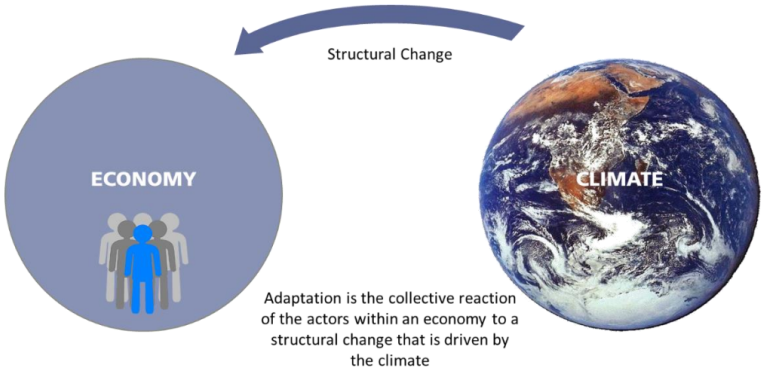
Climate Adaptation Financing (Mauritius)

TECHNICAL ASSISTANCE PROGRAMME

FOR

SUNREF III – MAURITIUS

November 2024



Prepared by Avinash Ramessur

Développé par
Avec la participation financière de l'UE
En partenariat avec
Mis en œuvre par

“**The Earth has enough resources to meet the needs of all but not enough to satisfy the greed of even one person**” *Mahatma Gandhi*

“Les vices privés font la vertu publique”
Bernard Mandeville / La Fable aux abeilles (1705) repris par Adam Smith

In these two quotes lies the **paradox** of Adaptation which, beyond its technicalities, consists in the collective reaction of the actors within an economy to a structural change driven by Climate Change and our planet boundaries in terms of extractive capabilities of natural resources.

Ô Maurice ! O Patrie ! Arbres ! Soleil ! Rivages !
Ô cascades, que l’œil contemple avec effroi
Montagnes de granit où planent les nuages !
Doux pays embaumé ; non ! rien n’est mort en toi !
Non tu n’es pas perdue, « Ô Cythère de l’Inde » !
Car tu gardes encore le culte des Beaux-Arts
Car tes sommets boisés ont les attraits du Pinde
Et ton soleil sur toi brille de toutes parts !
Car nous t’aimons, Ô terre ! Ô créole !

Fernand Duvergé (1842-1891), poète mauricien

Cultural inhibitions are a barrier to effective Adaptation. The fact that Mauritius emits around 0.01% of global GHG emissions is not a reason not to address climate change Adaptation needs. The fact the island has undergone uncontrolled and unrestrained rapid urbanisation is a reason to do so in order to protect lives, livelihoods and the national economy.

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GLOSSARY

AFD : Agence française de développement

CREFRM: Climate-related and Environmental Financial Risk Management

DFI: Development finance institutions

EMDCs: Emerging Markets and Developing Countries

FDI: Foreign Direct Investment

GCA: Global Centre on Adaptation

GFANZ: Glasgow Financial Alliance for Net Zero

IHLEG : Independent High-Level Expert Group on climate finance

IPCC: Intergovernmental Panel on Climate Change

MDB: Multilateral Development Bank

NCCAPF: National Climate Change Adaptation Policy and Framework

NDC : Nationally Determined Contribution

PPP: Public–Private Partnerships

ROI: Return On Investment

TNA: Technology Needs Assessment

UNEP: United Nations Environment Programme

UNFCCC: United Nations Framework Convention on Climate Change

1. EXECUTIVE SUMMARY

Adapting to climate change is one of the most challenging problems facing humanity. The time for adaptation action to ongoing and future climate change is now upon us. Living with climate change involves reconsidering our lifestyles and goals for the future, which are linked to our actions as individuals, societies and governments worldwide.

In his new book *The Road to Freedom: Economics and the Good Society ,2024,* Joseph E. Stiglitz states that: ***"We are facing a climate crisis as we confront our planetary boundaries".*** Within the Mauritian context, this study modestly tries to demonstrate how values, culture and the constraining forces of governance can act as significant barriers and limits to action. Adaptation will not be costless, indeed it will be painful for many in many different manners. The cost of inaction or maladaptation will push the costs and burden to adapt towards future generations in an exponential manner.

In a study[1] published in 2018 and titled "The Effects of Climate Change on GDP by Country and the Global Economic Gains from Complying With the Paris Climate Accord", the researchers model that the cost of inaction (Global warming scenario 3°C) represents the following impact on GDP for Mauritius:

Year	2027	2037	2047	2067	2100 (long run)
Mauritius GDP	-0.650	-1.359	-2.113	-3.700	-7.458

The main focus of this study is to determine the key factors to enable the future financing of Adaptation projects in Mauritius. However, limiting the scope of this report to discussing only financing aspects (the supply-side) would miss the point that finance is only an enabler of a wider ecosystem around climate change which encompass multiple aspects to be considered for the emergence of projects qualifying for Adaptation finance (the demand-side).

In that context, this report argues that the implementation (or failure to implement) of Adaptation is essentially a governance issue. Adaptation involves deliberate action, or inaction, taken by individuals and through collective action. *Governance involves processes through which we engage with our environment and the rest of society: governance involves those activities which make a 'purposeful effort to guide, steer, control or manage sectors or facets of societies'* (Kooiman, 1993, p. 2). *The dilemmas of governance concern the location of power and influence within society, relating again to whose values count, and to the* ***naïve*** *presumption of collective wisdom over myopic individual choices taken on the basis of self-interest* (Adger and Jordan, 2009).

Understanding Adaptation in the context of climate change requires careful consideration of two dimensions: scale (Who is responding where, to what?) and purpose (Why are we responding? What are the aims of Adaptation?). **Adaptation is therefore context-specific, entity-specific and location-specific.**

It is important as well to note that Adaptation occurs at different but related levels: policies shaped by national and international circumstances and/or set objectives to be achieved at local and regional levels. Also, individuals and organisations do not operate in isolation: interpretation of information and its

[1] *Kompas, T., Pham, V. H., & Che, T. N. (2018). The effects of climate change on GDP by country and the global economic gains from complying with the Paris Climate*
Accord. Earth's Future, 6, 1153–1173. https://doi.org/10.1029/2018EF000922
This report extends a large dimensional **intertemporal CGE trade model** to account for the various effects of global warming (e.g., loss in agricultural productivity, sea level rise, and health effects) on Gross Domestic Product (GDP) growth and levels for 139 countries, by decade and over the long term, where producers look forward and adjust price expectations and capital stocks to account for future climate effects.
This work shows **considerable global economic gains** from complying with the Paris Climate Accord for 139 countries. For example, with the comparative case of a temperature increase of four degrees, the global gains from complying with the 2◦ target are approximately US$17,489 billion per year in the long run (year 2100). **The relative damages from not complying to Sub-Sahara Africa, India, and Southeast Asia are especially severe.**

translation into decisions and behaviours are affected by social context, individual characteristics and direct experiences. In other words, *Adaptation is a multi-scalar process of multi-level governance, concerned with the interaction of individual and collective behaviours acting from the bottom–up and the top–down in response to changing circumstances* (see Pelling et al., 2008; Urwin and Jordan, 2008, the Rio model of multi-level and multi-stakeholder governance (Jänicke, 2012a, 2015)).

In listing the barriers limiting the emergence of Adaptation projects, this report delves into the different aspects which should be addressed to improve the demand-side of the Adaptation process. Namely, beyond the need to improve climate governance, it is vital to develop a national framework for Climate Risk Assessment (CRA) exercises which serves the interests of all stakeholders in Mauritius (public and private sectors, civil society etc…). CRA is essentially a top-down process and the government should be prepared to fully discharge its responsibilities in line with current international practices.

A lack of understanding of how to handle current uncertainties related to Adaptation, limited decision-making tools, and difficulties in ascertaining return on investment can all make it challenging for private actors to finance Adaptation projects. Quality data and information are critical to addressing those issues.

The supply-side of Adaptation financing including financial intermediation by local Fis are also scrutinised in different chapters (3, 6, 9 and 10). Key points are as follows:

- The bank regulator should engage with the commercial banks beyond the course of regulatory activities to understand the requirements of those banks for effective climate change Adaptation financing and to consider what measures could be taken at policy level to facilitate Adaptation financing including derisking of products, reduction of transaction costs and prudential capital requirements.
- There is no one-size-fits-all solution that can address all the aspects and requirements of Adaptation Financing. Instead, a careful engineering of multiple financial instruments and best practices interconnected together, while ensuring a working and efficient interconnectedness, is required. Those potential instruments are described in chapter 9.
- Concessional finance is key to unlocking first movers in climate Adaptation. Piloting innovative projects is challenging for lenders and borrowers alike. First-mover costs are often high and can usually only be reduced through reaching economies of scale through high levels of adoption, and through understanding what works and what does not. Local financial institutions should be supported in developing green financing programmes with sound technical assistance services for Adaptation.
- Microfinance is an important consideration for Adaptation financing. Intermediated finance to larger institutions can be used to on-lend to microfinance institutions, in addition to the larger institutions' own green financing activities, thereby achieving greater market penetration for Adaptation finance. Although it must be said through prior experience on SUNREF III Mauritius that the market context of the banking sector is not conducive of such an endeavour. Therefore, donors could also directly target MFIs for specific Adaptation financing programmes such as lending to small planters.
- Credit guarantee schemes that make investment financing available and affordable for small and medium enterprises can be used to encourage investment in Adaptation actions that help these enterprises prepare for weather disasters, drought, rising sea levels etc… They can also provide emergency finance for small and medium enterprises impacted by climate-related disasters.

This report also considers that significant capacity-building and knowledge-transfer, sustained over time, are required for local stakeholders to apprehend the different dimensions of Adaptation and thereafter engage in an adaptative process which builds the resilience of the Mauritian economy against the impacts of climate change.

30 recommendations are provided throughout the report. Some of them are broad and relate to the general context and approach which are required to implement a framework for Adaptation in Mauritius, and which will foster Adaptation-related activities, excluding maladaptation, in different sectors of the national economy. Some of them specifically relate to the process of Adaptation financing both from the supply-side and demand-side. It is to be noted that Adaptation financing:

- cannot be a one-size fits all approach because of the different dimensions and nature of Adaptation projects and activities,
- must cater for sub-credit worthy or non-revenue generating projects which struggle to access financing but which can potentially bring socially optimal Adaptation benefits
- requires financial intermediaries whose activities or strategies are aligned with the sectors/business activities targeted in the Adaptation financing programme,
- cannot be based on generic product offerings only. A significant dose of financial engineering is required based on objectives to be attained

Finally, the report also leverages on the results of a survey conducted with the assistance of Business Mauritius to capture the views of the private sector on Adaptation and Adaptation financing to specify its recommendations.

2. CONTEXT

Note: The Terms of Reference are provided in Annexure 1.

2.1. MAURITIUS

Extract from the Mauritius National Climate Change Adaptation Policy and Framework (NCCAPF rev 2021):

As a Small Island Developing State (SIDS), Mauritius is among the countries most impacted by climate change, as it is particularly vulnerable to severe weather events and natural disasters such as cyclones, storm and tidal surges, torrential rains, floods and flash floods, landslides, tsunamis. Historical data and future projections of climate trends indicate increased negative impacts and, thus, higher vulnerability for the island of Mauritius. An increase in all climate extremes has been observed and is projected for the future, including heavier rainfall, higher minimum, and maximum temperatures. Climatic distortion such as the reduction of rainfall by 13% by 2050 (DRR, 2013), and increasing trends of torrential rains floods and flash floods, and intensification of cyclones have been observed and projected. Sea level rise is projected to be of the order of 49 cm by 2100 (DRR, 2013). The global mean sea level (GMSL) rise under RCP2.6 is projected to be 0.39 m (0.26–0.53 m, likely range) for the period 2081–2100, and 0.43 m (0.29–0.59 m, likely range) in 2100 with respect to 1986–2005. For RCP8.5, the corresponding GMSL rise is 0.71 m (0.51–0.92 m, likely range) for 2081–2100 and 0.84 m (0.61–1.10 m, likely range) in 2100.

National Climate Change Adaptation Policy

The objectives of the climate change Adaptation policy are to: (i) Foster the development of strategies, plans and processes to avoid, minimise or adapt to the negative impacts of climate change on key assets of Mauritius, namely agriculture, water, fisheries and ecosystems; avoid or reduce damage to human settlements and infrastructure caused by climate change; to build capacity to understand, analyse and react in a timely manner in the wake of future climate change impacts within the Republic of Mauritius; (ii) Integrate and mainstream climate change Adaptation into core development policies, strategies and plans of the Republic of Mauritius.

Note 1: To ensure synergy between public and private sector, Adaptation finance targeted towards private investments should align their sectoral/eligibility requirements with national policies and frameworks of Mauritius while at the same time encouraging such eligible investments to adopt applicable international best practices in the sectors which are relevant to them. This has been the essence of the SUNREF3 programme and it is recommended that future green financing lines follow the same principle.

Note 2: Beyond the above, the NCCAPF provides little comfort in the articulation of a holistic climate Adaptation strategy for Mauritius. The elements contained therein appear to have been juxtaposed without however 1.) a clear indication on how they fit together 2.) why or how they will improve the adaptative capacities of the Republic of Mauritius or 3.) how the impact of such actions will be monitored over time to ensure that meaningful progress is achieved. Absence of 1.) a national Green taxonomy and 2.) sound climate risk assessment (section 4) are key reasons why the NCCAPF cannot provide additional guidance for the emergence of Adaptation projects.

2.2. INVESTING IN ADAPTATION

From a societal perspective, investing in Adaptation yields multiple benefits. The World Bank's Lifelines report found that every **US$1** invested in resilient infrastructure in low- and middle-income countries yields **US$4** in net benefits (Hallegatte et al., 2019). As shown below, the Global Commission on

Adaptation reached similar conclusions, noting that early action on Adaptation brings a “triple dividend” of avoided losses, economic benefits, and social and environmental benefits (GCA, 2019).[2]

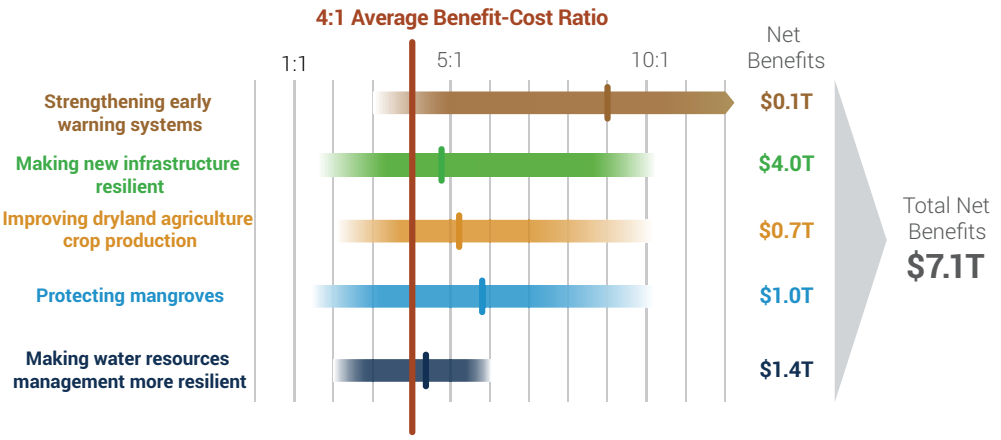


Figure 1: Average Benefit-Cost Ratio of Adaptation Investment, Source: Reproduced from GCA (2019)

Adaptation action to date, however, has fallen far short of what is needed to avoid severe economic and human impacts, especially in developing countries. There are several reasons, including inadequate finance, fundamental gaps in knowledge and capacity, and an absence of tools that help government translate climate commitments into practical solutions and investments.[3]

Various estimates pertaining to the scale of financing needed for the Adaptation of developing countries have been presented. Chapagain et al. (2020) have estimated that the total cost for Adaptation by 2030 would be between USD 50 billion and USD 180 billion per year, at a 50% confidence level. This will increase to USD 90– 290 billion per year by 2050 in the low-risk scenario. Under the high-risk scenario, it is projected to be USD 140–450 billion per year by 2050 and USD 520 billion to USD 1.75 trillion per year by the end of the century. United Nations Environment Programme (UNEP) (2017) estimates the scale of financing required by the developing countries to be USD 280 billion to USD 500 billion per year by 2050. The World Bank also reported that the total cost of Adaptation, as indicated by the Nationally Determined Contributions (NDCs) of 46 countries, would be USD 783 billion per year by 2030 (Climate Policy Initiative 2020). **It is fair to say that the cost of Adaptation for developing countries will be at least USD 100 billion per year by 2030.**

For Mauritius, the total financial needs associated with the investments made to implement the objectives of its NDC[4] are estimated to be USD 6.5 billion by 2030 (cumulative). The total needs for implementing the mitigation and **Adaptation** measures identified in the current NDC are estimated at USD 2 billion and USD **4.5 billion** respectively.

The breakdown of unconditional and conditional contributions for the $6.5 billion is as follows a) unconditional amount: $2.3 billion (from government and the private sector), i.e. 35% with the contribution of the private sector and b) conditional amount: $4.2 billion i.e. 65%. (from international sources and donor agencies).

[2] WB/GFDRR: Enabling private investment in climate Adaptation & resilience, Current Status, Barriers to Investment and Blueprint for Action (Arame Tall, Sarah Lynagh, Candela Blanco Vecchi, Pepukaye Bardouille, Felipe Montoya Pino, Elham Shabahat, Vladimir Stenek, Fiona Stewart, Samantha Power, Cindy Paladines, Philippe Neves and Lori Kerr)
[3] IBID
[4] Mauritius Nationally Determined Contributions 2021

The scale of Adaptation action required is therefore enormous, yet at the same time most economic systems are deeply rooted in the carbon economy and this creates massive inertia against required change. Under these circumstances it is not enough to simply state that resources should be shared, Adaptation should be funded through international transfers, or people and settlements should evolve in the face of risk. These actions will not take place or will do so at marginal levels grossly insufficient in the face of the challenges.

Economists label these inertias as market failure or government failure. This study supports the idea that the governance challenges of promoting necessary Adaptation are significant even if they are largely put aside in simple models of Adaptation action. In reality, the governance and implementation of Adaptation action is likely to be complex and somewhat messy – it will require going against a legacy of past modes of operating combined with the persistence of outdated paradigms (some of which promote self-interests) that make it difficult to enact effective adaptations to an issue as complex and multifaceted as climate change.

2.3. PRIVATE INVESTMENTS IN ADAPTATION

Private sector investment to supplement limited public resources is widely recognized as essential to closing the Adaptation finance gap. Though governments and MDBs have recently committed to ramp up investment in Adaptation, it is clear that public spending alone cannot come close to meeting the demand (Climate Investment Funds, 2016; Puig et al., 2016). As the Global Commission on Adaptation put it in its Flagship Report, "the public sector needs to shift its focus to include both generating finance and creating incentives to scale up private sector engagement in Adaptation investments" (GCA, 2019).

It is difficult to quantify the current levels of private investment in Adaptation. Often Adaptation investments are part of a larger investment, requiring detailed project information to single out (CPI, 2019). Climate resilience activities are also often integrated into development interventions or business activities, and therefore rarely standalone (CIF, 2016).

A major challenge in measuring investments in Adaptation and resilience is that, in contrast with mitigation, Adaptation can take many forms and is not a well-defined set of activities. Adaptation efforts cuts across sectors, ranging from traditional infrastructure projects (schools, roads, bridges, etc.) that need to be made resilient to climate change, to standalone Adaptation projects, such as protecting the coast from erosion due to sea level rise.[5]

By the best existing estimates, private sector investment in Adaptation has remained minimal, despite a 35 percent increase in overall Adaptation spending between 2015–2016 and 2017–2018. The Climate Policy Initiative has tracked climate finance for almost a decade, aggregating identifiable projects from various data sources and categorizing them by funding source, financial instrument, and use by sector. Global Adaptation investment, public and private, increased from US$22 billion per year in 2015–2016, to US$30 billion in 2017–2018, amounting to less than one-fifth of total climate finance in that period (CPI, 2019). Of the total US$30 billion spent on Adaptation in 2017–2018, **only roughly US$500 million (1.6 percent) came from private Adaptation spending.** Water and wastewater management projects attracted 70 percent of that private investment; the second-largest category was energy and other infrastructure, at 17 percent. Despite Adaptation finance tracking, accounting, and measurement

[5] WB/GFDRR: Enabling private investment in climate Adaptation & resilience, Current Status, Barriers to Investment and Blueprint for Action (Arame Tall, Sarah Lynagh, Candela Blanco Vecchi, Pepukaye Bardouille, Felipe Montoya Pino, Elham Shabahat, Vladimir Stenek, Fiona Stewart, Samantha Power, Cindy Paladines, Philippe Neves and Lori Kerr)

challenges, **these figures point to alarmingly low levels of private sector Adaptation financing for A&R in emerging markets**.[6]

SUNREF III Mauritius is a program designed by AFD to promote **green private sector investment**. It consists of (i) an €85M green credit line made available to companies and individuals with climate change mitigation, **Adaptation** or gender equality projects through three partner banks (AfrAsia, MCB and SBM); (ii) technical assistance financed by the European Union, based within Business Mauritius, whose role is to support project sponsors in defining their project and banks in implementing the programme; (iii) investment grants ranging from 5 to 16% of the amount of the eligible loan from the project sponsor to the project sponsor.

SUNREF III Mauritius proposes between **15% or 16%** investment grant (cash-back) for projects qualifying under the **Adaptation component** (as compared to 5% or 6% for mitigation projects). However, despite this highly attractive value proposition, **Figure Figure** 2 shows that the share of Adaptation-related investments as a percentage of total amount financed **is significantly low (22%)** in a similar vein to the international context.

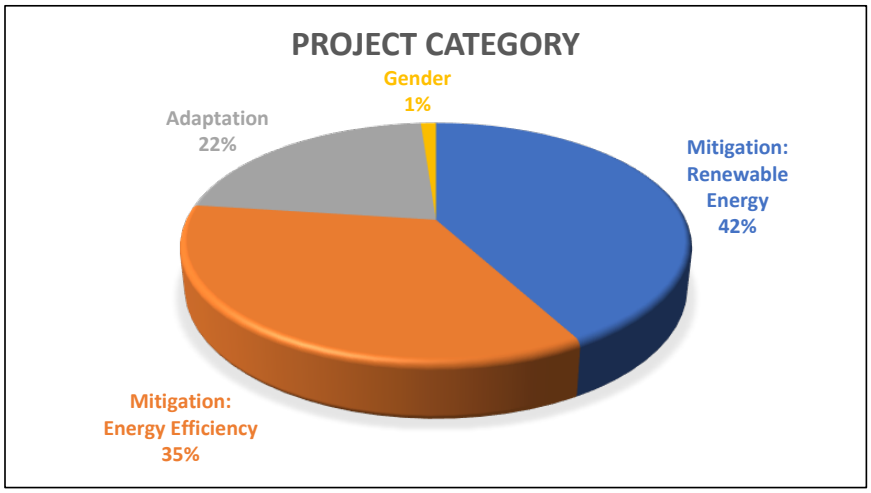
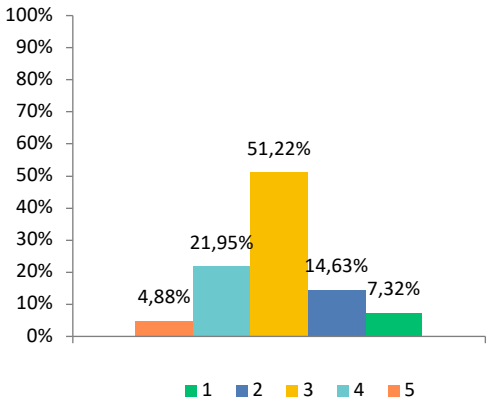


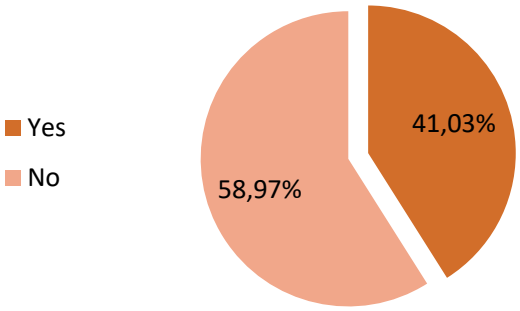
Figure 2: Distribution of financing under SUNREF III, Source SUNREF III

This could be partly explained by the statistics provided below, obtained from a survey which the study conducted. To note, some (41%) private companies in Mauritius recognise climate Adaptation as a key issue to address in their risk management strategies, and they are working to make their supply chains and production processes more resilient.

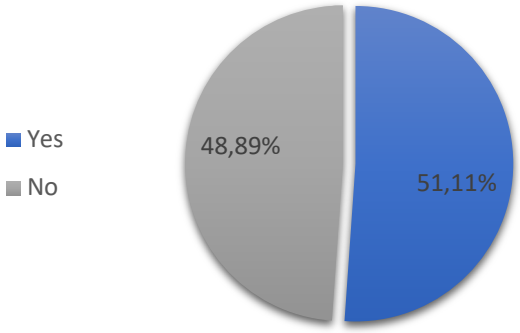


A majority of respondents (73%) believe that their companies have a low to moderate understanding of Adaptation. This is indicative of the low number of projects that have emerged to benefit from SUNREF funding under this theme.

[6] IBID

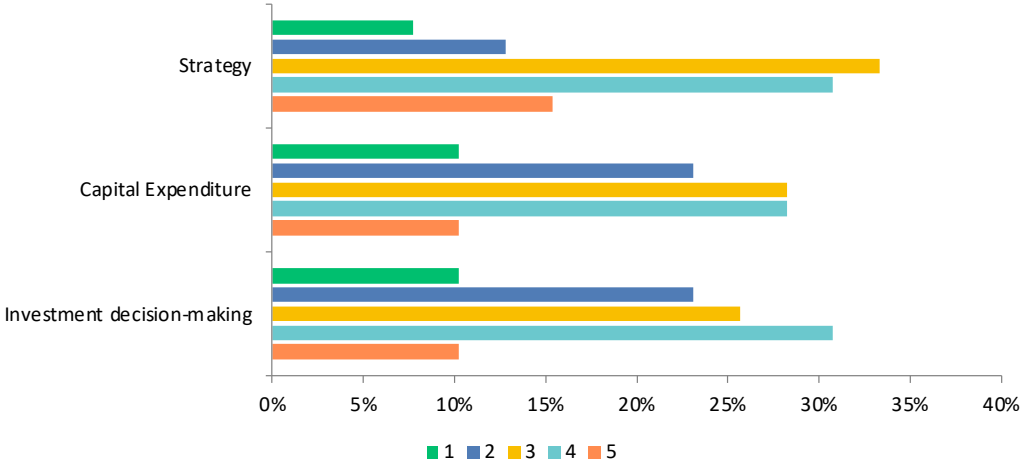


41% of respondents say that their companies have a corporate strategy for Adaptation. This number might give the impression of a positive dynamic, but in view of the figures given in the above figure, it would be reasonable to analyse the relevance of these strategies in more detail.



Almost 49% of respondents confirm that their companies do not have a framework for risk management (ERM), indicating a weak overall culture around the subject of 'risk'. Nevertheless, 73% of respondents in this category indicated that they would like to make an effort to factor climate risks into their corporate strategies.

Of the 51% who responded positively, a large majority (82%) have also taken climate risks into account in their ERM frameworks.



Drilling into sub-themes related to board-level corporate activities, the same low trend appears in terms of how Adaptation is considered/embedded into those themes

The above data shows that 1.) a better understanding is needed of how to unlock private capital and encourage private financing of national and local Adaptation priorities and 2.) Adaptation financing programmes should strongly support capacity-building activities towards local stakeholders. This study incidentally attempts to bridge (at least partly) this information and understanding gap.

Recommendation 1: Future Adaptation financing programmes to put a strong initial focus on and to embed tailored capacity-building activities towards all involved stakeholders. Those capacity building activities should drill into the multi-faceted aspects of the different thematic sectors covered by the

financing programme and efforts should be sustained over time. Government should also conceive and roll-out its own capacity-building programme on the basis of the NCCAPF and future climate Adaptation policies towards to ensure mass dissemination and efficient absorption of the national Adaptation strategy into economic activities.

3. UNDERSTANDING ADAPTATION AND ADAPTATION FINANCE

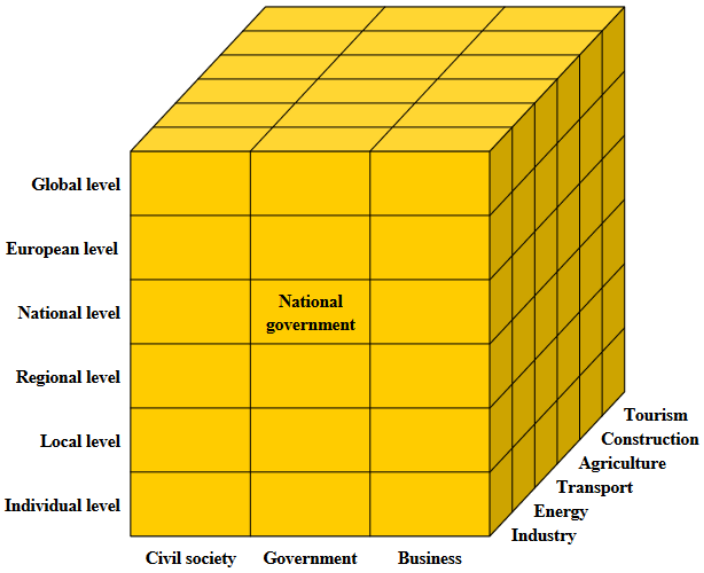
3.1. ADAPTATION

There are abundant sources of literature on Adaptation, its official UNFCCC definition and the fundamentals required to develop Adaptation-related activities. In the context of this study however, this section attempts to summarise only the key points pertaining to the ToRs of the study.

Understanding Adaptation in the context of climate change requires careful consideration of two dimensions: scale (Who is responding where, to what?) and purpose (Why are we responding? What are the aims of Adaptation?). **Adaptation is therefore context-specific, entity-specific and location-specific.** Said otherwise, for example, Adaptation-related solutions applicable to Mauritius may not be applicable to another geography.

Adaptation occurs at different but related levels. Policies shaped by national and international circumstances set objectives to be achieved at local and regional levels. Individuals and organisations however do not operate in isolation of forward-looking actions. Interpretation of information and its translation into decisions and behaviours are affected by social context, individual characteristics, backward compatibility and direct experiences. In other words, Adaptation is a multi-scalar process of multi-level governance, concerned with the interaction of individual and collective behaviours acting from the bottom–up and the top–down in response to changing circumstances (Pelling et al., 2008; Urwin and Jordan, 2008).

Adaptation is therefore a subject which requires complex governance processes. An adequate framework which takes into account the extremely complex configuration of players involved in Adaptation is the Rio model of governance[7]. This model embeds and recognises that: “Environmental governance is necessarily multi-stakeholder, multi-sector and multi-level”.



Source: Jänicke (2003)

Figure 3: RIO multi-dimensional model of Governance

Further, the human domination of earth’s ecosystems imposes ecological limits to the ability of humanity to adapt to climate change. humanity **already uses a substantial proportion of earth’s ecosystem services**, and there are limits to the extent that humanity can increase this use further, particularly in the context of climate change. There are two reasons for this: **first, human modification of ecosystems is decreasing the supply and undermining the reliability of many of these services**, and climatic change is likely to amplify these changes. **Second, the simplification of earth’s ecosystems has reduced the**

[7] Jänicke, Martin, The 'Rio Model' of Environmental Governance - a General Evaluation (March 2006).

ability of ecosystems to self-regulate, which increases the possibilities for abrupt changes in ecological functioning. **Abrupt changes are much more difficult to adapt to than gradual changes**.[8]

While the purpose of this report is not to delve into the core concepts of Adaptation, it is useful to point out that **linked to Adaptation is the concept of Adaptability**. Contrary to the usual myth, Darwin's theory of evolution does not preach that only the fittest will survive but instead that the ones that have the best capacities for adaptability which will survive.[9] Those capacities are intrinsically linked to what makes a natural biological system resilient (**Figure 4**). Unfortunately (for the purpose of Adaptation), systems designed by humans tend to embed opposite concepts to those presented in **Figure 4** thus leading to fragility of those systems in the face of changing conditions or parameters outside human control.

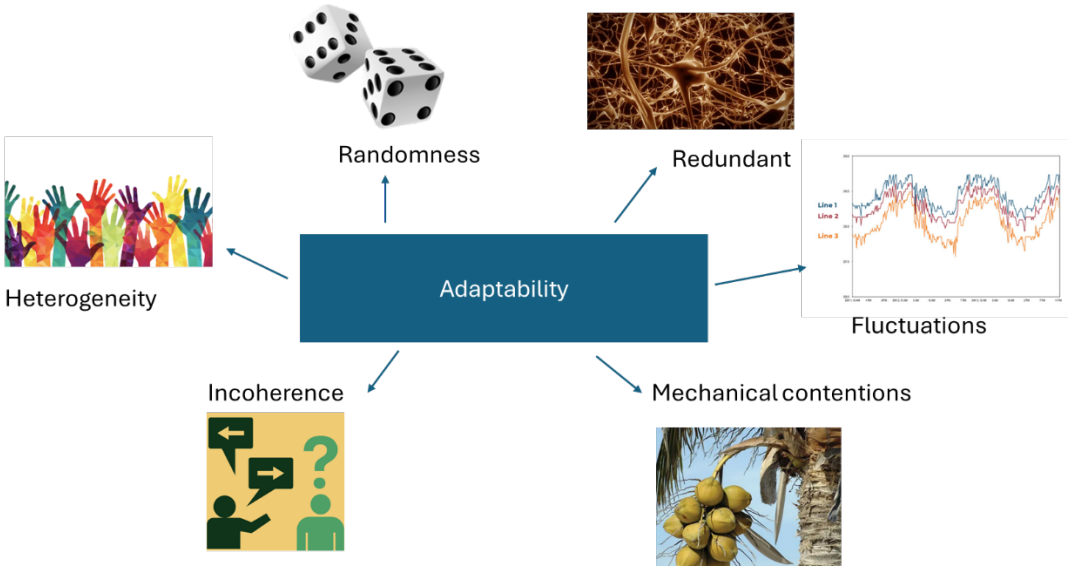


Figure 4: Adaptability based on nature concepts, Source: Oliver Hamant, The living world favours robustness over performance

Given the above (complex governance requirements, latency to overcome entrenched practices, beliefs and perspectives in order to enact a timely response), **Adaptation efforts can result in imperfect outcomes, or even maladaptation** (section 7). Existing system dynamics in a country (as described in section 2: Context) can hinder a process of Adaptation that has to aim, considering the increasing threats posed by climate change, **to achieve much more than incremental change**.

Therefore, the question of how successful Adaptation may take place in a country (in the case of this study: Mauritius), despite (or within) the governance constraints that exist and persist, in enacting change (section 2)? **Can (and if so, how?) imperfect governance structures and processes facilitate a transition towards an adapted future under more pronounced climate change effects,** thereby ensuring collective and individual human welfare? In Mauritius, the Baastel report[10] commissioned by AFD highlights significant climate governance related issues which may prevent the country from reaching its objectives set in its NDC.

Recommendation 2: Future Adaptation financing programmes should attempt to embed the intrinsic complexities of Adaptation related investments (at sectorial or national levels) in their conception and design instead of resorting to simple models of Adaptation. This can be construed as a weakness/flaw of the SUNREF III programme which propose to finance private-sector generated Adaptation projects without having first considered in-depth the impact of the above complexities on preventing relevant projects from emerging. This flaw is mitigated by the fact that SUNREF III was the first programme to

[8] Garry Peterson, Adapting to Climate Change: Thresholds, Values, Governance, eds. W.Neil Adger, Irene lorenzoni and Karen L.O'Brien. published by Cambridge University Press (2009).
[9] Olivier Hamant, La 3ème voie du vivant, ISBN 978-2-7381-5729-4
[10] Study, commissioned by AFD, conducted by Groupe Baastel on climate governance in Mauritius and 4 other jurisdictions in 2023.

propose Adaptation financing for Adaptation-related projects. Future financing programmes should therefore aim to, ex-ante, provide capacity-building and knowledge transfer support to would-be financial intermediaries so that they are capacitated from the onset to support their clients in financing such projects (the supply-side of finance).

Recommendation 3: However, supporting private sector stakeholders will not be enough for Adaptation projects to emerge. It is necessary for financing partners and donors of Mauritius to engage with the national authorities for upstream capacity-building, technical support and/or legislation to address governance-related and strategy-setting issues with the aim of creating a conducive environment for investors to engage into Adaptation-compatible/eligible projects (the demand-side of finance).

From another perspective, Adaptation has always taken place and is likely to continue doing so. Human beings have been able to adapt to changing environments and societies, surviving and flourishing overall. However, the current realities of Adaptation process due to climate change, show that environmental and social change does not affect everyone equally. Less resilient communities (and more vulnerable individuals) and ecosystems providing services to those communities can be severely affected by change, thus limiting their opportunities for Adaptation.

In the context of climate change, the key question is the speed and the scale of change[11] to which human beings, communities, ecosystems and the planet fundamentals are (will be) confronted with. While there have been previous major shifts in climate fundamentals during the existence of the Earth, none (maybe to the exception of the extinction of dinosaurs during the Cretaceous–Paleogene extinction event caused by an external factor) have had the potential of mass life extinction and/or major disruptions affecting the viability of economic and social systems, in essence the human legacy.

Adaptation to climate change is necessary and should be part of national strategies in the face of scientific elements emerging from published IPCC reports. **But one should recognise that the process for implementing Adaptation is a path which intrinsically embeds complexities, difficulties and challenges.** One can safely assume that Adaptation in ecosystems and in society do not (will not) advance in a smooth manner **in response to slow trends in climate parameters such as temperature, but which have the potential of creating abrupt and severe disruptions**.

One of the greatest challenges in implementing Adaptation **lies in identifying who and what is vulnerable**, and even in specifying who has the right and responsibility to execute such a task. **Understanding the wider implications of Adaptation measures requires that many important normative and ethical issues be discussed and debated**. It must be done or executed at the core of the economic systems which underpin human society and its related activities.

Adaptation as a national process should therefore be expected to be a conflictual and messy as it will involve societal decision-making, attitudes to acceptable risks, and structural constraints within society. In essence compromise and hard choices (which may affect some groups which stand to lose) will have to be made. One should not be in doubt that the scale of the necessary transformations of societies and economies to face the coming climate change is enormous **(probably the USD 4.5 Billion required for Adaptation by Mauritius in its NDC may not suffice)**. Even if climate change mitigation efforts are successfully pursued, the impact of expected climatic changes (due to past and existing emissions over the current Anthropocene period) over the next decades will require changes in infrastructure, in behaviour and more fundamentally, in human society's relationship with its environment.

Such a process in establishing an Adaptation strategy assume governments act systemically with a long-term perspective and an adequate vision to promote and safeguard the interest of their citizens towards equitable and sustainable outcomes. Importantly it also assumes that governments, as the agents of collective action, elected by their citizens have the necessary means and knowledge to implement that vision. In practice however, on both accounts governments usually fail to meet the adequate standards.

[11] Olivier Hamant, La 3ème voie du vivant, ISBN 978-2-7381-5729-4

Medium-term electoral priorities tend to trump the necessary long-term planning and governance systems are curtailed to those priorities.

Recommendation 4: In establishing its long-term strategy to adapt to the effects of climate change, the Government of Mauritius should ensure that the requirements and complexities described above are taken into account. An in-depth understanding of the vulnerabilities and risks should be undertaken prior to establishing a relevant action plan which will provide the necessary safeguards against maladaptation or imperfect outcomes far-removed from the objectives of its NDC. A green taxonomy would also contribute greatly to this endeavour.

Private sector perspective

In the context of climate finance, the term "bankability" **refers** to projects that are clearly highly likely to benefit from public or private financing because of their objectives, design, enabling environments, risk management and other factors indicating that **the project is likely to be viable, successful and sustainable**. The use of the term **"financial attractiveness"** in the context of climate finance **should not be confused** with the more traditional use of the term "bankable" in the context of investment finance, which refers to project proposals with sufficient collateral and cash flow forecast and a high probability of success to be accepted by commercial lenders.

In the context of the SUNREF III financing programme, it was observed that stakeholders of the programme (staff from partner banks, project bearers etc…) have not been able to incorporate this approach from the onset in designing and/or instructing Adaptation projects (applicable for mitigation projects as well). More often than not, projects submitted for green financing, included potential "green components" as an after-thought to access concessionary finance. In turn, this has led to frustration over projects not accepted for financing due to these projects not meeting minimum requirements. Several fundamental concepts are essential for identifying, developing and implementing fundable Adaptation projects. A project initiator must demonstrate a clear understanding of Adaptation needs and priorities linked to the project and be able to put forward convincing arguments for funding requests to be successful. Projects must be in line with related national, regional and international policies. **Figure 5** below recapitulates those concepts. They are further expanded throughout the report.

[12] Banque mondiale. 2019. « Financement de l'Adaptation au changement climatique dans les bassins transfrontaliers : Préparer des projets susceptibles d'être financés ». Banque mondiale, Washington, DC

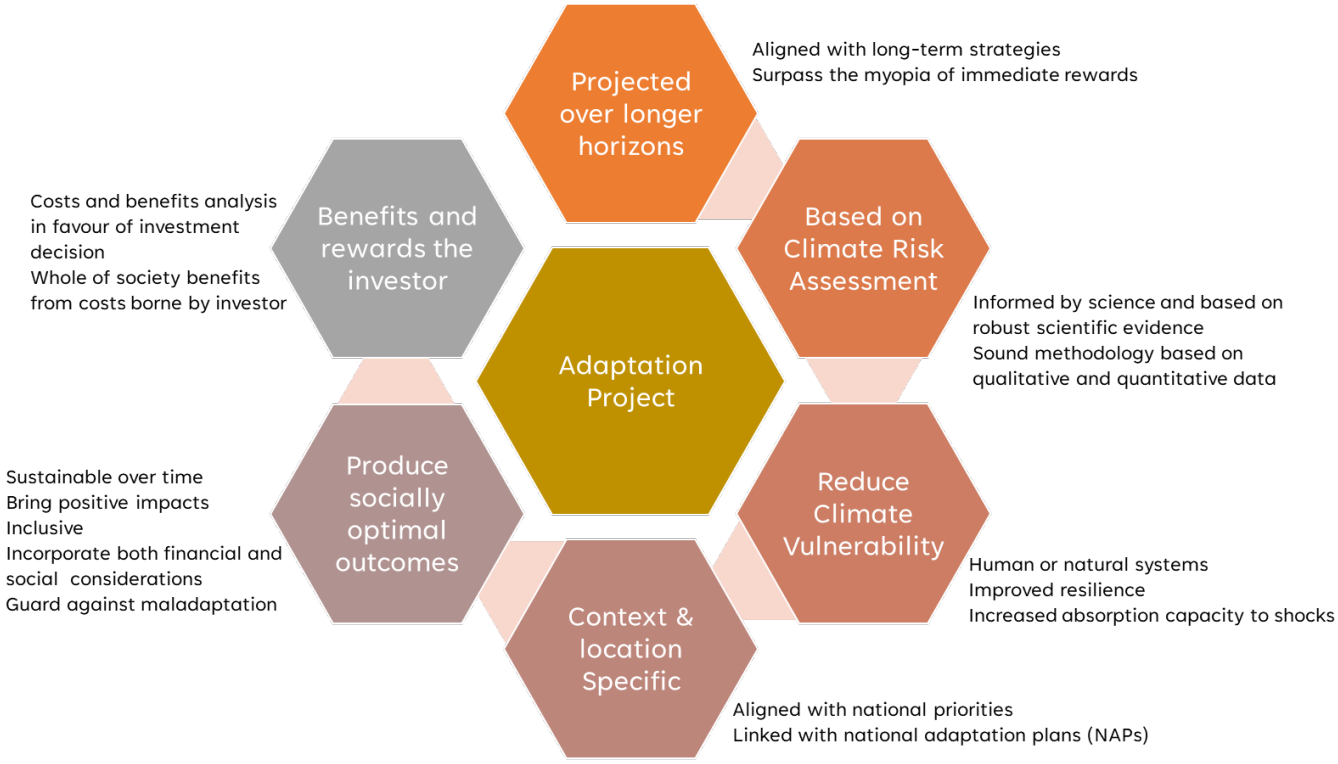


Figure 5: Considerations to conceive an Adaptation project. Source: Author

Recommendation 5: The remarks in **Figure 5** can also be construed as general principles which project initiators should embed in their project design for a successful access to green financing. In addition, those remarks have also a far-reaching intention to guide policymakers and international organisations in the way forward to enable the creation of a sound ecosystem (encompassing integrity of design and actions) around the emergence and financing of Adaptation projects. It is especially important for policymakers to understand and accept that Adaptation projects bring, by design, whole-of-society benefits while costs are borne by a private investor. It is therefore important to ensure, through appropriate governance mechanisms, that the investor can derive benefits from his investment.

3.2. ADAPTATION FINANCE

The Adaptation Gap Report 2023[13] is titled as **Underprepared and Underfinanced: Inadequate investment and planning on climate Adaptation leaves world exposed.** This is, in the view of the information gathered for this study, valid for Mauritius as well. The recent climatic events which affected the country are also testimony to that.

The report further notes that:

1.) the Adaptation finance gap now stands at US$194–366 billion per year, with Adaptation finance needs in developing countries likely to be 10–18 times as great as finance flows – over 50 per cent higher than the previous range estimate.

2.) Estimated Adaptation costs and needs for developing countries are significantly higher than previous estimates, with a plausible central range of US$215 billion to US$387 billion per year this decade.

3.) Despite the urgent need to accelerate and scale up international public Adaptation finance to developing countries, these flows have declined since 2020.

[13] United Nations Environment Programme (2023). Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate investment and planning on climate Adaptation leaves world exposed. Nairobi. https://doi.org/10.59117/20.500.11822/43796

4.) The Adaptation finance gap (that is the difference between estimated Adaptation financing needs and costs) is likely 10–18 times as great as current international Adaptation finance flows – at least 50 per cent higher than previous range estimates.

5.) Gender equality and social inclusion are inadequately included in Adaptation finance needs and flows.

6.) Bridging the Adaptation finance gap requires more international, domestic and private finance, ideally a reform of the global financial architecture and better international cooperation.

7.) Slow and insufficient action on mitigation and Adaptation is increasingly translating into soft and hard limits to Adaptation, some of which may have already been reached.

The costs of Adaptation can be defined as the costs of planning, preparing for, facilitating and implementing Adaptation measures to moderate harm or exploit beneficial opportunities arising from climate change. In simple terms, **the costs of Adaptation can be assessed by estimating the current and future impacts of climate change**, then assessing the reduction in these impacts (the benefit of Adaptation) and its associated cost (UNEP 2016b). In doing so, an investor will consider the trade-off involved over how much Adaptation to do, and on the level of residual damage costs after Adaptation (noting these include both market and non-market damages).

In practice, Adaptation projects require high levels of tailoring based on the risks associated with a specific geography, sector, and the exposure of assets or a population. What may be a highly effective intervention in one place may create new vulnerabilities and **maladaptation** in another. Investment sizes can vary significantly depending on the economic sector which is involved (hospitality, agriculture, building etc …). There are also significant uncertainties about future climate change impacts, socioeconomic factors, population and migration trends, as well as policy and behavioural shifts which cannot be assessed from a purely qualitative manner (resorting to modelling tools is a must).

Based on the above paragraphs, to stimulate the demand-side, planning and financing strategies for Adaptation often requires flexible, low- or no-regret investments, and focus on broader development goals, so projects yield benefits whether the expected climate hazard manifests. **A lack of understanding of how to handle these uncertainties, limited decision-making tools, and difficulties in ascertaining return on investment can all make it challenging for private actors to finance Adaptation projects.** Quality data and information are critical to addressing those issues.

Recommendation 6: There is a plethora of existing reports on Climate Change/Disaster Risk Management and related matters which urge the Government of Mauritius to implement a data governance framework based on an open and transparent framework to serve the interests of a whole-of-society approach to these matters. This report also makes the same recommendations and urge these to be considered as a national priority to foster climate change action.

In practice, estimating the costs of Adaptation is extremely difficult (UNEP 2016a, 2021a) and there is no single definitive estimate, because costs depend on the objectives chosen, as well as on the definitions and methods used (UNFCCC 2022a). **This constitutes one of the main reasons why private investments in Climate Adaptation is low worldwide**.

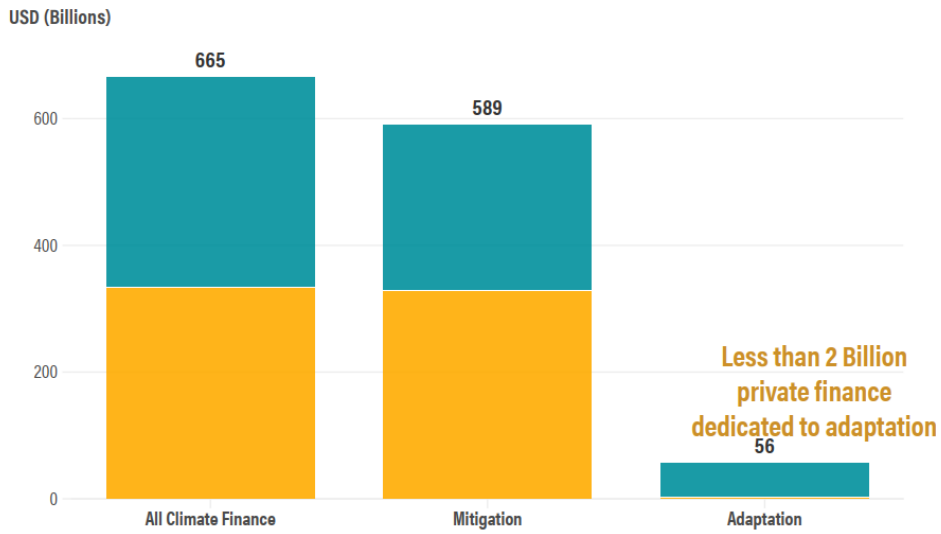


Figure 6: Public vs. private climate finance flows, 2020. Source: World Resources Institute

The Second report of the Independent High-Level Expert Group (IHLEG) on Climate Finance **notes that private investment and private finance in EMDCs** *(Emerging Markets and Developing Countries)* **is dismally low and the MDBs are not playing their part**. MDBs mobilised only $17 billion in private finance compared with $80.6 billion in their own lending for climate action in EMDCs in 2022. MDBs have so far lacked an effective strategy for boosting private investment and finance based on sector and country opportunities and challenges. **There is insufficient cooperation with the private sector on identifying key opportunities and tackling barriers to private investment and finance.** They have often competed for easy projects with the private sector and even among themselves. **They have lacked the approach, incentives and instruments necessary to better manage and share risk with the private sector and bring down the cost of capital.** (Section 9: Financial Instruments). MDBs need to establish a new partnership with the private sector, taking advantage of the sector's proactive engagement, including in the Glasgow Financial Alliance for Net Zero (GFANZ). The authors thus call for a new partnership with the private sector.[14]

Recommendation 7: In line with the above observation from IHLEG, it is important and necessary as well for green financing programmes implemented by donor-funded institutions in Mauritius and targeted at Adaptation projects to effectively focus their eligibility criteria beyond what could qualify as "easy" or "run of the mill" projects. Financing programmes should direct their funding with the right level of incentives to those projects which 1.) would bring optimal environmental and social benefit outcomes 2.) require proven financial additionality to be bankable by a commercial bank and/or 3.) promotes the implementation of Adaptation-related practices based on current consensus on applicable scientific and technical knowledge.

Recommendation 8: The private sector voice should be heard in the implementation and design of green financing programmes. However, this dialogue should be broad as well as deep. If restricted to "surface" matters, the risk (and natural tendency) would indeed be to limit oneself to easy ("quick win") solutions which may not serve the initial objectives and overall purpose of such financing programmes. This is backed by the observation during the financing activities of SUNREF III (2018 to 2024), whereby simple projects listed in the List of Eligible Materials and Equipment (LEME) did not find much interest and attractiveness from project bearers. There are multiple reasons for this (section 5: SUNREF III), one of them would be that multiple "simple" solutions taken together cannot be easily amalgamated into an overall Adaptation solution. In this dialogue with the private sector (including financial intermediaries), considerations for both the supply and demand side of finance should be addressed. Section 9.1 provides

[14] Bhattacharya A, Songwe V, Soubeyran E and Stern N (2023) A climate finance framework: decisive action to deliver on the Paris Agreement – Summary. London: Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science

some insights on the requirements of the private sector in Mauritius based on a survey carried out for this study.

3.2.1. Components of the financial system in the context of Adaptation

Understanding both the supply of and demand for Adaptation finance is critical to designing policies and public finance instruments to catalyse flows of private Adaptation finance. **Figure 7** below provides a simple overview of the different stakeholders involved in developing and financing Adaptation projects and the rationale for economic actors to engage into Adaptation activities. It is important to note that the economic rationale includes not only risk considerations (**downside Adaptation**) but also the opportunities (**upside Adaptation**) evolving from the structural change towards a climate resilient economy.

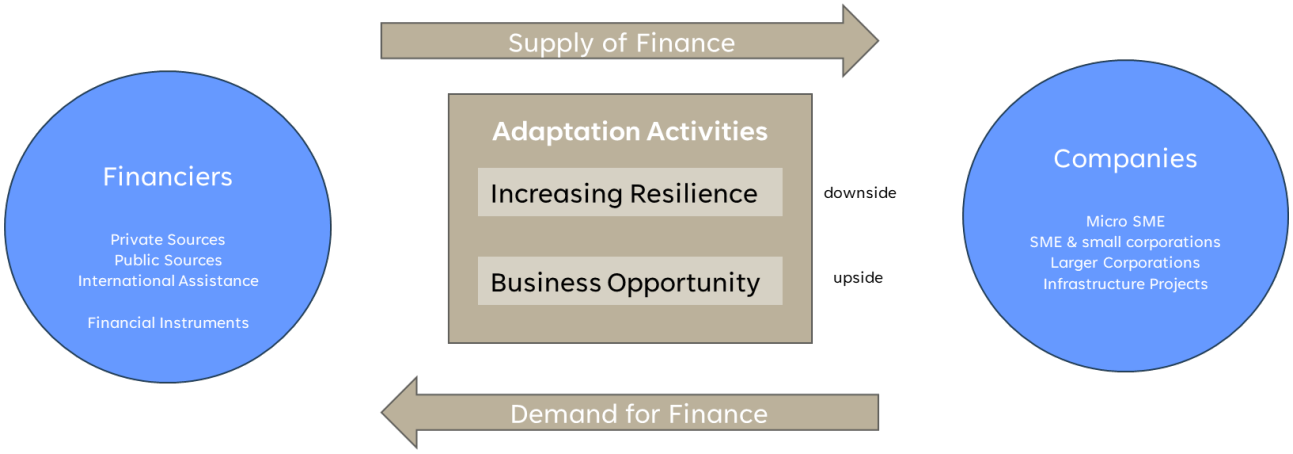


Figure 7: Demand and Supply of Adaptation Finance, Source : Adapted from University of Frankfurt School of Finance and Management

Downside Adaptation can be defined as moderating harm' or making the potential negative consequences of extreme events less extreme or intense, or adjusting to expected climate impacts. Resilience can be strengthened by decreasing the probability of occurrence of a hazard, avoiding or reducing its potential effects, and facilitating recovery in the face of damages. (Frankfurt university)

Upside Adaptation may be defined as new business opportunities generated by climate change or the creation of new markets to which many businesses and investors react; either by launching new businesses or complementing existing operations through new activities (Druce L. e.).

It is important in the context of designing an Adaptation financing programme to engage with the different actors in the real economy (trade of goods and services) and understand their interests, competing roles and goals and requirements for both downside and upside Adaptation opportunities. This may not be as straightforward as it may seem since different factors may prevent the narrowing of gaps towards an optimal solution. These factors may include competing interests (example cost of finance or guarantees), asymmetry of information, different perceptions on climate change etc… This report attempts, through its findings and recommendations, to define a way forward that bridges those gaps.

3.2.2. Framing the issues for financing Adaptation projects

The overarching characteristics of a climate change Adaptation project eligible for funding are as follows:

- It refers to the anticipated climate impacts, based on scientific findings, that the project intends to directly address
- It provides convincing arguments in favour of a reasoned approach, demonstrating a good understanding of the impacts and externalities (positive and negative) of its project.
- It complies with and supports national, regional and global climate and development policies.
- It minimizes project risks
- It is consistent with the objectives of the financing institution or partners.

Research shows that private Adaptation investments are typically financed using the same instruments as traditional business investments and are determined under the same aegis as traditional business strategies. **Adapting to structural change should therefore an on-going component of strategic business management, addressing economic a range of social, political, and environmental factors**.

The physical impacts of climate change constitute one such example of structural change, albeit a significant one. If adapting to structural change is a core part of the normal course of business, then financing of adaption can be considered as part of normal business financing. **This implies that concessionary finance (or absence of) should not be the leitmotiv to justify why private companies do not consider or are behind the curve for investments in Adaptation** at the very least for those projects which have a sound financial bankability perspective. Concessionary finance is best used to address market imperfections or to compensate for accrued risk.

Albeit the above, there are also multiple dimensions and challenges to be able foster investments in Adaptation, some of which are intrinsic to the nature of such projects. **Understanding both the supply of and demand for Adaptation finance is critical to designing policies and public finance instruments to catalyse flows of private Adaptation finance.** From a policymaker perspective, when designing public policies or financing strategies to mobilise private finance, it is critical to understand both the inherent characteristics of such projects and potential barriers which, if unaddressed, result in shortfalls in the supply Adaptation finance.

Recommendation 9: Policymakers and Regulators should ensure and/or be trained so that they have a precise economic perspective on Adaptation finance and are able to define how within the framework of national strategies on climate change, they can implement policies that meets the objectives of Mauritius on Adaptation (financing included).

In line with this recommendation, the Sharm El Sheikh Guidebook for Just Financing[15], published on the occasion of COP27, notes that **some challenges that face climate projects are mainly related to the supply and demand sides of climate solutions, while others are related to the enabling environment at the country level.**

[15] The Sharm El Sheikh Guidebook for Just Financing is an embodiment of collective effort of a broad range of stakeholders. Through an inclusive and engaging process, the Egyptian Ministry of International Cooperation (MoIC) worked closely with governments, multilateral and bilateral development partners, commercial and investment banks, private sector, Philanthropies, think tanks and research institutes, to underpin an ambitious and realistic actionable agenda that is rooted in the principles of justice and equality.

Figure 8 below (adapted from the guidebook for the purpose of Adaptation Financing) recaps those challenges, most of which also apply to the Mauritian context. Section 9 looks into potential solutions to mitigate and/or address those challenges.

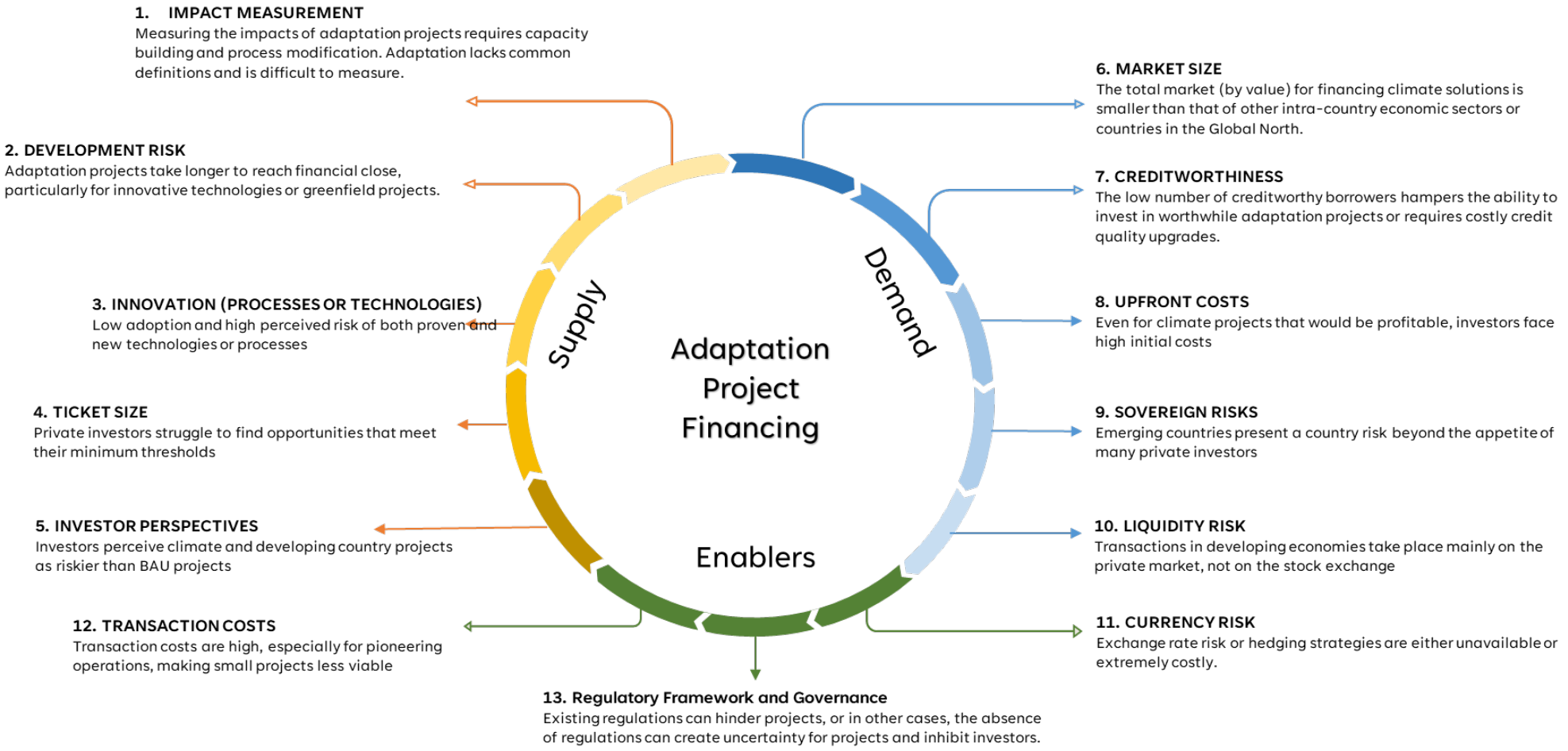


Figure 8: Challenges for Adaptation financing in emerging countries. Source: Adapted from Sharm El Sheikh Guidebook for Just Financing (2022)

Abundant literature on Adaptation points to several barriers, in the form of market imperfections, which create distortions in the risk/return profile of an Adaptation investment and suppress levels of Adaptation below the ideal and required amount. **Figure 9** provides an insight in the inherent characteristics of an Adaptation project (beyond the small lot of projects that could be easily bankable):

Figure 9: Inherent characteristics of an Adaptation project. Source: Author

In general, an Adaptation project will be considered/perceived as having a lower bankability and carrying a higher risk premium than Business-As-Usual (BAU) projects for the reasons indicated in **Figure 9**. Adaptation projects have a lower RoI because they embed components which may make project costlier while being non-revenue generating. Investing into Adaptation eligible infrastructure projects such coastal-based projects require a longer investment horizon (duration) that discourages private investors. They are also more likely to be require additional development efforts that increase the project cost. Section 3.1 details why Adaptation Projects can be construed as having a higher risk profile.

This leads to a reduced attractiveness of Adaptation projects for financiers to back them.

The above taken together constitutes a significant market imperfection that, if left unaddressed, lead to a sub-optimal level of financing flows towards Adaptation projects (and through ripple effects discourages economic actors in investing into Adaptation projects).

Recommendation 10: Based on lessons learned from the Green Climate Fund[16], public actors with the assistance of Donor-funded organisations (DFIs for example) could address this market imperfection in two general ways:

1. Correcting the market imperfection: The market environment can be modified through enhanced market regulations or creation of new efficient market institutions to tackle emerging sectorial requirements

[16] Stoll, P.P., Pauw, W.P., Tohme, F., & Grüning, C. (2021). Mobilizing private Adaptation finance: lessons learned from the Green Climate Fund. *Climatic Change* 167, 45.

linked to climate change Adaptation. A variety of instruments can be used to correct market failure, for example, tariffs, subsidies, taxation, restrictions on trade, etc. They all address the issue at the level of the market as opposed to the level of the individual project or investment.

2. Enhancing the risk/return profile of individual projects through compensation to the investor: This requires an initial understanding of the consequences of the market imperfection on investor's perspective in terms of risk-return profile of Adaptation projects. Then to put in place supportive financial mechanisms that directly increase the attractiveness for the investor such as grants and subsidised loans thereby increasing RoI without necessarily correcting the market imperfection at market level.

SUNREF III (section 5) constitutes one such mechanism that enhances the risk/return profile of individual projects. However, for reasons described throughout in this report, this cannot foster by itself a healthy ecosystem around Adaptation projects.

4. THE NECESSITY AND IMPORTANCE OF CLIMATE RISK ASSESSMENTS

Section 1.2 of the NCCAFAP rev 2021[17] is titled as "Summary of the vulnerability assessments". It is written based on the Climate Change Vulnerability Assessment of Mauritius and Rodrigues report (CCVA) done by HEAT GmbH in 2021 and refers extensively to the "**Republic of Mauritius, Disaster Risk Management: A Capacity Diagnosis (2020), RoM, CADRI Partnership, Mauritius**", commonly known as the CADRI Report, to outline the risk profile of different socio-economic sectors in Mauritius with regards to Climate Change.

Therein, lies the second fundamental flaw of why current Adaptation efforts cannot be deemed effective in Mauritius or why the national economy as a whole is not building effective resilience against the impacts of climate change.

From the outset, it is important to note that climate change vulnerability assessments **are not to be construed** as climate risk assessments which englobes multiple other factors (see footnote 18, Sendai Priority 1 below) than vulnerability assessment and which requires higher technical skills to be performed.

The preconised approach to understanding climate change hazards, vulnerability, exposure and risk has evolved from the IPCC Fourth Assessment Report (AR4 - 2007) to Fifth Assessment Report (AR5 - 2014). The AR4 construct includes vulnerability as a core concept that describes the degree to which a natural or social system is susceptible to, and unable to cope with, adverse effects of climate change. The AR5 construct, (see **Figure 10**) replaces the concept of vulnerability with that of risk as the endpoint of the preconised approach and **which should be focused on assessing the risk of climate-related impacts that may harm a system in one way or another.**

From literature, this change has been largely driven by the need to integrate interrelated nature of climate risks and vulnerabilities and disaster risk management more broadly. Thus, the AR5 construct attempts to integrate the two research realms of climate change Adaptation (CCA) and disaster risk reduction (DRR). It is therefore surprising that the NCCAPF rev 2021 appear to have resorted to vulnerability assessments only for its revision.

Sercondly. while it provides a brief outline of the risk profile of Mauritius, the CADRI report explicitly points out the multiple challenges and gaps in the national capacity for Understanding Risk (in line with Priority 1 of the Sendai Framework for Disaster Risk Reduction 2015-2030)[18]. They are extensively quoted below and then their relevance to climate change Adaptation in general and to this study are further discussed.

Note: for the sake of clarity, disaster risk englobes climate-related risks.

Extracts from the CADRI Report:

Executive Summary : *There remain two key challenges to address: Firstly, risk information is not available in the right format for decision makers (open access, digital, spatial and user-friendly data at the right scale); and secondly the assessment of disaster risk does not integrate the analysis of multiple hazards. A number of gaps in capacity must be addressed to make progress in both areas*

Section 2.1: *The legal and regulatory framework for risk identification across sectors is relatively patchy. The PPG and the EIA include regulations for risk identification, but they do not systematically apply. There is a lack of clarity with sector ministries on the applicable regulation for risk identification, and limited knowledge about the applicable legal framework, regulations and methodologies to conduct risk assessment prior to planning.*

The Disaster Risk Reduction and Management Act does not clearly articulate the provisions for the conduct of multi-hazard risk assessments.

[17] Mauritius National Climate Change Adaptation Policy and Framework (NCCAPF rev 2021)
[18] Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment

The production of risk information products such as maps or risk assessment - by institutions such as MoHL or MoESC - is not underpinned by an analysis of user needs in public and private sector in particular in the growing sectors of tourism, industry, trade & transport, ICT.

Recommendation 2.1.2.2 *requires that the national authorities "Undertake comprehensive risk assessment that responds to the needs of government, economic and civil society actors"*

Recommendation 2.1.2.2.1 *requires that "Based on analysis of user needs, complete a comprehensive multi-hazard risk assessment in relevant areas of the country. This should entail preparing comprehensive maps in appropriate scales for the main prevailing hazards, including technological hazards; and the generation of scenarios based on historic data and the inter-connectiveness of risk (for instance floods and epidemics) and assessing potential losses based on the exposure of property, livelihoods, critical facilities, infrastructure etc."*

From research and interviews conducted for the purpose of this study, it would appear that the above recommendations have stayed unaddressed as at date. Recommendation 2.1.2.2.1 is particularly relevant to this study as it would have allowed to bring informed answers (or at the very least additional precision to decision-makers, both public and private) to the question raised in section 3.1: *Understanding Adaptation in the context of climate change requires careful consideration of two dimensions: scale (Who is responding where, to what?) and purpose (Why are we responding? What are the aims of Adaptation?).*

Figure 10 describes the overall components of Risk and where Adaptation policies and frameworks fit in addressing the challenge of climate change.

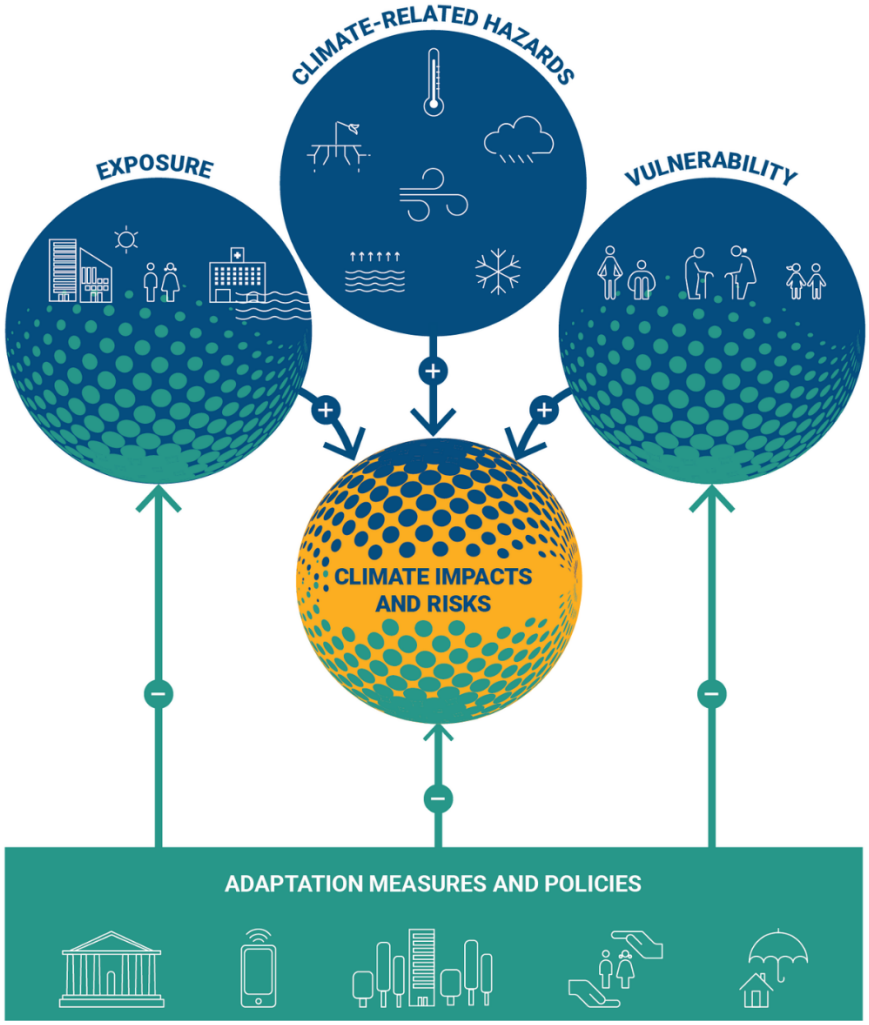


Figure 10: Climate Risk Assessment Approach, Source: EU Climate-Adapt (adapted from IPCC 2023)

Adaptation measures and policies are essential in reducing the overall risk, aiming to limit climate impacts and improve resilience within communities and systems. Planning Adaptation at local and regional level requires a good grasp of the above four factors to produce a climate risk assessment.[19] This is aligned with Sendai Framework Priority 1. In limiting itself to a vulnerability assessment (CCVA 2021) which then guided the formulation of the NCCAPF rev 2021, it may be feared that Mauritius is, in effect, addressing climate change Adaptation from a slender perspective which may not serve the interests of a long-term Adaptation strategy.

Recommendation 11: National Authorities should put in place a priority task force to address recommendation 2.1.2.2 of the CADRI Report. UNDRR (United Nations Office for Disaster Risk Reduction) provides an explicit guide on how to conduct a national risk assessment exercise[20]. Its headline ("**Putting Words into Action**") is pretty revealing on what governments should do. If deemed necessary, international assistance should be sought.[21] The task force should comprise relevant national representation. The risk assessment exercise should have a multi-hazard approach.

Recommendation 12: The risk assessment exercise should aim to produce quantitative data which in turn would allow for more precise formulation of linked risks such as financial risk caused by climate-related events.[22]

The CADRI report notes that the legal framework for the conduct of multi-hazard risk assessment is patchy and not clearly articulated. The same observation can be made for the Climate Change Act 2020 whereby 1.) the concept of risk assessment is not defined 2.) vulnerability and risk assessment are put at the same level whereas it should not be so 3.) no consideration is provided multi-hazard risk assessments, the formulation of the clauses pertaining to risk assessment pertain mostly to sectoral/mono-hazard assessment and 4.) no obligation or accountability clauses is provided for ensuring effective and periodic risk assessment exercises and reporting on those matters.

As an example of a sound legal formulation for climate risk assessment exercises, the UK Climate Change 2008 section 56 (widely recognised as a benchmark) is quoted below for reference:

UK Climate Change Act 2008, section 56

(1)It is the duty of the Secretary of State to lay reports before Parliament containing an **assessment of the risks** for the United Kingdom of the current and predicted impact of climate change.

(2)The first report under this section must be laid before Parliament **no later than three years after this section comes into force.**

(3)Subsequent reports must be laid before Parliament **no later than five years** after the previous report was so laid.

(4)The Secretary of State may extend the period for laying any such report, but must publish a statement setting out the reasons for the delay and specifying when the report will be laid before Parliament.

(5)Before laying a report under this section before Parliament, the Secretary of State must take into account the advice of the Committee on Climate Change under section 57

[19] EU Climate-Adapt
[20] Words into Action guidelines: National disaster risk assessment (2017)
[21] The GRMA (Global Risk Modelling Alliance) is one such entity that specialises in risk modelling which requires high technical skills
[22] Bank of Mauritius Guideline on Climate-related and Environmental Financial Risk Management

Paragraph 256 of the explanatory notes of the UK Climate Change Act 2008 recognises the top-down link between Climate Risk Assessment and formulation of an Adaptation strategy.

Recommendation 13: National policymakers should consider addressing the shortcomings in the Climate Change Act 2020 for climate risk assessments. It should also consider aligning those provisions with the National Disaster Risk Reduction and Management Act 2016 to avoid potential duplication of responsibilities/mandates.

4.1. COMPOUND CLIMATE RISKS

It is quite possible for a geographical location to be affected by several climate hazards, but what would happen if these hazards were to occur in a period of time small enough for them to interact with each other?

The Intergovernmental Panel on Climate Change (IPCC) *Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* defines "compound events" as events where multiple extreme events of either different or similar types occur simultaneously and/or in succession. These compound events can often impact ecosystems and societies **more strongly** than when such events occur in isolation.

In the context of climate change, compound risks or complex risks refer to a combination of climate risks whose collective impact might be more severe than when they occur alone.

4.2. CASCADING CLIMATE RISKS[23]

Direct (Physical) climate change impacts such as increasing heatwaves, floods and wildfires pose a serious risk to societies and should be easy to apprehend by decision-makers.

'Cascading climate risks' connect a given economy(country) with wider vulnerabilities such as climate hazards in remote locations that create knock-on impacts that spread across borders and through systems, affecting societies and economies.

A country's exposure to cascading climate risks increases if countries, communities and companies outside its borders do not have the capacity to prevent initial climate impacts from escalating and propagating. In the context of Mauritius, a simple illustration of this spill-over effect could be wildfires in Australia preventing exports (or sharp rise of prices) of pulses or severe droughts in India causing rice shortage and ban on exportations.

The European Climate Risk Assessment[24] mentions that "**Climate change is a risk multiplier that can exacerbate existing risks and crises".**

Climate-related hazards (e.g. heatwaves, prolonged droughts and floods) in interaction with non-climatic risk drivers (e.g. ecosystem fragmentation, pollution, unsustainable agricultural practices and water management, land use and settlement patterns, and social inequalities) threaten food security, public health, ecosystems, infrastructure and economy. Climate impacts can cascade from one system or region to another. Cascading climate risks can lead to system-wide challenges affecting whole societies, with vulnerable social groups particularly implicated.

[23] Cascading climate risks: strategic recommendations for European resilience, Ruth Townend, Chris Aylett and Magnus Benzie, November 2023
[24] EEA Report 01/2024

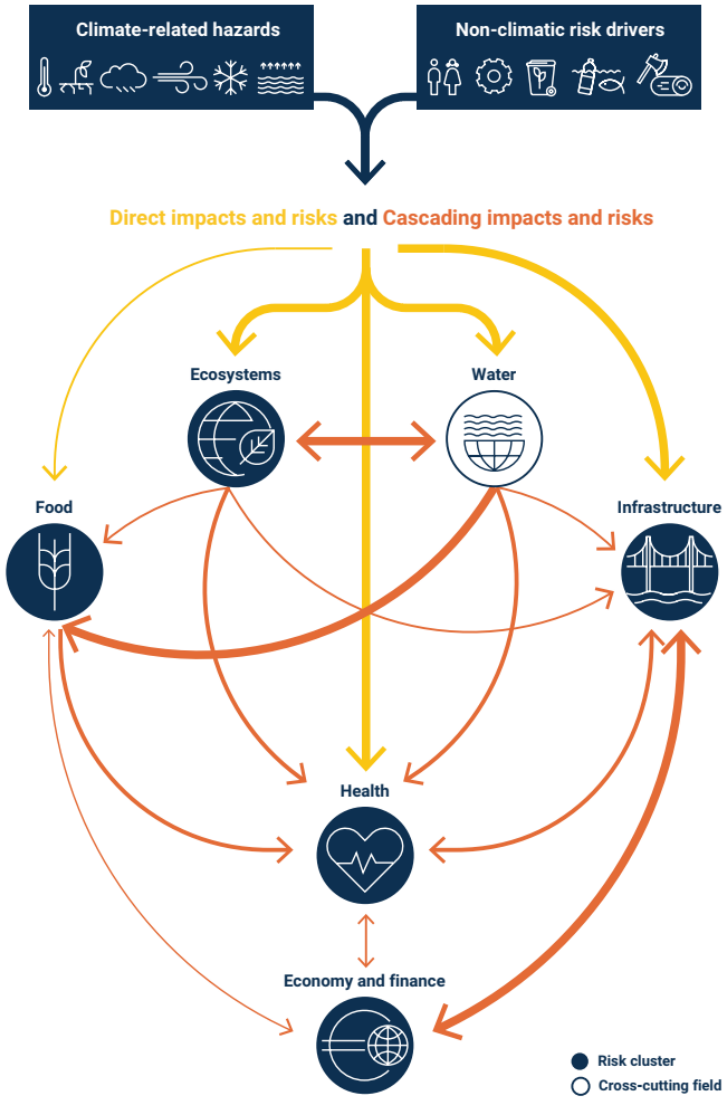


Figure 11: Links between risk drivers and the clusters of climate risks assessed. Source: European Climate Risk Assessment 2024

Awareness of risk cascades is crucial for reducing climate risks because it offers different possible targets for risk reduction strategies. It is often more efficient to address a risk at the beginning of the cascade than where the impacts are felt most strongly. **Comprehensive Adaptation policies need to prevent the deterioration of the foundation of basic human needs (such as ecosystems, food and health) while promoting the resilience of human systems and activities (such as infrastructure, economy and finance).**

Adaptation policies also need to consider pre-existing inequalities and the disproportionate burden on vulnerable groups most affected by the lack of essential services.

Shocks occurring in remote locations have therefore the potential to severely disrupt societies and economies far away. It is noted from the report being quoted that "Cascading climate risks are, as yet, little understood and seldom assessed or managed. This is extremely dangerous." The success or failure of Adaptation beyond a country's borders will, because of cascading climate risks, partially determine the level of risk faced in that country.

Recommendation 14: Hence in defining its Adaptation strategy, Mauritius should include considerations for Compounding and Cascading risks in order to have an integral view of the Adaptation and Resilience needs of its economy.

4.3. THE ROLE OF GOVERNMENT IN CRA

Risk Assessment is essentially a top-down process. This was true even for vulnerability assessment as illustrated for **Figure 12** (based on Benioff, Guill and Lee, 1996).

Note: However, data generation and collection in the context of CRA is both top-down and bottom-up.

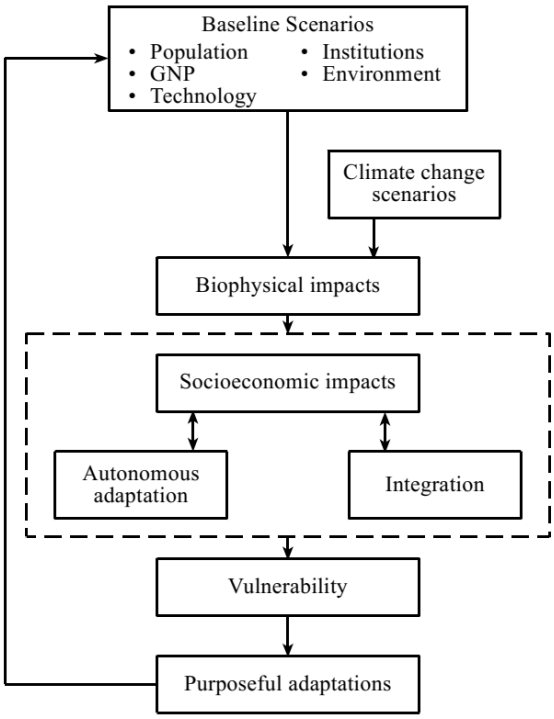


Figure 12: Top-down process for Risk Assessments (based on Benioff, Guill and Lee, 1996)

The role of Government in CRA is therefore essential and pivotal for CRA to be meaningful for all stakeholders (public and private). This is recognised in the Australia Methodology for National CRA[25] (see box below)

> The public sector can also encourage and assist private sector Adaptation by addressing the barriers to action identified in this analysis. **A key role for the public sector is to help provide companies with the information they need to take account of climate risks.** Public sector institutions do not necessarily need to produce this scientific information themselves, but can act as intermediaries to facilitate information exchange between scientific and business communities and to make information more understandable and accessible for non-technical end users (Corfee-Morlot et al., 2011). Additionally, **the public sector can assist private sector decision-making by providing risk-management guidance and tools** that are adapted to suit different users' needs.

In failing to do so, the potential consequences are that the private sector will resort to self-defined methodologies that 1.) could be based on erroneous data/information thereby leading to ill-informed decisions such as maladaptation 2.) could be incoherent between each other and lead to wrong aggregated data 3.) severe underestimation of exposure to risks and unaddressed vulnerabilities thereby endangering people's life or creating systemic economic risks.

[25] Australia Government, Department of Climate Change, Energy, the Environment and Water

In the Mauritian context, an illustration of the above paragraph could be found in the current Risk Assessment exercises engaged by commercial banks in order to comply with the BoM Guidelines on Climate-related and Environmental Financial Risk Management (CREFRM). **In the absence of a nationally defined methodology and unavailability of essential risk data/information at national level, banks have adopted a scattered approach to comply with the guideline**. Outputs appear to contain high levels of variability and uncertainty that should not allow for a sound consolidation in view of deriving a national regulatory perspective on CFREFM. Some of the methodologies used by banks (witnessed during the course of this study) appear to be directly based on typical Entreprise Risk Management (ERM)[26] methodologies which are grossly inadequate to be employed for CRA.

In the context of the above, it can be assumed that banks are constrained in their capacity to fully grasp Climate-Related Risks in the national context of Mauritius **and are in turn constrained in their capacity to understand and align to the Adaptation requirements of different economic sectors in Mauritius**.

As consequence, this limits the capacity of the supply-side of finance to articulate financing strategies for Adaptation (section 3.2).

Recommendation 15: Public authorities in Mauritius should be in no doubt around the crucial and vital role that they need to play for a sound and effective national climate-risk assessment framework and exercise. The CRA should serves the needs of all stakeholders and guide Adaptation action in line with preconised IPCC recommendations and best practices.

4.4. PRIVATE SECTOR PERSPECTIVE

In the context of this study, the views of the Private Sector were sought on their perception of risks which are directly or indirectly related to climate change. Those were defined as follows:

Climate change poses **direct and indirect** physical risks to business performance, with both **local and distant** exposure (see below). For example, sea level rise poses a direct risk with local exposure to a business with coastal infrastructure, as this physical asset may be damaged. Political risk, on the other hand, poses an indirect risk with distant exposure. Many private actors do not yet quantify physical risks in their direct operations and supply chains, and those that do seem to be substantially underestimating them. (Goldstein, Turner, Gladstone, & al., 2019).

[26] ERM typically averages multiple people opinions (educated or non-educated) to derive risk levels. This method does not weed out scientific illiteracy. On the contrary, CRA should be based on scientific and probabilistic scenarios-building exercises. CRA conducted without the support of recognised climate scientists should not be used for strategy decision-making or definition of Adaptation strategies.

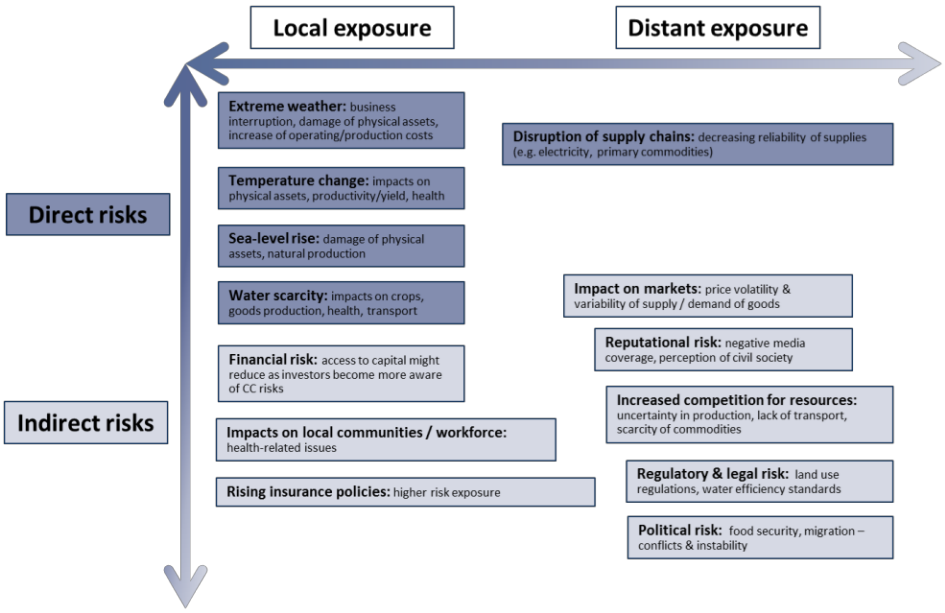


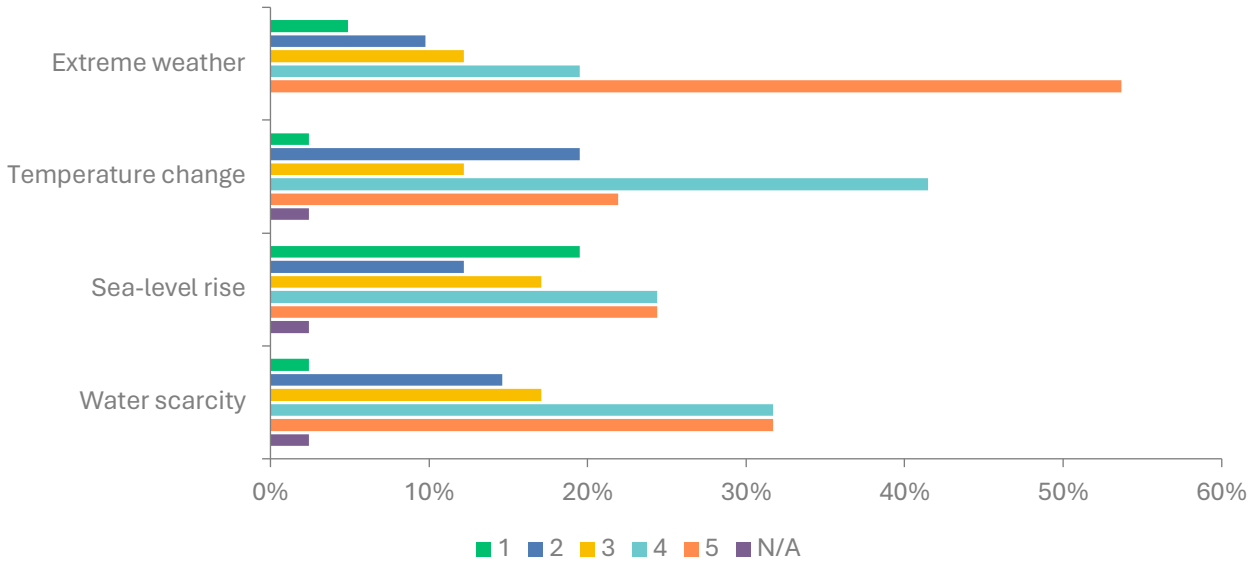
Figure 13: Climate-related risks, Source: FS-UNEP Collaborating Centre (2015), adapted from Pauw (2014).

Recommendation 16: In designing their CRA exercises, private sector companies should consider all four dimensions (direct and indirect, local and distant), notwithstanding other points raised in this section

Recommendation 17: In designing focus areas for National CRA exercises, the public sector should consider the preoccupations raised by the private sector as provided in the survey results below.

Survey Results *(1 – least concern, 5 highest concern)*

Direct Risk and Local Exposure



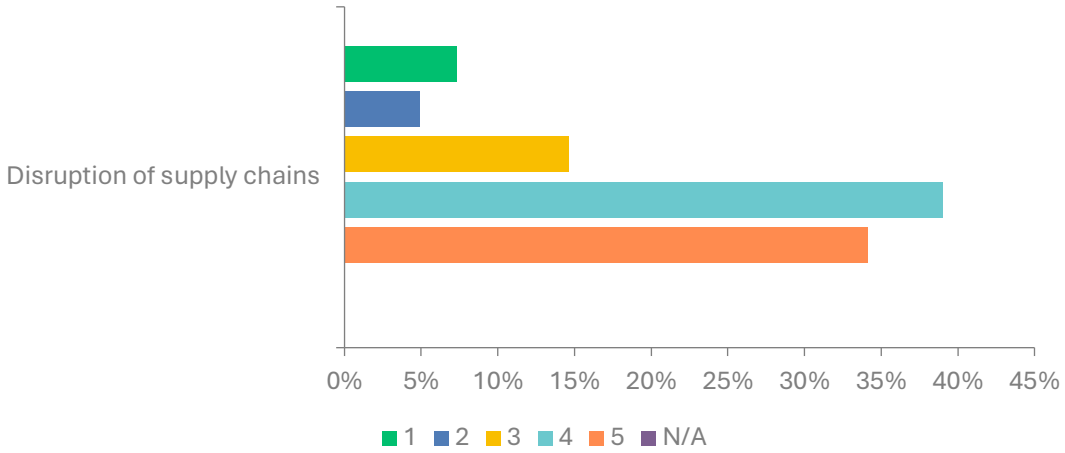
Extreme weather events (73%) and rising temperatures (63%) are major concerns for the private sector. Recent events in Mauritius have weighed heavily in the balance. With regards to rising temperatures, this also demonstrates awareness of the effects of CC on human health and ecosystems.

Sea-level rise (51%) is a concern mainly for the tourism sector, but its more global impact on the Mauritian economy should not be ignored, despite its relatively lower score.

Water resource issues (62%) are also a chronic reality in Mauritius, and the outlook is not good without a change in policy.

In conclusion, Adaptation actions around these 4 themes should be pursued in the future, leading to the emergence of financing projects.

Direct Risk and Distant Exposure



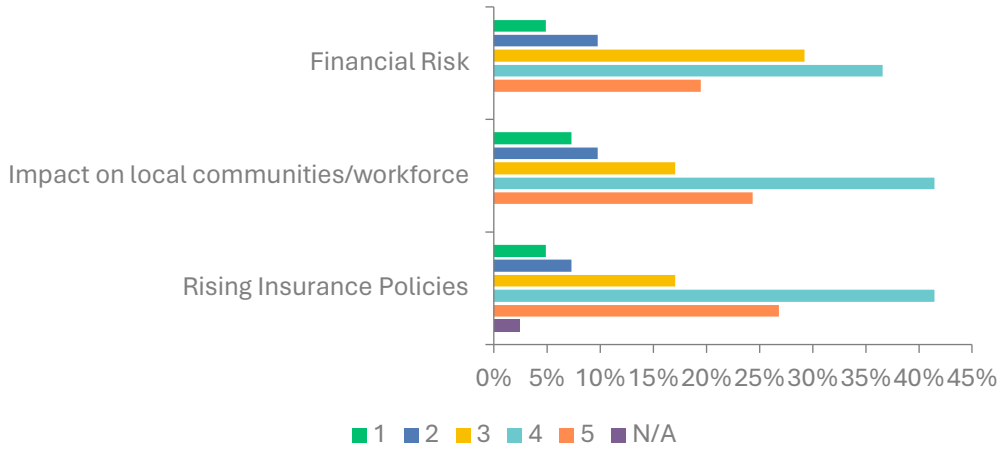
Even if an organization in Mauritius owns only a handful of assets, most of them rely on long supply chains that depend on hundreds of assets, including factories, power plants and office buildings abroad. All parties in the supply chain therefore share the risk of damage to any of these assets, including climate risks such as floods, droughts and forest fires, which can lead to disruption, delays and loss of profitability.

The projected cost of environmental risks in supply chains is USD 120 billion by 2026. (see CDP graph below)

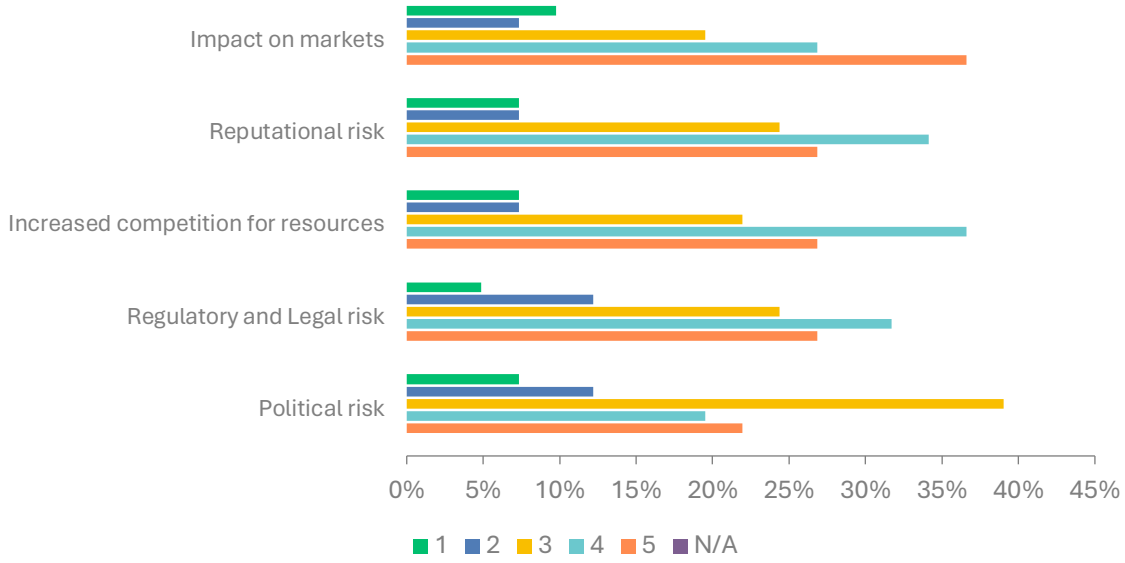
The survey results (75%) show that Mauritian companies are aware of this risk for their own operations. As part of an Adaptation strategy for the emergence of resilient supply, project financing coupled with institutional support for the development of regional and/or local value chains should be considered.

Source: Centre for Disaster Protection

Indirect Risk and Local Exposure



Indirect Risk and Distant Exposure



As Mauritius is a politically stable country and seeks harmony between public and private players, it is natural that political risk should be considered low. But this is only applicable if Climate Change Impacts are considered with a short-term perspective only. From a longer term perspective, companies may overlook the fact that politicians may have to take drastic decisions depending on changes in the geopolitical context caused directly or indirectly by the CC. Companies can also be affected by political risks in third countries. For example, India has banned rice exports for domestic political reasons, due to the negative impact of drought on production.

The elements presented in this slide and the concerns expressed by companies demonstrate the awareness of the various risks they face. Support will be needed to establish the causalities between climate risks (physical and transitional) and the financial risks weighing on Mauritian businesses.

The social question and the well-being of employees and communities providing the labor pool vis-à-vis the CC must also form part of the Adaptation measures in accordance with the specific characteristics of different jobs.

5. SUNREF III

SUNREF Mauritius is a program designed by AFD to promote green investment by the private sector. Its current iteration, SUNREF III, consists of (i) a €85 million green credit line made available to companies and individuals with climate change mitigation, **Adaptation** or gender equality projects, through three partner banks (AfrAsia, MCB and SBM); (ii) technical assistance financed by the European Union, based at Business Mauritius, to support project initiators in defining their projects and banks in implementing the program; (iii) investment grants ranging from 5% to 16% of the eligible loan amount for the benefit of the project sponsor. SUNREF III was launched in September 2018 and is expected to be completed by September 2024.

SUNREF III was a pioneering initiative to foster and encourage the private sector in Mauritius to engage into the conception and implementation of Adaptation projects. It was actually one of its first worldwide when it launched in 2018. The eligibility criteria for financing Adaptation projects were defined as part of a preparatory exercise to set up the programme and are based on a feasibility study on Adaptation projects in Mauritius carried out by the consulting firm Artelia early 2018.

This preparatory study was key to defining the broad parameters around the conditions and eligibility criteria for such projects to be successful in obtaining SUNREF financing. It was carried out in close collaboration and exchanges and interactions with the SUNREF partner banks. Based on that study, SUNREF III adopted the following principles and outlines:

- Eligible projects to be financed by SUNREF III need to contribute to one or more actions listed in the Mauritius NDC.
- Eligible projects should first be bankable from a financial perspective and then be bankable from an Adaptation perspective (See section 3.2).
- SUNREF III should seek to bring additionality, this means that projects are brought above financial bankability levels by benefiting from SUNREF III incentives.

In line with the national strategy of Mauritius in transitioning towards a greener economy, the following priority sectors were identified as essential (listed activities are non-exhaustive):

- **Tourism**: water consumption, coastal activity, desalination, cooling
- **Industry**: water consumption, desalination, effluent treatment and reclamation
- **Housing**: Adaptation-compatible constructions, materials, building cooling
- **Public infrastructure and commercial buildings:** Adaptation-compatible constructions, materials, building cooling, stormwater management
- **Agriculture**: water consumption, land use, irrigation, development of climato-resilient crops

Over its six years duration, the volume of Adaptation-related financing stand at 22% (see **Figure 2**) of the total financing disbursed by SUNREF. This percentage is below the initial expected performance. Analysing the reasons and deriving learnings from the activities executed/done by SUNREF III constitutes one of the key purposes of this report.

First, it is important to note that based on the other sections in this report, Adaptation-related investments are generally lower than expected worldwide. Based on abundant literature in this matter, the difficulty in isolating Adaptation components from private sector investments contributes probably to reporting gaps.

From OECD report on scaling up Adaptation finance[27], Adaptation objectives often align with broader growth and development objectives hence the complexity of identifying or narrowing down finance for Adaptation purposes.

[27] Scaling Up Adaptation Finance in Developing Countries (ISSN: 24090344 (online) https://doi.org/10.1787/24090344)

To be counted as Adaptation finance, international standards require that funding should be provided **with the express intention of enhancing climate resilience, based on analysis of climate risks**.

Adaptation, Resilience and Development are closely related subjects.

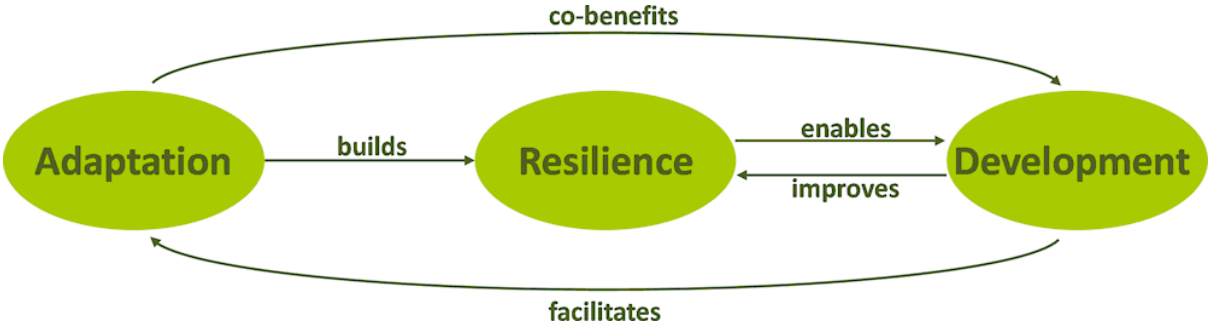


Figure 14: Relation between Adaptation, Resilience and Development, Source: OECD

Analysing the merits of the SUNREF III programme and scrutinising private sector investments in Adaptation cannot be achieved in isolation of the sole merits or activities of the financing programme.

It should first be carried out with a **macro-angle or outward-looking perspective** on Adaptation-related issues and challenges emerging from both the world and national economies in transitioning towards sustainable practices. It is important to stress once again that Adaptation strategies must be embedded into development strategies and backed by a governance framework that create the necessary drive for economic actors to engage into Adaptation. This analysis is carried out in-depth in other sections of the report, namely:

- **Section 2** stresses the general need for a robust and fit-for-purpose governance framework to support national Adaptation strategies and explain the reasons for this.
- **Section 2.3** provides key insights on the complexity and challenges on fostering the right ecosystem for Adaptation-related projects to emerge. The arguments and recommendations provided therein aim to shed light on framing the issue and the potential courses of action.
- **Section 3.2** frames the issues for both demand and supply side of Adaptation finance, some of which are to be considered as market imperfections which have limited the ability of SUNREF III to meet its Adaptation objectives.
- **Section 6** describes the barriers from six different perspectives (in line with the current literature in this matter[28]) which may prevent Adaptation projects from emerging from the private sector and provides potential solutions for addressing those barriers (some of which are self-explanatory in the way they should be resolved from the description of the issue and/or are canvassed elsewhere in the report)
- **Section 4** addresses the issue of absence of a sound climate risk assessment exercise at national level which is to be considered as a fundamental flaw in the National Adaptation Framework and Action Plan of Mauritius, thereby leading to a national strategy which lacks clarity and precision for stakeholder engagement and action (including green financing programmes such as SUNREF III or potentially any other relevant support from international organisations/DFIs). This flaw is linked to one of the key challenges of Adaptation (section 3.1: *One of the greatest challenges in implementing Adaptation **lies in identifying who and what is vulnerable**, and even in specifying who has the right and responsibility to execute such a task*)

Then, it is also important to have a **micro-angle or inward-looking perspective** in order to leverage on lessons learnt and derive an enhanced strategy for future Adaptation financing lines, namely:

Note: the points raised below are written in recommendation mode

1. Financing Adaptation projects does not involve the same approach as to financing mitigation projects both from the supply and demand side of finance. Future financing programmes especially those

[28] UNEP Finance Initiative, Demystifying Adaptation Finance for the Private Sector (Nov 2016)

targeted towards new partners or less mature partners should ensure that the specificities of Adaptation-related projects described in various sections of this report are considered.

2. In line with the above paragraph, adequate preparation time should be provided prior to the launch of the financing programme. This should include capacity build-up activities targeted towards would-be partner banks/financial institutions so that they are effective and operational in executing the financing programme from the onset. In addition, a clear budgeted plan for training, communication and knowledge transfer should be established and executed diligently by the TA towards a wide audience of economic actors. This plan should not shy away from having difficult conversations to ensure that the fundamental principles of Adaptation are understood and accepted by all actors so that projects comply with eligibility criteria.

3. Studies and reports should be disseminated to a wide audience instead of being restricted. The Artelia feasibility study embeds a high-level climate risk assessment which, considering the context in 2018, would have most proven useful to educate different actors. It was unfortunately restricted to be shared with partner banks only.

4. Surprisingly, it was observed at the time of this study that most staff of partner banks involved in green financing were not even aware of the existence of the Artelia feasibility study. This could be due to the turnover of personnel within the partner banks. However, this is also a process failure, and it will be important for future financing lines to ensure that 1.) the engagement level of partner banks stay strong throughout the programme duration and 2.) commitment is given by senior management at Partner Banks that information is properly transmitted or handed over between rotating staff and/or departments.

5. As mentioned already, the Artelia report provides the broad parameters for Adaptation related investments, however the report was not meant to suffice as the sole detailed reference from which the SUNREF III Technical Assistance (TA) should have discharged its responsibilities. The report mentioned multiple open issues and states that they should be detailed in a more precise manner later. Most of these issues have stayed unaddressed during the programme.

6. New sectors (such as Agroforestry or development of bio-sources materials for construction) would have required their own strategic planning (including the involvement of policymakers for institutional set-up) and in most cases, in-depth detailed feasibility studies prior to their large-scale adoption by Mauritian stakeholders. Not doing so curtails the potential of such beneficial activities to be implemented. It is therefore important for future Adaptation financing lines to develop a knowledgebase in the local context around Adaptation related projects. The Agrivoltaics study conducted under SUNREF III could serve as reference for a modus operandi towards innovative subjects and their required capacity build-up.

7. In the case of an Adaptation finance programme based purely on loan instruments, eligible projects should be streamlined to those projects that can actually satisfy the requirements of partner banks/FIs for financial bankability partner Eligible projects such as “Selection and developing climate-smart crops” are mostly research-oriented and are not carried out by commercial entities/businesses. As such they do not provide a business case for financing by commercial banks.

8. Further, there are several categories of Adaptation investments. Some generate revenue, some savings, some both or neither. Some generated savings are shared, some are internalised. Some revenue-generating investments provide clear business opportunities. Each category has different implications for where and how the private sector can engage; **thus, tailored innovative financial mechanisms are required to address barriers to private investment in different situations**. However, SUNREF III, in its design, limits itself to those Adaptation investments that provide clear business opportunities. Should future Adaptation programmes adopt the same financing perimeter as SUNREF III, it would be then necessary to limit the typology of eligible projects that meet the financing criteria of partner banks.

9. Notwithstanding the above, it is desirable for future Adaptation financing programmes to be holistic in their design and conception to achieve an optimal outcome and impact in supporting national strategies. They should therefore englobe different financial instruments and/or channel funding through different mechanisms to cover a large spectrum of different types of Adaptation investments.

10. Developing an Adaptation financing programme (even if targeted towards the private sector) should be done in close collaboration with policymakers/national agencies to ensure that 1.) the programme is backed by required support from these stakeholders and 2.) comfort is given from the onset on the alignment of the programme with national strategies. It is also desirable, if possible, for a mutually agreed action plan supporting the programme (such as addressing barriers) to be agreed and implemented.

11. Green building financing should be curtailed in future Adaptation financing programmes[29]. They already embed high return rates and their commitment to incorporate Adaptation components should be driven by regulatory requirements rather than concessionary finance which are better suited to support lower return rate investments or to correct supply side issues of Adaptation financing. The same may apply to real-estate developments although it may be necessary to support innovation and technology transfer investments on a case-per-case basis.

12. Future Adaptation financing programmes should seek to go beyond “simple/quick-win” solutions (such as taps, domestic washing machine etc …). Although some of these projects may provide excellent benefits from a micro-angle, they are not enough to bring meaningful change and tend to dilute key communication around Adaptation causing it to be viewed with a degree of casualness.

13. The current SUNREF approach requires a detailed analysis/decomposition into micro-components of a project to those eligible elements. While this approach is necessary to filter BATs (Best Available Technologies) for mitigation projects, it may prove to be counter-productive in the case of Adaptation funding since the latter requires considering the overall design and impact of projects. The methodology for assessing some Adaptation projects should be adapted to the characteristics of those projects. The approach used for determining the eligibility of the “Ciel Textile” and the “Wecycle” projects under SUNREF III is a good illustration in alignment with this recommendation.

14. Future financing programmes should embed agility and flexibility features for them to adjust during their execution to 1.) new conditions such as emergence of new technologies/practices 2.) new policies or scientific data such as climate modelling data that require putting into question established eligibility criteria or approach to assess Adaptation projects 3.) addressing misjudgements or design issues cropping up post-launch.

[29] OECD Rio Markers

6. ADAPTATION INVESTMENT BARRIERS

An (Adaptation) investment barrier is “a friction that prevents socially optimal (Adaptation-related) investments from being commercially attractive”.[30]

Market imperfections (barriers) lead to an unwarranted reduction of the attractiveness of an Adaptation investment relative to the hypothetical case of a fully functional free market. From the perspective of an investor, the apparent consequence would be reduced returns and/or increased risks. This reduced attractiveness thus limit or inhibit private Adaptation finance flows.

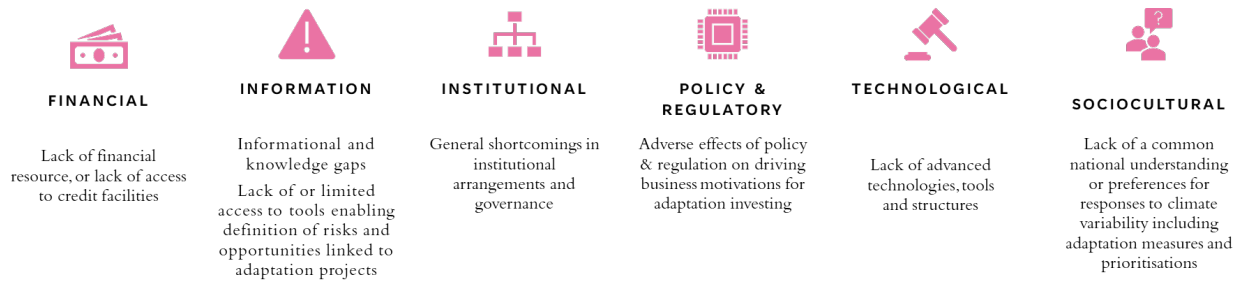
However, to achieve the Adaptation targets listed in Mauritius NDC and the NCCAPF rev 2021, policymakers in collaboration with all economic actors should be diligent in mitigating barriers.

Addressing market imperfections which require changing the regulatory environment in which markets operate, **is within the remit of national governments and national regulatory bodies to address** with potentially the support of international organisations. It is therefore important for policymakers to analyse market imperfections preventing optimal conditions for Adaptation investments to emerge though it is agreed that it is unrealistic to assume that all barriers can be eliminated.

Some ways of addressing barriers[31] would be to:

1. integrate a more granular, ‘actor-based’ perspective into national Adaptation planning, rather than limiting the process to high-level planning approaches at macro level
2. incentivising private Adaptation investments which generate positive impacts on society.
3. stimulating the creativity of the private sector by increasing the support for knowledge generation and innovation. This would be sector and potentially actor specific and should be aimed at contributing to a general environment of innovation where there is also room for new business models to emerge (example: Agrivoltaics supported by the SUNREF III programme)

Although there are overlaps, Adaptation-related literature indicates that the six most frequently discussed typological groupings of barriers to private investment in Adaptation are as follows:



These barriers are detailed in the below paragraphs in the context of Mauritius. Some of the points raised are self-explanatory in the way they should be addressed, some are repeated from section 5 - SUNREF III (which is the sole green financing line catering for private sector Adaptation investment in Mauritius[32]) for the sake of providing a holistic perspective on barriers whereas other points raised are addressed in various sections in this report.

Financial	**Informational**
• The Adaption measures deemed eligible under SUNREF III are not all ‘bankable’	

[30] Druce, L., U. Moslener, C. Gruening, P. Pauw, and R. Connell (2016) Demystifying Adaptation Finance for the Private Sector, UNEP report
[31] Druce, L., U. Moslener, C. Gruening, P. Pauw, and R. Connell (2016) Demystifying Adaptation Finance for the Private Sector, UNEP report
[32] At the date of writing this report (30 September 2024)

subjects. They are therefore not eligible to be financed under credit mechanisms. • The economic benefits of Adaptation measures, such as return on investment, can be difficult to quantify and calculate accurately compared to mitigation measures. • The lack of universally recognised Adaptation indicators can make it difficult to accurately assess impacts, which may discourage investors. • No thought has been given to the need to develop financial mechanisms that are more complex than a simple loan, in particular with guarantee mechanisms opening up access to Green Financing (SUNREF) loans to a wider population. • Lack of funding opportunities for non-bankable Adaptation measures even though they are essential • Lack of innovation in the financial instruments available to market actors. • Lack of a liquid, long-term capital market, which may reduce capacity for Adaptation investments. Climate impacts tend to materialise over a longer period, while regulatory interventions favour a shorter debt maturity.	• Problems of data governance and access to information, making it difficult to carry out the analyses required for project design. • Failure to publish reports on climate change and associated risks in Mauritius, making it difficult to take informed decisions when designing projects. • Scarcity of local expertise and tools • Difficulty for loan officers to assess project risks due to lack of hindsight or information • Incomplete and/or asymmetric information can lead to unfavourable investment choices in terms of Adaptation in the economy (and maladaptation!)
Institutional[33] • The DCC (Department of Climate Change) lacks the staff and resources to fulfil its obligations • It is unclear whether the CCC (Climate Change Committee) is effective in fulfilling its obligations. The same applies to the IMCCC (Inter-Ministerial Climate Change Committee). • The structures put in place are centred on the public sector (Ministry of the Environment) with very limited openness towards the private sector or civil society. • No effective multi-level governance approach (horizontal and vertical) for the CCA (Climate Change Act) • No government body equipped to design a Long-Term Strategy (LTS) for transition to a greener and more resilient economy. • Several conceptual weaknesses in the 2020 Climate Change Act • Lack of legislation for sensitive areas (ESAs). • Need for capacity building for the Parliamentary and Judicial branches of RoM	**Policy & Regulatory** • Lack of funding for key plans, medium-term strategies and policies • Limited alignment between technical/institutional and budgetary planning processes • Institutional fragmentation and/or compartmentalisation hampers the planning process • Lack of inclusion of specific groups (women, youth, vulnerable communities) in advisory committees • Lack of basic data and lack of access to existing data
Technological • Lack of tools to conduct in-depth analyses to guide project developers' decision-making	**Socio-cultural** • There is no overall societal approach to the issues of resilience and Adaptation, resulting

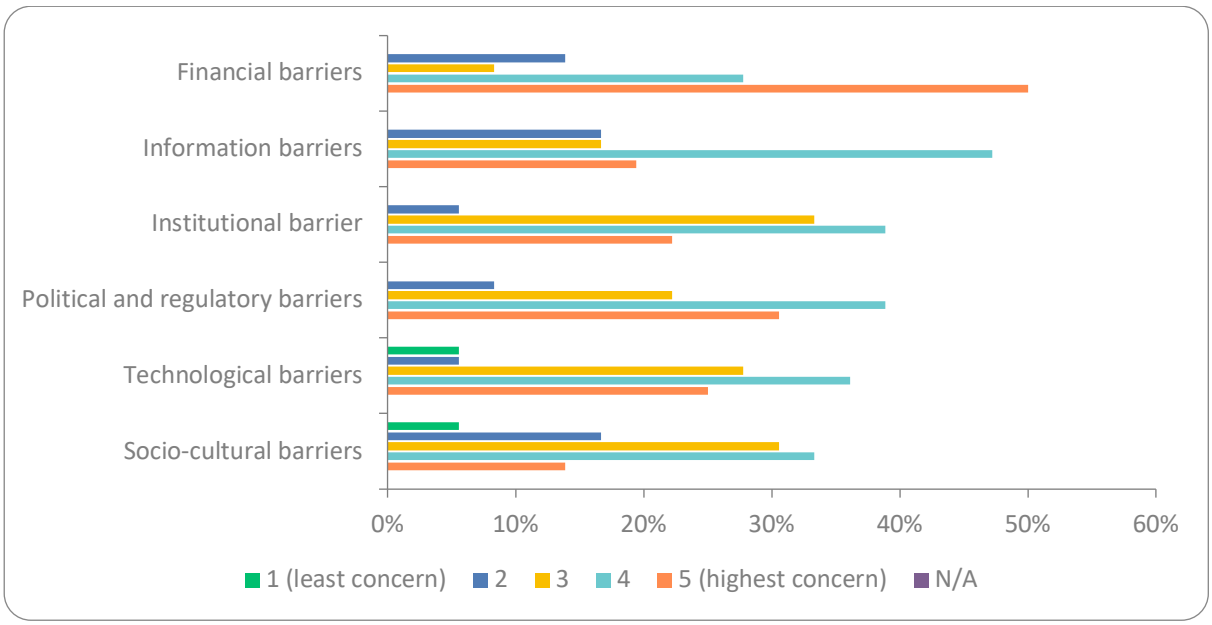
[33] Extracted from report on Climate Governance in Mauritius, AFD 2023

• The Mauritius TNA report dates from 2012. It is little known, contains generic information and is largely obsolete. • Weakness of the Mauritian economy in generating innovation and lack of financial incentives for additional risk-taking. • Limited local research and development capacity • Limited demonstration and technical support capacity for innovations through pilot implementations (example: pilot for Agrivoltaics and Green Hydrogen study) • Lack of policies to promote Adaptation to climate change and thus encourage innovation • Capacity Gap between R&D and generation of commercially viable projects/products/services • Limited financial vehicles to provide seed capital for projects • Lack of adequate protection for innovations, leading to free information leaks to third parties.	in a scattered approach in which individual parties all believe that they are doing the right thing. • The Adaptation strategy is weakened by the population's lack of understanding of the challenges linked climate change • An economic strategy focused on the construction industry and a purely financial rationale continue to take precedence over climate change issues.

Recommendation 18: In developing national strategies for Adaptation and a sound investment ecosystem to encourage private sector investments in Adaptation, policymakers with the potential assistance of international organisations should ensure that these barriers are addressed through different applicable tools and policy instruments.

Study-generated data shows that the private sector in Mauritius is strongly concerned with most of these barriers hampering their capacity to invest into Adaptation projects to the exception of social and cultural barriers.

Note: A low concern on the social and cultural barriers does not forcibly imply that this category is not important, social and cultural barriers 1.) are more abstract and complicated to apprehend for most people and 2.) require people to be self-critical. Understanding social and cultural barriers is however important for raising awareness and changing the behaviour of all stakeholders in Mauritius - it requires creating an analytical prism through which this barrier and its implications can be approached without value judgement.



	1 (Least Concern)	2	3	4	5 (Highest Concern)
	0%	13.89%	8.33%	**27.78%**	**50.0%**
	0%	16.67%	16.67%	**47.22%**	**19.44%**
	0%	5.56%	33.33%	**38.89%**	**22.22%**
	0%	8.33%	22.22%	**38.89%**	**30.56%**
	5.56%	5.56%	27.78%	**36.11%**	**25.00%**
	5.56%	16.67%	30.56%	**33.33%**	**13.89%**

7. MALADAPTATION

Broadly speaking, maladaptation refers to actions or inactions that may lead to an increased risk of adverse climate-related consequences, increased vulnerability to climate change or reduced well-being, now or in the future.

Barnett and O'Neill (2010) identified five dimensions of maladaptation, including actions that, relative to alternatives:

GHG

Increases GHG emissions

SOCIAL INEQUALITIES

Disproportionately affect the most vulnerable

LIMITATIONS

Comprises high opportunity costs

ILL-ADVISED CHOICES

Disregard for Adaptation and misalignment between stated intentions and reality

LOCK-IN EFFECTS

Commitment to paths that limit future choices for Adaptability

From data generated by the study, the private sector showed their significant concerns about most maladaptation issues arising from the above five dimensions. It is however important that all decision-makers within companies show the same concern and understanding of maladaptation and equip themselves with safeguards against it as part of their respective corporate strategies. By avoiding maladaptation, Mauritius will be in a better position to meet the objectives set out in its NDC.

From the survey, it is noted that there is relatively less concern in Mauritius about moral risks and taking into account ancestral/community relations and traditions. However, in the context of climate governance and in line with international best practices, it is important to educate local stakeholders about the need to consider these elements as well.

Finally, as part of the development of new lines of green financing focused on Adaptation, it will be important to include maladaptation considerations from the onset in the information pack provided to project promoters in order to guide their design choices.

Recommendation 19: Policymakers should design a governance framework for Adaptation projects that screens for maladaption in accordance with the elements provided in the chart below, further national strategies for Adaptation should revisited in the light of those same elements to ensure (and provide comfort to all stakeholders in Mauritius) that they are fit for purpose. A national green taxonomy will help in that sense and is critically important for Mauritius to make progress on its NDC.

Recommendation 20: New green financing lines for Adaptation (designed by DFIs) should embed those considerations as well. Sufficient efforts should be devoted to ensuring that technical staff at partner banks and promoters are informed and trained about the dimensions of maladaptation and held accountable for projects which, while comprising maladaptation dimensions, may be financed under green financing lines.

Source: Study data (1 – lowest concern, 5- highest concern)

8. APPETITE OF THE PRIVATE SECTOR FOR DIFFERENT ADAPTATION THEMES[34]

Based on the interests expressed by companies, the project categories presented in this section should guide the development of future green financing lines focused on Adaptation.

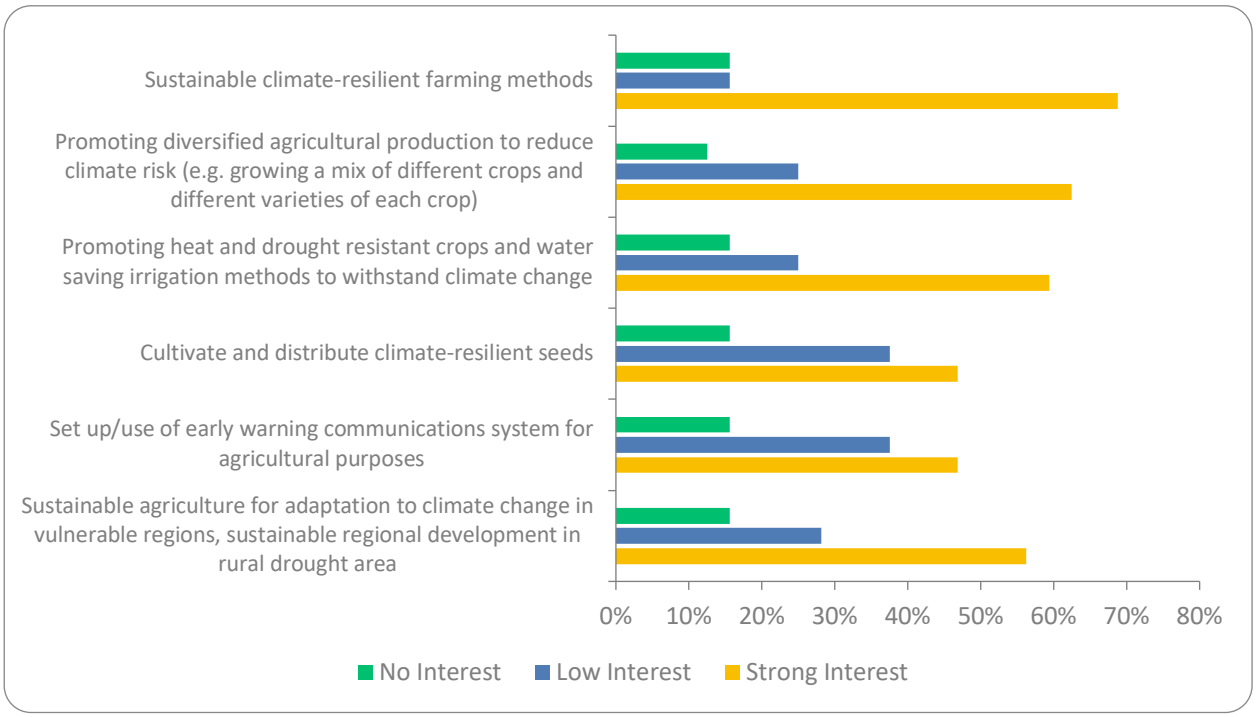
Note: The information presented below is sourced from data generated by the survey conducted in the context of this study. Though efforts have been made for the survey's outreach to be as broad as possible, it may not be statistically significant for all economic sectors or categories per company size.

It should be noted that many of these project themes/categories are already part of SUNREF III. Future green financing lines will need to pursue their efforts to educate national stakeholders on how to design projects falling under these categories with the purpose of making them eligible for green financing. This applies both to partner banks and project sponsors. It is also necessary to systemically explain and illustrate the necessary safeguards to avoid potential maladaptation.

Consideration will also need to be given to define appropriate funding methods and financial instruments to finance projects falling under these categories, depending on their relevance. Technical assistance will probably also be required to support national stakeholders.

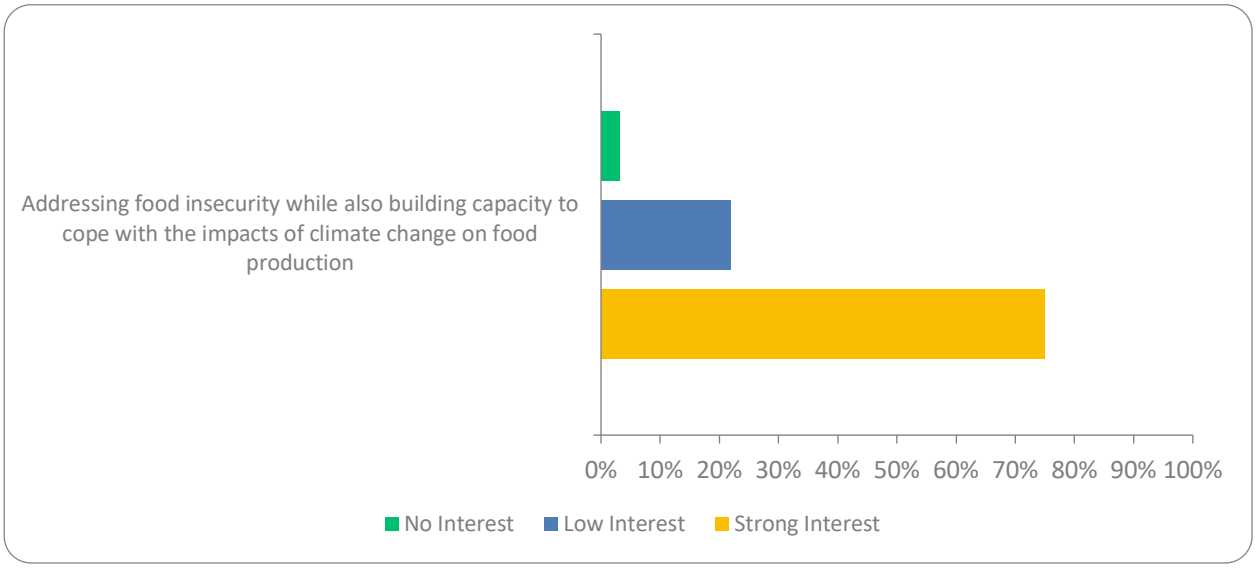
This survey adopts a different approach as compared to the Deloitte report (April 2024), particularly in terms of defining the related Adaptation themes in line with international taxonomies. This survey focuses on analysing participating companies' interest in these themes and does not consider the short-term pipeline of potential projects.

8.1. AGRICULTURE

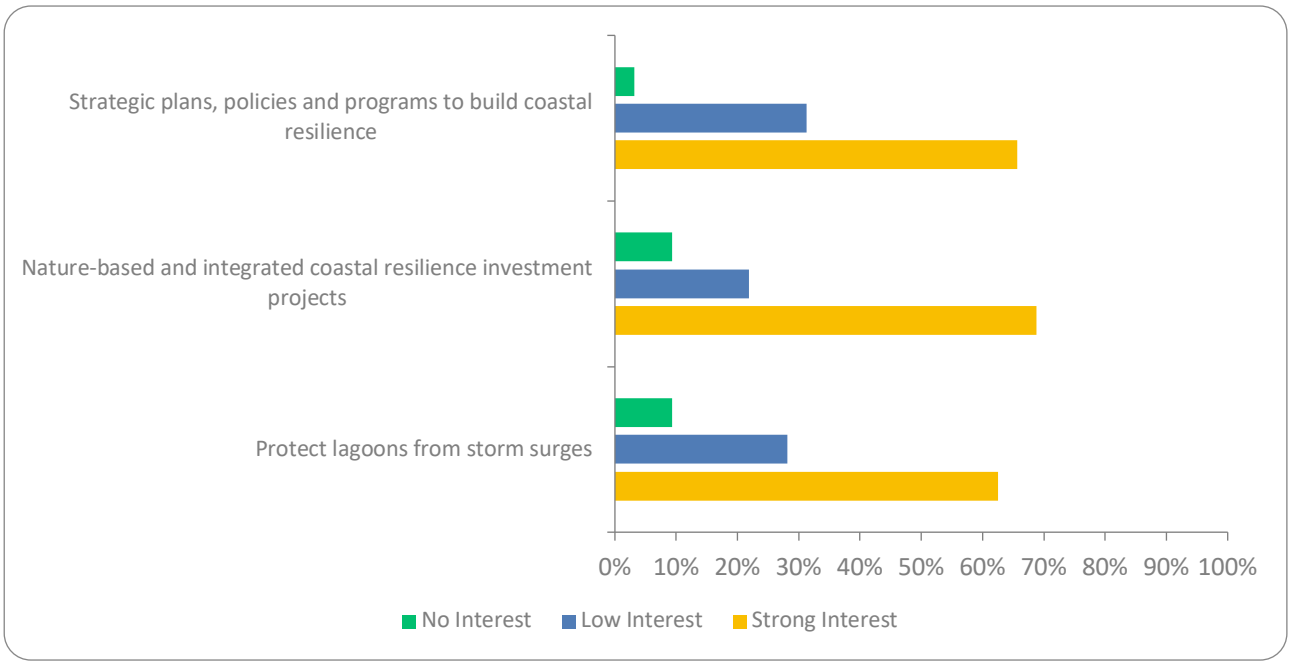


[34] OECD Rio Markers

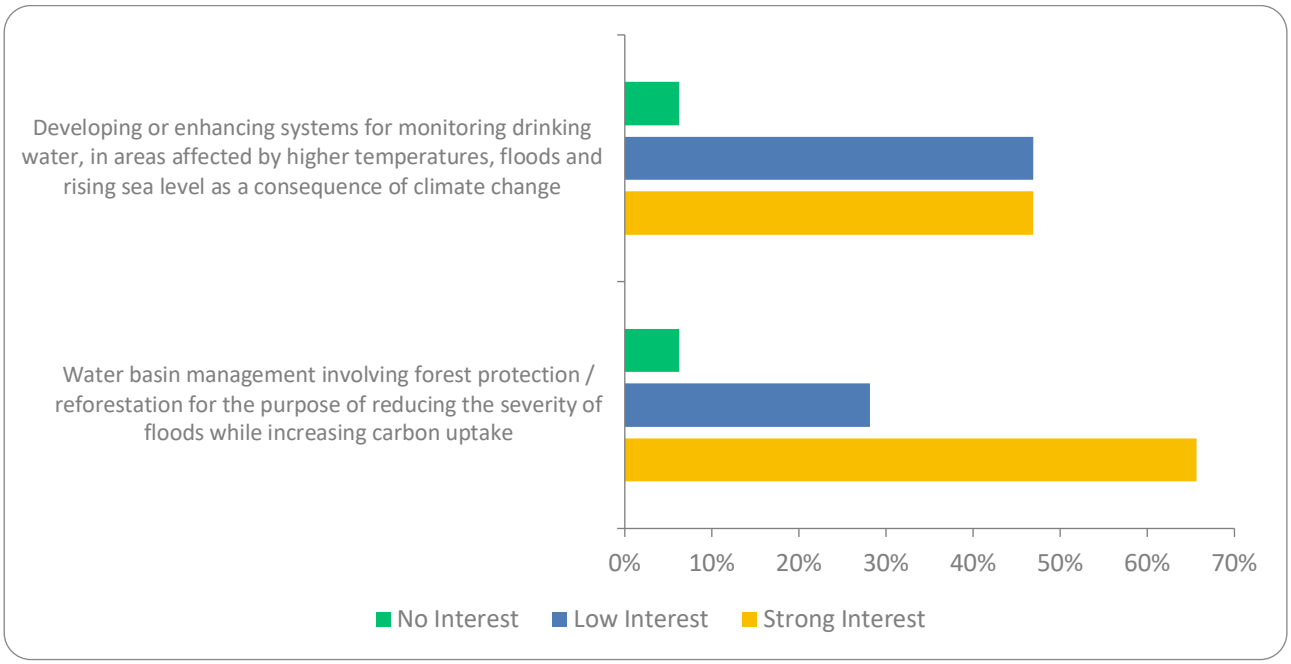
8.2. FOOD SECURITY



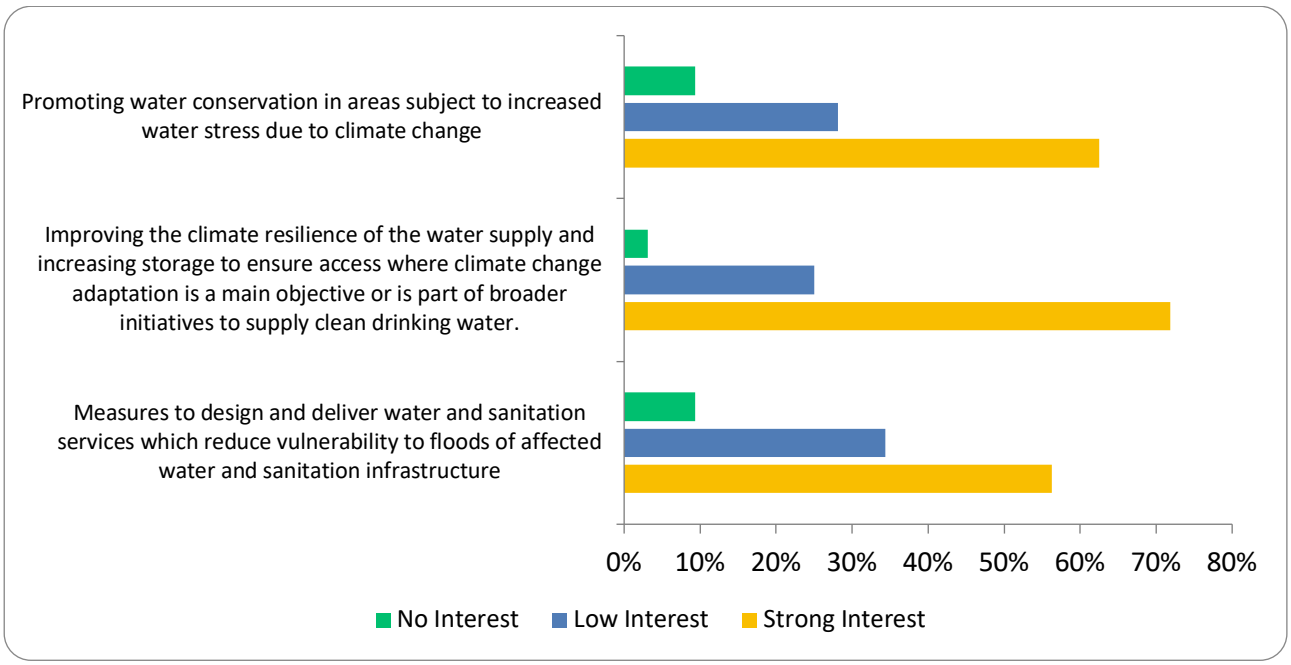
8.3. STRENGTHENING THE RESILIENCE OF COASTAL AREAS



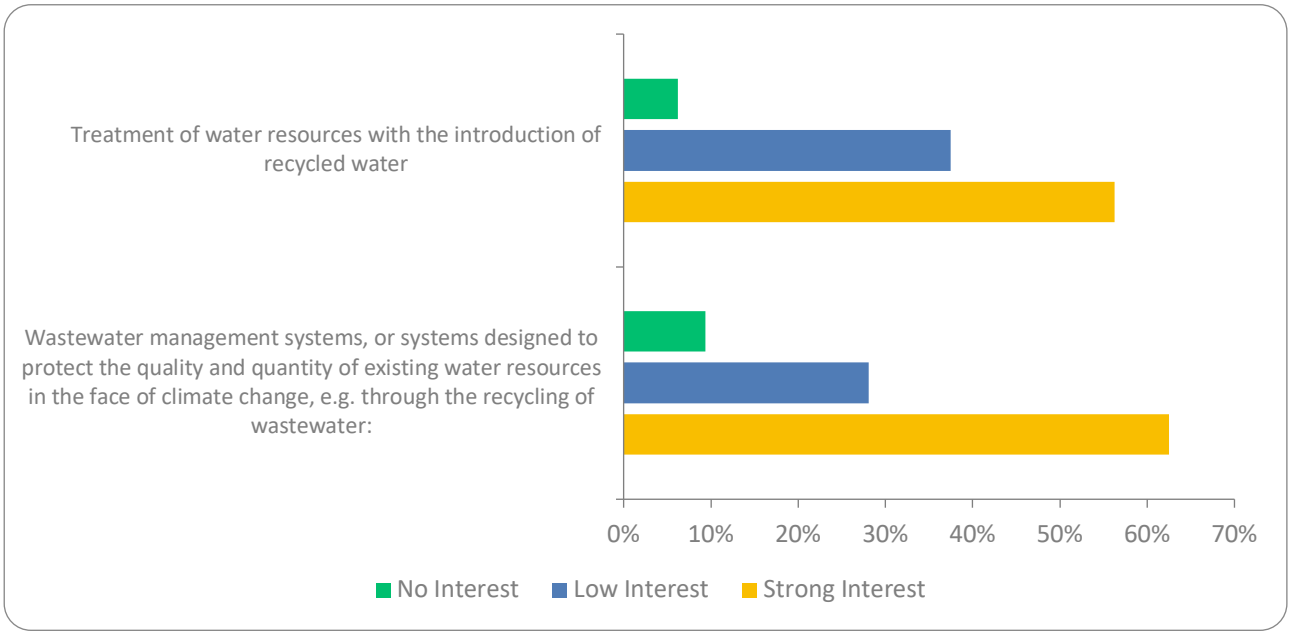
8.4. CONSERVATION OF WATER RESOURCES, DEVELOPMENT OF RIVER BASINS



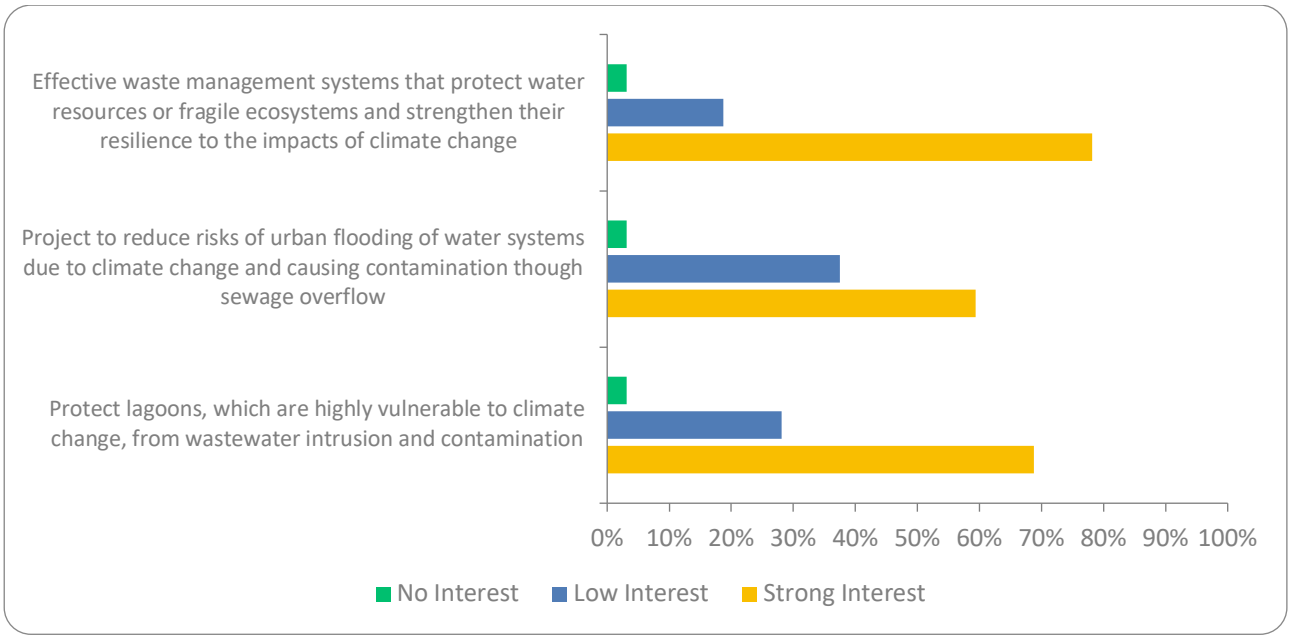
8.5. LARGE SYSTEMS FOR WATER SUPPLY AND SANITATION. BASIC DRINKING WATER SUPPLY AND BASIC SANITATION



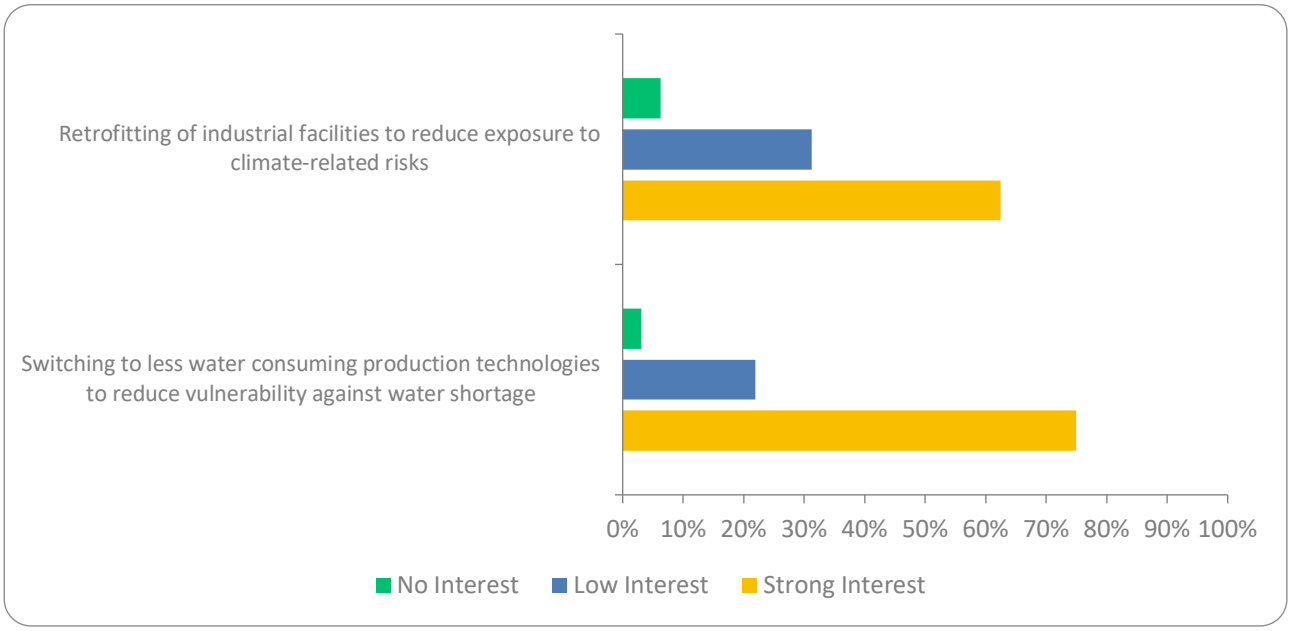
8.6. LARGE SYSTEMS - WASTEWATER TREATMENT



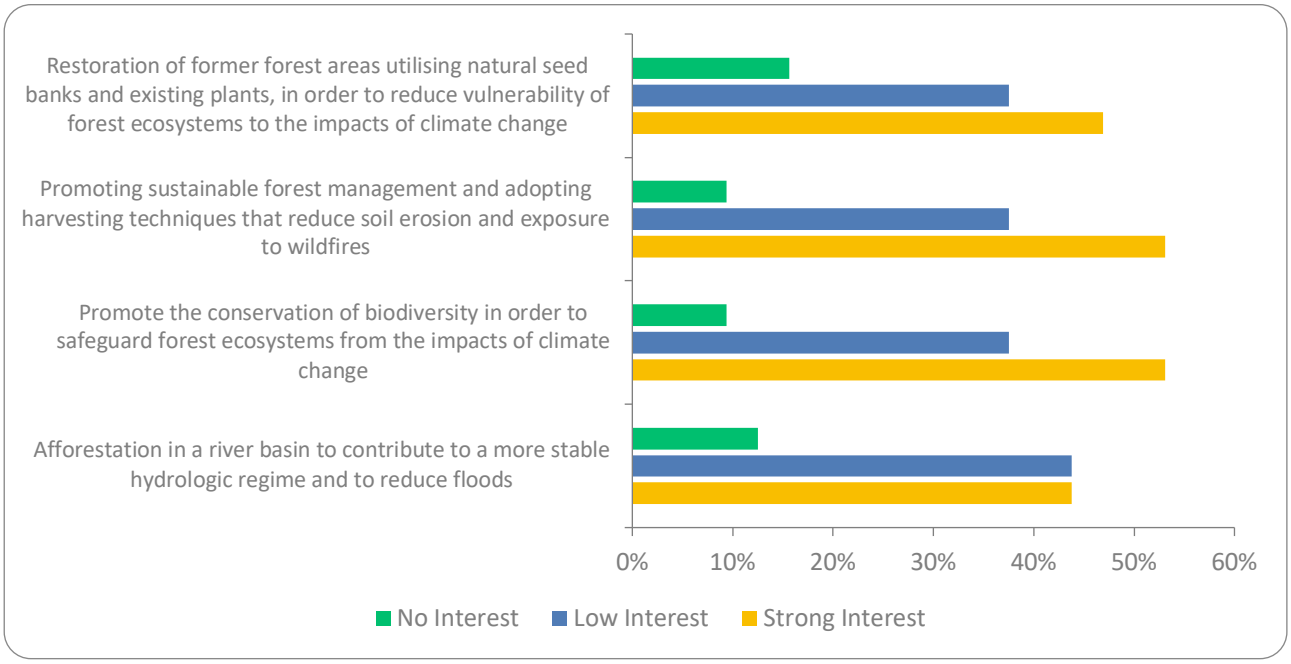
8.7. MANAGEMENT AND DISPOSAL OF WASTE



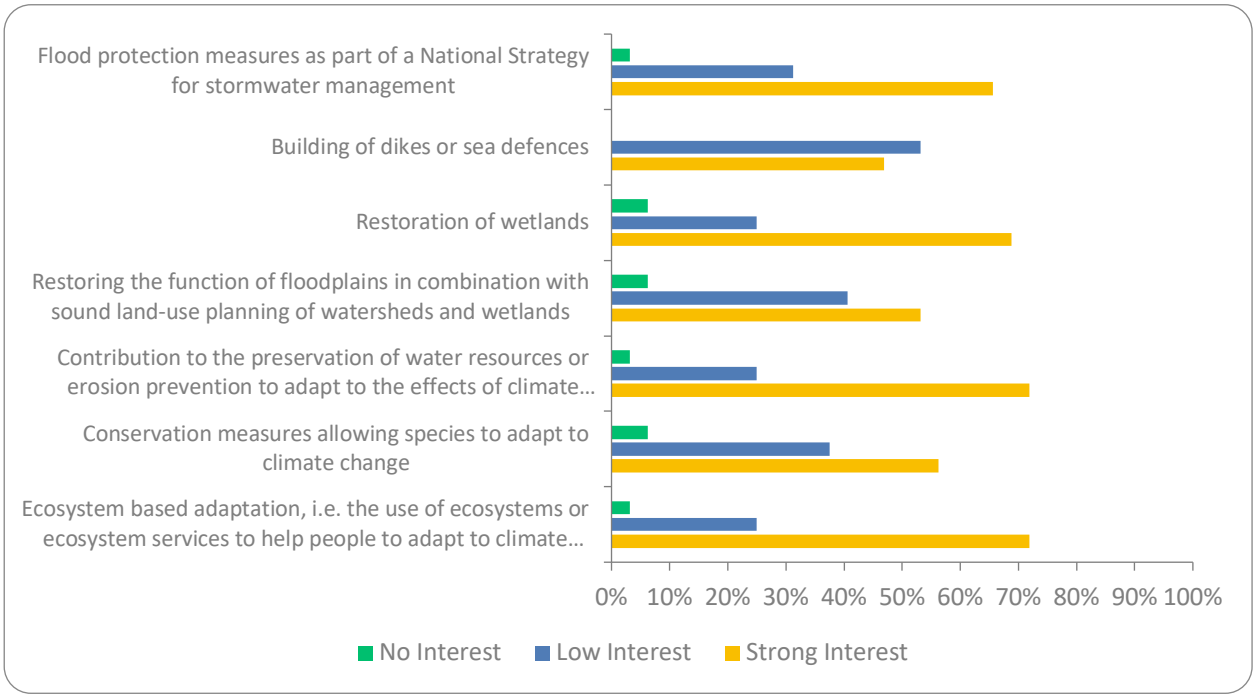
8.8. INDUSTRIAL APPLICATIONS



8.9. FORESTRY



8.10. MISCELLANEOUS ENVIRONMENTAL PROJECTS



9. FINANCING INSTRUMENTS FOR ADAPTATION

9.1. INTRODUCTION

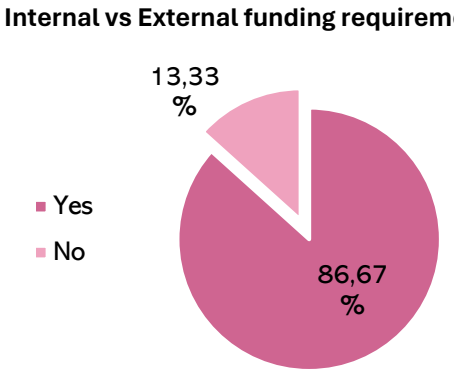
This section looks mainly into private sector financing instruments for Adaptation projects. Private sector Adaptation finance may require public sector involvement in different manners described herein to facilitate the flow of finance from supply sources through intermediaries to project originators in need of funding.

The table below describes the different ways through which the public sector may support private sector Adaptation financing in line with best practices indicated in relevant literature.

Risk transfer	Reducing transaction and set-up costs	Improvement of investment returns
• Improving the solvency of projects • Limiting exposure to loss • Providing insurance against unforeseen events • Providing technical assistance • Reducing funding gaps	• Providing financial support or advisory services for transactions • Facilitating relations between investors and developers • Support initial development costs	• Rewarding the achievement of objectives in line with Adaptation • Concessional loans • Investment bonuses

Source: Author

In the context of the survey carried out during this study, the private sector provided a series of useful indications as to their needs and preferences for Adaptation financing.

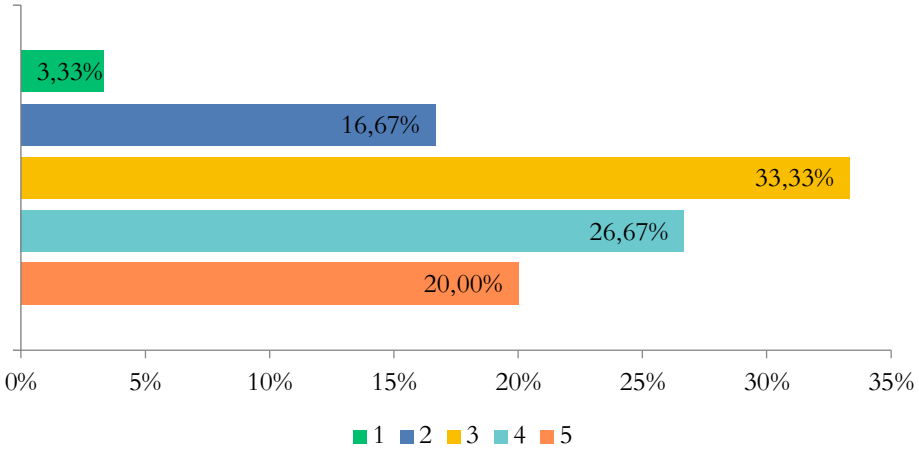


A vast majority of companies indicated that they need to rely on external sources of finance to implement Adaptation projects.

Longer Debt Maturity Period for Adaptation Project

Longer Debt Maturity Period for Adaptation Project

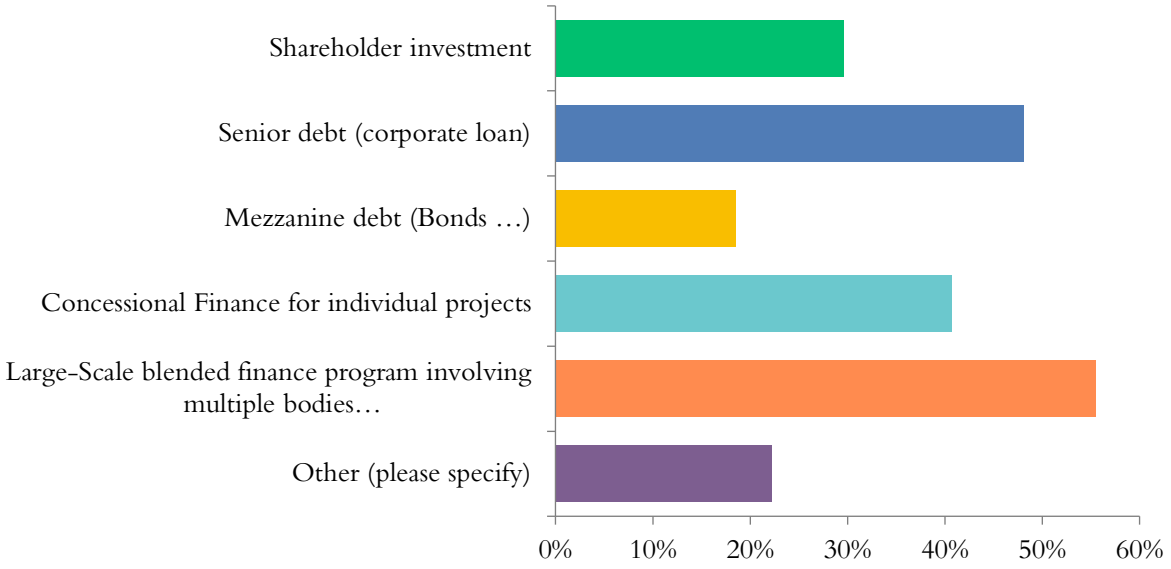
Longer Debt Maturity Period for Adaptation Project (1 least concerned, 5 highly concerned)



46% of respondents believe that the duration of loans should be extended to take account of the intrinsically longer return on investment of Adaptation projects. This demonstrates a good understanding of the issues involved in financing this type of project.

Interest in relevant Financing Instruments

(1 least interest, 5 highly interested)



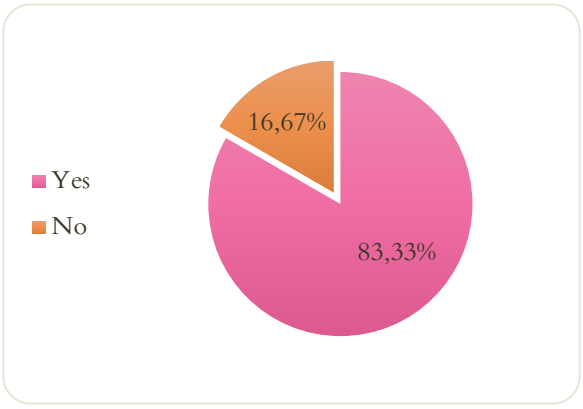
Information provided above on companies' preferences for the listed financial instruments should guide the joint work of DFIs, lenders and public authorities in setting up future green financing systems in line with the needs of those seeking finance.

It is noted with interest the willingness of companies to engage into blended financing systems. This could be applied in particular to coastal resilience or large-scale stormwater management projects.

Finally, the sustained interest of Mauritian companies for concessional loans is noted. This is in direct reference to SUNREF credit lines since they were introduced in Mauritius.

The 'Other' section includes requests for funding in the form of grants.

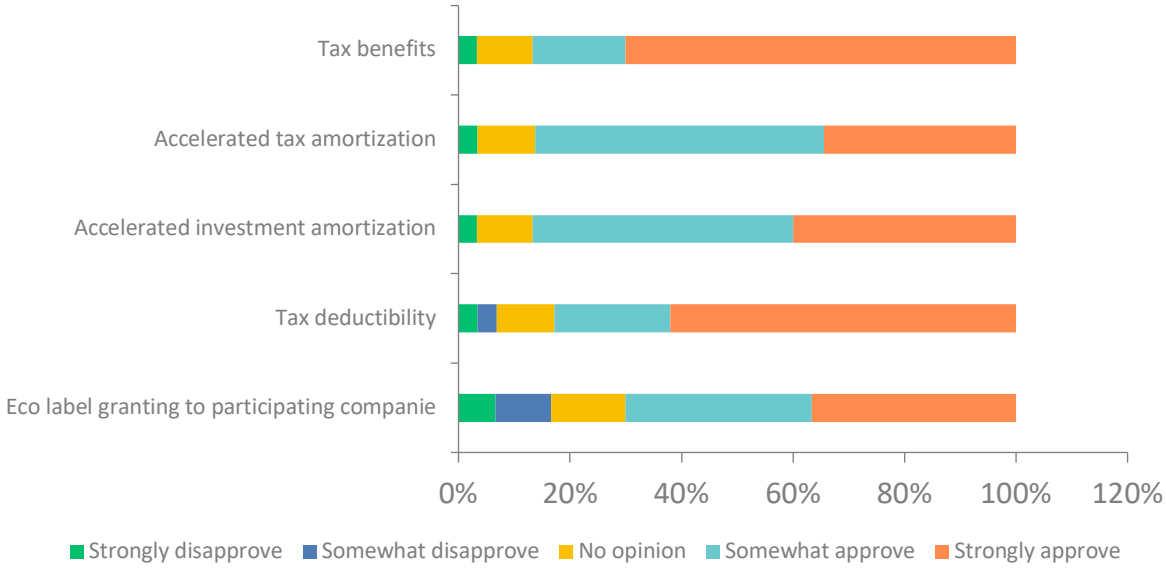
Interest of Private Sector in PPPs



A large majority of companies say they are comfortable with and want to engage in public-private partnership (PPP) mechanisms.

The nature of certain types of Adaptation project requires concerted public/private action/investment, and PPP structures are an interesting tool for meeting these needs.

Interest of Private Sector in incentives to co-invest in PPPs



The private sector has expressed their interests in the different incentives that would encourage them to co-invest with the public sector in PPPs.

This information should be used to guide the development of public policies that encourage private investment in adaptive projects, including PPPs.

It is worth repeating that **private sector finance is essential to supplement public investment if the Adaptation finance gap is to be closed** (Climate Policy Initiative, 2022; GCA, 2022; Songwe et al., 2022; Tall et al., 2021). In particular, there is a need to attract both domestic and international private finance into Adaptation initiatives led by the private sector or co-financed by the public sector. The IPCC Working Group II reported growing agreement that private finance for Adaptation might best be targeted at the infrastructure, agriculture, and water management sectors (New et al., 2022).

9.2. CATEGORIES OF FINANCING INSTRUMENTS

Broadly speaking, there are **three main different categories of instruments** that could be used to finance Adaptation. Section 3.2 mentions that “private Adaptation investments are typically financed **using the same instruments as traditional business investments** and are determined under the same aegis as traditional business strategies”.

Innovation may however be required in the combination and structuring of those traditional business instruments to address context and location specific requirements to supply finance to Climate Change Adaptation projects. Said otherwise, there is no one-size-fits-all solution that can address all the aspects and requirements of Adaptation Financing. Instead, a careful engineering of multiple solutions and best practices interconnected together, while ensuring a working and efficient interconnectedness, is required. The devised financing programme/project should be considered as an agile and flexible array similar to a toolbox which is able to adapt to different situations and requirements as demanded by country, private sector and civil society needs.

The three different categories for financing instruments are as follows:

Debt instruments

Debt instruments are agreements between a lender and a borrower in which the agreement lender receives fixed payment(s), usually with interest. Examples of debt instruments include bonds, mortgages, and loans.

Individuals, businesses, and governments issue debt instruments (become the borrower) for a variety of reasons, including raising capital and directing investment toward specific objectives. In recent years, debt instruments have been used to finance several specific environmental and social objectives, including climate change Adaptation goals.

Adapted from Boyte-White, C. (2022, September 12).

Financial Risk Management Instruments

Financial risk management is the process of identifying and analysing the uncertainty in investment decisions. The financial instruments used to mitigate identified risks are called financial risk management instruments. They serve to transfer risks away from one party to another party that is better able to underwrite or manage the risk, such as an insurer. They constitute of those financial transactions, mechanisms, or arrangements that may induce more financing to flow to Adaptation but will not finance Adaptation projects directly.

Adapted from United Nations Environment Programme. (2004). Financial risk management instruments for renewable energy projects

Impact or Result-based financing Instruments

Impact-only instruments are unburdened from needing to generate a financial return, but as such is less appealing for private financiers to provide. As a result, this is the domain of the public sector, international donors and philanthropy. They typically (though not always) provide grants for projects and systems that are unable to generate an attractive return on investment but serve a public good. This is particularly relevant in the case of Adaptation financing as exposed in the above sections of the report.

For certain types of Adaptation financing, Adaptation-related financial product development combining multiple instruments may be required and must be tailor-made for the specific context and needs of a given economy. Financing solutions cannot, therefore, be simply replicated from other geographies. While section 9.5 below describes those financials instruments and how they could combine, it does not delve into financial product development for financing Adaptation projects beyond general recommendations and some illustrations to support those recommendations. This would require specific terms of reference aligned to the requirements of specific financial institutions.

9.3. POTENTIAL FINANCING STRUCTURES

Further, certain Adaptation-related projects may require the set-up of **specific financial and legal structures** (also known as SPVs – Special Purpose Vehicle) to address the needs for multi-stakeholder projects requiring different levels of involvement or resources from public and private sectors as well as NGOs. These structures are also well-known instruments that need to be purposed for the objective of providing Adaptation financing. Some of them deemed applicable in the context of island economies and specifically Mauritius are described below:

9.3.1. Endowment Fund[35]

An endowment fund is an investment fund established by a foundation that makes consistent withdrawals from invested capital. The capital in endowment funds, often used by universities, non-profit organizations, churches and hospitals, is generally utilized for specific needs or to further a company's operating process. Endowment funds are typically funded entirely by donations/grants.

Financial endowments are typically structured, **so the principal amount invested remains intact**, **while investment income is available for immediate funding for use to keep a non-profit structure operating efficiently**. Larger endowments funds are structured, so a portion of the principal is released for use only after a period of time. This delayed use of the donation has an impact over a longer period and encourages the endowment fund management to grow the income from the fund to ensure that operational needs are covered.

Endowment funds with funding from International Donors represent a promising avenue to explore to fund those Adaptation projects which are non-revenue generating but which bring significant Adaptation benefits both socially and environmentally.

Public authorities in Mauritius could also consider setting such a fund for the specific purposes of meeting its NDC Adaptation objectives in supporting public, private and civil society relevant activities.

9.3.2. Conservation Trust Funds[36]

This chapter is extracted from the Conservation Finance Alliance, 2013.

Conservation Trust Funds (CTFs) are private legal entities that provide grant funding for conservation. CTFs have varied financial arrangements, though many begin by managing a single endowment or sinking fund, capitalised by donors, national governments and the private sector, the interest from which is used to provide grant financing to conservation activity. They can be thought of as a 'bridge' between donors and implementing organisations. Recipients typically include NGOs, CBOs and government agencies.

CTFs in the case of Adaptation could be used both to address biodiversity loss and to support actions to enhance the ability of natural systems to adapt to climate change. Projects with potential Adaptation benefits include restoring waterways, restoring watersheds, growing native plants, and implementing nature-smart climate solutions.

CTFs play a vital role in building financial sustainability, advancing innovative economic incentives such as Payments for Ecosystem Services (PES) and strengthening collaboration between public and private sectors by serving as an intermediary institution *(Bladon et al, 2014)*. They typically require a long-term commitment of 10-15years from the activities they finance *(Mathias and Victurine, 2012)*. Given their necessary alignment of multiple actors, CTFs feature a number of essential pre- and co-requisites, notably high political willingness among key government actors to enable funding for conservation projects, solid monitoring and reporting mechanisms and a sound legal framework for a CTF to be established and operate effectively

CTFs are well suited to financing projects that can't easily generate revenue but are of significant conservation/Adaptation importance such as Marine Protected Areas (MPA) or Wetlands/Ecosystems preservation/regeneration.

[35] Investopedia (https://www.investopedia.com/terms/e/endowment-fund.asp)
[36] Conservation Finance Alliance, 2013

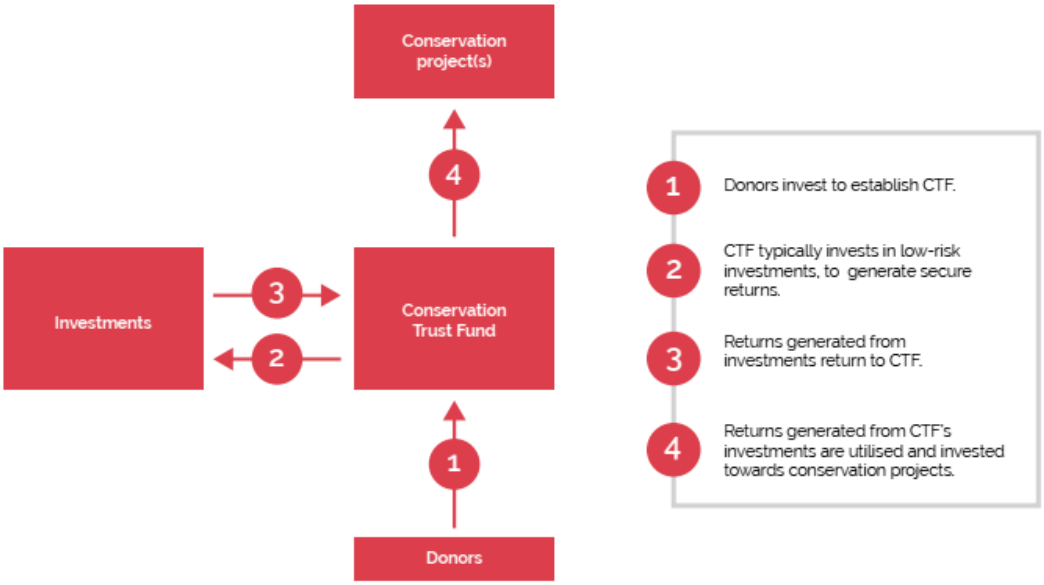


Figure 15: CTF Diagram (Source: The Ocean Finance Handbook (2020))

In Mauritius, the Foundations Act (2012) is deemed suited for the implementation of a CTF.

9.3.3. Adaptation Benefits Mechanism[37]

The African Development Bank is piloting the Adaptation Benefits Mechanism, a program in which reputable international organizations will be able to certify the benefits of specific Adaptation activities (Certified Adaptation Benefits) to project developers and/or governments. These project developers and/or governments will transfer these certificates to donors or climate change financiers based on pre-existing off-take agreements. The pre-existing off-take agreements are beneficial, as they allow the project proponent to use the agreement as extra security, or collateral, when seeking upfront loans or equity investments. This ability to use certificates as collateral may allow for projects to draw needed initial investors when they would not otherwise have found the investment opportunity to be attractive.

The Adaptation Benefits Mechanism is designed to be a non-market mechanism under Article 6.8 of the Paris Agreement that aims to boost private sector investment and the commercial viability of Adaptation projects across developing countries.

Potential Adaptation-relevant sector applications:

- crop and food production – including agroforestry; livestock production; fisheries (marine, freshwater, and aquaculture); irrigation;
- ecological services and management – forest management (including afforestation and reforestation); wetlands; ecosystem and biodiversity protection, conservation, and enhancement;
- water supply (infrastructure) – water storage; water harvesting; water management;
- disaster risk reduction – early warning and observation systems;

This tool is at the pilot stage and was launched in 2019. Two pilot projects were under development in 2023: climate-resilient cocoa in Côte d'Ivoire and rapid-deployment dams to counter flooding in Lagos, Nigeria.

Considerations for using the Adaptation Benefits Mechanism:

- The Adaptation Benefits Mechanism needs agreed-upon methodologies to capture the impact of Adaptation activities.
- The mechanism requires adequate means of monitoring and verifying delivery.
- The mechanism must have buyers/investors willing to purchase Certified Adaptation Benefits.

[37] Reproduced and adapted from The National Adaptation Plan (NAP) Global Network, https://napglobalnetwork.org/ (visited 16/10/2024)

- Interest has been expressed in projects ranging from USD 1 million to USD 50 million.

In view of a revised National Adaptation Policy, Framework and ambitious Action Plan, Mauritius could develop or adhere with the right technical assistance an Adaptation Benefits mechanism that serves the interests of both public and private sectors.

9.3.4. Public–Private Partnerships[38]

PPPs are a mature instrument that can be adapted/tailor-made for different needs. In Mauritius, PPPs could bring together the public and private sector for coastal resilience projects that comply with Adaptation standards.

PPPs are generally created following a rationale that they deliver public assets or services more cheaply and effectively than projects purely funded and steered by the public sector and that they optimally divide counterparty risks between public and private partners. In other words, risks that are best borne by the public sector should remain with the public sector and the same principle should apply to risks and the private sector. This is especially true for climate change mitigation projects. **In the case of Adaptation projects, PPPs need to be set up for co-investment in public goods that benefit all parties and/or increases resilience of systems that directly or indirectly benefits the national economy in general.**

There is no standard formula on how PPPs should be designed; this depends on the characteristics of the projects and their revenues, allocation of responsibilities and benefits, the expertise of private counterparties, and the institutional strengths of the public sector.

The World Bank and the Global Centre on Adaptation have noted that PPPs can be a key tool for integrating Adaptation and resilience into infrastructure projects. **The greater the proportion of public finance included in an investment, the greater the influence that this finance could have on ensuring that projects are developed/implemented in a manner that accounts for projected physical climate hazards and risks.**

Current or potential Adaptation-relevant sector applications:

- crop and food production – including agroforestry; livestock production; fisheries (marine, freshwater, and aquaculture); irrigation;
- ecological services and management – forest management (including afforestation and reforestation); wetlands; ecosystem and biodiversity protection, conservation, and enhancement;
- water supply (infrastructure) – water management;
- resilient transport infrastructure;

Considerations for entering into PPPs:

- PPPs require long-term contracts, legal expertise, and the definition of strict terms and conditions. This complexity means that technical assistance may be needed by parties interested in creating a PPP.
- Fulfilment of PPP conditions require monitoring and evaluation capabilities.
- Public entities may be uncomfortable with private involvement of traditionally owned public goods.

Figure 16 below describes how climate-resilience considerations can be embedded into the PPP process.

[38] Reproduced and adapted from The National Adaptation Plan (NAP) Global Network, https://napglobalnetwork.org/ (visited 16/10/2024)

Figure 16: Embedding Resilience in PPP project cycle,
Source: Global Centre for Adaptation, Knowledge module on public-private partnerships for climate-resilient infrastructure

9.4. CHALLENGES FOR IMPLEMENTATION OF FINANCING INSTRUMENTS

The design and implementation of financing programmes using those financial instruments may present their own challenges, which if left unaddressed may discourage innovation in this area. These are for example:

- The increased diversity of financing instruments and blended finance possibilities can lead to **complexity challenges where a country will find it difficult to engineer a workable solution which satisfy a large spectrum of needs**. Financing instruments also often imply complex legal arrangements which may not be to the taste of public authorities in countries where there are capacity gaps in the judiciary system. Government officials may therefore shy away from solutions if they feel overwhelmed by the magnitude of the work to be done. This should be addressed by technical assistance from DFIs and from specialised UN agencies.

Recommendation 21: DFIs could provide technical assistance to public authorities in Mauritius to design and implement financing instruments that meet the requirements for Adaptation financing in Mauritius.

- Risk adverse public authorities may not be willing to experiment with innovative financing solutions which are required to address the tasks at hand. Typically, Adaptation financing will require innovative approaches in order to channel private capital. In the conducted survey, the private sector showed their interests for instruments and willingness to engage in PPPs. In general, these issues are addressed by bridging knowledge and capacity gaps where required.

  Recommendation 22: In line with recommendations 1, 2 & 3, sufficient efforts should be engaged into capacity-building and knowledge transfer. DFIs are expected to play a key role in supporting public authorities in engaging into innovative financing and bridging knowledge gaps.

- Increasingly, FDI in Mauritius has flown towards real-estate developments rather than manufacturing or research and development in the transition or Adaptation-compatible economy for instance. This is because investors tend to look for low-risk, short-term profit generating solutions to satisfy their shareholders. In turn, governments are also constrained by political pressure to sustain economic growth and tend to disregard longer term necessities. In Mauritius, in 2019, 63% of FDI was channelled towards real estate development. **The quality of FDI is therefore critical for its impact on sustainable development.**[39]

  Recommendation 23: Economic cynicism constituting of a sum of short-term projects providing stewardship to the economy is detrimental to any sort of long-term perspective compatible with current scientific data on climate change. Public stakeholders should be supported in building capacity to do long-term planning and forecasting based on scenarios in line with robust data generated through the international and local scientific community on climate change.

  Recommendation 24: Public authorities and their execution agencies should be supported in developing the vision and having the ability to articulate and apply a foreign direct investment (FDI) policy that is compatible with long-term strategic orientations on climate change while having the support of a sound and robust governance system which does not allow to resort to short-term goals cynicism.

9.5. DESCRIPTION OF FINANCING INSTRUMENTS

The Global Centre in Adaptation (GCA) notes in its report[40] that

- Globally, debt continues to be the most utilized instrument to deliver Adaptation finance, increasing in 2021–2022 to 80% of total Adaptation finance from 70% of flows in 2019–2020. The remaining share consists predominantly of grants with a minor proportion of equity investment.
- The volume of concessional finance flowing to Adaptation increased modestly, but its proportion relative to other financial sources diminished between 2019–2020 and 2021–2022.
- Non-market rate instruments are essential for enabling investments in countries where high risks prevent market rate capital investments.
- Concessional capital is also critical for leveraging private sector investments.

[39] UNDP - Financing the 2030 Agenda CO Guidebook
[40] Global Centre On Adaptation And Climate Policy Initiative, State And Trends In Climate Adaptation Finance 2024

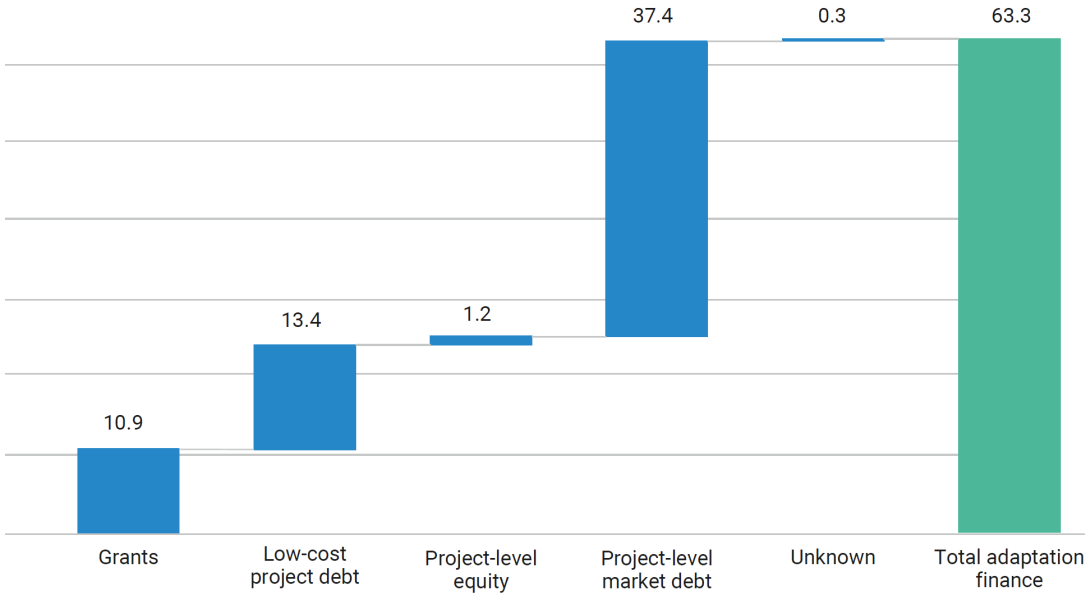


Figure 17: Average Annual Adaptation Finance Flows by Instrument (USD billion, 2021–2022), Source : IBID

Based on the above, the same observations apply in the context of Mauritius in terms of requirements for sustained concessional financing to induce private capital into investing in climate change Adaptation projects.

Recommendation 25: In the context of findings of this report, concessional finance targeted towards both public and private sector should be sustained for Adaptation financing in Mauritius.

The taxonomy of financing instruments applicable to Adaptation financing could be categorised as follows:

Impact Instruments	Debt Instruments	Financial Risk Management Instruments
Grants	Microfinance loan	Credit Guarantees
Corporate social responsibility (CSR)	Green Revolving Fund	
Endowment Fund	Bank loans	
Stormwater Credit Trading	Conservation Impact Bonds	
	Green Bond	

The description of Financial Instruments below is mostly reproduced and adapted from the National Adaptation Plan (NAP) Global Network[41]. They are fairly comprehensive and represent an overall benchmark for financing instruments and their applicability to Adaptation Financing. Where applicable, specific comments for the context of Mauritius are made as well.

9.5.1. Grants and Corporate Social Responsibility (CSR)

Grants, from philanthropic sources as well as development agencies and corporations, are a key existing source of funding for Adaptation-related projects and have acted as a vital resource for communities, NGOs and **early-stage businesses** working on developing such projects. They have the potential for making a large impact in terms of triggering and accelerating the transition to sustainable development in areas/sectors which require complex transitions linked to socio-economic contexts.

They are particularly crucial due to their lack of financial return expectation, making them applicable and useful in contexts that commercial finance is unwilling to consider, **notably for projects**

[41] https://napglobalnetwork.org/ (visited 16/10/2024)

lacking revenue streams or at the very earliest stages of development or in the case of non-revenue generating Adaptation-based projects.

To ensure that Grants are used for optimal impact, it is important to ensure that grants are effective in 1.) channelling funding in the local economy to those projects that meet strict eligibility criteria, 2.) reaching targeted beneficiaries whether through financial intermediation or directly 3.) do not create dependencies that impair sustainability of Adaptation action.

Corporate Social Responsibility (CSR) could be a specific form of grant funding stemming from the obligations set in the Finance Act of Mauritius to set 2% of their chargeable income for CSR of which 75% is remitted to the taxation authority in Mauritius. CSR allows expenditures for environment and sustainable development. This definition is deemed to be quite vague but could apply in effect to Adaptation projects.

CSR if allowed by public authorities can be a powerful lever for private sector institutions to invest into or support Adaptation projects on the basis of a nationally approved green taxonomy.

9.5.2. Endowment Fund

In addition to the description in section 9.3.1, it can be mentioned that his financial instrument presents the advantage of ensuring a multiplier effect to the impact of a grant over a longer duration and could be suited to Adaptation-related impact investing. In Mauritius, together with the backing of international donors, Endowment funds could for instance be the recipients of Grants/CSR funds from the private sector so as to engage into non-revenue generating Adaptation projects.

Recommendation 26: In the bid to improve access to Adaptation financing, a partnership between the public and private sector to channel CSR/Grant funding to an Endowment fund could be implemented with the support of international donors. The legal structure governing the Endowment fund would have its own governance mechanisms. As an additional benefit, this would capacitate local stakeholders into driving climate change financing in an autonomous manner over time.

9.5.3. Stormwater Credit Trading Program (SCTP)[42]

Stormwater credit trading programs are an economic instrument used by municipal governments to encourage individual firms to implement measures to manage stormwater runoff on their properties. Property owners in urban areas are encouraged to build green infrastructure or green their existing infrastructure to create or generate credits. Green infrastructure projects include the installation of green roofs, rainwater harvesting systems such as rain barrels, and permeable pavement that allows rainwater to seep back into the ground.

There are various options for developing these credit trading programs. One option is to base the generation of credits on meeting a runoff retention standard, where a property owner can buy credits when they cannot meet the standard. Another approach is to generate allowances that are based on the maximum amount of runoff to be delivered to the sewer system allowed by each property, as calculated by the municipal utility or regulator. A property with runoff below its allowance generates credits that can be sold to property owners who exceed the desired runoff level. The opportunity to generate revenue encourages property owners to invest in green infrastructure that could qualify to generate credits.

Current or potential Adaptation-relevant sector applications:

[42] **Case study from NAP Global Network: Washington, D.C. – Stormwater Retention Credit Trading Program**
Development projects are required by the District of Columbia to retain 100% of the stormwater on their sites to avoid hazardous flooding. If all of the stormwater cannot be retained as required, developers can either pay a fee in lieu of the cost of implementing stormwater retention measures or they can buy stormwater credits as needed to keep their projects under the set limit. These credits are generated by other developers that construct stormwater management control structures (e.g., green roofs, rain gardens, permeable pavement, tree planting) in the district. Credits can be generated through actions taken on one property or aggregated from multiple properties.
Washington, D.C.'s credit market completed 44 trades in both the 2020 and 2021 fiscal years, with the value of credits traded in the two years totalling over USD 1,600,000. The program has encouraged the growth of green infrastructure investment, creating more green space and stormwater retention capacity. The Washington, D.C., stormwater credit trading program was recognized in 2014 as an innovative climate program that increased climate resilience through green infrastructure that prevented flooding and reduced the urban heat island effect.
Other municipalities in the United States, including ones in Michigan and Illinois, were developing credit markets for stormwater retention in 2023, building on the learning of the Washington, D.C., program.

- coastal and riverine protection and management – coastal defences or flood protection barriers; river flood protection measures; and
- other built environment and infrastructure – urban development.

Additional insights:

- Storm Water Credit Trading is deemed to be a mature instrument. Credits to reduce stormwater fees and allowance-based credit trading systems have existed in the United States since the 1990s.

Considerations for developing stormwater markets:

- Strong public institutions and private property rights that allow owners to bear the costs of implementing stormwater management are needed. Subsidy schemes can be employed to support owners with limited financial means.
- Public authorities should have technical knowledge of water management, economic instruments to establish allowances and trading systems, and data collection and analysis, in addition to monitoring and legal enforcement.

Quantitative instruments should be employed to assess runoff levels to prioritize where economic investments should be made first.

In Mauritius, considering 1.) the magnitude of disaster issues linked to flooding in recent years, 2.) the rapid and uncontrolled urbanisation with ultra-impermeabilization of land surfaces and 3.) the size of the island, SCTP could most probably be suited if designed as a national instrument to address the need for multi-stakeholder flood management. At the very least, this could represent an interesting perspective to further study in order to drive private investments into stormwater management.

Recommendation 27: Public authorities to consider whether SCTP could be interesting to implement in Mauritius and to seek further technical assistance for potential feasibility studies.

9.5.4. Microfinance Loans[43]

Microfinance consists of small loans and grants given to those who lack access to traditional financial institutions. It helps low-income households strengthen livelihoods and allows small enterprises to enter new markets.

Microfinance is an essential catalyst of climate resilience, but it remains a mystery for most.

To benefit from microfinance, climate-vulnerable communities must know that it exists in the first place. Not only that, but they also need to know it is available to them at favourable rates. Lack of awareness about microfinance — not only among potential beneficiaries, but also, crucially, financial institutions — persists worldwide. (applicable to SUNREF and future financing programmes, refer to section 5, SUNREF III analysis)

Concessional microfinance is key to enabling early adopters of climate Adaptation.

Microfinance is an essential enabler of climate resilience, in a world where the concept of financing Adaptation, and the mechanisms for doing so, remain a mystery to most people. Developing countries still grapple with fundamental issues related to finance readiness. For example, there are few mechanisms to provide financial services to people who cannot access finance through traditional institutions and products, or to people who are unaware that climate Adaptation can yield greater financial returns from their livelihoods. **Microfinance can address these challenges – particularly if concessional – allowing loans to be offered at below market rates.** Focused financial interventions are necessary to remove the barriers to inclusive finance.

Research shows that using intermediated, concessionary finance to enable inclusive, micro- finance solutions allows communities vulnerable to climate change to adapt and build resilience by financing

[43] https://www.cif.org/news/small-loans-big-impact-microfinance-and-climate-resilience

income-producing activities, building up their assets, stabilising consumption and taking measures to protect themselves against climate risks[44]

Recommendation 28: This report strongly recommends that efforts to be pursued together with relevant financial intermediaries to put in place green microfinance concessional loans at below market rates for Adaptation-related projects aligned with national strategies. This endeavour should be supported with strong awareness campaigns and prior preparatory works for ease of process to access such facilities.

9.5.5. Green Revolving Fund[45]

A green revolving fund has been defined as "an internal capital pool that is dedicated to funding sustainability projects that generate cost savings. A portion of those savings is then used to replenish the fund (i.e., the funds are revolved), allowing for reinvestment in future projects of similar value" (U.S. Department of Energy, n.d.). This establishes an ongoing funding vehicle that helps drive increased sustainability over time while generating cost savings and ensuring capital is available for important projects. **Typically, the interest rates are at or below market rates.** The funds are usually capitalized by public sources and managed in a manner that creates a repeated cycle of loans and repayments.

Traditionally, green revolving funds in North America and Europe provided loans for sustainable energy and sustainable urban development projects. However, countries have started using state revolving funds **to finance Adaptation-related projects, including green stormwater and wastewater infrastructure and drinking water capacity projects.**

In addition, revolving funds have been used to support small projects in developing countries, including for Adaptation. Repayment to the fund may not be through cost savings, but the fund enables community members to access funds at low interest rates with long repayment periods. Such funds are often established with seed funding from development partners.

Current or potential Adaptation-relevant sector applications:

- ecological services and management – forest management (including afforestation and reforestation); wetlands; ecosystem and biodiversity protection, conservation, and enhancement;
- water supply (infrastructure) – water management;
- coastal and riverine protection and management – coastal defences or flood protection barriers; river flood protection measures;
- disaster risk reduction – early warning and observation systems;
- other built environment and infrastructure – urban development; and
- social infrastructure – education; health facilities.

Considerations for using Green Revolving Funds:

- Sufficient capital is required to seed the fund.
- Green revolving funds seek projects that will pay back/reseed the fund regularly, which may be an impediment to funding long-term projects.

Recommendation 29: Similar to an Endowment Fund, a national Green Revolving Fund instrument could be considered as part of the toolkit for Adaptation financing. The Green Revolving Fund is complementary to the Endowment fund as it targets revenue-generating projects. Future green financing programmes could also be structured as revolving funds.

[44] Microfinance For Climate Adaptation : From Readiness To Resilience, Research Brief, CIF 2018

[45] **Case study from NAP Global Network: Sustainable Island Resources Framework Fund – Antigua and Barbuda**
The Adaptation window of the Sustainable Island Resources Framework Fund is a revolving loan program that disburses unsecured, low-interest loans (average size USD 14,550) to vulnerable homes and businesses to meet new Adaptation guidelines and standards for built infrastructure. Loans are used to install rainwater harvesting systems, water efficiency retrofits, hurricane shutters, mosquito screens, and solar panels. The loan facility was capitalized with USD 3 million from the Adaptation Fund and USD 1.6 million from the Special Climate Change Fund, with the United Nations Environment Programme as the implementing entity.

9.5.6. Green loans

This study considers that the subject of Green Loans is well understood and established in Mauritius through the different SUNREF financing programmes although enhancements linked to Adaptation financing are desired. These are detailed in section 5, SUNREF III.

9.5.7. Conservation impact bonds (CIBs)[46]

Conservation impact bonds (CIBs) are pay-for-success, outcome-based financial structures that can strengthen conservation efforts. They connect key conservation and finance stakeholders, aiming to **transfer the risk of funding conservation from governments, communities, businesses, and donors (in developing countries) to impact investors**.

The core model is based on bringing together groups that place a monetary value on and are willing to pay for nature-based services with impact investors that provide funds for conservation and nature-based projects. Different models are emerging for repayment to investors, including one in which investors are paid their principal plus a return on investment if outcomes are achieved but no return on investment if the outcomes are not successful. Outcomes are measured using predetermined data that can include social, economic, ecological, and climate change metrics.

These bonds can help both to address biodiversity loss and to support actions to enhance the ability of natural systems to adapt to climate change. Projects with potential Adaptation benefits include restoring waterways, restoring watersheds, growing native plants, and implementing nature-smart climate solutions.

Current or potential Adaptation-relevant sector applications:
Ecological services and management – forest management (including afforestation and reforestation); wetlands; ecosystem and biodiversity protection, conservation, and enhancement; fire management.

Additional insights:
CIB is an emerging instrument, with a prototype for a CIB for healthy landscapes having been launched in Canada in 2020. Long-term support for CIBs requires that early projects demonstrate financial viability and the ability to deliver measurable results.

Considerations for using a CIB:
- CIBs are place specific, and structuring the bond can be time-intensive and costly.
- CIBs often require a third party to design and implement the bond as well as to bring together necessary stakeholders.
- Government or development partner support has been a critical element in the launching of early iterations of CIBs. There is uncertainty as to whether some projects funded through the issuance of this kind of bond can generate profit and deliver the returns necessary to attract private sector investors.
- Issuance of a CIB can be an important step in demonstrating whether or not private funders may be willing to finance a certain type of project.
- CIBs need specific targets or goals against which to measure success and issue payment. Determining the additionality of environmental outcomes and the timeframes required for achieving demonstrable impacts poses challenges in measuring success.

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[46] **Case study from NAP Global Network: Deshkan Zibi Conservation Impact Bond**
The Deshkan Zibi Conservation Impact Bond, launched in Ontario, Canada, in March 2020, is the prototype of the CIB model. As of April 2023, the bond was supporting 54 landscape/habitat projects that were delivered by habitat partners, including First Nations communities, landowners, municipalities, and businesses. The projects had specific outcome metrics (e.g., hectares of natural assets/climate-smart habitat that have been improved, number of native plants used in habitat improvements) that formed the basis of the bond's financial returns mechanism. Investors are paid their principal plus a return on investment if outcomes are achieved; but if the outcomes are not successful, only the principal is repaid. The impact investor, VERGE Capital, provided CAD 130,000 through a loan with a 5% interest rate and a 3-year repayment schedule. 3M Canada (a multinational corporation) and Pollinators Canada (a non-profit) were the outcome payers. A CAD 150,000 grant from the Canadian government supported the development of the concept and the project portfolio, which was overseen by Carolinian Canada, an environmental charity. Implementation was undertaken in partnership with local Indigenous communities, the Oneida Nation of the Thames and the Chippewas of the Thames First Nation. A second phase was starting up in 2023. The Deshkan Zibi Conservation Impact Bond received the 2022 Finance for the Future Climate Leader Award.

CIBs can be too ambitious for Mauritius to consider currently considering its maturity level on Adaptation financing. However, in a bid to address climate change through nature-based solutions, protecting sensitive ecosystems and biodiversity in a concerted manner, CIBs could represent a useful tool to consider.

9.5.8. Green Bonds

A bond is a type of loan in which the issuer borrows money from the bondholder or buyer of the bond. The issuer repays the loan sum plus interest on an agreed-upon schedule.

Green bonds are bonds in which the issuer commits to investing the proceeds raised by the bond issuance to investments in projects with environmental benefits, also referred to as green projects.

The Green Bond Principles issued by the International Capital Markets Association, are voluntary guidelines for the structure and management of green bonds. As outlined in the principles, a core component of a green bond is the use of its proceeds for projects that have clear environmental benefits, which are to be assessed and, if possible, quantified by the borrower/bond issuer. The use of proceeds should be described in a legal document that clearly identifies the types of projects eligible to be funded from the bond proceeds. Adaptation-aligned project categories from the Green Bond Principles include the following (International Capital Market Association, 2021):

- **Environmentally sustainable management of living natural resources and land use** (including environmentally sustainable agriculture; environmentally sustainable animal husbandry; climate-smart farm inputs such as biological crop protection or drip-irrigation; environmentally sustainable fishery and aquaculture; environmentally sustainable forestry, including afforestation or reforestation, and preservation or restoration of natural landscapes);
- **Terrestrial and aquatic biodiversity conservation** (including the protection of coastal, marine and watershed environments);
- **Sustainable water and wastewater management** (including sustainable infrastructure for clean and/or drinking water, wastewater treatment, sustainable urban drainage systems and river training and other forms of flooding mitigation); [and]
- **Climate change Adaptation** (including efforts to make infrastructure more resilient to impacts of climate change, as well as information support systems, such as climate observation and early warning systems).

Other types of eligible projects under the Green Bond Principles that could provide climate Adaptation benefits are listed below.

Current or potential Adaptation-relevant sector applications:

- crop and food production—including agroforestry; livestock production; fisheries (marine, freshwater, and aquaculture); irrigation;
- ecological services and management—forest management (including afforestation and reforestation); wetlands; ecosystem and biodiversity protection, conservation, and enhancement;
- water supply (infrastructure)—water storage; water harvesting; water management;
- coastal and riverine protection and management—coastal defences or flood protection barriers; river flood protection measures;
- disaster risk reduction—early warning and observation systems;
- energy infrastructure—energy generation (including renewables);
- transport infrastructure;
- other built environment and infrastructure—urban development; tourism (infrastructure); wastewater systems;
- social infrastructure—education; health facilities; and
- industry and manufacturing.

Matters arising from the implementation of Green Bonds in Mauritius have been canvassed extensively in other forums and reports. The current economic situation of Mauritius should also be taken into account while setting up a green bond together with the requirements for a strong governance framework and a pipeline of national projects (public or private sectors or joint projects) that meets the required eligibility criteria.

9.5.9. Credit Guarantees[47]

Credit guarantees have been described as “mechanisms in which a third party—the guarantor—pledges to repay some or the entire loan amount to the lender in case of borrower defaults” (Gozzi & Schmukler, 2016). This reduces the lender’s expected credit losses, even if the probability of default remains unchanged, acting as a form of insurance against default. In other words, guarantees seek to augment the risk/return calculations of lenders to make project loans more attractive.

Guarantees in developing countries are most popular in structuring financing in which a multilateral development bank, bilateral development partner, or government entity will guarantee the repayment of a loan taken by a project developer. In essence, the guarantor indicates to the lender, usually a financial institution, that it will pay on behalf of the developer if the developer is unable to repay the loan. Multilateral development banks, bilateral development partners, and government entities undertake this risk to incentivize more lending and investment in sectors and countries in which lending from financial institutions is constrained and/or less common. In some instances, guarantees will be paired with technical assistance to further enhance the chances of repayment.

Guarantees could be especially crucial for Adaptation projects that have less of a track record and are unfamiliar to investors, or Adaptation projects that are predicted to have lower or more volatile returns on investment.

In addition, credit guarantee schemes that make investment financing available and affordable for small and medium enterprises can be used to encourage investment in Adaptation actions that help these enterprises prepare for weather disasters, drought, and rising sea levels. They can also provide emergency finance for small and medium enterprises impacted by climate-related disasters.

Current or potential Adaptation-relevant sector applications:

- crop and food production – crop production (including agroforestry); livestock production; fisheries (marine, freshwater, and aquaculture); irrigation;
- ecological services and management – forest management (including afforestation and reforestation); wetlands; ecosystem and biodiversity protection, conservation, and enhancement;
- water supply (infrastructure) – water storage; water harvesting; water management;
- coastal and riverine protection and management – coastal defences or flood protection barriers; river flood protection measures;
- disaster risk reduction – early warning and observation systems;
- energy infrastructure – energy generation (including renewables);
- transport infrastructure;
- other built environment and infrastructure – urban development;
- social infrastructure – education; health facilities; and
- industry and manufacturing.

Considerations for using credit guarantees:

- The project/initiative should be close to being “fundable” without the guarantee, to avoid situations in which the amount of the required guarantee is so large that no third party (e.g., a multilateral development bank) will offer it.

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[47] **Case study from NAP Global Network: Tanzania Agriculture Climate Adaptation Technology Deployment Programme**
The Tanzania Agriculture Climate Adaptation Technology Deployment Programme was initiated to increase access to agricultural technologies for climate Adaptation. Supported by a USD 70 million concessional loan from the GCF, the program includes the establishment of a lending and de-risking facility to increase access to affordable technologies, as well as to provide technical support and raise awareness of climate change risks within the private sector and government.
The lending and de-risking facility is developing customized financial products that support climate Adaptation and resilience in agriculture in Tanzania, particularly for smallholder farmers. Blended financing from the GCF and the CRDB (an African commercial bank) creates a credit line for CRDB’s Agriculture Resilience and Adaptation lending program, which eases lending for smallholder farmers looking to invest in Adaptation and resilience technologies. CRDB will also collaborate with insurance companies to create a resilience and Adaptation insurance scheme for smallholder farmers. The success of innovative technologies that result from this program is expected to justify further scale-up and attract private investment, which will help to proliferate both resilience and Adaptation technologies and financing products throughout the country.

- Guarantees are normally held on guarantor balance sheets for the full amount and thus, from the perspective of the guarantor, are less popular than other instruments (i.e., loans) because they generate fewer fees and offer less collateral.

In the context of providing and/or facilitating green/Adaptation financing to small businesses through local intermediaries in Mauritius, credit guarantees are an essential tool to include in the toolkit for green loans. A credit guarantee framework should be put in place with the collaboration of regulatory agencies and public authorities to ensure that the system achieve its objectives while ensuring that risk is adequately transferred to the appropriate stakeholders.

Recommendation 30: Future green financing lines (especially those which are structured for microfinance loans) should incorporate a credit guarantee mechanism to ensure effective access to finance by small businesses, individual entrepreneurs or vulnerable communities.

10. FINANCIAL INTERMEDIATION FOR ADAPTATION FINANCING

Financial Intermediation has been partly addressed in different sections of the report.

- Section 3.2 describes the supply of finance and how it could be enhanced.
- Section 5 analyses the lessons learnt from SUNREF III that could be applied for future financing programmes.
- Section 9 describes financial instruments potentially applicable to Adaptation financing in Mauritius in conjunction with local intermediaries.

Beyond the above, key points to consider for financial intermediation are as follows:

The private sector matters – both as an on- lender and as a beneficiary. Loans that flow from government institutions are generally perceived as social grants that do not require repayment, and they represent a burden on national finances. Local financial intermediation allows for lending to done on terms and conditions that allow for repayment of loans.

Intermediated finance is expected to enable private sector participation through unlocking risks, providing access to knowledge, building capacities and extending lines of credit, targeted at small business.

Intermediated finance with the support of donors should allow the most climate-vulnerable people and communities to access finance. Extending sustainable sources of Adaptation finance to these communities is no doubt a significant challenge but however one is much needed to build climate resilience.

Based on extensive literature, leveraging on the capacities of incumbent financial institutions is a critical success factor for green finance in general. Established banks and MFIs all have relevant structures and institutional capacities to draw from, in implementing an Adaptation finance programme. It is strongly recommended for donor-funded green financing to leverage on existing institutional capacities available in-country.

Concessional finance is key to unlocking first movers in climate Adaptation. Piloting innovative projects is challenging for lenders and borrowers alike. First-mover costs are often high and can usually only be reduced through reaching economies of scale through high levels of adoption, and through understanding what works and what does not. Local financial institutions should be supported in developing green financing programmes with sound technical assistance services.

Microfinance is an important consideration for Adaptation financing. Intermediated finance to larger institutions can be used to on-lend to microfinance institutions, in addition to the larger institutions' own green financing activities, thereby achieving greater market penetration for Adaptation finance. Although it must be said through prior experience on SUNREF III that the market context of the banking sector is not conducive of such an endeavour. Therefore, donors could also directly target MFIs for specific Adaptation financing programmes such as lending to small planters.

Loan seekers in Mauritius have regularly complained about the high interest rates applied to green loans. In engineering green Adaptation financing programmes, especially those targeted towards individual or small businesses, concessionality considerations should be provided to lower the interest rates below market rates.

Therefore, it is important to stress that financial intermediation for Adaptation financing

1.) cannot be a one-size fits all approach because of the different dimensions and nature of Adaptation financing,

2.) requires financial intermediaries whose activities or strategies are aligned with the sectors/business activities targeted in the Adaptation financing programme,

3.) cannot rely only on a pull-approach whereby loan seekers would have to systemically do the first move towards the Financial Institution and are hypothetically deemed to be already knowledgeable of the available features/possibilities of financing programmes

4.) cannot be based on generic product offerings only.

10.1. THE NECESSITY OF INNOVATIVE PRODUCT DEVELOPMENT FOR ADAPTATION FINANCING

Depending on the typology of projects being financed, generic financing instruments rarely suffice for Adaptation financing. It is extremely important that financial intermediaries1.) conduct specific market studies for each Adaptation theme being considered 2.) design tailor-made products for each of those Adaptation themes and 3.) thoroughly engage themselves and bridge the gap on the ground between the available funding facilities and the targeted population of potential loan-bearers.

Staff from financial intermediaries (retail, SME and corporate bankers) working on green financing programmes should be thoroughly versed into understanding business models and strategies aligned with Adaptation financing and should be able to demonstrate capability for designing financing products based on the use of different financial instruments that serves the sectorial needs of loan seekers.

Management/Executives of financial intermediaries should recognise the importance of product development for Adaptation Financing and provide sufficient resources and support to the relevant departments for these activities to happen with a vision that goes beyond the basic financial indicators determining the viability of such projects.

The bank regulator should engage with the commercial banks beyond the course of regulatory activities to understand the requirements of those banks for effective climate change Adaptation financing and to consider what measures could be taken at policy level to facilitate Adaptation financing including derisking of products, reduction of transaction costs and prudential capital requirements.

While it is accepted that each national economy has its own realities and context and therefore case studies from other geographies cannot be replicated in-toto, those case studies may still support the thought-process that is required in designing financial instruments for Mauritius. The case study presented below is from Zambia and is reproduced from the University of Frankfurt School of Finance and Management.

Case Study: Good Nature Agro (GNA)

Good Nature Agro is a social enterprise that was founded by a group of university graduates. As part of a study programme, the founders of the company realised that simple technologies and practices could aid farmers in Zambia to avoid post-harvest losses and increase productivity. The venture was created at the “d-lab”, an innovation hub at the University of California in cooperation with the MIT, which unites several disciplines and provides support for early-stage companies to bring their business models forward.

New technology & training

Smallholder farmers typically do not have access to adequate storage facilities for their crops and therefore post-harvest losses are a major concern for them. The company recognised this challenge and developed a chemical-free grain storage bag, priced at USD 2,50 per 100kg. Good Nature Agro (GNA) also trained participating farmers on using these new grain bags. The new bags enabled the farmers to store their crops sustainably for offseason sales, allowing them to store their stored produce when prices were higher.[48]

At the same time, a group of farmers was selected and received training in improved agricultural practices (intercropping with beans, a sort of legumes) and improved seeds. These farmers were able to reach a 75% increase in maize yield and together with the new income from the intercropping beans, participating farmers were able to double their income per hectare. The company founder provided regular training sessions to the farmers, including discussions on diversifying crops and thereby creating additional income, as these can be sold and traded, thus expanding farm yields.

Business model

[48] Website: https://www.ucdavis.edu/news/%E2%80%98farmer-preneurs%E2%80%99-improve-cropssouthern-africa

Based on this initial experience, a unique business model emerged.[49] GNA identified legumes as a high value crop (high margins in the market) with a high market potential (market in Zambia is underserved), suitable for intercropping with maize (the staple crop) and thus contributing to crop diversification. Legumes are also valuable to farmers because they increase soil fertility by replacing nitrogen and are highly nutritious.

The GNA team recognised that although the legume value chain was not well developed in Zambia, it had a huge market potential. There was no supply of high-quality seeds of varieties of legumes even though such seeds were demanded by the market. On the other hand, farmers could also not sell their produce of legumes, because market links to traders and processors only existed on a small level.

The GNA business model works into two directions, addressing both of the identified barriers for the legume market development, specifically:

1) establishing the production of quality legume seeds and

2) selling the (harvested) legumes commodities to customers (processors, agribusinesses), improving market links

Seed multiplication:

Legume seed breeding was rarely happening in Zambia, so GNA engaged with market actors to determine what the seed varieties that are on demand. With support from international organisations in the sector, seeds were bred and tested in Zambia. Once reliable varieties are developed, these seeds are multiplied through smallholder farmers.

The number of farmers engaged in the seed multiplication process has increased strongly and within five years, almost 5,000 farmers are enrolled in seed production. However, to ensure quality seed production, farmers need to be trained. For this, smallholder farmers are clustered into groups guided by one lead farmer, who works as private extension agent for the company. The lead farmers receive a salary from GNA for their services. At the start of the season, farmers receive training and an input seed loan, which they repay in (multiplied) seeds after harvest. The seeds that farmers produce through multiplication are sold to GNA for a premium price.

Legume Production:

Farmers often face the problem that they are not able to sell their crops because market links to traders or processors are missing. To overcome this challenge, GNA engaged with potential legume buyers on the market to determine the required characteristics of the legumes that would be in demand. GNA breeds and multiplies seeds of those varieties with the help of seed-farmers and finally use these (produced) seed as input for legume producer-farmers, who will then grow legumes as a crop.

The “producer farmers” purchase the (multiplied) legume seeds from GNA, which also commits to buy the whole legume harvest when it is ready. In this way, the company bundles the harvest from the “producer farmers” and on-sells the bulk to the previously identified actors (buyers) in the value chain. This business approach provides the legume producer farmers with a secured market on one side, and the legume buyers such as traders/ processors with a reliable supply of quality legume produce on the other side.

As a social enterprise, GNA seeks to improve the living of the smallholder farmers in Zambia. To measure their impact, they have developed a specific app that tracks the income increase of the farmers. However, income is not the only criteria. Farmers that enroll in the GNA programmes are encouraged to also set family targets, for example sending children to school. The company further aims to be gender inclusive when registering new farmers and also aspire to have a large number of female private extension officers.

Financing the business model

The business model from GNA relies on several revenue streams. Nevertheless, the startup and growth phase of the company was financed by different actors and financial instruments. Recently, the company

[49] Website: https://www.inclusivebusiness.net/impact-story/good-nature-agro

managed to secure USD 2.1 million through a series **A equity** from Finca Ventures, an impact investing venture fund.[50]

In addition, they were also able to secure **grants** and **collaborate with NGOs**, mostly on trainings. For example, a EUR 1 million grant from a European Union initiative is earmarked for expanding the number of smallholder farmers engaged, the creation of a technology platform to manage farmer engagement, financial transactions and logistics, a monitoring system and to lay the groundwork for selling carbon credits as a third revenue stream[51]. Another previously received grant was used to expand operations in provinces in Zambia which were not yet served[52].

As a pilot scheme, the company engaged with Finca Zambia, a local **microfinance institution (MFI)[53].** The lead farmers / private extension agents could open a savings account with the MFI which among others, was then used by the GNA to pay their salaries. The farmers can access their accounts physically at MFI branches and through mobile money agents.

The benefits of being "banked" for the participating farmers are multifaceted: besides being able to save their money in a secure way, they also get access to other financial services like loans by having an account. In the future, all transactions between the GNA and the seed-farmers as well as producer-farmers are planned to be managed through such bank accounts.

[50] Why We Invested: Good Nature Agro - FINCA Ventures Zambia's Good Nature Agro Closes $2.1m Series A Funding Led by Goodwell Investments (techawkng.com), https://ventureburn.com/2020/10/zambian-agritech-startup-secures-2-1-million-funding/

[51] https://enterprisezambia.org/good-nature-agro-products-ltd/

[52] https://miningforzambia.com/making-more-than-peanuts/

[53] https://medium.com/finca-ventures/piloting-digital-financial-services-for-smallholder-farmers-with-goodnature-agro-and-finca-zambia-c5790c16d5e40020

11. AFD'S ROLE IN SUPPORTING ADAPTATION FINANCING IN MAURITIUS

Based on information shared and reviewed during this study, AFD aims to pursue its prolonged involvement and support of climate finance in Mauritius through an integrated approach to supporting the transition needs of the Republic of Mauritius as illustrated below (this starts by an ongoing high-level dialogue with policymakers and other key stakeholders):

Tangibly, this involvement will cascade down through the following financing programmes or supporting mechanisms which if led to fruition within a sound national climate governance framework, are expected to greatly assist the Republic of Mauritius in achieving the targets set in its NDC:

Themes	Loans		Subsidies	
	Sub-theme	Amount	Sub-theme	Amount
Strategic engagements and support to high-level perspectives			Annual conference on Climate Finance organised by the business partners of AFD (Mauritius Banker's Association, Business Mauritius. EDB, BoM) in February year-on-year	150 K€
			Support to Maurice Stratégie	600 K€
			Facilité 2050 (Long-Term Strategy)	1.1 M€
			Sectorial workshops on Coastal Protection, Circular Economy and Gender with Business Mauritius	100 K€
Support to public policies and actions	FBPP Climate Governance/Climate Finance	150 M€	Support to update and issue Climate Governance Report and Matrix of action (Baastel)	500 K€
			Reallocation of AITF funds through EF (objective to support regulators and supervisory bodies)	1 M€
Climate financing programmes for private sector			Reallocation of AITF funds through EF (support to the MBA and Banking Sector for capacity build-up)	1 M€

originated projects through public-owned and private-owned banks				
	Green Financing Line to Maubank (TFSC)	TBD	Technical Assistance to Maubank	TBD
	Green Financing Line to SBM (TFSC)	TBD	Technical Assistance to SBM	TBD
	SUNREF III (closed)	85 M€	Technical Assistance to SUNREF (studies)	3 M€
	Green Financing Line to ABSA (Proparco)	TBD		
	Green Financing Line to MCB (Proparco)	75 M€		

It is further appreciated that in the design and concept stage of the above activities, some of the recommendations made in this report were already embedded, namely in the Green Financing lines (TFSC) to SBM and Maubank and the support which is being provided to Bank of Mauritius, the Mauritius Banker's Association and Business Mauritius.

Finally, the recommendations presented in different sections of this report provide a sound outlook on the different types of support which AFD could consider for Adaptation financing in Mauritius. Some key priorities would be as follows:

1. Support national policymakers in framing and putting in place a Climate Governance framework aligned with current best practices and that plugs current gaps in this matter
2. Support the conduct of a comprehensive and integrated Climate risk assessment for Mauritius with the objective of producing quality data (quantitative and qualitative) which serves the requirements of all stakeholders (public, private and civil society)
    a. Further to the Climate Risk Assessment exercise, to provide support in devising a revised National Adaptation Policy, Framework and Action Plan based on it
3. To consider providing technical assistance for the set-up of different financial instruments in accordance with the financing needs stemming from the National Adaptation Action Plan
4. To provide sustained concessional financing for Adaptation projects which are below or borderline in terms of financial creditworthiness, but which can bring optimal Adaptation benefits. To engage with MFIs in that respect to ensure funding is channelled towards the relevant loan seekers.
5. To provide technical assistance to local stakeholders for shifting the economic strategy and priorities towards an Adaptation compatible future.

12. END OF DOCUMENT

ANNEXURE 1

SUNREF (Sustainable Use of Natural and Renewable Energy Finance)

Ligne de crédit climat

SUNREF III Maurice

CAHIER DES CHARGES

ANALYSE ET EVALUATION DU POTENTIEL ET DES MÉCANISMES DE FINANCEMENT DE PROJETS LIÉS À L'ADAPTATION AU CHANGEMENT CLIMATIQUE À MAURICE

Autorité contractante : Business Mauritius / AETS

Représentée par Amandine de Rosnay (a.derosnay@businessmauritius.org)

TABLE DES MATIERES

1. INTRODUCTION

1. Les risques climatiques augmentent à mesure que le réchauffement planétaire s'accélère. Des mesures fortes d'atténuation et d'Adaptation sont essentielles pour éviter d'atteindre les limites strictes de l'Adaptation.
2. Les effets du changement climatique s'intensifient dans le monde entier. La sécheresse qui sévit dans la Corne de l'Afrique depuis plusieurs années, les inondations sans précédent qui frappent l'Asie du Sud ou encore les fortes chaleurs estivales et les sécheresses record enregistrées dans de nombreuses régions de l'hémisphère Nord témoignent, parmi d'autres, de l'augmentation incessante des risques climatiques. Selon le sixième Rapport d'évaluation (WGII AR6) du Groupe de travail II du Groupe d'experts intergouvernemental sur l'évolution du climat (GIEC), le monde sera confronté à de graves risques climatiques avant la fin du siècle, même dans le cadre de scénarios à faibles émissions.
3. Il est, à ce titre, primordial de déployer des mesures ambitieuses et accélérées pour s'adapter aux changements climatiques, parallèlement à de véritables efforts d'atténuation.
4. Les efforts mondiaux déployés en matière de planification, de financement et de mise en œuvre des mesures d'Adaptation continuent d'être porteurs de progrès graduels, sans toutefois parvenir à suivre le rythme de l'augmentation des risques climatiques.
5. Il est donc nécessaire d'accélérer plus que jamais la recherche scientifique, d'innover en matière de planification, **d'améliorer le financement et la mise en œuvre**, de renforcer le suivi et l'évaluation, et de resserrer la coopération internationale.
6. Le déficit de financement de l'Adaptation dans les pays en développement est probablement cinq à dix fois supérieur aux flux financiers internationaux actuels en la matière et continue de se creuser. Les flux financiers destinés à la fois à l'Adaptation et à l'atténuation en 2020 étaient inférieurs d'au moins USD 17 milliards par rapport aux USD 100 milliards promis aux pays en développement, d'après les chiffres avancés par les bailleurs de fonds climatiques eux-mêmes.
7. L'ampleur des investissements privés dans l'Adaptation reste incertaine. Bien que le financement privé ne soit pas la panacée pour combler le déficit de financement de l'Adaptation, il est essentiel de renforcer considérablement les actions du secteur privé visant à rendre les opérations commerciales, les chaînes d'approvisionnement, les fournisseurs et les clients plus résilients, et de soutenir à travers ceux-ci les actions d'Adaptation menées par le secteur public.

2. CONTEXTE : ILE MAURICE

1. En tant que petit État insulaire en développement (PEID), l'île Maurice fait partie des pays les plus touchés par le changement climatique, car elle est particulièrement vulnérable aux phénomènes météorologiques violents et aux catastrophes naturelles tels que les cyclones, les tempêtes et les raz-de-marée, les pluies torrentielles, les inondations et les crues soudaines, les glissements de terrain et les tsunamis. Les données historiques et les projections futures des tendances climatiques indiquent une augmentation des impacts négatifs et, par conséquent, une plus grande vulnérabilité de l'île Maurice. Une augmentation de tous les extrêmes climatiques a été observée et est prévue pour l'avenir, notamment des précipitations plus abondantes, des températures minimales et maximales plus élevées.
2. Maurice a initié son engagement climatique dès 2015 : avec une première démarche sous la forme d'une contribution indicative marquant une première étape (INDC ou Indicative National Determined Contribution) au Secrétariat de la Convention-cadre des Nations Unies sur les changements climatiques (CCNUCC) le 28 septembre 2015.
3. La loi sur le changement climatique a été publiée au Journal officiel le 28 novembre 2020 et est entrée en vigueur le 22 avril 2021. En vertu de cette loi, le ministère du Changement climatique est chargé de coordonner la mise en œuvre des engagements pertinents afin d'assurer le respect des accords internationaux sur les changements climatiques.
4. Ensuite, sur la base des projections réalisées en 2021, Maurice révise ses CDN (Contribution nationale) et vise à réduire les émissions globales de GES de 40 % en 2030 par rapport au scénario Business as Usual (BAU) d'environ 6 900 ktCO2eq en 2030. Le cadre politique national d'Adaptation mis à jour en novembre 2021 met l'accent sur :

- L'amélioration de la base de connaissances sur les risques du changement climatique et les impacts sur les communautés ;
- L'élaboration et la mise en œuvre d'une approche intégrée qui combine les secteurs suivants : la pêche (économie bleue), le tourisme, la biodiversité (terrestre et marine), la sylviculture, l'agriculture et la zone côtière ;
- Le renforcement des cadres stratégiques, pour combler les lacunes en matière de politiques et d'expertise dans le secteur de la santé, notamment en intégrant les risques climatiques
- Accroître la résilience des activités dirigées par l'homme tout en préservant les fonctions écosystémiques, en améliorant la gouvernance, en renforçant les mécanismes de préparation et de réponse aux catastrophes, pour les secteurs des infrastructures et de la réduction des risques de catastrophe.

5. Les besoins financiers totaux liés aux investissements réalisés, pour mettre en œuvre les objectifs de la CDN, sont estimés à 6,5 milliards de dollars d'ici 2030 (cumul). Les besoins totaux pour la mise en œuvre des mesures d'atténuation et d'Adaptation, identifiées dans la présente CDN sont estimés respectivement à 2 milliards USD et 4,5 milliards USD.
6. La répartition des contributions inconditionnelles et conditionnelles pour les 6,5 milliards de dollars est la suivante a) montant inconditionnel : 2,3 milliards $ (provenant du gouvernement et du secteur privé), soit 35 % ; le secteur privé est ici concerné. B) montant conditionnel : 4,2 milliards (provenant de sources internationales et d'organismes donateurs) soit 65 %.
    -

Secteur	Mesures d'Adaptation au changement climatique	Estimations des coûts (en millions USD) d'ici 2030
Infrastructures & Stratégie de réduction des risques de catastrophe	Protection renforcée de l'infrastructure Une meilleure compréhension du risque de catastrophe et la mise en place d'une stratégie de gestion des risques de catastrophe, avec une gouvernance renforcée	**545**
Eau	<u>Gestion des ressources en eau</u> Amélioration de la prévision, de la gestion, de la protection et de la qualité des ressources en eau, y compris la modernisation et la construction de nouvelles stations d'épuration et de nouveaux réservoirs, ainsi que la réduction des pertes d'eau dans le réseau de distribution. <u>Récupération de l'eau de pluie</u> Acquisition et installation de systèmes de collecte des eaux de pluie et amélioration du cadre politique, juridique et réglementaire de l'eau à Maurice continentale, à Rodrigues et dans d'autres îles périphériques <u>Dessalement</u> Usines de dessalement <u>Rodrigues</u> Renforcer le développement de la récupération des eaux de pluie avec chaque foyer disposant d'installations de 10 ou 15m3 Petites usines de dessalement	**950**
Agriculture	<u>Développer et promouvoir des pratiques agricoles intelligentes face au climat</u> Utilisation de systèmes d'irrigation performants (goutte à goutte, micro-aspersion) Promouvoir des pratiques agricoles durables (conservation des sols et de l'eau, compostage, travail minimal du sol, paillage…) Introduire des variétés adaptées aux conditions locales (p. ex., tolérance à la sécheresse et à la chaleur, résistance aux maladies) Production de cultures sous culture protégée, comme une ombrière, une serre et un mini-tunnel Ajuster les opérations agricoles (dates de plantation, traitements, calendrier d'irrigation, etc.)	**645**

	Optimiser l'utilisation des engrais pour minimiser le lessivage et les émissions de GES, comme le gaz N2O Utilisation de méthodes de lutte intégrée contre les ravageurs et les maladies ou de méthodes de lutte antiparasitaire sans produits chimiques Adopter des systèmes agricoles bio-agricoles et agro-écologiques Développer des systèmes de production animale intelligents face au climat	
Tourisme	Développer la résilience du secteur du tourisme face au changement climatique pour son développement durable	**135**
Gestion des zones côtières	Sensibilisation, réhabilitation renforcée et renforcement du cadre réglementaire pour la protection des plages, des dunes et de la végétation Rodrigues Enlèvement et déplacement du sable accumulé à l'embouchure des rivières pour le mettre sur la plage elle-même afin de restaurer les plages et d'attirer des activités économiques, combiné au dragage (géotextile)	**825**
Pêches intelligentes face au climat	Elaboration et mise en œuvre de plans de gestion durable de la pêche, renforcement des capacités institutionnelles et Adaptation des infrastructures (quai) au changement climatique (élévation du niveau de la mer) Rodrigues Une pêche artisanale résiliente avec une politique de cogestion marine des ressources et des mesures pour la pêche hors lagon	**335**
Améliorer la résilience de la biodiversité marine et terrestre	Amélioration de la gestion des aires protégées marines et terrestres et expansion du réseau d'aires protégées, y compris la réhabilitation des zones humides, des herbiers marins, des plantations de mangroves, l'augmentation de la couverture forestière et la réhabilitation et l'agriculture des récifs coralliens Rodrigues Développement d'une gestion durable des paysages et de solutions d'Adaptation écosystémique et de protection de la nature	**410**
Secteur de la santé	Intégration de l'Adaptation au changement climatique dans le secteur de la santé pour répondre à l'augmentation de la population et à la charge sanitaire supplémentaire liée au climat. Élaboration et mise en œuvre d'une stratégie de communication, d'éducation et de sensibilisation à l'égard des risques et des impacts des changements climatiques sur la santé humaine. Améliorer la surveillance des maladies associées au changement climatique et développer et mettre en œuvre un mécanisme décentralisé d'alerte et de réponse rapide	**595**
	Total	**4,440**

Face aux besoins identifiés en matière d'Adaptation à Maurice, ainsi qu'aux lacunes en matière de financement, il est crucial que le secteur privé contribue. Il est donc important de comprendre pourquoi, malgré le mécanisme SUNREF III et son intention stipulée, les projets d'Adaptation du secteur privé ont été rares.

SUNREF III (description générale du programme en section 2 ci-dessous) inscrivait par ailleurs dans ses termes de références initiaux, pré-lancement, la formulation suivante *« Ainsi les thématiques **d'Adaptation au changement climatique** et d'égalité professionnelle femme – homme seront **prioritaires** dans le cadre du nouveau programme SUNREF à Maurice. »* Une note d'analyse des difficultés rencontrées dans l'exécution du programme SUNREF III rédigée en mars 2023 relevait de façon sommaire les barrières au financement des projets d'Adaptation.

Une compréhension approfondie des obstacles rencontrés par le secteur privé dans la mise en œuvre de projets d'Adaptation revêt une importance capitale pour élaborer des stratégies efficaces visant à mobiliser davantage le secteur privé dans ce domaine crucial de l'action climatique.

3. PRÉSENTATION SUNREF III MAURICE

SUNREF Maurice est un programme de promotion de l'investissement vert du secteur privé conçu par l'AFD. Il consiste en (i) une ligne de crédit verte de 85 M € mise à disposition des entreprises et particuliers portant des projets d'atténuation au changement climatique, **d'Adaptation au changement climatique** ou d'égalité femmes/hommes, au travers de trois banques partenaires (ABL, MCB et SBM) ; (ii) une assistance technique financée par l'Union Européenne, basée au sein de Business Mauritius, ayant pour rôle d'accompagner les porteurs de projets dans la définition de leur projet et les banques dans la bonne mise en œuvre du programme ; (iii) des subventions à l'investissement allant de 5 à 16% du montant du prêt éligibles du porteur de projet à son bénéfice.

Le programme SUNREF, développé dans une trentaine de pays, en est à sa troisième phase à Maurice (phase 1 : 2009 – 2013 ; phase 2 : 2014 – 2017 ; phase 3 en cours : 2018 – 2023).

Plus d'information sur le site dédié : https://www.businessmauritius.org/sunref/

Critères d'éligibilité des projets d'Adaptation :

Les critères d'éligibilités des projets d'Adaptation ont par ailleurs été définis dans le cadre d'une étude préparatoire sur les projets d'Adaptation à Maurice réalisée par le cabinet Artelia en 2018. Cette étude préparatoire a été indispensable pour définir avec précision les conditions et les modalités d'éligibilité de ce type d'investissement vis-à-vis des banques partenaires et a été réalisée en étroite collaboration et des échanges et interactions avec les banques partenaires identifiées. Ont été adoptés, les principes et contours suivants :

Les projets d'investissement admissibles sont promus par des entreprises qui contribuent à une ou plusieurs des actions listées dans la CDN de Maurice.

Compte tenu de la logique de fiabilité financière des investissements qui seront retenus (en prenant en compte les primes à l'investissement), des secteurs ont été pré-identifiés comme étant prioritaires et porteurs sur lesquels les entreprises peuvent avoir un fort impact et rôle à jouer en matière de lutte contre le changement climatique.

Les secteurs prioritaires à étudier sont les suivants (liste de problématiques associées non exhaustive) :

- Tourisme : consommation d'eau, activité littorale, désalinisation, refroidissement
- Industrie : consommation d'eau, désalinisation, traitement et valorisation des effluents
- Logement : type de construction, matériaux, refroidissement des bâtiments
- Infrastructures publiques et bâtiments commerciaux : type de construction, matériaux, refroidissement des bâtiments, eaux de ruissellement
- Agriculture : sujet de consommation d'eau, usage des sols, irrigation, nouvelles cultures

4. OBJECTIFS ET CHAMP DE L'ÉTUDE

Compte tenu de ce qui précède, il est convenu qu'il est important de tirer les leçons du fonctionnement et de la performance de la composante Adaptation de SUNREF III. L'objectif de cette consultation est de comprendre les points de blocages tout au long de la chaîne de valeur. La consultation devra proposer des perspectives (instruments financiers & mécanismes de financement, les processus d'analyse de risques crédit, la gouvernance, le transfert de connaissances …) qui pourraient servir à la conception de lignes de financements futures, dans le but d'augmenter leurs impacts et de rehausser leurs niveaux d'appropriation par les partenaires. Elle devra également proposer des perspectives pour renforcer les investissements qualifiés d'Adaptation au changement climatique, et proposer des possibilités d'amélioration le long de la chaîne de valeur pour accroître les investissements du secteur privé dans l'Adaptation.

Plus spécifiquement, il est attendu que la mission permettra **d'évaluer et d'analyser de manière critique :**

<u>Le cadre structurant, l'accompagnement et la méthodologie de financement vert pour l'Adaptation :</u>

1. D'évaluer brièvement la contribution de la composante Adaptation de SUNREF III dans le cadre des CDN de Maurice.
2. Evaluer l'ensemble des activités mises en œuvre par les banques et l'AT (stratégie, taxonomie/LEME, opérationnalisation, communication, renforcement de capacités, gouvernance interne, reporting, design

des produits financiers, etc.) pour faire émerger et/ou promouvoir la composante Adaptation dans le cadre du programme SUNREF III

3. Faire un 'benchmark' des instruments financiers et mécanismes de financement mixte, qui ont fonctionné pour les projets d'Adaptation dans des contextes similaires à l'ile Maurice. Identifier des instruments dont pourraient disposer les acteurs privés à Maurice pour investir dans des activités d'Adaptation au climat, y compris les instruments "innovants" et le financement mixte
4. Proposer, sur la base des évolutions de marché, des évolutions règlementaires qui sont intervenues depuis 2018 et de l'expérience accumulée, une mise à jour de la critériologie SUNREF III applicable aux projet d'Adaptation, voire également des LEME adoptées.

<u>L'opérationnalisation, les capacités internes, la communication au niveau des banques</u>

5. Evaluer les activités (stratégie, opérationnalisation, communication, renforcement de capacités, design de produits adaptés) des banques partenaires pour faire émerger et/ou promouvoir la composante Adaptation
6. Identifier les instruments pertinents de mesure des risques climatiques (y compris dans le cadre de la mise en places des procédures exigées par la Banque de Maurice), d'atténuation des risques et les sources de financement correspondantes dans le cadre de financement de projets Adaptation (assurance, design du projet, subventions publiques nationales ou internationales, dispositifs de garantie, etc.).
7. D'évaluer les besoins en matière de renforcement de capacités pour favoriser l'émergence de projets Adaptation, en distinguant les besoins au sein des banques de ceux liés à l'écosystème mauricien (bureaux d'étude, formation initiale, etc.)
8. Sur la base de l'expérience SUNREF lII, proposer une méthode et un process pour que le staff des banques soit in fine en mesure d'identifier seul les opportunités et les prérequis pour financer des projets d'Adaptation, tout en évitant le financement de pratiques de mal-Adaptation

<u>L'opérationnalisation, les capacités internes, la communication au niveau des porteurs de projets</u>

9. Evaluer les conditions d'accès au financement, les services non financiers proposés par les banques, le cycle de financement projet et les modalités de mobilisation des fonds SUNREF III pour les porteurs de projets
10. Evaluer la pertinence et l'alignement des projets Adaptation (et projets mixtes atténuation avec une composante Adaptation) soumis à SUNREF III et/ou soumis au banques partenaires mais qui on reçut des refus de financement par les banques.
11. Evaluer la technicité et la compréhension des enjeux de risques climatiques et d'Adaptation (identification de risques, étude de faisabilité préliminaires, intégration des enjeux ESG, appropriations).

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<u>L'environnement externe à la mise en œuvre de projets d'Adaptation à Maurice</u>

12. Evaluer l'influence de facteurs externes (politiques publiques, gouvernance, socio-économiques) sur l'émergence de projets Adaptation à Maurice.

<u>Pour proposer des perspectives pour les différentes partie-prenantes,</u> il est attendu du Consultant qu'il puisse formuler des recommandations sur 8 grands questionnements :

Q1 : Quelles leçons sont à tirer sur la base de déroulement du programme SUNREF III ? Quelles en ont été les forces et faiblesses pour le déroulé de la composante Adaptation ? Comment capitaliser sur ces leçons pour l'élaboration de nouveaux appuis au secteur bancaire sur l'Adaptation ?

Q2 : Comment l'AFD pourrait-elle appuyer ses contreparties dans le cadre de ses futures lignes de finance climat à mieux construire, structurer et intégrer le cycle de financement de projets Adaptation en ligne avec les CDN de la juridiction sous considération (Maurice) ? Quelle pourrait être une structuration optimale permettant la formulation, la planification et le suivi-évaluation de projets Adaptation en ligne avec les CDN ainsi qu'avec la déclinaison des stratégies de long terme (SLT) quel que soit le secteur ?

Q3 : Quelles complémentarités devraient être formalisées entre ces nouveaux appuis et ceux déjà déployés par l'AFD, au niveau sectoriel, en faveur de l'Adaptation au changement climatique (appuis techniques ; appuis financiers ; appuis de plaidoyer ; travaux de recherche ; etc.) ?

Q4 : Quelles opportunités existent pour encourager les banques mauriciennes à accroître leur participation aux investissements qualifiés d'Adaptation au changement climatique, notamment en termes de segments de marché prioritaires ? Quels besoins en renforcement des capacités et les évolutions en termes de gouvernance qui sont nécessaires pour favoriser la systématisation du financement des projets d'Adaptation par les institutions bancaires ?

Q5 : Quelles sont les opportunités identifiées pour accroître la participation du secteur privé mauricien aux investissements qualifiés d'Adaptation au changement climatique ? Quels besoins en renforcement des capacités sont nécessaires pour favoriser l'émergence de projets d'Adaptation au sein des entreprises ?

Q6. Quels sont les business-models durables identifiés (dans le cadre du programme ou ailleurs) permettant de s'assurer qu'une demande bancable existe sur les différents segments de marché sur des projets d'Adaptation ? Au niveau des acteurs intervenant au sein des chaines de valeur de ces segments de marché, quels sont les alignements d'intérêt exploitables ou les éventuelles difficultés à anticiper ? Quels segments de marché ne pourront pas être couverts compte tenu des contraintes actuelles du marché et de la politique publique mauricienne ?

Q7. Quelles sont les évolutions et ajustements qu'il s'agit d'introduire sur les critères d'éligibilité adoptés sur SUNREF III, compte tenu des différents retours de l'AFD depuis les travaux préparatoires d'Artélia en 2018 et les évolutions du marché et de la règlementation locale ? Comment s'assurer que ces critères sont effectivement compris par les

Q8. Quelles opportunités se présentent pour renforcer l'engagement du cadre réglementaire, de la gouvernance et de la politique mauricienne dans les investissements qualifiés d'Adaptation au changement climatique ? Quels ajustements ou améliorations sont nécessaires pour favoriser l'émergence de projets d'Adaptation porté par le secteur privé ?

5. MÉTHODOLOGIE ATTENDUE

Business Mauritius/AETS recherche les services d'un (des) consultants individuels nationaux ou internationaux pour conduire cette étude dans le cadre de SUNREF Maurice. Le consultant travaillera étroitement avec Business Mauritius/AETS pour analyser le dérouler du programme SUNREF III.

Le consultant précisera dans son application, et par la suite dans son rapport initial la méthodologie ou approche qu'il adoptera dans le cadre de sa mission permettant de s'assurer de l'adhésion et de la collaboration des différentes parties prenantes qui seront consultées.

Un véritable souci de communication et d'échange permanents avec l'équipe-projet est attendu. Le prestataire devra par ailleurs solliciter, autant qu'il le pourra, toutes les organisations partenaires, locales, françaises et internationales, qu'il jugera intéressant d'impliquer.

Une articulation sera attendue avec le travail déjà en cours au sein de la MCB pour faciliter la mise en place de produits alignés avec leur taxonomie Adaptation, le travail en cours sur les instructions en cours par l'AFD sur des nouvelles lignes de crédit climat avec la SBM et la MauBank, tout comme avec les travaux qui seront être lancés par la Mauritius Bankers Association pour chiffrer le potentiel de marché.

Sur le volet concernant le cadre et l'environnement règlementaire, le consultant pourra conduire des consultations avec le secteur privé pour délibérer 1.) sur les actions politiques et les réglementations 2.) la mise en place de mesures de politiques publiques pour la réduction des risques non-financiers et 3.) la mise en place de structures de financements mixtes afin d'accroitre le flux de capitaux pour les projets dit climatiques ou verts.

1. LIVRABLES ATTENDUS

Pour cette étude, il est attendu que le(s) consultant(s) fournira (fourniront) les livrables suivants :

Livrable 1 : Rapport initial (en anglais Inception Report) permettant de préciser les premières conclusions attendues de l'étude, la méthodologie de travail et de définir un plan de travail détaillé. (10 jours après le démarrage)

Livrable 2 : Rapport préliminaire et présentation des enseignements préliminaires attendus (20-30 jours après le démarrage)

Livrable 3 : Rapport final de mission (45 – 65 jours après le démarrage), incluant une proposition de révision des critères d'éligibilité, avec les diligences associées, des propositions adaptées aux porteurs de projets et aux banques. Le rapport final comprendra deux versions : une version publique et une version interne à l'usage exclusif de l'AFD pouvant contenir des éléments sensibles.

Langue des livrables : anglais ou français.

2. CALENDRIER ET BUDGET ESTIMÉ

Calendrier prévisionnel

- **Mi-Avril 2024** : Lancement des études
- **Mi-Mai 2024 :** Soumission du rapport provisoire
- **Juin 2024 :** Soumission du rapport final

Septembre 2024 : Restitution et présentation des rapports aux acteurs économiques locaux et clôture de la prestation

Le budget estimatif d'environ 40 jours/personnes.

3. CONTROLE ET SUIVI DE L'EQUIPE PROJET

- Le consultant assurera les relations avec le maître d'ouvrage et l'équipe de suivi technique, composé du chargé de projet SUNREF Business Mauritius.
- Le prestataire s'engage à tenir informé l'équipe de suivi technique en temps réel des activités menées, de la planification des formations et des données intermédiaires récoltées tout au long de la durée de l'étude.
- L'équipe de suivi technique assistera le(s) consultant(s) dans la mesure du possible pour les interactions avec les acteurs locaux, les introductions nécessaires auprès des institutions ciblées et la collecte des données.

4. PROFIL(S) CONSULTANT INDIVIDUEL/BE RECHERCHÉ(S)

- Expertise et expérience avérées sur l'Adaptation au Changement Climatique et la Réduction des Risques et des Catastrophes
- Expertise et expérience avérées sur le financement des projets climatiques notamment ayant trait à l'Adaptation au changement climatique dans le cadre des économies insulaires (PEIDs) et/ou en voie de développement.
- Expertise et expérience avérées sur le cycle de financement projet (risques, crédits, gestion de portefeuille)
- Expertise et expérience avérées sur les instruments financiers liés à la finance verte et le secteur financier en général
- Expertise et expérience avérées sur les analyses de cadres législatifs et les études d'évaluations de programme de financement
- Bonne connaissance des programmes de financement par des bailleurs de fonds
- Capacité avérée à interagir avec plusieurs échelons de hiérarchie au sein des partenaires de l'AFD à Maurice, de tisser des liens et de porter un débat et une réflexion de haut-niveau sur les thématiques contenues dans ces TdRs.