEP DTU Partnership
Copenhagen, Denmark
www.unepdtu.org

With funding from the Global Environment Facility, and through the UNEP DTU Partnership, UNEP supports developing countries in preparing their TNAs and TAPs within the global Technology Needs Assessment (TNA) project. Since 2009, close to a hundred developing countries have joined the project. For more information, visit www.tech-action.org.

This guidebook is part of the TNA Guidebook series, covering the sectoral themes of technology, finance and the process of TNA implementation.

Preface

At the 21st Conference of the Parties (COP 21) in 2015, the Parties to the UN Framework Convention on Climate Change (UNFCCC) formulated the Paris Agreement with the aim of pursuing efforts to limit the average increase in global temperatures to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C. According to the Intergovernmental Panel on Climate Change (IPCC), a major reallocation of the global investment portfolio is needed to make finance flows consistent with a pathway towards low greenhouse gas (GHG) emissions and climate-resilient development, in line with the Paris Agreement. Climate finance flows have been increasing in recent years, reaching approximately 600 billion annually (CPI, 2018). Nevertheless, they still fall far short of the estimated averages of 3 and 5 trillion USD per year needed to stay in line with the Paris Agreement 2°C and 1.5 °C targets respectively (IPCC, 2018), as well as the estimated adaptation costs of USD 1.8 trillion USD per year (GCA, 2019). There is therefore a need not simply to scale up climate finance, but also to utilise the limited public resources available strategically to catalyse and leverage finance from private sources.

Aligning investments with the Paris Agreement's targets is not a burden or threat to economic growth. Research shows that climate-compatible investments will support economic growth, innovation, public health and employment, and avoid locking economies into high-polluting, low-productivity and deeply unequal pathways (Whitley, S. et al., 2018). Given the speed required to make finance consistent with the Paris Agreement and the expected benefits of climate-compatible investments, a wide range of actors in the public and private sectors, from the local to global levels, urgently need to take action (Whitley, S. et al., 2018).

Acknowledging the importance of technological change in reducing emissions of GHGs and adapting to climate change, Technology Needs Assessments (TNAs) were directly referenced in the Paris Agreement. Conducting TNAs and implementing Technology Action Plans (TAPs) have become instrumental for developing countries as part of the UNFCCC process of identifying and prioritising nationally appropriate climate actions. However, developing countries have cited the lack of financing as the most critical barrier to implementing enhanced climate actions, in addition to domestic capacity and gaps in co-ordination, despite the unspent finance said to be available in international climate funds. This contradictory situation partially stems from a gap in understanding what is necessary to access finance for climate interventions. There is therefore an increasing demand for capacity-building to turn the TNA/TAP results into financially sustainable climate interventions or investments and translate these into project proposals to acquire funding.

This guidebook provides information on how to develop a business case for climate change mitigation and adaptation technology inclusive interventions, and to present this information in structured proposals to donors and financiers. **Chapter 1** provides an introduction to the TNA process and the financing required to implement TAPs. **Chapter 2** gives an overview of the phases of proposal development, given that actions described in TAPs are still at the idea stage. **Chapter 3** describes how to calculate the financial viability of a business case and to analyse risks. **Chapter 4** explains how financial instruments and principles are applied to ensure the effective and efficient use of finance and shows how financing sources can be blended to enable successful financing mechanisms. **Chapter 5** describes the building blocks of successful funding proposals, while **Chapter 6** offers guidance in identifying relevant donors and financiers.

Contents

Preface	3
List of Figures	5
List of Tables.....	5
List of Abbreviations	7
1. Introduction	10
1.1. The TNA process and technology outcomes	11
1.2. Financing needs of countries implementing TAPs.....	13
2. Phases of proposal development	14
2.1. Bringing a concept from feasibility to bankability	15
2.2. From concept note to targeted proposal.....	16
3. Preparing the business case and financial plan	20
3.1. How to prepare a business case	21
3.2. Risk/sensitivity analysis and considerations for financial structuring	26
4. Application of financial instruments, concessionality and incremental cost	30
4.1. Global trends in climate finance and the application of financial instruments	31
4.2. Financial instruments, their associated risks and their providers	32
4.3. Private sector's financial role	35
4.4. Public sector's financial role	38
4.5. Concessional finance	40
4.6. Incremental cost	41
5. Building blocks of a proposal: preparing the first draft proposal	44
6. Selecting the appropriate financial partners for a targeted proposal	50
6.1. Multilateral climate funds.....	52
6.2. Multilateral Development Banks.....	56
Conclusion.....	60
References	62

List of Figures

Figure 1: Steps in the TNA Process	12
Figure 2: Financing needs for implementation of TAPs	13
Figure 3: Illustration of the process, from concept to implementation	15
Figure 4: Phases of proposal development and related documentation	17
Figure 5: Aspects to be included in the construction of a business case	21
Figure 6: Projected cash flows.....	25
Figure 7: Project approach for the IFC-PPCR project in Nepal.....	28
Figure 8: Aspects of risk and financing during proposal development	31
Figure 9: Risk versus potential return on investment of different financial instruments	33
Figure 10: Flow of funds and data in the Blockchain Climate Risk Crop Insurance project.....	36
Figure 11: Financing mechanism for the Solar Securitization for Rwanda project	38
Figure 12: Drafting a draft proposal during the development phase	45
Figure 13: Aspects to consider in making a targeted proposal.....	51
Figure 14: Priorities of different finance providers....	51
Figure 15: Relationship of funds to international climate agreements	52

List of Tables

Table 1: Glossary of financial terms	8
Table 2: Activity table with costs and revenue.....	22
Table 3: Time period-wise allocation of costs for proposal preparation phase	23
Table 4: Time period-wise allocation of revenues.....	23
Table 5: Time period-wise allocation of operating costs.....	24
Table 6: Time period-wise allocation of grant and subsidies.....	24
Table 7: What-if Scenarios.....	26
Table 8: Financial ratios for the project without any grants or concessional loans	27
Table 9: Payback time for sugarcane businesses in the IFC-PPCR project.....	29
Table 10: Matrix of financial instruments and the funding entities that provide them	34
Table 11: Financing structure for the GCF supported project in Mauritius	39
Table 12: Financial instruments available to different funds	54
Table 13: General CTF financing terms.....	55
Table 14: Overview of multilateral development banks	57
Table 15: Overview of selected bilateral and national channels for climate finance	57
Table 16: Grant financing sources for readiness and preparatory activities.....	59



Drought. Wesley Tingey/
Unsplash

List of Abbreviations

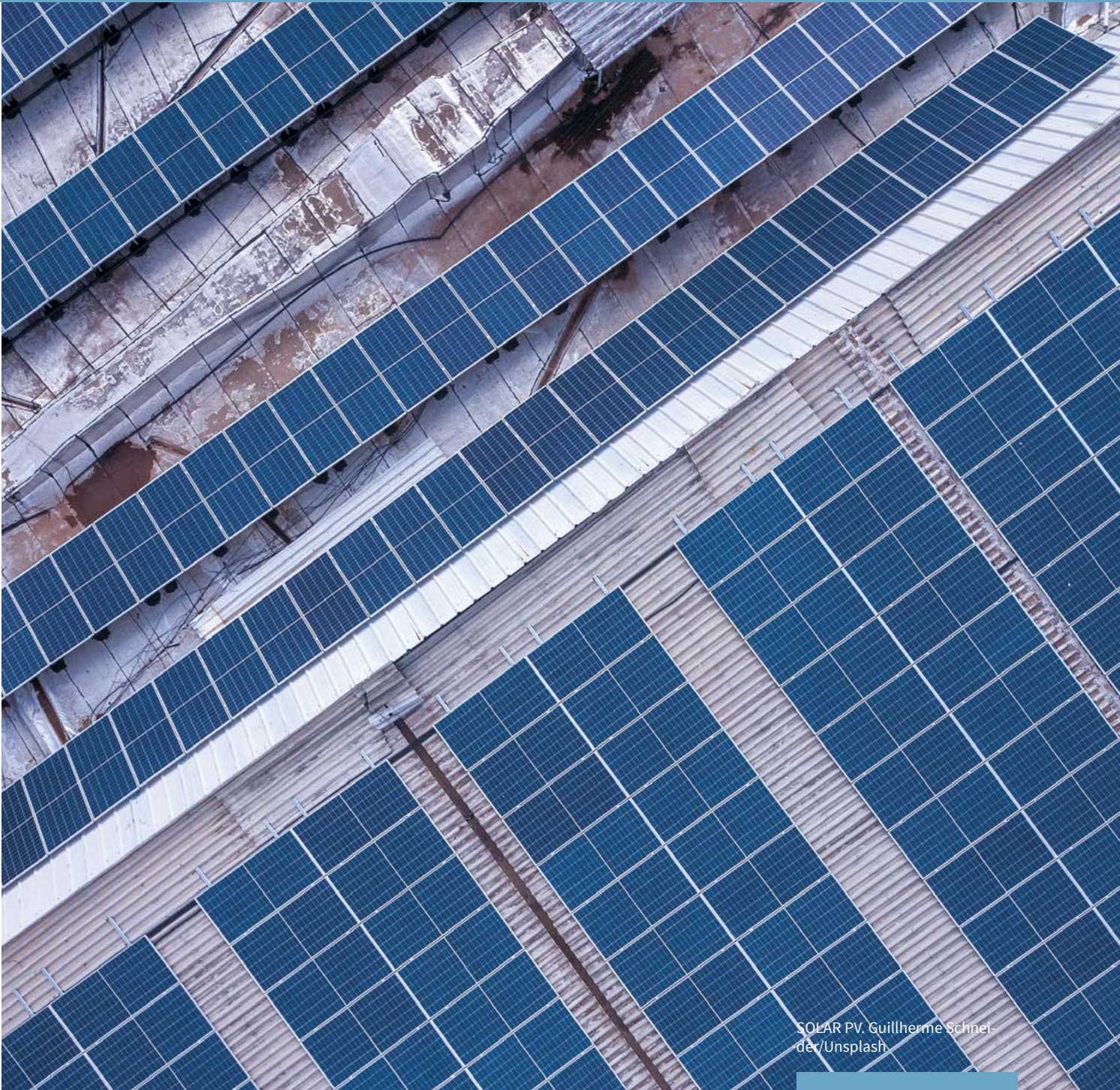
ADB	Asian Development Bank	KfW	German Development Bank
AF	Adaptation Fund	LDCF	Least Developed Countries Fund
AfD	Agence Française de Développement	LULUCF	Land use, land-use change and forestry
AfDB	African Development Bank	MSMEs	Micro, small, and medium sized enterprises
BAU	Business-as-usual	MCA	Multi-criteria analysis
BNDES	Brazilian National Development Bank	MDB	Multilateral development bank
BRT	Bus rapid transit	NDB	National development bank
CHP	Combined heat and power plant	NDC	Nationally Determined Contribution
CIF	Climate Investment Funds	NFV	National finance vehicles
CO₂ e	Carbon dioxide equivalents	NPV	Net present value
CTCN	Climate Technology Centre and Network	PMR	Partnership for Market Readiness
CTF	Clean Technology Fund	PPP	Public-private partnership
DSCR	Debt-service coverage ratio	RE	Renewable energy
DFI	Development finance institutions	REDD+	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
EBRD	European Bank for Reconstruction and Development	SCCF	Special Climate Change Fund
EE	Energy efficiency	SISRI	Small Island States Resilience Initiative
EIB	European Investment Bank	SPV	Special-purpose vehicle
ESG	Environmental and social safeguards	SREP	Scaling-Up Renewable Energy Program for Low Income Countries
FCPF	Forest Carbon Partnership Facility	SCF	Strategic Climate Fund
FIP	Forest Investment Program	TA	Technical assistance
GCF	Green Climate Fund	TAP	Technology Action Plan
GEF	Global Environment Facility	TNA	Technology Needs Assessment
GEEREF	EU Global Energy Efficiency and Renewable Energy Fund	UNDP	United Nations Development Programme
GHG	Greenhouse gas	UNFCCC	United Nations Convention on Climate Change
ICCTF	Indonesian Climate Change Trust Fund	USAID	United States Agency for International Development
IDB	Inter-American Development Bank		
IFC	International Finance Corporation		
IRR	Internal rate of return		

Table 1: Glossary of financial terms

Aggregation	Aggregation of small-scale investments with similar features, e.g. technology, stakeholders, business case in a larger portfolio, with the benefit of lowering transaction costs and exposure to risks.
Banking institutions	These include commercial banks, credit unions and cooperative banks. They accept deposits from the public and provide credit and are normally highly regulated.
Blended finance	Blended finance refers to a blend or mix of instruments, e.g. use of grants or concessional loans to leverage additional private capital such as commercial loans or equity. Blended finance enables finance to be scaled up due to the reduction of risks. Blended finance is increasingly used by multilateral development banks and climate investment funds.
Cash waterfall	A cash waterfall allows companies to organize the distribution of cash, ensuring that each financing instrument is placed in the right order, for instance, from higher to lower seniority.
Concessional loans	Concessional, soft or preferential loans are loans provided below the market rate, i.e. with low interest rates, long repayment terms and possible grace periods. Concessional loans are, amongst others, provided by multilateral development banks and climate investment funds.
Credit enhancement	Credit enhancement is a strategy used to reduce investor risk by providing reassurance to a lender that the debts will be paid. This is done via additional collaterals, diverse guarantees or financial product subordination.
Crowd financing	Raising capital or finance through the collective effort of a large pool of individuals or peer-to-peer lending, typically facilitated through social media and web platforms. Can include different types of finance, e.g. donations, guarantees, equity etc.
Debt	Debt is an amount of money borrowed by one party from another. The borrowing party borrows money under the condition that it will be paid back later, usually on an agreed schedule, with interest. Borrowers usually need assets as collateral to provide reassurance to the lender. The most common forms of debt are loans, credit, mortgages and leasing.
Debt-service coverage ratio (DSCR)	DSCR is a measurement of the cash flow available to pay current debts, including interest, principal and lease payments. It is used to measure an entity's ability to cover its debt.
Equity	Equity represents the amount of money invested by a shareholder in a company, which would be paid back if all the company's assets were liquidated and its debt had been paid off. Equity financing consists of selling a share of the company to investors, who expect to share the profits of the revenues created.
Grants	Grants are contributions (in cash or in-kind) given by one entity (often a government, foundation or trust) for specified purposes. Grants are usually conditional upon specific circumstances and purposes.
Green bonds	A green bond is debt, where an entity seeks to borrow capital for a specific period of time and at a particular interest rate to finance climate and environmental projects. Green bonds come from one or many investors and usually benefit from tax incentives to increase their attractiveness. A bank may sell a green bond to raise money to finance climate-related interventions.

Guarantees	A credit risk mitigation measure provided by financial specialists to lenders. Governments can also provide sovereign guarantees, ensuring that the financial obligation (loan) will be repaid, even if the borrower is unable to.
Institutional investors	Investments made on behalf of members, e.g. pension funds, insurance companies, hedge funds etc.
Internal Rate of Return (IRR)	IRR is calculated by reducing the discount rate of the net present value (NPV) of all cash flows from a particular project to zero. IRR provides a metric used to estimate the profitability of investments.
Mezzanine loans	Mezzanine financing, often divided into junior and senior debt, consists of an agreement whereby investors have their loan repaid in a predefined order in case of default. Some creditors, such as multilateral development banks and climate investment funds, can provide loans with first loss guarantees in order to lower the risk for the other investors, allowing additional private capital to be leveraged.
Micro-finance institutions	Financial institutions that provide small-scale loans or financial services to low-income business or households.
Multilateral development banks	International financial institutions created by countries (shareholders) with the purpose of encouraging economic development, using a range of instruments, e.g. loans, grants and technical assistance. The most famous MDB is the World Bank, while regional banks such as the African Development Bank or Asian Development Bank are other examples.
National development banks	Established by a country's government to provide different types of finance for the purposes of economic development.
Net Present Value (NPV)	NPV is an expression of the time value of money, meaning that current cash flows have more value than future cash flows, and where the current value of future cash flows is discounted based on a chosen discount rate. NPV is a metric used to estimate the profitability of investments.
Performance-based finance	Finance agreement where the recipient is paid on the basis of performance. REDD+ is a type of performance-based payment scheme where reduced deforestation and degradation is rewarded on the basis of performance. Another example is ESCO, paid by energy-efficiency savings.
Payback period	The time required to recover the cost of an investment.
Reimbursable grant	Like regular grants, reimbursable grants consist of a financial contribution, but with the condition that they should be totally or partially reimbursed, e.g. if the project materialises and produces an income or profit.
Risk allocation	Risk allocation is an essential part of project finance and consists in allocating project risks to the most suitable participants, depending on their degree of risk aversion.
Risk mitigation instruments	Financial instruments, such as credit, currency, political and inflation guarantees and insurance, to mitigate the risks of investments, helping reduce financing costs and mobilizing private capital, which is especially relevant in countries with high investment risk environments and low creditworthiness.
Subsidies	Subsidies are benefits usually provided by the government in the form of a cash payment or tax reduction. Subsidies are commonly used as financial incentives to promote activities or policies regarded as being in the interests of the public.

1 ■ Introduction



SOLAR PV. Guillaume Schneider/Unsplash

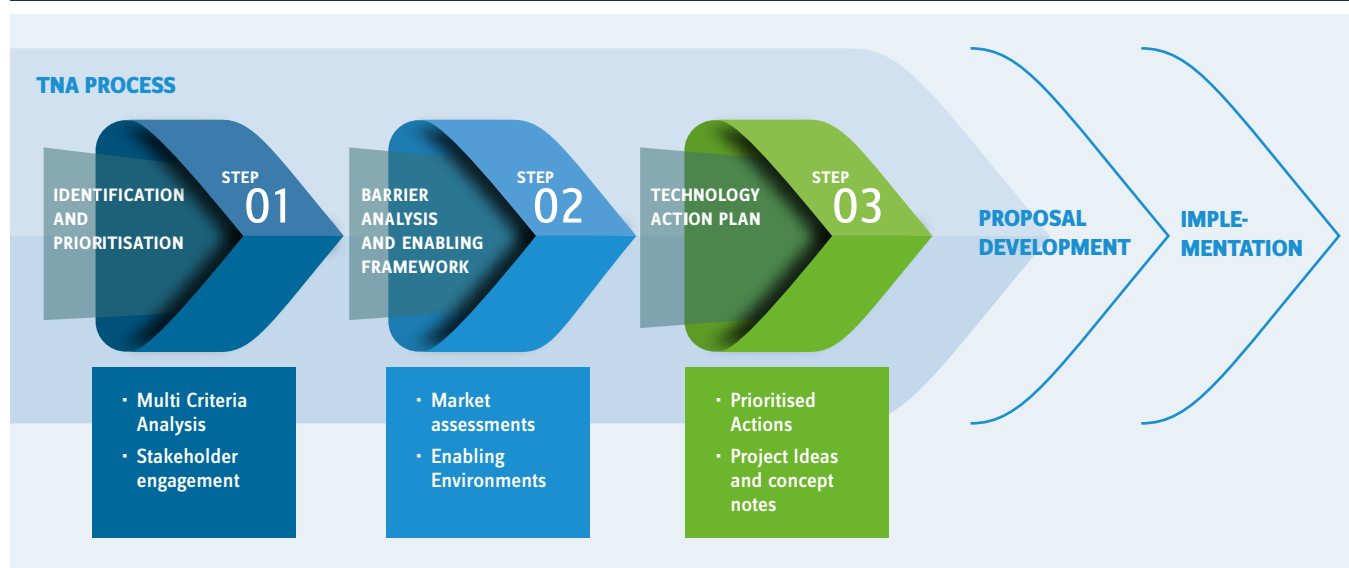
Technology Needs Assessments (TNAs) were strongly emphasized in the Paris Agreement, and they play a central role in the UNFCCC Technology Framework. Enhanced support to developing countries in conducting and implementing effective TNAs and implementing Technology Action Plans (TAPs), which are an integral part of TNAs, are instrumental in enhancing implementation of the Paris Agreement. TNAs provide information about the potential, ability and scale of nationally selected climate technologies, and they can play a unique role in the updating and implementation of Nationally Determined Contributions (NDCs). They are a highly practical tool that provides an effective and solid foundation upon which developing countries can both scale up and implement action on climate technologies. With their TNAs, therefore, countries can pursue both the targets they have agreed under the Paris Agreement and their national Sustainable Development Goals.

TNAs also aim to help countries in developing their project pipelines for the financial mechanism of the climate change convention (i.e. Green Climate Fund, Global Environment Facility and Adaptation Fund), as well as other potential funds and donors. Provided the political environment in countries with a TNA is conducive to climate action, the project outputs will also lead to policy changes and financial flows into priority technology areas. With successful and adequate support mechanisms in place, the project can expect to contribute to accelerating the deployment of technologies that reduce greenhouse gas (GHG) emissions and/or improve resilience to climate change in the target countries. However, to accelerate the implementation of climate technologies, there is increasing demand from developing countries undertaking their TNAs for capacity-building in how to develop project proposals and for more guidance on the opportunities for attracting funding by building on their TNAs. In their TNAs, developing countries have expressed the lack of finance as the most critical barrier to implementing enhanced climate actions, in addition to domestic capacity and gaps in coordination, despite their apparently being unspent finance available in international climate funds. This contradictory situation partially stems from a gap in understanding what is required to access finance for climate interventions. The annual climate finance flows, comprised of grants, concessional loans, debts at market rates and equity from both public and private sources, amounting to USD 579 billion in 2017/18 (CPI, 2019), also falls short of the finance needed by developing countries for implementation of the Paris Agreement's goals (IFC, 2016). The TAPs provide strategic direction telling governments and the private sector where to focus, although realizing NDCs and TNAs is dependent on financing, which will not materialize unless the interventions are appropriately designed from a financial point of view and the proposed financing structure can be made attractive to potential financiers.

1.1. The TNA process and technology outcomes

The TNA project provides participating countries with a process consisting of targeted financial and technical support to prepare new or updated and improved TNAs, including TAPs, for prioritized technologies that reduce greenhouse gas emissions, support adaptation to climate change, and be consistent with NDCs and national sustainable development objectives.

Figure 1: Steps in the TNA Process

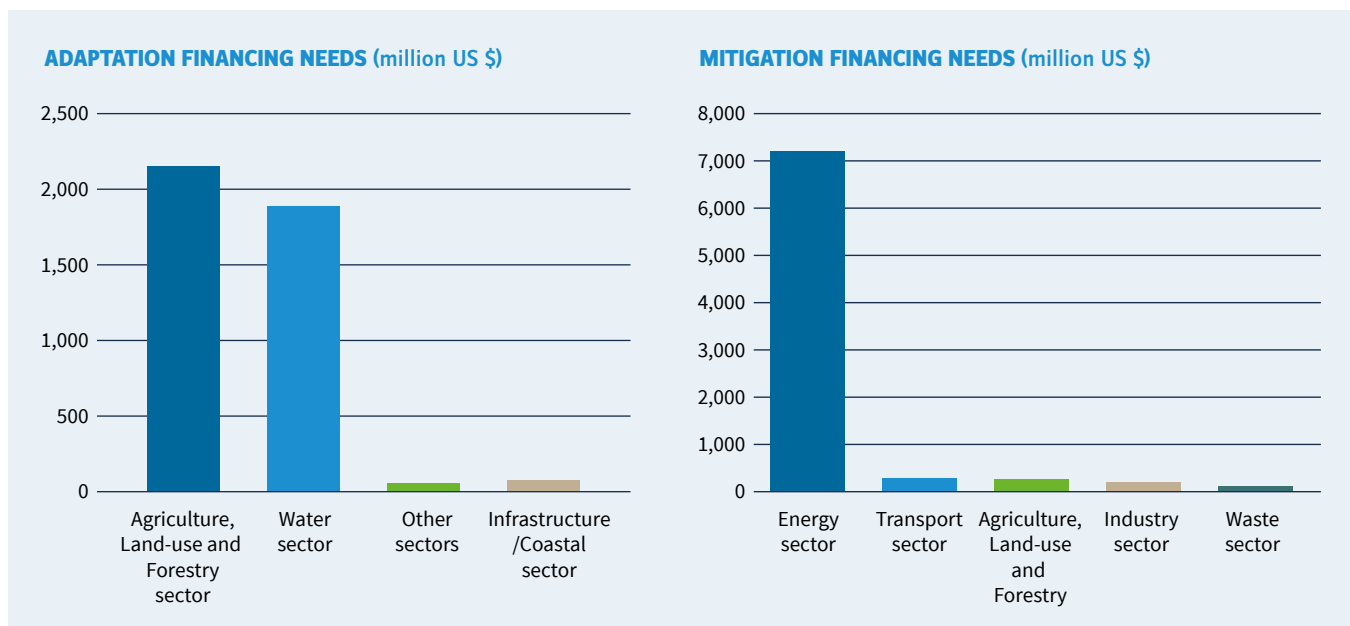


Source: authors.

The results of the TNA process are available for integration into national planning processes and for funding and implementation by interested stakeholders. Participating countries gain improved in-country capacity on the methodologies and process of conducting a TNA, including stakeholder engagement, multi-criteria analysis, barrier analysis and preparation of project concepts, including financial proposals. The outputs of the project will be generated using a transparent participatory approach, with strong national stakeholder engagement, which will enable national consensus on priority technologies and actions to emerge.

The TNA project has three main steps (Figure 1) starting with the prioritization of technologies for mitigation and adaptation using a multi-criteria analysis (MCA) within a few sectors based on national and sectoral development priorities and alignment with NDCs. The actions needed to implement the prioritized technologies are proposed within the TAP. They emanate from the Barrier Analysis and Enabling Framework step, which helps identify a wide variety of barriers (economic, legal, institutional, social, cultural, market, technical, etc.) and possible means of addressing these barriers, including policy options for creating enabling frameworks. Ways of addressing the barriers are then prioritized, high-priority measures being included in the Technology Action Plans (TAPs) and referred to as actions. These actions are further broken down into activities, some activities in the TAP becoming project ideas. These project ideas can then be scaled up further into project concepts and finally into full proposals for submission to donors and financiers to enable implementation.

Figure 2: Financing needs for implementation of TAPs



Source: UNFCCC, 2020a.

1.2. Financing needs of countries implementing TAPs

The total estimated finance required for implementation of adaptation TAPs is USD 4.2 billion. Generally, for adaptation purposes, lower levels of finance are reported since the main focus of TAP adaptation actions is on capacity-building and awareness-raising as opposed to capital investments in infrastructure and hardware. The total estimated finance required for implementation of mitigation TAPs amounts to USD 8.1 billion. The energy sector takes up the major share of the budget at about 90 per cent, the rest of the mitigation TAP budgets being made up by transport and agriculture, LULUCF & forestry, industry and waste (Figure 4). A large proportion of mitigation financing is needed for infrastructure and capital costs, though financing needs are also highlighted for institutional capacity, policy & regulations, and economic & financial incentives.

The financing needs for implementation of TAPs are modest compared to the estimated investment of USD 23 trillion required for the implementation of NDCs between 2016 and 2030 (IFC, 2016). One of the reasons is that TNAs focus on only a few sectors within countries (typically two each for mitigation and adaptation).

This guidebook provides information on recent developments in opportunities to attract funding for climate change projects. It seeks to guide TNA practitioners and developers of climate projects and programmes in designing their interventions from a financial point of view, how to identify appropriate financiers for their specific needs, and how interventions can be structured to become attractive to a range of potential investors and to target a range of financial instruments.

2 ■ Phases of proposal development



Flooding, Toomas Tartes.
@toomastartes/Unsplash

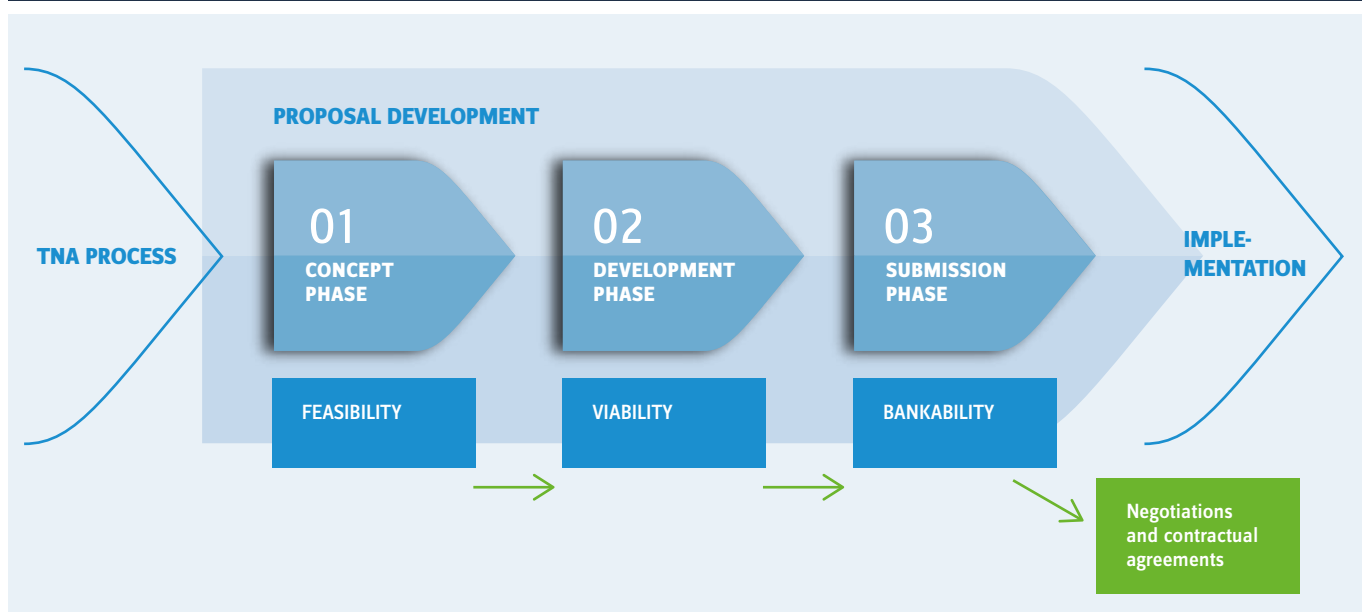
This chapter provides an overview of the phases involved in developing proposals for submission to potential finance providers. This represents a continuation of elaborating on the concept notes that emerge from the TNA process and are outlined in TAPs. It provides a description of the financial aspects to be considered in the different phases and the central tasks involved in producing a document ready for submission.

A proposal consists of a plan to do an intervention, combined with a request for resources in the absence of which the intervention's implementation would not be viable. While there is no single formula or template for preparing a successful proposal, there are a set of phases that most proposals will have in common, namely concept, development and submission.

2.1. Bringing a concept from feasibility to bankability

1. **Feasibility** is established during the **concept phase**, which shows that the technical, regulatory, environmental and political aspects of the project are practicable. Assumptions about the potential costs and revenues are established, and an initial impression of the market space of the project is confirmed, justifying embarking on the concept's development.
2. During the **development phase**, **viability** is established, determining that under realistic assumptions the project will generate acceptable returns on the investment, and is robust against potential challenges and risks.
3. A project proposal will only be ready for **submission** to potential financiers when the project is structured in such a way that the presented collateral, future cash flows and returns during implementation (similar to a business plan) and the general assumptions and conditions are deemed acceptable for financing by third-party

Figure 3: Illustration of the process, from concept to implementation



Source: authors.

funders, who must be convinced that the project will generate revenue and provide a return on investments. It may also include a market assessment, including identifying and understanding the competition, if any. This is termed **bankability**, and it implies that the proposal needs to present calculations of the expected financial performance of the intervention during implementation and operation throughout its lifetime.

There is a wide range of sources of climate finance that partly or fully grant finance for implementation even if full bankability is not established. The financier will need to see the need for grants justified (i.e. that there is no possibility of a return, revenue or income from an intervention), be assured of the potential long-term sustainability of the project, and be presented with potential approaches to achieve bankability over time. In general terms, grants for the implementation of mitigation projects are uncommon, mainly being provided for project preparation, scoping and feasibility studies, capacity-building or support to develop policy and regulation.

Grants can be provided for adaptation where the additional cost of adaptation is well documented and the adaptation intervention does not involve significant revenue streams. Some actions do not necessarily require any external investments and needs are rather related to technology transfer and capacity building¹, for which grants can be applied for. Concessional loans are provided to marginally improve the economic attractiveness of climate interventions and to leverage financing from commercial financial institutions (Christiansen, et al., 2012). Chapter 4 presents a more detailed description of financing principles and the application of financial instruments.

After **approval** of the proposal, the proponent, potential implementing partners and financiers will go through a series of **negotiations and contractual arrangements**, laying down the final terms for financing and implementation arrangements and responsibilities.

2.2. From concept note to targeted proposal

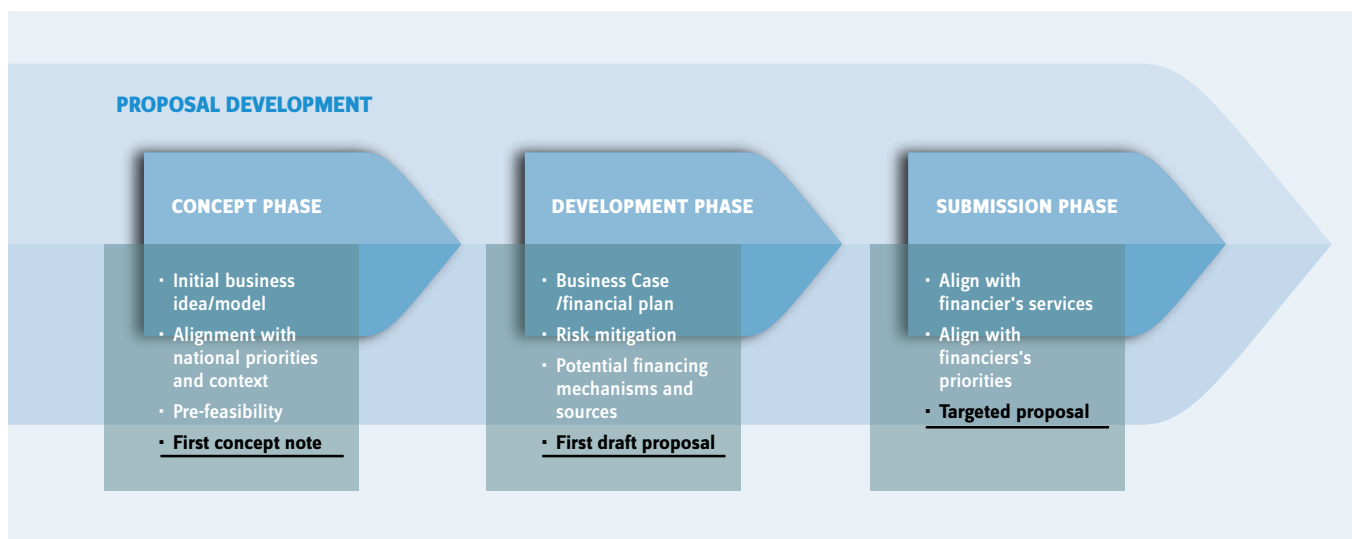
The project ideas in TAPs should be able to provide the necessary inputs to draft the first concept notes developed in the concept phase.

The **Concept Phase** starts with an assessment of the potential climate actions proposed in TAPs or other national plans and strategies, with regard to aligning them with national priorities and the perceived business potential.

Alignment with national priorities is necessary to source finance from the public sector and dedicated climate and development funds, as national approval is a common requirement for receiving funds. Private sources of finance will also be easier to attract if the business case is aligned with national priorities and endorsed by the relevant national institutions, as this will reduce the perceived risk of the investment. To identify initial business ideas, as well as ensure alignment, several sources of official documentation can be used, including:

¹ For an example of a no-regrets adaptation measure and how to structure an adaptation business case and establish adaptation scenarios, please consult Callaway, J. Et al. , 2016: The Economics of Adaptation: Concepts, Methods and Examples. UNEP DTU Partnership. Available at: http://orbit.dtu.dk/ws/files/128724334/Economics_of_Adaptation_Final_Report.pdf

Figure 4: Phases of proposal development and related documentation



Source: authors.

- TNAs and TAPs
- NDCs
- National development and climate change strategies and policies
- National investment policies
- Relevant sector-specific policies
- Specific laws and regulations that influence financial flows within a sector
- The results of existing feasibility and pre-feasibility studies

At this stage of developing the initial business idea, the specific product or service to be offered needs to be identified and described. Current cash flows need to be identified, i.e. the pattern of income and expenditure and the resulting availability of cash relevant to the baseline scenario of the project idea, and alternative scenario (meaning proposed future) cash-flows must be visualised. Attracting donors to assist with preparation from concept to submission and attracting financiers for implementation can involve a lengthy process of matchmaking. It is therefore important to scout for appropriate support providers and financiers early in the process of proposal development. Identifying potential sources of finance already at this stage and starting to reach out early in the process can also provide valuable feedback from potential future partners and assist in shaping the design. An analysis of the donor's or financier's requirements and processes for obtaining finance can assist in targeting the proposal early on and in making the necessary preparatory arrangements, thus saving time and resources throughout the process. Useful information on sources of climate finance and a tool for selecting appropriate financing partners can be found in Chapter 6.

For the reasons mentioned above, TNA practitioners should also consider providing information about and disseminating TNA results and updates on the development of TAPs regularly to relevant multilateral and bilateral donors, especially those that are active or represented in the country, e.g. through development partner consultations and/or in-country donor groups at the sector or thematic level to gauge potential interest and initiate relationship-building at an early stage.

To be able to elaborate further on the business case for the chosen technology-inclusive project, it is, amongst other things, necessary to:

- Establish a project team
- Decide on the location, market and setting for implementation of the project
- Visualise implementation modalities, e.g. how the product or service will be produced, delivered, paid for etc.
- Conduct initial cost estimates
- Consider a budget and a means of obtaining funding
- Identify probable stakeholders, including possible financiers and ways of engaging them
- Establish baseline and impact scenarios

Pre-feasibility studies are normally developed at this stage, or in the case of TNA the same information is provided through TAPs. Pilot activities may also be conducted to further inform the business case development process. All of this may add up into a first **concept note**. With a strong concept note in hand, project developers also have a powerful tool with which to present the project to development agencies, regional development banks, other financial institutions and a variety of support providers, such as accredited entities, implementing agencies and delivery partners of the UNFCCC financial mechanism and other climate finance sources. With the concept note, an application for project preparation support to support the next steps in the project's development may be granted by some climate funds and other potential sources of climate finance². The concept note is also useful as a first outline to engage stakeholders in the development phase.

Depending on the nature of the business case, the **Development Phase** includes the following elements:

- Financial feasibility analysis, including a business case and financial plan
- Risks and draft risk mitigation plans
- Technical and impact assessments
- Envisioning potential financing mechanisms
- Defining the responsibilities of the actors involved
- Obtaining the necessary permits and approvals
- Negotiating and obtaining commitments to enable or leverage other financial commitments in the submission phase

Some of the financial aspects noted above will be described in Chapters 3 and 4. The specific steps in this phase will result in an initial draft proposal. The draft financing mechanism and sources will mostly depend on the planned business activities, but they may change as a result of discussions and consultations with partners and stakeholders. However, one of the common elements will be to outline how the business case overcomes the financial barriers identified in the TNA process and how the potential risks are addressed. The specific identification of financial barriers in the TNA process should guide identification of the appropriate financial instruments and mechanism.

²
See Chapter 6 for an overview of sources of grant finance for readiness and preparatory activities.

In the Submission Phase, it will be necessary to adjust and align the final proposal to the specific financiers' services and priorities before submitting a proposal. Some financiers only offer a specific set of financial instruments. An adaptation intervention that is highly dependent on grant finance will not have a high probability of success if it targets financiers who mainly provide debt finance. Similarly, if the barrier analysis in the TNA process indicates that local banks are reluctant to provide loans to technologies they are not accustomed to, developers might be more successful if they target equity investors with a track record in the given technology or look for banking partners with dedicated credit lines for green technologies. Specific climate funds also specialize in supporting specific niches, e.g. adaptation interventions, Least Developed Countries and Small Island Development States, or innovative climate technologies. In any case, the careful selection of financial partners and thorough research on their services and priorities is usually a good investment in order to increase the chances of financing.

The process described above is of course simplified. In many cases, especially for initiatives led by the public sector, the process might not be linear. The identified financial constraints on implementation might actually be used to inform changes in policy, regulation and incentive structures nationally and locally, thus requiring the project team to revisit the initial business cases and readjust the calculations and assessment, based on potential or actual changes to policy, regulation, budgeting and incentive structures. The result of the development phase is an initial draft proposal, to be further targeted in the submission phase.

3 ■ Preparing the business case and financial plan



Collecting rainwater data on the farm Kenya 2016. CIAT Georgina Smith

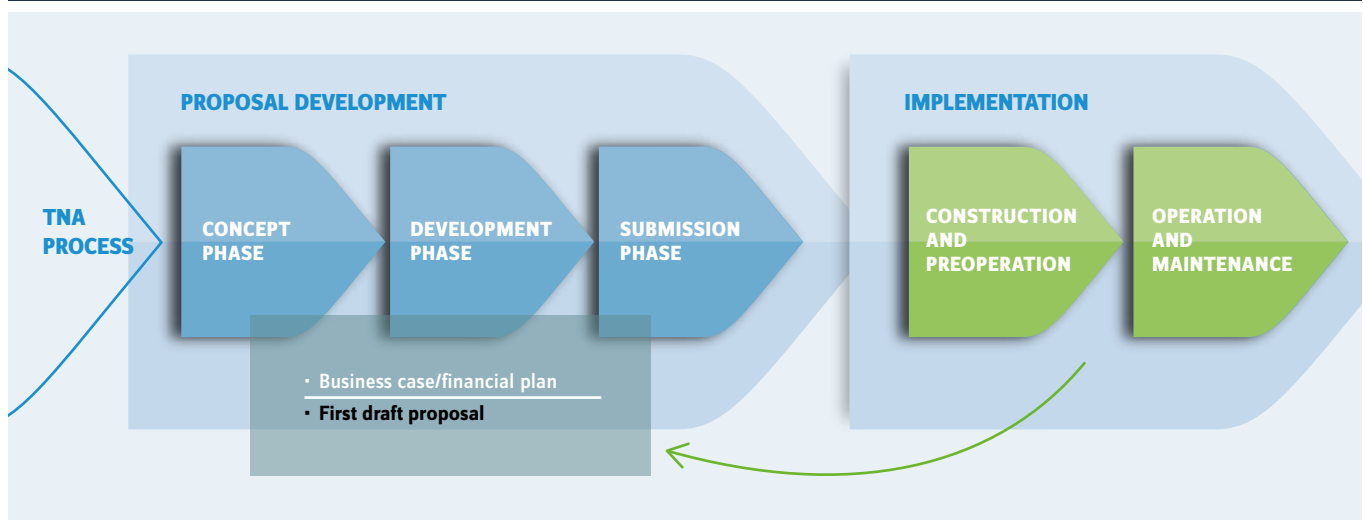
The basic principles of accounting that are used to structure, analyse and present the required information for a business case and central financial indicators are described in this chapter. This information provides project proponents with a central tool for understanding and communicating the expected financial performance of the project, one that in fact has multiple purposes. It allows one to analyse and predict how the project will perform under different scenarios, thus illustrating the attractiveness and potential risks (and robustness) of the intervention. It also allows one to determine whether the project is in need of financial support (concessional finance) in order to materialize, thus assisting in identifying relevant financial instruments for implementation.

When investors or potential financiers evaluate a proposal, they will need documentation on the expected return on investment throughout the implementation of the intervention and information to enable them to assess the risk to their investment. In other words, the financial soundness of the intervention throughout implementation needs to be proved during the proposal development phase. The financial model and financial plan, with a clear description of costs and revenues, provides this crucial information and forms the backbone of any proposal. In the case of some funders, such as the Green Climate Fund (GCF), the funder also needs to understand the key assumptions in the financial model and to see an analysis of potential stress scenarios. The chapter will show how to develop a financial model, and a simple Excel workbook is also provided for developing a financial model. Developing the business case and financial plan is part of the development phase.

3.1. How to prepare a business case

A proposal consists of a “project proponents” plan to do something combined with a request to an “enabler” for resources. The resources (i.e. money) are needed for different purposes during project development and implementation in order to invest in and maintain the project’s income-generating activities. Envisaging, tracking and communicating the use of money and financial performance is done through “accounting”, that is, the set of computations and bookkeeping methods required to record and report the

Figure 5: Aspects to be included in the construction of a business case



Source: authors.

inflows and outflows of money. “Finance” describes the management and creation of money, banking, credit, investments, assets and liabilities that make up financial system.³ These concepts are illustrated in the following sections.

In order to build a base case, it is helpful to think of activities in terms of blocks of time, i.e., Proposal Development Phase, Construction and Pre-Operation Phase, and Operation and Maintenance Phase. In each phase different activities are carried out which should be identified in their turn, e.g. using a logical framework approach and/or a theory of change framework. Once we are clear about the activities, the next step is to estimate the costs and revenues for the activities that need to be obtained, divided into phases. In this section we will use a hypothetical example of a biomass-based combined heat and power plant (CHP) to explain the steps in preparing the base case and risk analysis. Table 2 presents the activities envisaged for a biomass-based combined heat and power (CHP) plant, the estimated costs, and the start and finish times for each activity. At the end of this chapter we present two real-world examples of mitigation and adaptation.

³ For more information on the accounting and financing concepts, including debt service and payment plans, see section 2.2 of the UNFCCC Guidebook on preparing technology transfer projects for financing (UNFCCC, 2006).

Table 2: Activity table with costs and revenue

	Activities	Estimated cost	Month start	Month finish
Proposal preparation				
P1	Permits	15,000	1	12
P2	Technical analysis	15,000	1	24
P3	Consultancy contracts	15,000	1	24
	<i>Subtotal</i>	<i>45,000</i>		
Construction & pre-operation				
C1	Land acquisition	240,000	6	12
C2	Engineering	110,000	6	12
C3	Machinery 1	2,381	6	12
C4	Machinery 2	200,000	13	24
C5	Machinery 3	111,000	13	24
C6	Machinery 4	22,333	13	24
C7	Testing 1	300,000	25	36
C8	Testing 2	33,334	25	36
C9	Interest payment during construction	50,952	6	36
	<i>Total</i>	<i>1,070,000</i>		
Operation Phase				
Revenue				
R1	Revenue	Table 4	37	216
Operating costs				
O1	Labour	Table 5	37	216
O2	Rent	Table 5	37	216
O3	Communication	Table 5	37	216
O4	Fuels	Table 5	37	216
O5	General & administration	Table 5	37	216

Source: authors.

Proponents should go through each activity until every one of the numbers is identified. Once this has been done, the costs and revenues have to be distributed over chronological time. The year when operations start can be designated as 1, whereas activities that happen before this can be listed under years 0 and below. A table showing this for the example is shown in Table 3. A similar approach can be taken in the construction and pre-operation phase.

If the operations phase is to last the entire life of the project, both revenues and costs need to be estimated. It is helpful to identify all the different revenue streams from the project. For example, in the case of the CHP plant the revenue comes from the sale of electricity and heat that the project generates (see Table 4).

Table 3: Time period-wise allocation of costs for proposal preparation phase

	Activities	Year -2 months 1-12	Year -1 months 13-24	Year 0 months 25-36	Total
	Proposal preparation				
P1	Obtaining all permits	15,000			15,000
P2	Technical analysis	10,000			10,000
P3	Negotiating and preparing contracts	5,000			5,000
P4	Negotiating and preparing contracts		10,000		10,000
	<i>Total</i>	<i>30,000</i>	<i>15,000</i>	<i>0</i>	<i>45,000</i>

Source: authors.

Table 4: Time period-wise allocation of revenues

	Revenues	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-15
	Revenue from energy						
	Units sold	400	550	650	700	700	700
	Revenue per unit	200	200	200	200	200	200
R1	<i>Subtotal</i>	<i>80,000</i>	<i>110,000</i>	<i>130,000</i>	<i>140,000</i>	<i>140,000</i>	<i>140,000</i>
	Revenue from heat	300	520	520	670	670	670
	Units sold	200	200	200	200	200	200
R2	Revenue per unit	60,000	104,000	104,000	134,000	134,000	134,000
	<i>Subtotal</i>		<i>180</i>	<i>180</i>	<i>200</i>	<i>200</i>	<i>200</i>
	Revenue from residue		150	150	150	150	150
R3	Units	0	27,000	27,000	30,000	30,000	30,000
	Revenue per unit	140,000	241,000	261,000	304,000	304,000	304,000

Source: authors.

Table 5: Time period-wise allocation of operating costs

	Operating costs	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-15
O1	Labour	5,000	6,000	7,000	8,000	9,000	9,000
O2	Rent	50,000	50,000	50,000	50,000	50,000	50,000
O3	Communications	5,000	5,000	5,000	5,000	5,000	5,000
O4	Fuel	50,000	50,000	50,000	50,000	50,000	50,000
O5	General and administrative costs	12,000	12,000	12,000	12,000	12,000	12,000
	<i>Total</i>	<i>122,000</i>	<i>123,000</i>	<i>124,000</i>	<i>125,000</i>	<i>126,000</i>	<i>126,000</i>

Source: authors.

Table 6: Time period-wise allocation of grant and subsidies

	Grants and subsidies	Year -2	Year -1	Year 0	Year 1	Year 2
1	For planning or construction/pre-operation			50,000		
2	For operation				12,500	
	<i>Total</i>	<i>0</i>	<i>0</i>	<i>50,000</i>	<i>12,500</i>	<i>0</i>

Source: authors.

A similar estimate can be made of operating costs, divided into fixed operating costs (e.g., rent, administrative cost) and variable operating costs (e.g., fuel, labour, communications, etc.). In the case of long-term investments, to remain realistic, costs and revenues should increase annually, keeping in mind the rate of inflation in the economy. However, for simplicity's sake we have assumed zero inflation (Table 5).

Once time-wise allocations have been made for all the activities and both costs and revenues covering the full range of the project's phases, we need to consider grants and subsidies for the project. For instance, in some cases a capital grant can be applied for in the application to the funding organization, and a nominal grant can be applied for and received to prepare the base case. In addition, a grant or subsidy can also be requested for the first year of operations, when the revenues are low and the costs high. Besides seeking grant finance, it is also important to check if there are any other subsidies that the project can tap into, e.g. government or municipal subsidies.

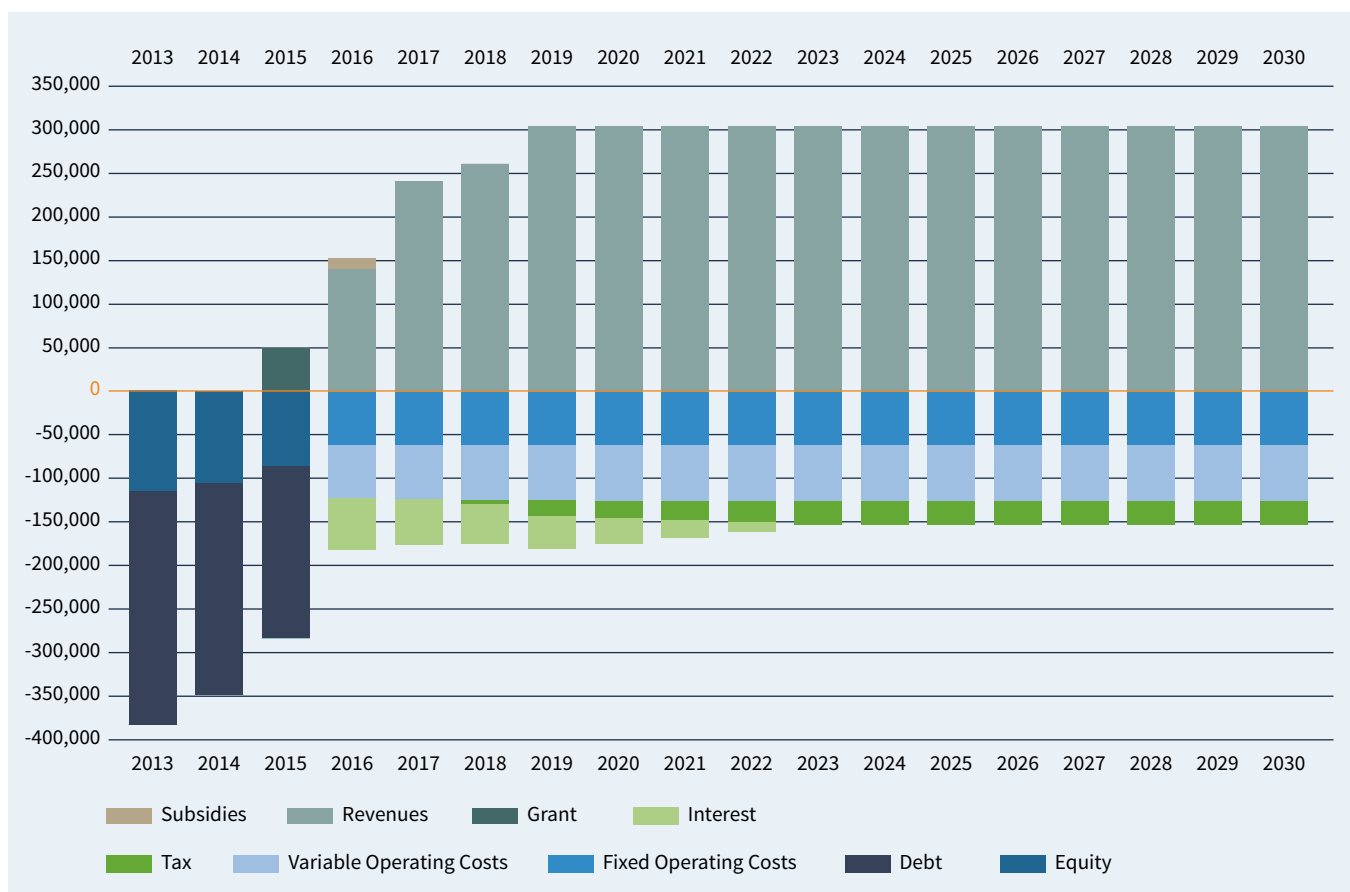
The information presented in Table 2 to Table 6 needs to be complemented with assumptions regarding the interest rate on debt, tenure of debt, discount rate and tax rates to develop a base case for a financial plan. Using a financial calculator, we can then calculate various financial ratios such as Net Present Value (NPV), Internal Rate of Return (IRR), Debt Service Coverage Ratio (DSCR) and Pay Back Period.⁴ Making these calculations using a financial calculator should be a straightforward job for a proponent familiar with financial concepts. In the case of mitigation technologies, there are models such as HOMER⁵ and RETScreen⁶ that can be used to structure the analysis of the business case. The TNA project has developed the FICAM model for such analysis, a light version of which is also available to carry out simple financial analyses.

⁴ For more information on these financial indicators, see Section 2.2 of the UNFCCC Guidebook on preparing technology transfer projects for financing (UNFCCC, 2006), and the TNA Guidance Note Evaluating measures for inclusion in a technology action plan (Naswa et. al., 2017).

⁵ <https://www.homerenergy.com>

⁶ <https://www.nrcan.gc.ca/maps-tools-publications/tools/data-analysis-software-modeling/retscreen/7465>

Figure 6: Projected cash flows



Source: authors.

In order to complete the financial analysis using the information provided in Table 5, we made the following assumptions and made calculations using the light version of the FICAM model:

- Interest rate of debt: 8%
- Tenure of debt (years): 10
- Income Tax Rate: 25%
- Discount Rate: 5%
- Debt / equity ratio: 70% / 30%

The financial analysis for the above example shows a post-tax equity IRR of 10.3%, a positive NPV and an average DSCR of 2.3. A negative NPV is a no-go for a project. The DSCR is of interest to funding entities to establish whether their loan will be paid back, so a low DSCR (below 1) would cause them concern. The most common ratio used for a project appraisal by a funding entity is the IRR. Among the rules of thumb used in interpreting IRR are:

- If the IRR is negative, revenues and existing grants cannot cover the capital and operating costs for the proposal. Without additional revenues, grants or subsidies, the proposal is probably not financially viable.
- If the IRR is positive but below the discount rate (5% in this case), the proposal is financially self-sustaining but may be of limited interest to the private sector, as it does not generate a profit. Specialized impact lenders, investors and donors who value development, environmental and market transformation impacts may be prepared to consider such a proposal.

- If the IRR is positive and above the discount rate, in this case 5% per cent, the proposal's financial details (especially tax implications, debt structure and any additional revenues) need to be developed further and different financing schemes considered; the result may or may not be of interest to the private sector. Specialized lenders, investors and donors who are interested in blended investments are likely to be the targets.
- If the IRR is substantially above the discount rate, e.g. at 10 per cent, the financial details need to be developed with a strong view towards engaging private-sector investors and lenders.

3.2. Risk/sensitivity analysis and considerations for financial structuring

The base case provides a positive picture of the project, though both equity investors and funding institutions that provide grants and loans will always require an understanding of the risks to their investment. It is also important to understand how changes to financial structuring, such as grants from donors, loans from lenders and equity from owner-investors, will affect the project.

Table 7: What-if Scenarios

Base Case		What-If Scenarios					Sensitivity*	
Variable		Scenario	Description	IRR	NPV	Avg DSCR	IRR	NPV
Construction cost	1,115,000	A1	5% higher	9.7%	223,499	2.1	-0.1%	-4%
		A2	30% higher	7.1%	18,091	1.7		
Year 1 revenue	140,000	B1	20% lower	10.0%	244,315	2.2	0.0%	0.3%
		B2	30% lower	9.9%	236,705	2.2		
Revenue all years	4,290,000	C1	20% lower	5.8%	62,620	1.5	0.2%	39.9%
		C2	30% lower	3.8%	186,943	1.3		
Operating costs, all years	1,880,000	D1	15% higher	8.5%	128,906	1.9	-0.1%	-7.1%
		D2	30% higher	6.7%	-8,068	1.7		
Cost of debt	8.5%	E1	75% increase	10.3%	261,800	2.1	-	-0.1%
		E2	80% increase	10.3%	260,362	1.9		
Discount rate	5.0%	F1	6% increase	10.3%	192,947	2.2	-	-27.8%
		F2	8.5% increase	10.3%	59,061	2.2		
Project IRR Pre-tax (IRR)	10.3%	H comb.	A1+B1+C1+D1+E1+F1	3.3%	-267,065			
NPV	263,237							
Average DSCR	2.2							

* Sensitivity values show the percentage change in dependent variables (IRR, NPV) to a percentage change in different input variables.

Source: authors.

To do this analysis, we can run a few “what-if scenarios” and check the sensitivity of IRR and NPV to the different variables (Table 7). For each variable we have scenario 1 with a small variation and scenario 2 with a more significant variation. “Revenue all years” appears to be the most significant variable, one that shows greater sensitivity regarding the project IRR and the NPV. Discount rates are another variable which can make significant changes to the project’s NPV. However, it is important to note that if combined, even small variation in variables, can make the project unviable (Scenario H).

Next we present two real-world examples, one related to the financial structuring of a mitigation project, the other to an adaptation project.

Financial structuring for mitigation programme: Green Bus Rapid Transit, Karachi, Pakistan

The Green BRT project aims to build a 30 km bus rapid transit (BRT) system in Karachi, utilising biomethane-hybrid buses and including low-emission mobility features, such as cycle lanes, bike-sharing facilities and 25 bus stations, resulting in a GHG reduction impact of 2.6 MtCO₂e over 30 years. The project is being financed by an ADB senior loan of USD 442 million, with a tenure of 25 years at 3.89%; a GCF concessional loan of USD 37.2 million, with a tenure of 20 years at 0.75%; and a GCF grant of USD 11.8 million. The project has a total capital cost of USD 583.5 million, of which USD 297 million is for core infrastructure for the BRT; USD 93 million for buses, non-motorized transport, a fare collection system and a bio-methane plant USD 22 million for environmental and social management requirements; and USD 59 million for effective management of the BRT.

The rest is to cover contingencies and taxes. The BRT system generates revenues in three ways:

- i) fares,
- ii) advertising, and
- iii) rent on concessions and shops in stations and depots.

In 2021, fare revenues, the largest revenue source, is estimated to be USD 19.46 million and is expected to increase over time with increases in ridership. Advertisement revenue is estimated at US \$2.65 million per year, while rent revenue from concession stands is estimated at US \$4.35 million. This revenue will be used to cover all O&M expenses, as well as the procurement of new buses to keep up with projected increases in demand and fleet replacement costs.

Table 8: Financial ratios for the project without any grants or concessional loans

Key Costs and Revenue	US \$	Financial Ratio	Value
Construction cost	563 million	Project Pre-tax IRR	-7.4%
Revenue, all years	650 million	NPV	-292 million US \$
Operating costs, all years	455 million	Average DSCR	0.4

Source: authors’ estimate

The project’s financial analysis was carried out using a 9% discount rate and assuming a two-year project implementation period starting in 2019 and twenty years of economic life after that (2021–2041). It was clear that the project could not be funded as a purely commercial project due to the high capital costs and relatively low revenues generated. Financial analysis assuming a financing structure

similar to the CHP example and a loan at a rate of 3.89% shows that the project is not financially viable (Table 8). However, the BRT system is a priority for Pakistan, as identified in its Technology Needs Assessment (TNA) for 2016.

For the city of Karachi, the project is vital in order to provide a credible public transport option. Accordingly, the

Financial structuring for mitigation programme: Green Bus Rapid Transit, Karachi, Pakistan

provincial government of Sindh has provided a grant of USD 92.5 million. In addition, given previous bad experiences with BRT projects in Pakistan not being able to repay the capital costs, the executing agency (TransKarachi) is exempt from having to replay the capital costs, being responsible only for operational and maintenance costs and replacing buses after twelve years.

The Asian Development Bank (ADB) has advanced a loan of USD 442 million at 3.89% with a tenure of 25 years and waived the required use of a financial rate of return for the project, instead allowing an economic IRR (EIRR) to be used. The EIRR calculation monetizes other non-financial

impacts such as travel time savings, safety savings, CO₂ savings and NO_x savings. The base case EIRR comes in at a healthy 20%, well above the ADB hurdle rate of 9%. GCF is providing a concessional loan (USD 37.2 million at 0.75% with a tenure of 20 years) and a grant of USD 11.8 million for the bio-methane plant. This will enhance the climate credentials and economic benefits by shifting away from CNG for buses. The financial structure of the Green BRT system allows the ADB to deliver funds to Pakistan's public entities, while the GCF funds will be blended with the other co-financiers' funds. The loans by ADB and GCF are agreed separately with the government.

Financial structuring for an adaptation programme: promoting climate-resilient agriculture by engaging private-sector companies in Nepal

Climate change is threatening agricultural production in Nepal, which is already challenged by the limited use of stress-resilient, quality seeds, poor farming practices, and high dependence on precipitation patterns. The IFC Pilot Project for Climate Resilience (IFC-PPCR) aims to improve crop productivity and capacity utilization of agribusinesses in five selected districts of the Terai region. The project has three components:

- i) building technical skills of agribusinesses, which in turn transfer these to farmers and improve the latter's access to improved seeds, irrigation technologies and fertilizers;
- ii) establishing risk-sharing mechanisms and helping local banks to design financial products suited to the agricultural supply chain;
- iii) creating SMS-based dissemination platforms to deliver weather forecasts and advice on agronomic practices, as well as market information to farmers.

Figure 7: Project approach for the IFC-PPCR project in Nepal

PRIVATE ACTORS' BARRIERS

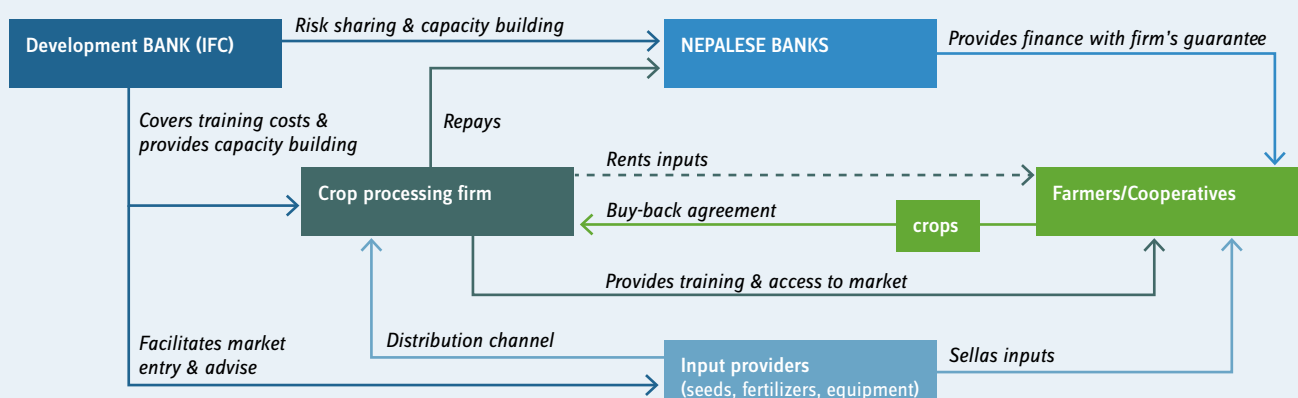
Capacity & knowledge

Quality inputs

Credit risks

Access to finance

PROJECT'S ARRANGEMENTS



Source: Trabacchi & Stadelmann, 2016.

For this example, we will examine the business case of one sugarcane business with the involvement of 567 farmers. The sugar-processing company is running its plant at 75-80% of its capacity due to insufficient supplies of sugarcane, resulting in revenue losses. The case assumes that if 567 farmers are trained and take up improved practices, they could increase their productivity by 20%. The sugarcane-processing company could then expect to increase its net revenues by at least USD 12,000 a year. The sugarcane

business will invest between USD 32,000 and USD 95,000 in staff time, facilities and demonstration plots. The payback period for the company is 2.6 to 7.9 years, when IFC-PPCR will bear 70% of the cost. Therefore, there is a business case for investing in the project if PPCR support is available. Sugarcane businesses have an interest in engaging in the project, as it will reduce their vulnerability to climate-induced risks, which directly impact their profitability and returns.

Table 9: Payback time for sugarcane businesses in the IFC-PPCR project

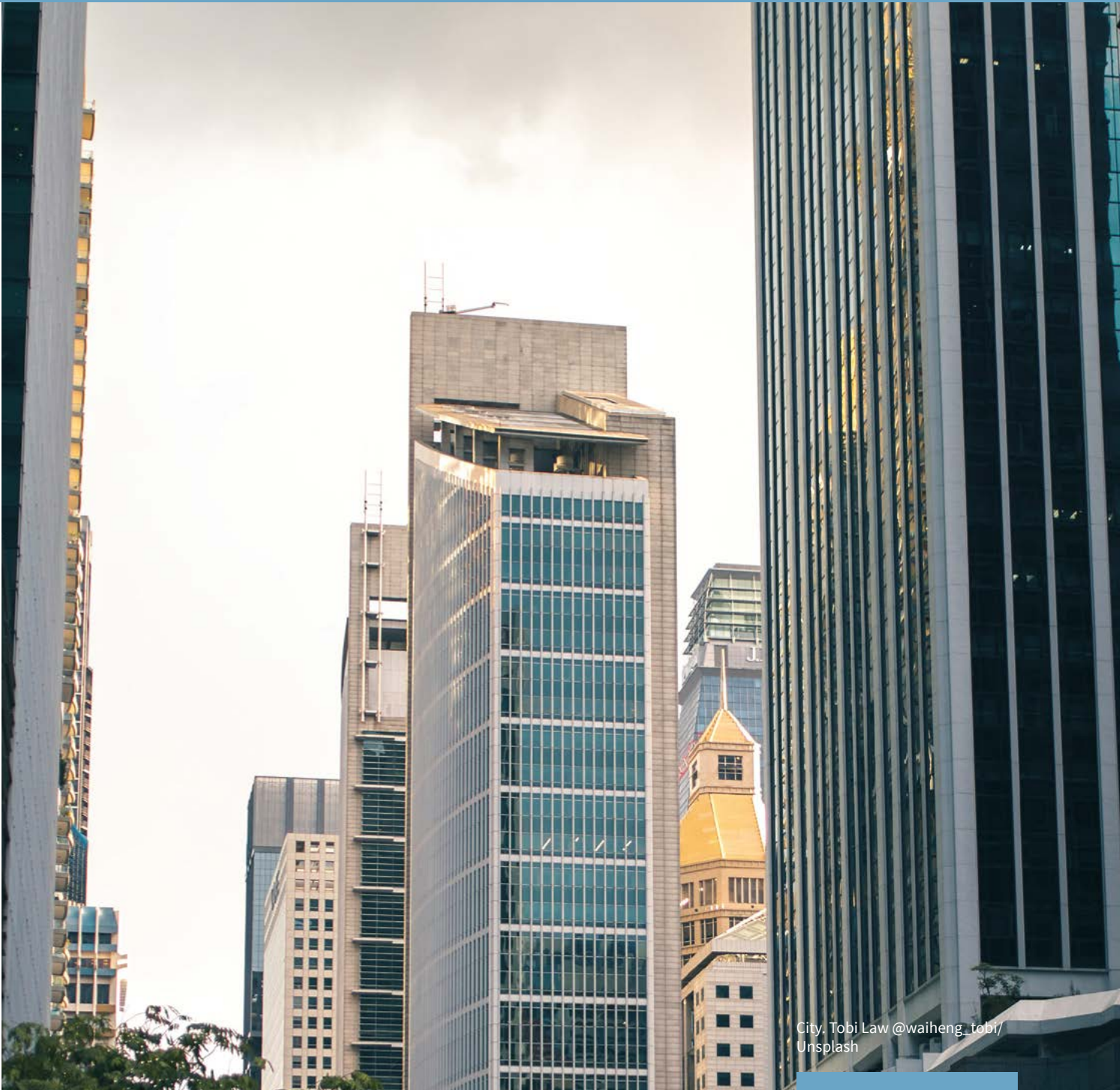
Productivity increase scenario	Payback period with 70% payment from PPCR as a grant	
	Upper estimate of costs	Lower estimate of costs
Low 10%	15.7 years	5.3 years
20% (base case)	7.9 years	2.6 years
High 30%	5.3 years	1.8 years

Source: Trabacchi & Stadelmann, 2016.

Farmers will not be asked to pay for the training activities, but they will have to pay the costs of investing in improved and climate-resilient farming practices. A restrictive factor are the high interest rates on loans accessible to farmers, varying from approximately 20% for commercial banks to 33% for informal lenders, and the fact that farmers find it difficult to obtain loans from commercial banks. Therefore, commercial banks were involved in the project and

provided with inputs on how to improve risk management and design financial products, thus enabling them to extend lending to farmers for innovative agricultural practices. Furthermore, a risk-sharing facility providing loan guarantees was designed together with the IFC, bringing down loan interest rates to around 11.5%.

4 ■ Application of financial instruments, concessionality and incremental cost



This chapter introduces general global trends in climate finance. It provides a description of central financial instruments and their providers and, through practical examples, shows how they are applied and blended into successful financial mechanisms. Finally the chapter describes the two central financial principles of concessionality and incremental cost, both relevant in constructing arguments explaining why financial support for a given climate intervention is needed.

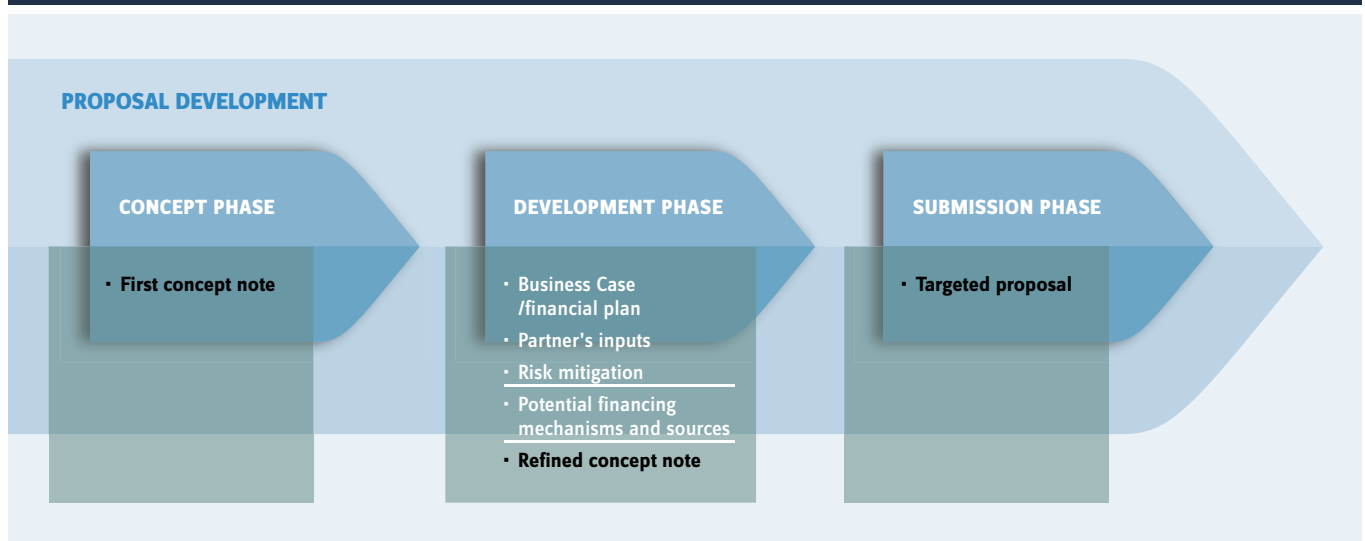
When preparing a proposal for a climate intervention, developers must strive to design the business case in the most effective way, targeting the most appropriate financial instruments, keeping in mind the specific financial barriers and financial risks the intervention or technology is facing. This chapter presents financial instruments and relates them to the principles of climate finance in the context of different climate finance providers.

4.1. Global trends in climate finance and the application of financial instruments

Climate finance flows have been increasing in recent years, now standing at approximately 600 billion annually (CPI, 2018). A review of global climate finance flows reveals certain tendencies:

1. Private investments from project developers, corporations and commercial banks account for by far the major share of climate finance flows (CPI, 2019). This highlights the need for climate interventions to seek to be bankable to be successful in attracting considerable amounts of private finance and emphasizes that it is difficult to mobilize grant-based climate finance.
2. Investments in renewable energy (RE) are the largest beneficiary of total climate finance flows. RE used to be the largest beneficiary of public investment, but in recent years it has been outpaced by investments in transport (CPI, 2019). This

Figure 8: Aspects of risk and financing during proposal development



Source: authors.

development illustrates how the decreasing costs of RE have led to a shift in financing from the public to the private domain, and how public investments are mainly directed towards sectors or technologies in need of more risk-willing support to become bankable.

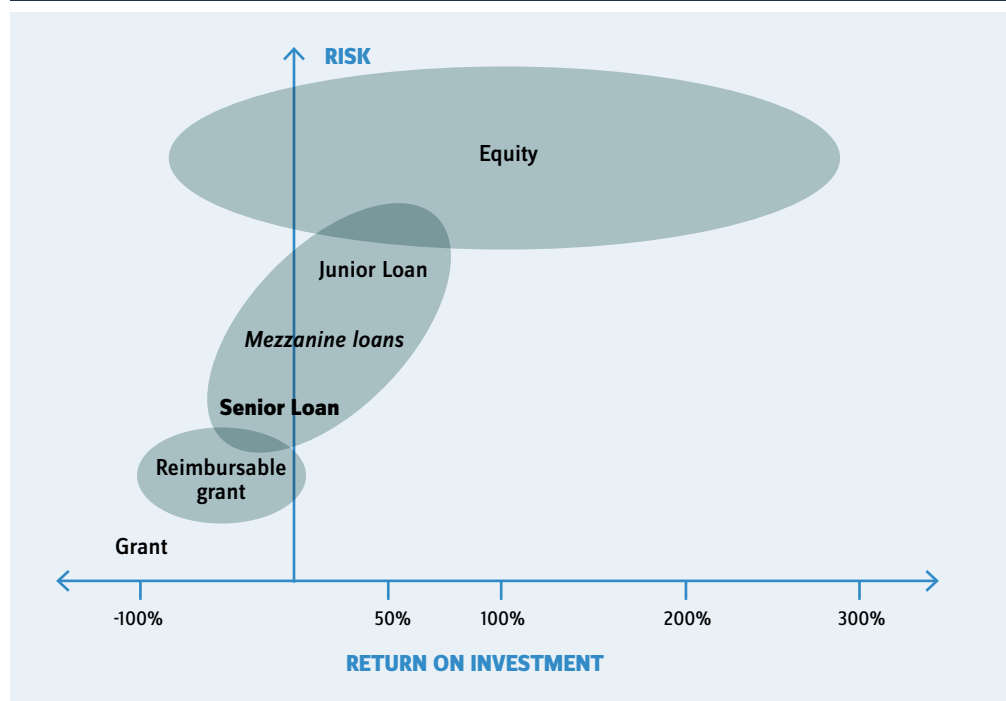
3. Adaptation finance is eclipsed by finance for mitigation (CPI, 2019), public sources of finance for adaptation being by far the largest proportion (CPI, 2019). This illustrates that adaptation interventions do not provide many options for 100% bankable investments yet, many cases still being dependent on public and grant financing for implementation.
4. Most financing comes from within the country itself, both public and private (CPI, 2019). Therefore, it is important to involve the local stakeholders, finance institutions and corporations as much as possible when designing climate interventions.
5. Public funding is a large contributor to investments in energy efficiency, land use and projects with cross-sectoral impacts (CPI, 2019). Domestic, bilateral and multilateral development finance institutions (DFI) account for most public finance, with national DFIs being the largest providers of climate finance among all DFIs (CPI, 2019). This highlights the importance of involving national development banks when considering financing climate interventions.
6. Grants only account for a very small proportion of total climate finance. Almost all grants originate from public sources and mostly have public recipients as their beneficiaries. Grants tend to focus on geographies and sectors that are currently underserved by commercial finance (e.g. transport, agriculture, forestry, land use and natural resource management; CPI, 2019).
7. Debt is the most important financing instrument. Concessional (low-cost) debt almost completely originates from public sources, with DFIs providing the bulk of concessional loans. The second commonest type of instrument is equity, mostly balance-sheet equity, but also equity invested directly in the project itself (CPI, 2019).

For an updated and detailed overview of global climate finance flows, the Climate Policy Initiative publishes yearly updates in its [Global Landscape of Climate Finance series](#).

4.2. Financial instruments, their associated risks and their providers

As mentioned in Chapter 3, one of the main features informing the decision, choice or composition of a financial instrument is the risk associated with the investment. Risk, whether real or perceived, is probably the most important factor that prevents climate-related projects from finding financial investors. While some risks are seen to be associated with the investment as such, others are related to the investment environment, e.g. the country's vulnerability, the enabling policy environment or the global financial situation. Different financial instruments carry different risks and opportunities.

Figure 9: Risk versus potential return on investment of different financial instruments



The x-axis in the figure illustrates the potential return on the investment through different financial instruments. The y-axis illustrates the potential risk associated with the financial instrument. You can find the definition of these instruments in the glossary in Table 1. Source: authors.

Figure 9 illustrates financial instruments in terms of their potential returns on investment and the associated risks (seen from the investor's point of view). A grant carries no risk because there is no intention or requirement to pay it back, and thus it shows a 100% negative return on investments. A reimbursable grant carries some risk of non-repayment, but a higher potential return on investment than a regular grant. Unless agreed otherwise, the donor will not receive more return on the investment than it has already provided through the grant. Junior loans are riskier than senior loans and can be expected to be provided with higher interest rates. Equity provides the highest risk, as the investor becomes a shareholder, with all the obligations that entails, and there is no pre-determined agreement on financial returns. Although riskier, equity normally also has a higher potential return on investments compared to other financial instruments.

It is essential to seek to meet investors' risk-return needs. For instance, public-sector risk-reducing instruments, such as guarantees (see further below) and credit-enhancement mechanisms, help investors mitigate diverse political, market, regulatory or technology risks. Other public mechanisms aim to enhance investment returns, including financial policies such as feed-in tariffs, tax incentives and other incentives.

Guarantees play a central role in covering risk. Guarantee models are designed to provide the necessary trust among financiers, who balance the price of their money with the risk of losing it. Guarantees not only help to release capital in the first place, they also reduce the price of financing, thus increasing the patience and confidence of investors. Different instruments for covering risks and guarantees are provided by both the public and private sectors. Governments will normally provide sovereign guarantees; government agencies, such as export credit agencies, may insure financial guarantees;

Table 10: Matrix of financial instruments and the funding entities that provide them

Source	Debts/Loans	Equity	Grants	Guarantees	Insurance	Blended Loans	Green Bonds	Convertible Debt	Securitisation	Crowd-Finance	Aggregation	Performance Based Financing	On-Bill Financing
Banking institutions	●						● (b)						
National development banks (NDBs)	● (d)	●	●	●		●	● (b)		●		●		
Bi/Multilateral development banks (MDB)	● (a)		● (a)	● (a)			● (b)						
Microfinance institutions	●										●		
Non-banking Financial Institutions	●	●			●			●			●		
Private equity funds	●	●						●	●		●	●	
ESCOs (Energy Savings Insurance)	●								●		●	●	
Pension funds (mutual funds)	● (e)						● (c)						
Insurance companies					●								
Guarantee institutions				●									
Crowd funding platforms										●			
Utility	●												●

Source: Base, 2019: *Manual of financing mechanisms and business models for energy efficiency*

(a) Mainly loans and financial services provided to governments or intermediaries (not directly to projects or private customers).

(b) Green bonds are used for raising funding from many investors that expect yields generated from green projects.

(c) Pension funds invest in green bonds expecting a yield that is coming from green projects or lending.

(d) Some MDBs act just as “second floor banks”, meaning they do not lend directly, they use the banking institutions to imburse their funding.

(e) Not very common. Pension funds might invest in large-scale investments that are generating yields.

the private sector, usually technology providers, can provide performance bonuses and technical risk coverage (technology guarantees), while private insurance companies can offer additional insurance.

As already mentioned, instruments are often combined in the same investment, and a range of instruments may be offered by a financial mechanism, such as a climate fund. Still, different projects and investments are more relevant for certain instruments, in which financial institutions may specialize. E.g. in wind energy, now a well-known technology, it is possible to invest with an equity share of 20-25% of the investment. The remaining 75-80% can be financed by loans through banking institutions. Less well-known technology investments may have equity requirements of 50% or more before a bank may be willing to lend the remaining 50%, and the interest rate might still be too high to make the investment viable. The exact ratio of equity to loan and the interest rate depend on a number of factors besides technologies, e.g. the regulatory regime and/or the country in which the investment is made, all of which represent a certain risk. Utilizing a blend of different instruments from various sources can help spread the risk and leverage the necessary finance to make the investment viable.

In Table 10 the type of finance sources and the financial instruments they use is mapped out with a specific focus on investments in energy efficiency.

4.3. Private sector's financial role

4.3.1. Equity financing

Equity is an investment made directly in a project or investor's operating assets. In equity investments, the ownership is "ranked" in accordance with the investors' capital provision. This is a fundamental source of climate finance for both SMEs and large companies wanting to invest in innovative technologies for mitigation or adaptation projects. Equity investors are typically private companies, individuals, venture capital funds, public risk capital funds (hybrids) or pension funds (see elaborations below). Equity rarely stands alone but is mixed with other financial instruments.

The availability of capital for entrepreneurs seeking seed capital for their business models may depend on private funds, such as:

- **Private equity capital:** firms provide capital at mature stages of companies. They offer investors lower returns and lower risk within projects.
- **Venture capital:** investments that focus on the early stages of companies offering higher returns and risks. These funds mostly focus on technology companies.
- **Institutional investors:** pension funds and insurance companies with larger investment horizons and lower risks.

As already mentioned, climate adaptation finance flows are still considerably lower than mitigation investments. Since equity financing means more risk for the investor, the combination of public and concessional funds is often a requirement of adaptation interventions. One example of this, described in the following text box, concerns an innovative blend of finance.

An innovative example of equity financing is the *Blockchain Climate Risk Crop Insurance* project, which aims to offer accessible crop insurance to smallholder farmers in Sub-Saharan African countries. As a climate change adaptation financing project, its main objective is to become a technology platform that interlinks up-to-date weather information and adequate insurance policies to small-scale farmers.

The project features a digital platform that incorporates crop insurance policies on a blockchain through smart contracts, indexed to local weather conditions. When an extreme event happens, the platform facilitates timely and transparent pay-outs to farmers. Insurance and data providers design the product, process premium payments and manage the collection of weather data. The main objective of the blockchain technology platform is to become

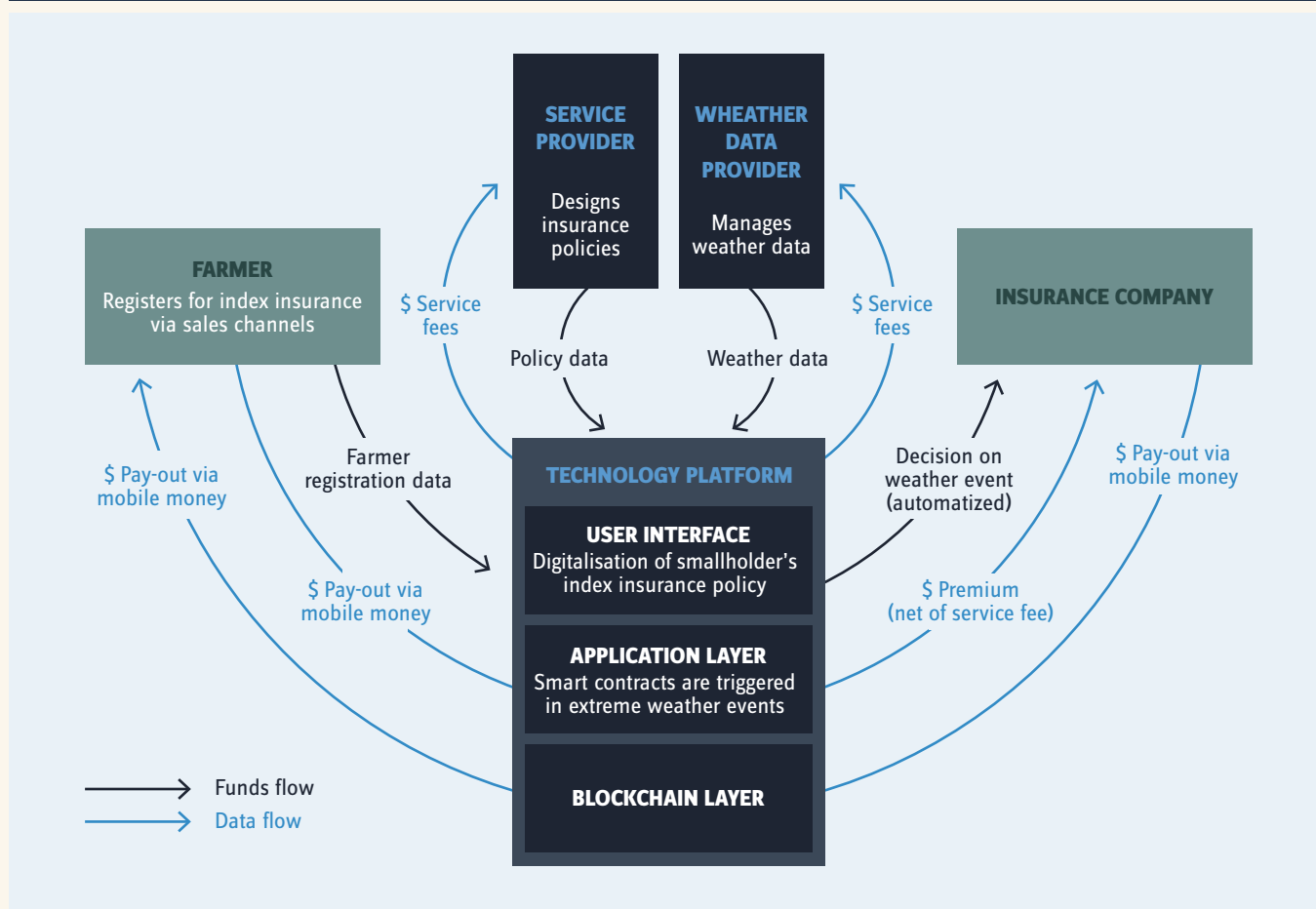
a one-stop-shop insurance service that the different stakeholders can use to design smart contracts and make automated weather decisions based on adequate timing.

Financing mechanism of the Sub-Saharan blockchain project

The project is mobilizing USD 11.6 million of private equity and venture capital for business development and up-front investment. Another USD 10.8 million comes from public grants for premium subsidies and USD 5 million of concessional debt for the insurance company to manage the risk pool.

The role of private finance in this project allows the blockchain and user interface to be developed on the basis of what would otherwise be an unviable business model (Climate Finance Lab, 2019).

Figure 10: Flow of funds and data in the Blockchain Climate Risk Crop Insurance project



Source: Climate Finance Lab, 2019.

4.3.2. Debt financing

From the point of view of the investor, debt instruments are less risky than equity, as they offer a predetermined return. For the private sector, loans represent opportunities where access to one's own finance is limited. Commercial non-concessional debt, however, can be hard to come by in the case of climate finance. Multilateral financing mechanisms have opened the way for concessional loans that are especially useful for renewable energy, energy efficiency and other infrastructure projects that are capital-intensive and require long-term funding.

Nevertheless, commercial banks and development banks increasingly offer dedicated loans for mitigation and adaptation projects, some of them with concessional features. The advantage of a concessional loan is that the project can obtain preferential credit lines, which can also be combined with grants from climate funds to lower the risk for private companies. These loans can be senior, subordinated or quasi-equity, depending on the desired level of risk for the project. The main goal of green credit lines is to overcome market and cost barriers.

Specifically for microfinance, micro, small, and medium-sized enterprises (MSMEs), particularly in developing countries, lack access to traditional credit lines due to their limited capital, assets, collateral and structure. Financial institutions develop and offer small-scale loans to low-income businesses or individuals to undertake climate mitigation or adaptation activities. Many of these instruments support rural and cooperative projects. One example of this is presented below:

Debt climate financing in Rwanda

An example of innovative debt climate financing is the [Solar Securitization for Rwanda](#) project, which aims to pool loans from solar companies, creating a tradable asset-backed security with the aim of expanding the market. A Special Purpose Vehicle (SPV) will be used to underwrite the loans, and a trustee will oversee the flow of funds. The main point for households is to make payments to solar companies, who will securitize assets through the SPV. The SPV allows solar developers to pledge their assets and have an investment structure for the loans. These loans are divided into tranches which are sold to investors, the SPV trustee having the final say on repayment and servicing. The flexibility of the SPV aims to offer senior and

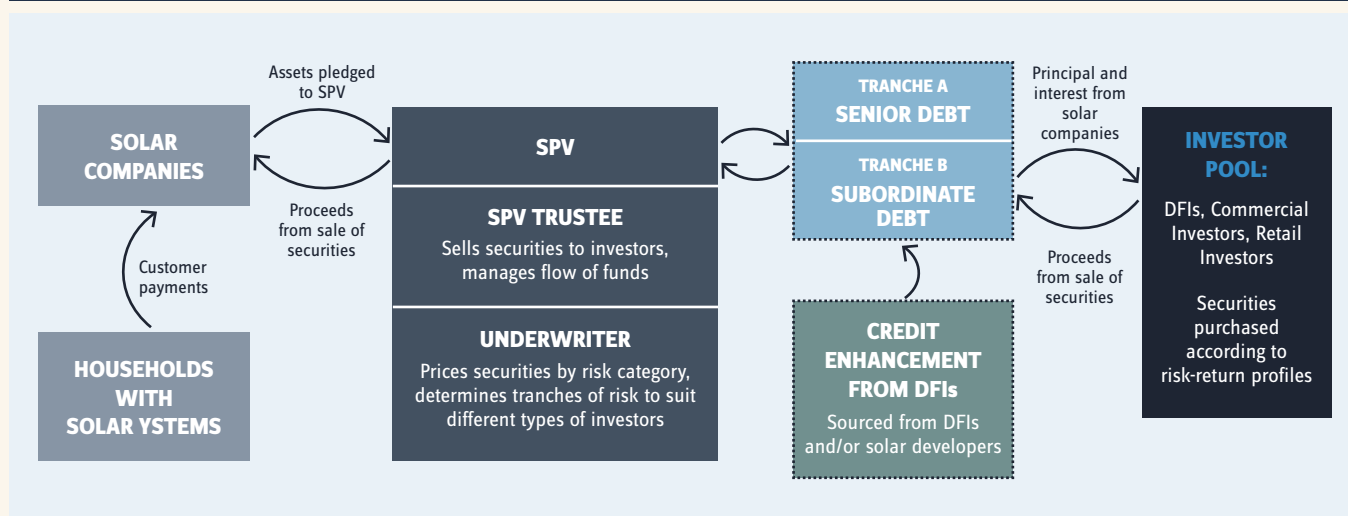
subordinate debt for investors to match different returner risk preferences.

Financing mechanism of the solar securitization project

The project will use a USD 1 million grant to set up a securitization structure, together with up to USD 10 million of concessional debt, USD 25 million of private debt and USD 3 million in retail debt.

The first issuance of debt can be scaled up to reach USD 100 million in size, thus benefitting two million households (Climate Finance Lab, 2019).

Figure 11: Financing mechanism for the Solar Securitization for Rwanda project



Source: Climate Finance Lab, 2019.

4.4. Public sector's financial role

4.4.1. Blended finance

National governments lack public finance and need access to climate finance mechanisms to realize their climate ambitions. DFIs are an essential partner for the public sector in this respect, as are climate funds and facilities. A primary climate ambition for governments and public-sector institutions is to open new markets, this facilitating investment flows, which drives private capital to develop climate projects faster. With the help of concessional funds, blended finance structures diversify climate instruments, combining debt, equity, grants and guarantees. For instance, climate finance from the GCF can be channelled through multilateral development banks (MDBs) for a national government to combine with public finance in order to support the operationalization of mitigation or adaptation programs for diverse sectors. This also allows the local and small-scale private sector, including MSMEs, to capitalize on local interventions where financing schemes are limited (CFLI, 2019). One example is outlined in the next text box:

Blended climate finance in Mauritius

As one of the low-carbon initiatives identified in its TNA, Mauritius is developing a twenty-year national project, “Accelerating the transformational shift to a low-carbon economy”, that is directly linked to the country’s NDC. The project is using blended finance to allow three components under this project to be implemented:

1. Institutional strengthening of the Mauritius Renewable Energy Agency
2. Improvement of Grid Absorption Capacity followed by PV deployment
3. Provision of PV mini-grids on the outer island of Agalega as part of the remote SIDS cases

The Mauritius project uses USD 122 million in concessional finance and grants from GCF, UNDP and the national government. This is combined with USD 37.9 million in senior loans from AFD and co-finance from the private sector.

Table 11: Financing structure for the GCF supported project in Mauritius

Component	Sub-component (if applicable)	GCF financing (US\$ m)	Co-financing	
			Source	Amount (US\$ m)
1. Institutional strengthening for renewable energy	1.1 Institutional strengthening of MARENA	1.1	MEPU	1.0
			UNDP	0.08
2. Improving Grid Absorption Capacity followed by PV deployment	2.1 Installation of Battery Energy Storage System and accompanying software for grid to absorb up to 185 MW of intermittent RE	10.9	UNDP	1
			CEB	2
			AFD	17
	2.2 Smart grid	2.7	CEB	1
			AFD	1.7
	2.3 PV deployment	12.7	CEB	119
			AFD	19.2
3. PV mini-grids on the outer island of Agalega	3.1 PV mini-grids on the outer island of Agalega	0.81	Government of Mauritius	0.9
			UNDP	0.3
Total		28.21		163.18

Source: GCF, 2017.

AFD: French Development Agency; CEB: Central Electricity Board; MARENA, Mauritius Renewable Energy Agency; MEPU: Ministry of Energy and Public Utilities.

4.4.2. Financial incentives

One of the main roles of the public sector is to offer finance and policy incentives to accelerate climate change investments, including policy-risk guarantees, green taxes, tax incentives feed-in tariffs and subsidies, among others (GCF, 2019). However, this type of incentive can place a burden on the national budget, which is why such incentives tend to be time-bound, solely to provide an initial push for market development. Incentives also tend to distort markets: it might be just as efficient and more appropriate to remove existing incentives on unwanted technologies and practices, e.g. removal of fossil fuel subsidies.

After this further elaboration of instruments and suppliers, it is fair to conclude that it is often in relation to the combination of these instruments and their suppliers that the financial platform for implementation of the project or investment will be defined. The objective is to structure the most profitable combination of instruments that achieves the objective of making the investment viable for the private sector and imposing the least possible strain on scarce public finances.

Having established which financial instruments are available and their suppliers, the following sections will move to a description of two central financing principles, concessionality and incremental cost, which will structure the argument for why the specific financial instruments selected are the most appropriate.

4.5. Concessional finance

The concept of concessionality expresses how “soft” finance is being provided, that is, how favourable the terms are, e.g. compared to a regular market instrument. Concessionality involves a continuum with a range of possibilities.

At the one end of the continuum is a grant. A grant can be considered a fully concessional instrument, as the funds are provided without any repayment being required. At the other end of the continuum, a loan at market terms or a market rate would have no concessionality, as there is no favourable term attached to it. In simple terms, if the normal interest rate for a loan is 10%, but a loan with a favourable 5% rate is provided, the concessionality of that loan, or “grant equivalent”, would be the present value of the 5% difference.

While the example above describes a grant and a loan, as well as an interest rate, there are other ways of expressing the degree of concessionality:

- Concessional loan, low interest rate (as above), long payback periods, or extended grace periods.⁷ Subordinated loan, also known as “first Loss” or “junior loan”, where the financial institution agrees to take the first loss and that others should paid back first in the event of a default
- Capital investment (equity): losses (and profits) are shared
- Guarantees: provided by financial institutions, which make good the losses of other investors in case of default
- Reimbursable grants: must be paid only under certain conditions, e.g. if they prove to be profitable

7
Period during which the borrower can refrain from paying instalments from the time the loan is issued, or time allowed for payment beyond the due date of instalments without any penalty fee.

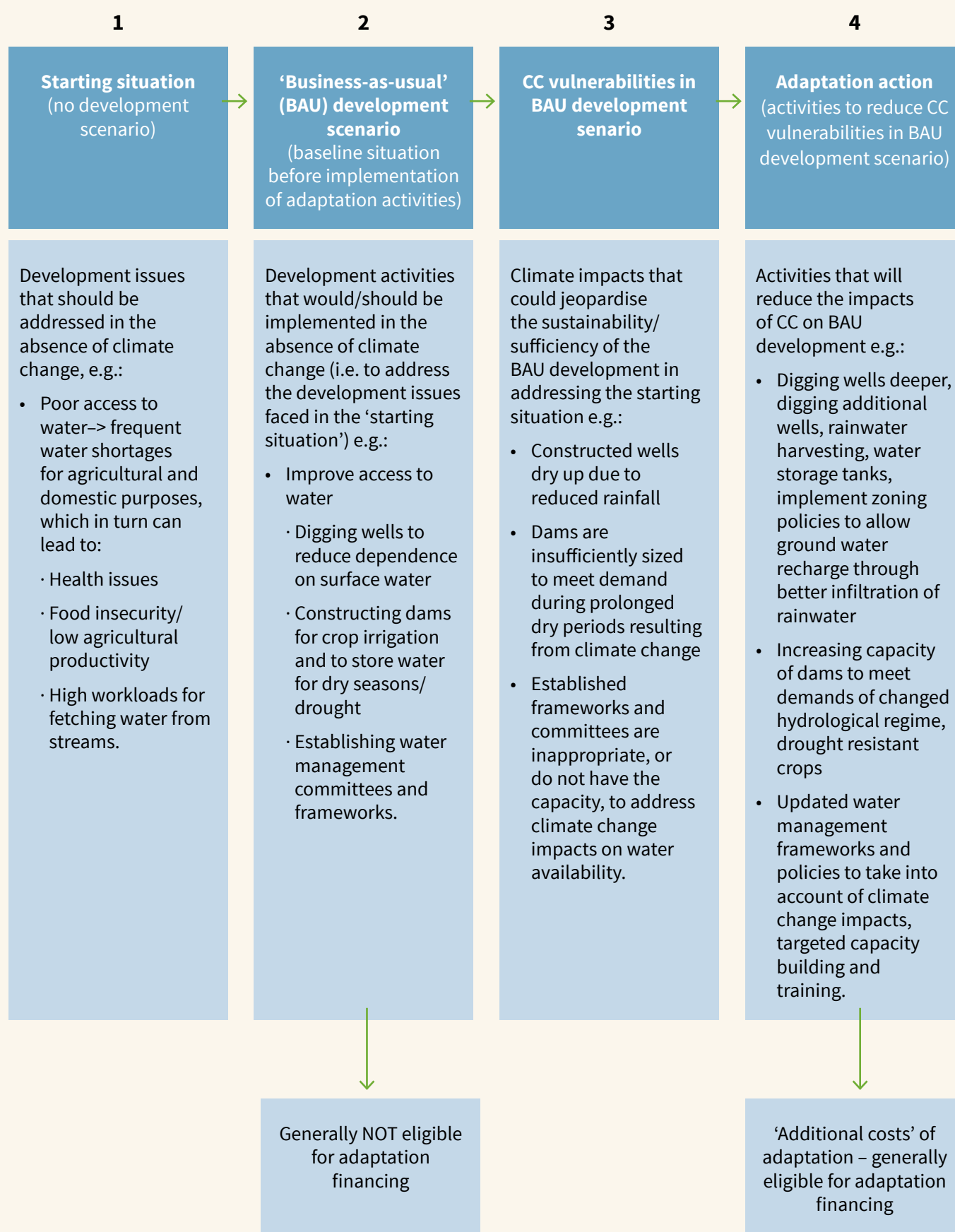
The rationale for concessionality within climate finance is that some climate investments need to be given favourable conditions because the market is not yet providing these investments itself: e.g. climate action is under-valued or under-priced (and often not privatised), leading to sub-optimal decisions and investments, such that the necessary climate action would not take place unless concessionality were applied. Concessionality is often reliant on public finance. As mentioned earlier, scarce public finance should be used to catalyse private finance, it being vital that the public finance is not replacing private finance on market terms, but only being used where concessionality is needed. It is therefore necessary to establish the “minimum level of concessionality” (on the continuum), while ensuring that the concessional finance does not “crowd out” the private sector or distort the markets, but instead addresses the root causes of market failure.

4.6. Incremental cost

Incremental cost is a term often used in climate finance. It means the additional expenses (costs) of producing the necessary outputs that result in climate adaptation and mitigation. It can be defined as the additional costs of adaptation or mitigation. Most adaptation and mitigation interventions are (and should be) closely integrated into “regular” development planning and investments. For instance, infrastructure investments need to be climate-resilient or climate-proofed, and energy efficiency measures need to be considered in property investments. However, these extra costs or incremental costs are not always covered as part of the investment. It is thus of vital importance for any investment to clearly delineate the costs of business as usual (BAU) development (i.e. the investments in development that would or should happen even in the absence of climate change) and the costs of implementing the activities necessary to make development less carbon-intensive and more resilient to the impacts of climate change than the BAU scenario. In practice, separating BAU development costs or non-climate costs from the costs of adaptation and mitigation dollar by dollar is a challenge. A degree of approximation and estimation is therefore needed and is generally accepted. For some investments, the entire intervention will deliver climate outputs, and there will be no returns on the investment. In such cases the full costs of the investment can be applied for. The concept of net costs accounts the economic benefit of the investment in terms of the mitigation and adaptation outputs and their returns. The returns are then subtracted, and the costs are reduced to the net cost.

The text box on page 42 provides a schematic example of the thought process needed to present the adaptation rationale and incremental cost argument to a potential project donor.

Schematic presentation of the adaptation rationale and additional cost argument



Source: Christiansen, et al. 2012: *Accessing International Funding for Climate Change Adaptation: A Guidebook for Developing Countries*

Cost-effectiveness and efficiency regarding financial and non-financial aspects – Financial adequacy and appropriateness of concessionality

- Proposed financial structure (funding amount, financial instrument, tenor and term) is adequate and reasonable in order to achieve the proposal's objectives, including addressing existing bottlenecks and/or barriers
- Demonstration that the proposed financial structure provides the least concessionality needed to make the proposal viable
- Demonstration that the Fund's support for the programme/project will not crowd out private and other public investment

Cost-effectiveness and efficiency regarding financial and non-financial aspects – Cost-effectiveness (mitigation only)

- Estimated cost per t CO₂ e (PMF-M Core 2) as defined as total investment cost/expected lifetime emission reductions, and relative to comparable opportunities

Amount of co-financing – Potential to catalyse and/or leverage investment (mitigation only)

- Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources
- Co-financing ratio (total amount of co-financing divided by the Fund's investment in the project/programme)
- Potential to catalyse private- and public-sector investment, assessed in the context of performance on industry best practices
- Expected indirect/long-term low-emission investment mobilized as a result of the implementation of activity
- (See text box on page 47 on co-finance for more information)

Programme/project financial viability and other financial indicators – Expected economic and financial internal rate of return

- Economic and financial rate of return with and without the Fund's support (i.e. hurdle rate of return or other appropriate/relevant thresholds)

Programme/project financial viability and other financial indicators – Financial viability in the long run

- Description of financial soundness in the long term (beyond the Fund's intervention, when the finance expires/stops)

Industry best practices – Application of best practices and degree of innovation

- Explanations of how best available technologies and/or best practices, including those of indigenous peoples and local communities, are considered and applied. If applicable, the proposal specifies the innovations or modifications/adjustments made based on industry best practices.

5 ■ Building blocks of a proposal: preparing the first draft proposal



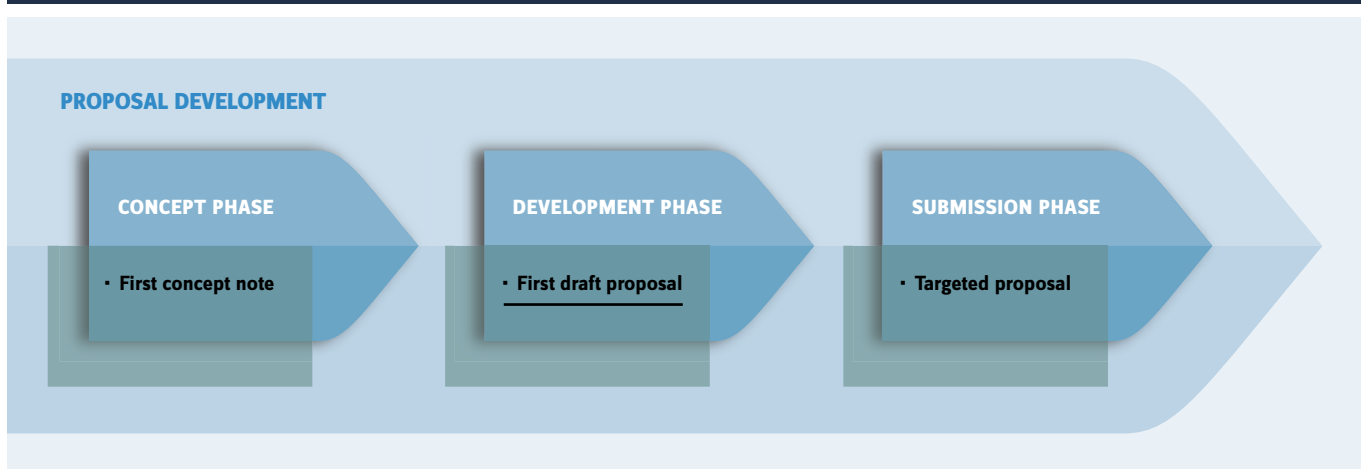
This chapter builds upon information provided in the TNA Guidebook, [Accessing International Financing for Climate Change Mitigation](#) (Limaye, D. R., & Zhu, X., 2012). It provides information on the common building blocks of funding proposals and the information that is likely to be needed to respond to climate finance providers' requirements. It therefore guides project proponents in drawing up a document which may then be tailored to different finance providers.

Countries and project developers seeking finance for climate change interventions need to understand the specific requirements of the financing sources from which they seek assistance. While many multilateral and bilateral financiers provide technical assistance through third parties to prepare proposals, the recipient country is usually responsible for their actual preparation. Because finance is limited, most multilateral and bilateral financiers evaluate proposals through a competitive process to select the interventions that are best aligned with the scope of the specific institution. Therefore, the preparation of high-quality proposals that are responsive to the requirements of the proposed sources of financing is a critical factor in making a successful application.

The content of any funding proposal should be developed keeping the specific funding source in mind and using its required format. Formats vary, but in general terms an effective proposal should address the following elements, which ideally should be initiated or drafted during TAP preparation:

1. Project design and implementation plan
2. Implementation partners
3. Stakeholder engagement
4. Technical assistance and capacity-building needs
5. Budget and use of funds
6. Impact potential and expected results
7. Monitoring progress and impact indicators
8. Risks and risk mitigation

Figure 12: Drafting a draft proposal during the development phase



Source: authors.

In the following, these eight elements will be elaborated, though at various depths, in line with this being a guide to finance. Certain issues such as gender⁸ and environmental and social safeguards (ESG)⁹ cut across these elements and need to be integrated throughout the proposal. Many finance providers, including the GCF, GEF, AF and CIF, require a gender-responsive approach and ESG in their supported interventions. Incorporating gender-sensitive aspects, gender-disaggregated indicators and Gender Action Plans will add value to the design of the proposal, deliver additional positive impacts and improve the effectiveness of its implementation.

1. The **project design** and its objectives are at the core of the process. The design can be summarized using, e.g., a Theory of Change and a Logical Framework Approach or using other models and can be justified using context-specific data, e.g. from market research and assessments. The project design presents a description of the business case and financing, as described in Chapter 3. The **implementation plan** provides a description of the project development schedule, illustrating project steps and milestones, including production, marketing, servicing, evaluation through to closing, or pay back, or similar.
2. The proposal also needs to provide a description of its **implementation partners** together with each partner's functions, roles and responsibilities related to the activities in the implementation plan. If the project involves the public sector, it must be integrated into the relevant sector institutions, their sectoral planning and existing development activities. This may likewise entail involvement of the line ministry/ies and other relevant sector institutions, experts and stakeholders in a Committee or Advisory Council.

The implementation partners should be carefully selected based on their respective mandates, capacities, previous experience in managing and implementing similar interventions, and potential financiers' requirements.

3. **Programme stakeholders** should be identified, and a description of their consultation and engagement should be provided. Active stakeholder participation builds understanding and support, leading to effective implementation. Donors and financiers might even require evidence of stakeholder engagement. E.g. the GCF requires proposals to be developed in consultation with civil-society groups and other relevant stakeholders, with particular attention being paid to gender equality, and to be in agreement with the fund's ESG and stakeholder consultation guidelines. One approach we advise is to set up an advisory committee of stakeholders to provide informal advice to the programme during operations and to provide a channel for communications.
4. Interventions will in many cases need **technical assistance and capacity-building**, potentially not only for the development phase, but also for actual implementation. Technical assistance can be used to build capacity, e.g. training, among implementation partners and/or deliver actual inputs needed for implementation. Technical assistance can also provide support to:

⁸ See the TNA, *Guidance for a gender-responsive Technology Needs Assessment*, and the GCF Manual, *Mainstreaming gender in Green Climate Fund projects* for more information.

⁹ See the GEF, *Environmental and Social Safeguard Standards* for more information.

- i. business planning,
- ii. marketing support,
- iii. structure transactions,
- iv. assistance to local finance institutions to familiarize them with a specific technological niche and the design of financing packages for end users,
- v. confirming the technical soundness of proposed projects, and
- vi. setting up a robust finance mechanism

It is vital to consult one's implementation partners to define what technical assistance and capacity-building needs they have, to perform their given roles in the project.

5. The programme's **budget and use of funds** must be specified and broken down in the funding request, as described in Chapter 3 on how to construct a business case, but it should also provide more in-depth details of the costs related to project management, evaluation and monitoring and the use of funds for concessional co-finance (see text box below on co-finance), such as loan loss reserves or other credit enhancements or direct capital subsidies.

Co-finance

One of the principles often applied by development or climate finance institutions is that the project or investment should seek to incorporate appropriate levels of co-finance, meaning that others are also providing money or funds to implement the intervention. Co-finance shows the commitment of the project proposer (and potentially other financiers), and it ensures that the impact of scarce development or climate financial resources that are available is maximized. Donors providing concessional finance expect the non-climate related costs are covered through co-finance, while they will provide finance for the additional climate costs of the intervention, as described in the previous section.

*Co-finance types can vary and be defined in different ways. **Direct** co-finance consists of public or private financial resources flowing alongside the finance from the donor or climate finance institution into the investment in a direct causal relationship (the co-finance exists because of the finance from other sources). E.g. an MDB provides a senior loan, conditional on the provision of a junior loan by a climate fund. Co-finance can also be **indirect**, meaning*

*finance from third parties that indirectly flows into the intervention, but with causal links. One example is private-sector companies investing equity in a project upon accessing concessional credit lines supported by a climate fund. **Leveraged, mobilized or catalysed finance** includes all direct and indirect co-finance that can reasonably assumed to be a result of the finance from the development or climate finance institution. Finally, **sequenced finance** denotes finance flows alongside the concessional finance, but earmarked for other outcomes and with no causal relationship. An example is a flood early warning system and climate-resilient riverbank infrastructure, which are financially non-related.*

These types of co-finance are not mutually exclusive, as there are slight overlaps and grey zones where it can be difficult to determine the actual type: e.g. causal links between finance but with a good proposal should strive to present the commitment in terms of co-finance, and describe the financial impacts of the concessional finance in terms of leveraged finance.

6. The proposal should present the **impact potential** and **expected results**. To present the impact potential of the intervention, it is necessary to establish a baseline consisting of the current situation and a BAU scenario. Direct impacts are those directly related to the scope of the activity, e.g. installed MW of RE, GHG emissions reductions, number of SMEs with increased resilience etc. Indirect impacts are related to the broader impact of the intervention, such as market transformations and leveraged investments.

GCF assessment criteria for impact potential

The GCF applies the following criteria in assessing an intervention's impact potential:

Mitigation impact: Contribution to the shift to low-emission sustainable development pathways

- Expected tonnes of carbon dioxide equivalent (tCO₂ e) to be reduced or avoided
- Degree to which activity avoids lock-in of long-lived, high-emission infrastructure
- Expected increase in the number of households with access to low-emission energy
- Degree to which the programme/project supports the scaling up of low-emission energy in the affected region by addressing key barriers
- Expected number of MW of low-emission energy capacity installed, generated and/or rehabilitated
- Expected increase in the number of small, medium and large low-emission power suppliers, and installed effective capacity
- Expected decrease in energy intensity of buildings, cities, industries and appliances
- Expected increase in the use of low-carbon transport
- Expected improvement in the management of land or forest areas contributing to emission reductions
- Expected improvement in waste management contributing to emission reductions (e.g. the change in the share of waste managed using low-carbon strategies and/or the change in the share of waste that is recovered through recycling and composting); and/or
- Other relevant indicative assessment factors, taking into account the Fund's objectives, priorities and result areas, as appropriate on a case-by-case basis

Adaptation impact: Contribution to increased climate-resilient sustainable development

- Expected total number of direct and indirect beneficiaries, (reduced vulnerability or increased resilience); number of beneficiaries relative to total population, particularly the most vulnerable groups
- Degree to which the activity avoids lock-in of long-lived, climate-vulnerable infrastructure
- Expected reduction in vulnerability by enhancing adaptive capacity and resilience for populations affected by the proposed activity, focusing particularly on the most vulnerable population groups and applying a gender-sensitive approach
- Expected strengthening of institutional and regulatory systems for climate-responsive planning and development
- Expected increase in generation and use of climate information in decision-making
- Expected strengthening of adaptive capacity and reduced exposure to climate risks
- Expected strengthening of awareness of climate threats and risk-reduction processes; and/or
- Other relevant indicative assessment factors, taking into account the Fund's objectives, priorities and result areas, as appropriate on a case-by-case basis

7. A plan for **monitoring progress and including impact indicators** to track implementation of the project or programme and achievement of the objectives must be provided. Having a sound monitoring plan with appropriate indicators and means of verification to track progress with implementation against the budget and expenditure will ensure that the financiers will be able to assess the performance of their investments and that corrective actions can be taken in case of underperformance. The impact indicators should be directly aligned with the direct impacts mentioned above, and as far as possible also cover the indirect impact of the intervention.¹⁰
8. As potential partners and financiers are attentive to potential risks, interventions with poorly mapped **risks and risk mitigation plans** will be regarded as insecure investments.¹¹ First and foremost, risks need to be identified in line with the outline in Chapter 4, and risk mitigation measures designed. The risks need to be categorized according to their likelihood and severity. The economic risks related to the activities should be addressed through a robust financing mechanism. Technology risks related to the introduction of new technologies could be addressed through pilot activities and demonstrations. Capacity-building activities can mitigate risks related to a lack of capacity. Awareness campaigns and marketing can contribute to mitigating social behavioural resistance to the required changes. In addition, support providers usually demand the provision of environmental, social and gender safeguards by assessing the risks of and preventing potentially negative environmental, social and gender effects from implementation of the activities, as well as seizing opportunities for positive impacts within these areas.

¹⁰
For more information on how to assess the impacts of climate interventions and identify the relevant impact indicators, see the [ICAT Series of Assessment Guides](#).

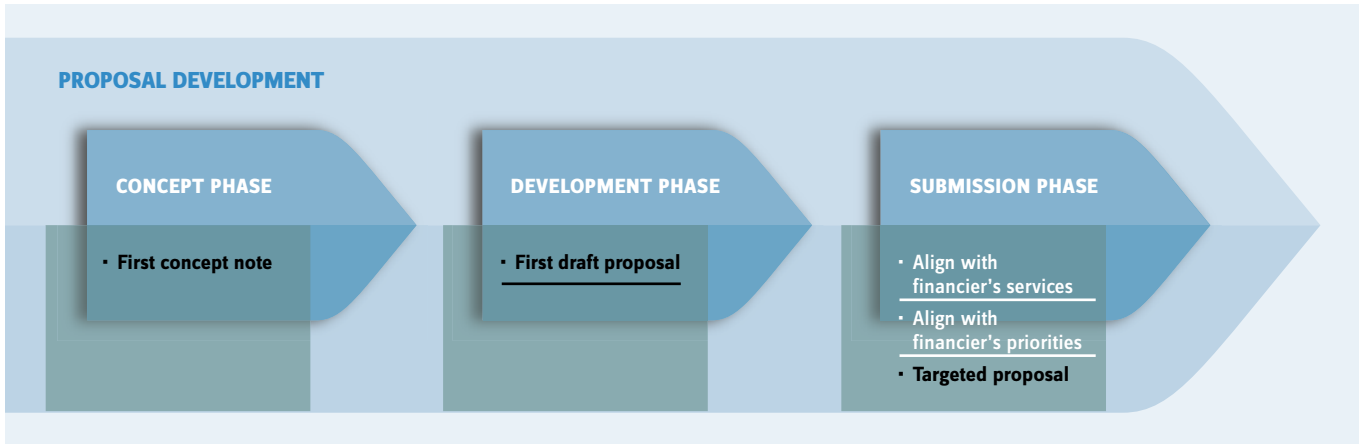
¹¹
The GCF proposal template places substantial weight on an elaborate risk assessment, not only by requiring information on how risk mitigation measures can reduce the financial, technical, operational, social and environmental risks of the project, but also on the risks that may arise during the project's lifetime. As to the latter, the GCF refers to risks that do not currently pose a threat to the project's success but may arise somewhere on the horizon and therefore need to be monitored (Ryfisch et al., 2018).

6 ■ Selecting the appropriate financial partners for a targeted proposal



This chapter presents information on different sources of climate finance, their respective focus areas and use of financial instruments, and general aspects of their operational modalities. It will guide project proponents in identifying appropriate climate finance providers, means of access, and considerations in structuring a proposal targeted at financiers' services and priorities.

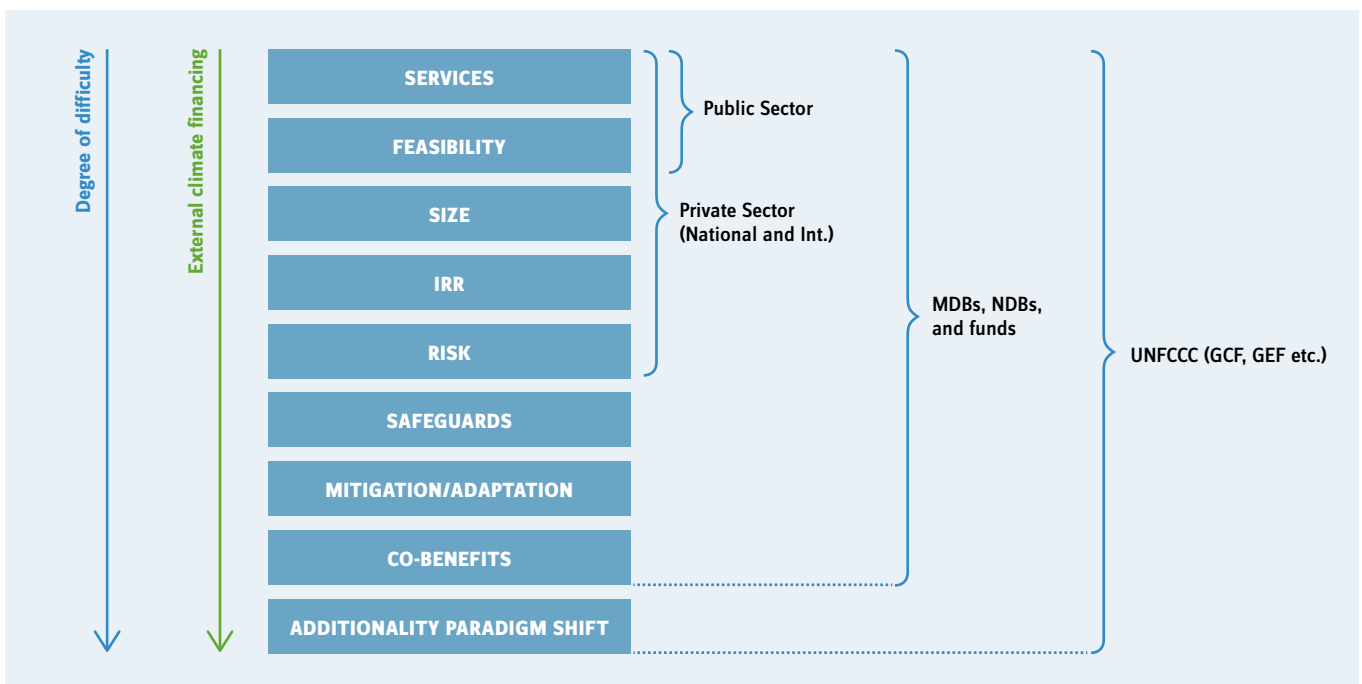
Figure 13: Aspects to consider in making a targeted proposal



Source: authors.

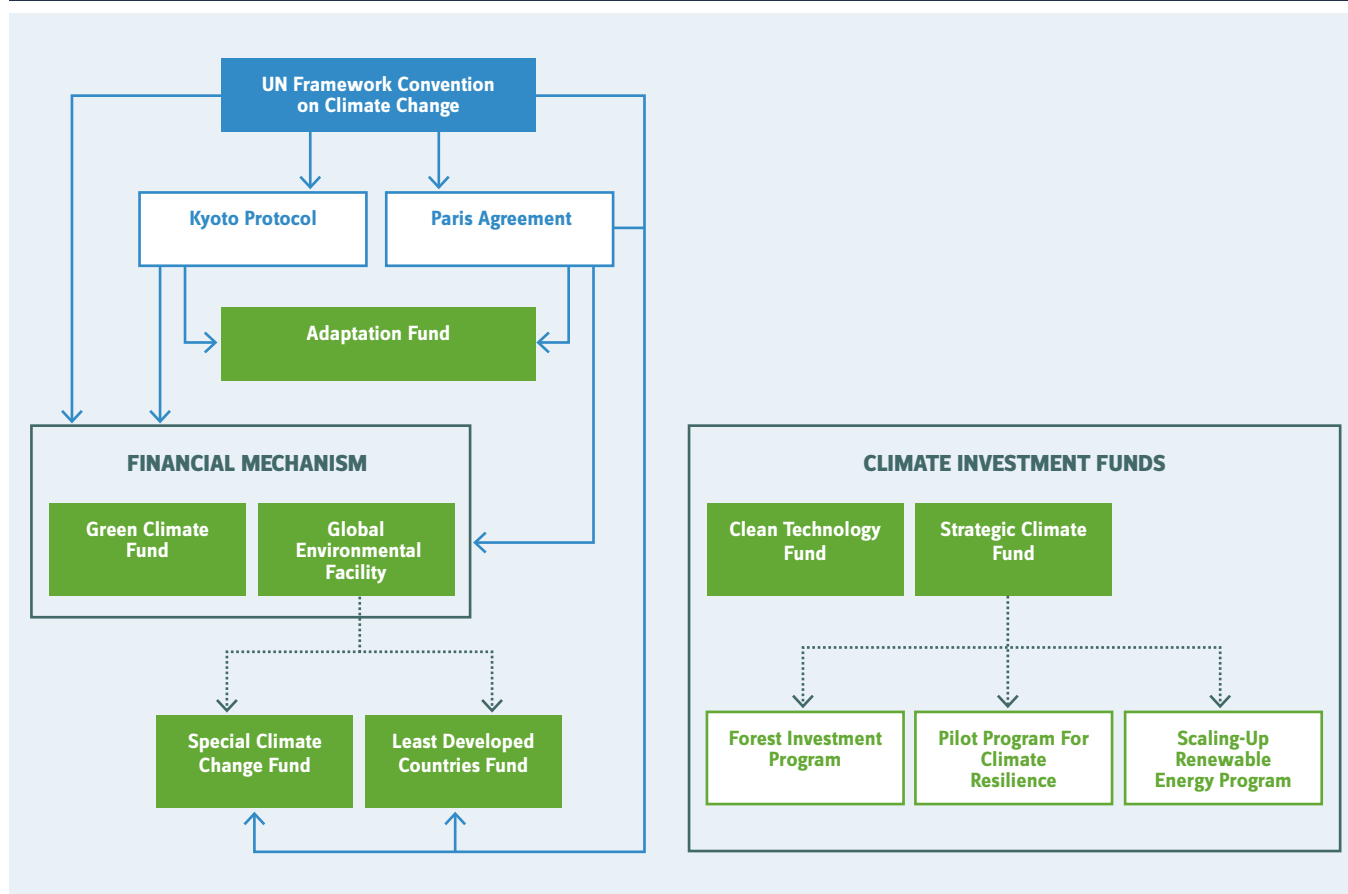
Identification of the appropriate financial partner(s), depending on the interventions' respective financing challenges and needs, is crucial to increase the chances of success and not incur extensive costs, time and energy in preparing unsuccessful proposals. There are certain aspects to consider when looking for sources of finance related to the scope of the intervention and the degree of concessionality of financing required. In general terms the higher the need for external financing and concessionality, the more requirements donors and financiers will make and the more difficult will it be to structure a proposal responding to these requirements.

Figure 14: Priorities of different finance providers



Source: Lütken, 2018.

Figure 15: Relationship of funds to international climate agreements



Source: WRI, 2017: *Future of the Funds: Exploring the Architecture of Multilateral Climate Finance*

6.1. Multilateral climate funds

Multilateral climate funds only represent a small proportion of international climate finance flows, but they are nonetheless important contributors to finance climate action that would otherwise not be available under normal market conditions, and they play a crucial role in leveraging additional private finance.

The **Global Environment Facility**¹² (GEF), established in 1991, is an operational entity of the financial mechanism of the UNFCCC and the Paris Agreement. The GEF has a long track record in environmental funding and is also the financial mechanism for the conventions on biodiversity, persistent organic pollutants, desertification and mercury. The GEF works through accredited GEF Agencies¹³ to implement and execute their projects. The GEF also administers the **Least Developed Countries Fund**¹⁴ (LDCF), with its special focus on supporting LDCs in implementing National Adaptation Plans of Action (NAPA), and the **Special Climate Change Fund**¹⁵ (SCCF), targeting key sectors for adaptation and technology transfers.

The **Adaptation Fund**¹⁶ (AF) has been operational since 2009, serving the Paris Agreement and assisting developing countries in building resilience and adapt to climate change. The AF pioneered direct access to climate finance for developing countries through accredited National Implementing Entities.

¹² <https://www.thegef.org>

¹³ You can access the list of GEF Implementing Agencies through this link: <https://www.thegef.org/partners/gef-agencies>

¹⁴ <https://www.thegef.org/topics/least-developed-countries-fund-ldcf>

¹⁵ <https://www.thegef.org/topics/special-climate-change-fund-sccf>

¹⁶ <https://www.adaptation-fund.org>

The Green Climate Fund¹⁷ (GCF) is another operational entity of the Financial Mechanism of the UNFCCC and the Paris Agreement. It implements climate projects and programmes through private or public, non-governmental, sub-national, national, regional or international entities accredited by the fund.¹⁸ Project preparation activities can be financed through the GCF Readiness Programme and the Project Preparation Facility or PPF, implemented through readiness delivery partners.¹⁹ Although a younger fund, it is expected to become the primary channel through which international public climate finance will flow over time and is intended to fund the expected paradigm shift (see text box page 55 on Paradigm shift) toward climate-resilient and low-carbon development in developing countries (CFU, 2019).

All the funds mentioned above operate through a specific entry point at country-level, e.g. the “focal point” in the case of GEF, and the “National Designated Authority” in the case of GCF.^{20 21 22} These entry points are typically government staff and selected relevant government institutions, and they form the interface and official communication channel between the country and the funds. Their role is to inform and engage country stakeholders in the funds and to ensure that applications to the funds are aligned with national priorities and the scope of the funds. For instance, they will issue a “no objection letter” indicating support to the project in the context of GCF. They also play a central role in the development of country programmes, which lay the bases for the country’s financing priorities and project pipelines related to the fund. It is therefore crucial to engage with these entry points early in the process and to obtain their approval and commitment to the project. Ideally, the TAP should be part of the basis of the design of national country-programme project proposals that are intended to be financed from the funds.

17
<https://www.greenclimate.fund>

18
You can access the list of GCF Accredited Entities through this link: <https://www.greenclimate.fund/about/partners/ae>

19
You can access the list of GCF readiness delivery partners through this link: <https://www.greenclimate.fund/readiness/partners>

20
A list of GEF Operational Focal Points can be accessed through this link: https://www.thegef.org/focal_points_list

21
A list of the GCF’s National Designated Authorities can be accessed through this link: <https://www.greenclimate.fund/about/partners/nda>

22
A list of the Adaptation Fund’s Designated Authorities can be accessed through this link: <https://www.adaptation-fund.org/apply-funding/designated-authorities>

23
<https://www.climateinvestment-funds.org>

Climate Investment Funds²³ (CIFs) are managed by the World Bank. They operate in partnership with regional development banks, including the African Development Bank (AfDB), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD) and the Inter-American Development Bank (IDB) (CFU, 2019). The national governments, together with the relevant development bank and country stakeholders, need to design an investment plan, a country programme defining the climate-related long-term investments required. Once the country programme has been endorsed by the CIF, the projects included in the investment plan are specified and the implementation modalities described. Projects are then gradually approved and implemented. Because of this process, it is crucial to engage early on with the government and include the specific project concept in the country programme at an early stage.

CIFs finance programmatic interventions in developing countries with the objective of improving understanding of how public finance is deployed to assist the transformation of development paths. CIFs include the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF), the latter being composed of three targeted programmes:

1. the Pilot Program for Climate Resilience (PPCR), providing grant finance (up to 1.5m USD) to prepare countries’ Strategic Programs for Climate Resilience, grants for detailed preparation of activities in the Strategic Program (approx. 1.5m USD for a single country pilot), and grants and loans to cover additional costs associated with mainstreaming climate resilience into investments.

2. The Forest Investment Program (FIP) is designed to support developing countries' REDD efforts and promote sustainable forest management through grants, concessional loans, guarantees, or equity.
3. The Scaling-Up Renewable Energy Program for Low Income Countries (SREP) provides finance for renewable energy use and generation. Financial instruments include grants and other concessional financial instruments.

The funds that provide other financial instruments than grants have the highest fund contribution per project, averaging around USD 42 and 49 million per project for the GCF and CTF respectively, which also reflects the specific focus of these funds on the transformational impact of their investments. These funds do not have a long history or track record of approving projects, but the GEF and its administered funds have the advantage that they are managed by the climate fund that has been operational the longest and that has the longest track record of approved projects.

Table 12: Financial instruments available to different funds

Fund	Grants	Loans	Risk Mitigation Instruments	Equity
GEF	X *			
LDCF	X			
SCCF	X			
AF	X			
CTF	X	X	X	X
FIP	X	X	X	X
PPCR	X	X	X	X
SREP	X	X	X	X
GCF	X	X	X	X

* GEF provides mainly grants but is also able to offer the other financial instruments through its non-grant pilot programme.

Source: WRI, 2017: *Future of the Funds: Exploring the Architecture of Multilateral Climate Finance*

As of August 2020, the GCF financial instrument portfolio of the currently approved 128 projects with a cumulative GCF funding of 5.3 billion USD (13.6 billion co-finance) is divided into the following shares: 50% grant, 40% loan, 4% equity, 4% result-based payments and 2% guarantees (GCF,2020). The CTF's use of financial instruments includes grants, concessional loans and guarantees aimed at increasing the attractiveness of investments in low-carbon technologies. Grants are provided to cover the additional costs needed to make the project viable. The general terms of CTF financing are (see Table 13):

Table 13: General CTF financing terms

	Harder concessional	Softer concessional
Maturity (years)	20	40
Grace period (years)	10	10
Principal repayments (Yr 11-20)	10%	2%
Principal repayments (Yr 20-40)	N/A	4%
MDB fee	0.18%	0.18%
Service charge fiscal year 09-10	0.75%	0.25%
Grant element	45%	75%

Source: CFU, 2020

In addition to the climate finance providers mentioned above, and with special reference to preparatory support, the operational arm of the [UNFCCC Technology Mechanism, the Climate Technology Centre and Network \(CTCN\)](#)²⁴, provides technical assistance at countries' request at no cost. The aim is to accelerate the transfer of climate technologies at the request of developing countries through countries' national focal points, the National Designated Entities (NDE).²⁵ Reaching out and engaging the country's NDE could initiate a dialogue resulting in access to finance to implement preparatory activities, such as feasibility studies, training and capacity-building or analytical work, that are needed to structure a strong proposal.

For a more extensive list and description of climate funds, see the World Research Institute's publication [Future of the Funds: Exploring the Architecture of Multilateral Climate Finance](#).

24
<https://www.ctc-n.org>

25
You can find a list of countries' NDEs through this link: <https://unfccc.int/ttclear/support/national-designated-entity.html>

Paradigm shift

The GCF uses the following assessment criteria to assess paradigm shift, or the degree to which the proposed activity can catalyse impact beyond a one-off project or programme investment.

Potential for scaling up and replication, and its overall contribution to global low-carbon development pathways being consistent with a temperature increase of less than 2 degrees Celsius (mitigation only):

- **Innovation:** Opportunities for targeting innovative solutions, new market segments, developing or adopting new technologies, business models, modal shifts and/or processes
- **Level of contributions** – Expected contributions to global low-carbon development pathways consistent

with a temperature increase of less than 2 degrees Celsius as demonstrated through:

- **Potential for expanding the scale and impact of the proposed programme or project (scalability)** – A theory of change for scaling up the scope and impact of the intended project/programme without equally increasing the total costs of implementation
- **Potential for exporting key structural elements of the proposed programme or project (replicability)** – A theory of change for replication of the proposed activities in the project/programme in other sectors, institutions, geographical areas or regions, communities or countries

Potential for knowledge and learning – Contribution to the creation or strengthening of knowledge, collective learning processes, or institutions

- Existence of a monitoring and evaluation plan and a plan for sharing lessons learned so that they can be incorporated within other projects

Contribution to the creation of an enabling environment:

- **Sustainability of outcomes and results beyond completion of the intervention:** Arrangements that provide for long-term and financially sustainable continuation of relevant outcomes and key relevant activities derived from the project/programme beyond the completion of the intervention.
- **Market development and transformation:**
 - Extent to which the project/programme creates new markets and business activities at the local, national or international levels
 - Degree to which the activity will change incentives for market participants by reducing costs and risks, eliminating barriers to the deployment of low-carbon and climate-resilient solutions
 - Degree to which the proposed activities help to overcome systematic barriers to low-carbon development to catalyse impact beyond the scope of the project or programme

Contribution to the regulatory framework and policies:

- **Potential for strengthened regulatory frameworks and policies to drive investment in low-emission technologies and activities, promote development of additional low-emission policies, and/or improve climate-responsive planning and development**

- Degree to which the project or programme advances the national/local regulatory or legal frameworks to systemically promote investment in low-emission or climate-resilient development
- Degree to which the activity shifts incentives in favour of low-carbon and/or climate-resilient development or promotes mainstreaming of climate change considerations into policies and regulatory frameworks and decision-making processes at national, regional and local levels, including private-sector decision-making.

Overall contribution to climate-resilient development pathways consistent with a country's climate change adaptation strategies and plans (adaptation only):

- **Potential for exporting key structural elements of the proposal to other sectors, regions or countries (replicability)**
 - A theory of change for replication of the proposed activities in the project/programme in other sectors, institutions, geographical areas or regions, communities or countries
 - Degree to which the programme or project reduces proposed risks of investment in technologies and strategies that promote climate resilience in developing countries
- **Potential for expanding the proposal's impact without equally increasing its cost base (scalability)**
 - Scaling up the scope and impact of the intended project/programme without equally increasing the total costs of implementation

6.2. Multilateral Development Banks

Multilateral Development Banks (MDBs) play a prominent role in delivering multilateral climate finance, not solely as implementing entities for the GEF, SCCF, LDCF, AF and the GCF, but also because most have incorporated climate change considerations into their core lending and operations, as well as providing climate finance with a regional or thematic scope.

Table 14: Overview of multilateral development banks

MDBs	Climate funds and initiatives
World Bank	The World Bank provides climate finance for mitigation and adaptation activities through the Climate Investment Funds, carbon and forestry funds. The bank has committed itself to doubling its climate finance investment to around USD 200 billion from 2021 to 2025, with a strong focus on adaptation and climate action at the country level.
European Investment Bank	The European Investment Bank provides large-scale climate finance in both developing and developed countries through energy and urban funds. The Bank has committed itself to unlocking a trillion EUR for 2030 and will align all financing activities with the Paris Agreement by the end of 2020.
European Bank for Reconstruction and Development (EBRD)	Supports middle-income economies in Europe and Central Asia under its Green Economy Transition approach in the areas of energy & resource efficiency, the circular economy, renewable energy and climate resilience.
African Development Bank (AfDB)	The African Development Bank has a strong focus on energy and green bonds for climate infrastructure projects. It has announced that all investments will be climate-proof. It intends to invest at least USD 6.4 billion over the next five years on climate finance.
Asian Development Bank (ADB)	The ADB strongly supports green technologies, adaptation and risk management in developing countries. Its Climate Change Fund focuses on clean energy, sustainable transport and low-carbon urban development, deforestation and degradation and improved land use management. The ADB has committed USD 80 billion from 2019 to 2030 to tackle climate change.
Inter-American Development Bank (IDB)	The IDB supports small- and large-scale climate projects in Latin-American developing countries. It has committed itself to at least 30% of its investment approvals being climate finance related. The IDB is providing support and finance for implementation of the Paris Agreement through NDC Invest , focusing in the development and implementation of NDCs, including financing mitigation and adaptation interventions.

Table 15: Overview of selected bilateral and national channels for climate finance

Agencies/funds	Climate funds and initiatives
French Development Agency (Afd)	Afd supports large-scale climate finance projects in developing countries. It has committed itself to offering climate mitigation benefits on 50% of its projects and intends to become a 100% Paris Agreement institution by 2022. The Afd offers support to mitigation and adaptation, lately focusing on solar technologies and nature-based solutions.
German Development Agency (GIZ)	GIZ provides climate finance in developing countries for mitigation and adaptation projects through a diversity of national and local initiatives. It has committed itself to become climate neutral by 2020.
German Development Bank (KfW)	Provides grants and concessional loans for climate interventions in developing countries. Focuses on investment projects that enhance mitigation and adaptation replicable activities through large-scale projects.

Table 15: Overview of selected bilateral and national channels for climate finance

Agencies/funds	Climate funds and initiatives
International Climate Initiative (IKI)	IKI is a German government initiative that specifically funds mitigation and adaptation activities, focusing on NDCs, NAMAs and forestry funds. It has provided more than USD 3 billion in climate finance to developing countries.
UK International Climate Fund (ICF)	The UK government provides substantial climate finance through multilateral funds and the NAMA Facility to implement mitigation and adaptation actions in developing countries. It has committed USD 12.7 billion to climate finance to 2021.
Japan International Cooperation Agency (JICA)	JICA provides mitigation and adaptation finance in 39 developing countries. It collaborates with multilateral climate funds and largely focuses on technical cooperation and grants. The Japanese government's development agency has committed itself to providing at least USD 10.5 billion in climate finance.
European Union	The EU spends at least 20% of its budget on climate-related actions. Through the Global Climate Change Alliance Plus (GCCA+) , it has invested more than EUR 450 million in mitigation and adaptation activities. Its goal is to support low-carbon finance through its Action Plan on Financing Sustainable Growth and capitalizing the GCF.

Several developing countries have established National Financing Vehicles (NFV),²⁶ resourced through international finance and/or domestic budget allocations and the domestic private sector, to implement and monitor green and climate action projects through grants, debt and equity financing, and risk-reducing instruments (GGGI, 2019). The [Indonesian Climate Change Trust Fund](#)²⁷ (ICCTF) was one of the first NFVs to be established. Brazil has a national [Climate Fund](#)²⁸, mainly financed by revenues generated from a tax on oil companies, and the [Amazon Fund](#)²⁹, both administered by the Brazilian National Development Bank (BNDES). There are also NFV already established or in the making in Bangladesh, Benin, Cambodia, [Colombia](#)³⁰, [Costa Rica](#)³¹, Ethiopia, Guyana, India, Jordan, the Maldives, Mali, Mongolia, Mexico, the Philippines, [Rwanda](#)³², Senegal, South Africa and [Vanuatu](#)³³, and more countries are planning the establishment of national climate funds to facilitate investments in climate interventions (CFU, 2019; GGGI, 2019). NFVs are great vehicles for facilitating the financing of climate actions, as their independent governance structures can channel finance to projects quickly.

Tool to select appropriate financiers

The NDC Partnership has made available the [Climate Finance Explorer](#), a tool for the identification of appropriate climate finance providers, providing the user with the ability to quickly identify providers of financing services based on their specific needs and profiles.

²⁶ For a more extensive list and a description of NFVs, consult the Green Growth Institute's publication, Review of GGGI's Experience to Design and Operationalize National Financing Vehicles to Finance Climate and Green Growth Policy Implementation.

²⁷ <https://www.icctf.or.id>

²⁸ https://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/Social_and_Environmental_Responsibility/climate_fund_program.html

²⁹ <http://www.amazonfund.gov.br/en/home>

³⁰ <https://fenoge.com>

³¹ <http://funbam.org>

³² <http://www.fonerwa.org>

³³ <https://doe.gov.vu/index.php/ngef/general-information>

Table 16: Grant financing sources for readiness and preparatory activities

GCF readiness sources	Other readiness sources
The GCF Project Preparation Facility provides grant support for mitigation and adaptation activities in developing countries, specifically for building capacity in developing financing applications.	The Adaptation Fund Readiness Programme for Climate Finance offers readiness grants to support countries in building their climate finance capacities. Offers scale-up grants worth USD 100,000 per project.
	The Forest Carbon Partnership Facility FCPF Readiness Fund supports activities in tropical and sub-tropical developing countries aimed at enabling recipient countries to participate in REDD+.*
The GCF Readiness Programme provides grants to strengthen the institutional capacities of GCF focal points, targeting developing countries with the aim of helping entities achieve accreditation with GCF.	The NDC Partnership Climate Action Enhancement Package (CAEP) delivers fast-track support and readiness funds for countries to plan and implement their NDCs and Paris Agreement-related strategies.
	The NDC Pipeline Accelerator assists national and sub-national entities in the Latin American and Caribbean region to plan and design NDC-aligned climate investments.

* REDD+ targets efforts to reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests and enhancement of forest carbon stocks.

Conclusion



Sprinkler irrigation. AgriLife
Today, Irrigation / Flickr

Having conducted a TNA and established a TAP for climate change mitigation and adaptation technology-inclusive projects, TNA practitioners can use this guidebook to take the next steps required to transform initial project ideas into concrete concepts, and to structure the required financial information so as to present a business case to potential financiers. The business case provides the required inputs to be able to identify the most appropriate financial instruments and present additional cost arguments and potentially the need for concessional finance. The practical examples of diverse public and private climate finance instruments and their application to specific actions and financing structures for different climate interventions should inspire TNA practitioners to visualize potential financial mechanisms for their concepts and to start interacting with relevant financial stakeholders. These initial interactions have also been facilitated by having the reader understand the essentials in building climate funding proposals, while identifying the most convenient financing sources for specific interventions.

The overall financial illustration of this document widens the toolkit of potential stakeholders to allow efficient and successful business cases to emerge, which is essential for the necessary implementation of mitigation and adaptation actions, crucial if the targets set by the Paris Agreement are to be achieved.

References

- Base, 2019: *Manual of financing mechanisms and business models for energy efficiency*, Basel Agency for Sustainable Energy, for United Nations Environment
- Callaway, J. M., Naswa, P., Trærup, S. L. M., & Bakkegaard, R. K., 2016. *The Economics of Adaptation: Concepts, Methods and Examples*. UNEP DTU Partnership. Available at: http://orbit.dtu.dk/ws/files/128724334/Economics_of_Adaptation_Final_Report.pdf
- Christiansen, L., Ray, A. D., Smith, J. B., & Haites, E., 2012: *Accessing International Funding for Climate Change Adaptation: A Guidebook for Developing Countries*. UNEP Risø Centre on Energy, Climate and Sustainable Development. Department of Management Engineering. Technical University of Denmark (DTU). TNA Guidebook Series
- CPI, 2012: *The Landscape of Climate Finance 2012*, [Buchner, B., Hervé-Mignucci, M.]. Climate Policy Initiative
- CPI, 2013: *Making Adaptation a Private Sector Business: Insights from the Pilot Program for Climate Resilience in Nepal*, [Trabacchi, C., Stadelmann, M.]. Climate Policy Initiative
- CPI, 2018: *Global Climate Finance: An Updated View 2018* [Padraig, O., Clark, A., Meattle, C.]. Climate Policy Initiative, London
- CPI, 2019: *Global Landscape of Climate Finance 2019*, [Barbara Buchner, Alex Clark, Angela Falconer, Rob Macquarie, Chavi Meattle, Rowena Tolentino, Cooper Wetherbee]. Climate Policy Initiative, London
- CFU, 2019: *The Global Climate Finance Architecture* [Watson, C., Schalatek, L.], Climate Funds Update
- CFU, 2019b: *Climate Finance Thematic Briefing: Adaptation Finance* [Watson, C., Schalatek, L.], Climate Funds Update
- CFU, 2019c: *Climate Finance Thematic Briefing: Mitigation Finance* [Watson, C., Schalatek, L.] Climate Funds Update
- CFU, 2020: *Clean Technology Fund, Climate Funds Update*. Available at: <https://climatefundsupdate.org/the-funds/clean-technology-fund/> 12.08.2020
- Fenhann, 2019: *NDC & Pledge Pipeline*, UNEP DTU Partnership. Available at: <https://www.unenvironment.org/explore-topics/climate-change/what-we-do/mitigation/pledge-pipeline>
- Frisari, G., Micale, V., 2015: *Risk Mitigation Instruments for Renewable Energy in Developing Countries: A Case Study on Hydropower in Africa*, Climate Policy Initiative
- GCA, 2019: *Adapt now: A global call for leadership on climate resilience*, Global Commission on Adaptation
- GCF, 2017: *Accelerating the transformational shift to a low-carbon economy in the Republic of Mauritius*, Funding Proposal
- GCF, 2020: *Status of the GCF portfolio: approved projects and fulfilment of conditions, Meeting of the Board*, 18-21 August 2020, Provisional agenda item 9, GCF/B.26/Inf.07, 28 July 2020
- GGGI, 2019: *Review of GGGI's Experience to Design and Operationalize National Financing Vehicles to Finance Climate and Green Growth Policy Implementation*, GGGI technical report no. 9, December 2019
- ICAT, 2020: *Stakeholder Participation Guide Executive summary*. Available at: <https://climateactiontransparency.org/wp-content/uploads/2020/01/Stakeholder-Participation-Guide-Executive-summary.pdf>
- IFC, 2016: *Climate Investment Opportunities in Emerging Markets – An IFC Analysis*, International Finance Corporation, Washington, D.C.

- IPCC, 2018: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press.
- Limaye, D. R., Zhu, X., 2012: *Accessing International Financing for Climate Change Mitigation – A Guidebook for Developing Countries*. UNEP Risø Centre on Energy, Climate and Sustainable Development. Department of Management Engineering. Technical University of Denmark (DTU). TNA Guidebook Series
- Lütken, S., 2014: *Financing Nationally Appropriate Mitigation Actions*, UNEP DTU Partnership
- Lütken, S., 2018: *Presentation at the NAMAcademy 2018*, UNEP DTU Partnership
- Naswa, P., Dhar, S., Sharma S., 2017: *Evaluating measures for inclusion in a technology action plan*, Technology Needs Assessment Guidance Note, UNEP DTU Partnership
- Ryfishch, D. J. J., Canu, F. A., Reutemann, T., Lütken, S., Hinojosa, M. L., 2018: *NAMA Information and Guidebook: Enabling implementation of NDCs through NAMAs*, UNEP DTU Partnership
- Trabacchi, C., Stadelmann, M., 2016: *Making Climate Resilience a Private Sector Business: Insights from the Agricultural Sector in Nepal*. In N. Salzmann & C. Huggel & S. U. Nussbaumer & G. Ziervogel (Eds.), *Climate Change Adaptation Strategies – An Upstream-downstream Perspective*: Springer.
- UNDP, 2010: *Brokering Inclusive Business Models*, Private Sector Division, Partnership Bureau, United Nations Development Programme
- UNEP, 2018: *The Emissions Gap Report 2018*, United Nations Environment Programme, Nairobi
- UNEP DTU Partnership, 2018: *Summary of country priorities – Technology Needs Assessments 2015-2018*
- UNFCCC, 2006: *Preparing and presenting proposals – A guidebook on preparing technology transfer projects for financing*, Climate Change Secretariat (UNFCCC) Bonn, Germany
- UNFCCC, 2019: *Eighth Report of the Green Climate Fund to the Conference of the Parties to the United Nations Framework Convention on Climate Change*, Item x of the provisional agenda for the Conference of the Parties, Twenty-fifth session, Santiago, 2–13 December 2019. FCCC/CP/2019/3
- UNFCCC, 2020a, *Fourth synthesis of technology needs identified by Parties not included in Annex I to the Convention*. Available at: https://unfccc.int/sites/default/files/resource/sbi2020_inf.01.pdf
- UNFCCC, 2020b: *Technology Needs Assessment – Pathways for climate tech implementation*. Available at: <https://unfccc.int/ttclear/tna>
- Whitley, S., Thwaites, J., Wright, H., Ott, C., 2018: *Making finance consistent with climate goals – Insights for operationalising Article2.1c of the UNFCCC Paris Agreement*, ODI. Available at: <https://wriorg.s3.amazonaws.com/s3fs-public/making-finance-consistent-climate-goals.pdf>
- WRI, 2017: *Future of the Funds: Exploring the Architecture of Multilateral Climate Finance*, World Research Institute



This guidebook is produced as part of the GEF-Funded Global Technology Needs Assessment Project, which is implemented by UNEP and UNEP DTU Partnership. Since 2009, close to one hundred countries have joined the Global Technology Needs Assessment (TNA) Project.

Reaching the envisaged scale of climate technology implementation implies a drastic scale-up and implementation of policies and measures, as well as a rapid mobilization of domestic and international financial resources, which should be efficiently and sustainably invested. This guidebook provides information on how to develop a business case for interventions that are inclusive of climate change mitigation and adaptation technologies, and to present this information in structured proposals to donors and financiers.

The guidebook is primarily intended for national TNA teams, which consist of stakeholders from government, non-government organisations, private sector and others, but can also be used by other practitioners developing project proposals.

www.tech-action.org

Follow us on Twitter @UNEPDTU