



Mainstreaming Migration, Environment and Climate Change into (Re)integration Initiatives in Mauritius



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This publication was made possible with financial support provided by the IOM Development Fund. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the IOM Development Fund.

Publisher: International Organization for Migration
12th Floor, Atalian Tower, 57 Labourdonnais Street
Port Louis
Mauritius
Tel.: +230 210 4250
Website: www.iom.int

Cover photos: From top right photo, clockwise: (1) Fisherfolks against the challenges of climate change effects for sustenance. © IOM 2002. (2) Land degradation and drought in a mountainous region. © IOM 2002. (3) A fisherfolk against the challenges of climate change effects for sustenance. © IOM 2022. (4) Mangroves for coastal protection. © IOM 2022.

Required citation: Adaawen, S. and A. Sookun (2023). *Mainstreaming Migration, Environment and Climate Change into (Re)integration Initiatives in Mauritius*. International Organization for Migration (IOM), Port Louis.

ISBN 978-92-9268-741-0 (PDF)

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IOM Development Fund
DEVELOPING CAPACITIES IN MIGRATION MANAGEMENT

Acknowledgements

This report is an outcome of the study conducted as part of the IOM research project titled “Mainstreaming Environmental Dimensions in Integration, Reintegration and Relocation Initiatives in Lesotho and Mauritius”. The project is being implemented in Mauritius and Lesotho, with funding from the IOM Development Fund and under the auspices of the IOM Southern Africa Regional Office, IOM Mauritius and IOM Lesotho. Many thanks to the IOM Southern Africa Regional Office and the project team in IOM Mauritius and IOM Lesotho. In particular, we wish to say a big thank you to the project team at the IOM Southern Africa Regional Office, most especially Ida Baraghizadeh (Regional Project Development Officer) and Andrew Lind for the support and making time to review and guide the whole research process. Special thanks also to Benjamin Schraven and Diogo Andreola Serraglio for their expertise and contributions in developing this report.

Our sincere gratitude also goes to Celine Lemmel (Chief of Mission, IOM Mauritius); Loganaden Muneesamy (National Programme and Policy Officer); Yatin Jokhun (Data and Research Assistant); and Anand Sookun (National Consultant, Mauritius) for being actively involved in every step of the project, and also being patient with the research team. You always made time to review and give insightful feedback for the successful outcome of this report. Your level of commitment to the study helped to facilitate engagement with key national stakeholders and also greatly contributed to shaping the study and final report. The feedback and clarification on some important issues in Mauritius and Rodrigues immensely helped to ensure that the issues of interest were being reported and discussed accurately.

We are also grateful to IOM Lesotho – especially Eriko Nishimura (Head of Office, IOM Lesotho); Masoai Dennis (Project Lead, IOM Lesotho); and Lisebo Motjotji (National Consultant, Lesotho) – for supporting the research team and helping to review and structure the research process. We wish to acknowledge and thank you all for helping to review and design the different instruments that were deployed for the collection of data in both Mauritius and Lesotho.

Our special thanks also go to the different key national stakeholders, international organizations and vulnerable populations/migrants who made time and participated in this study (see Annex 1). Your responses and insights proved vital in contributing to understanding the impact of climate change, human mobility and the implications for sustainable (re)integration in Lesotho. The derived insights served as basis in developing recommendations to enhance sustainable (re)integration of migrants in Lesotho. Special thanks to the following national agencies and experts for making

time to review and give expert feedback on revising this final report: Department of Climate Change under the Ministry of Environment; Solid Waste Management and Climate Change; the National Disaster Risk Reduction and Management Centre (NDRRMC); the District Council of Grand Port; Dr. S.K. Sobhee of the Department of Economics and Statistics in the University of Mauritius; and the Ministry of Education, Tertiary Education, Science and Technology. Thanks to you all for the support.

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List of abbreviations and acronyms

CADRI	Capacity for Disaster Reduction Initiative
COP	Conference of the Parties
CWA	Central Water Authority
DRR	disaster risk reduction
DRRM	disaster risk reduction and management
EDB	Economic Development Board
EEZ	exclusive economic zone
FGD	focus group discussion
HEAT GmbH	Habitat, Energy Application and Technology
HRDC	Human Resource Development Council
ILO	International Labour Organization
IOM	International Organization for Migration
INDC	Intended Nationally Determined Contribution
JICA	Japan International Cooperation Agency
MECC	migration, environment and climate change
MID	<i>Maurice Ile Durable</i>
MMS	Mauritius Meteorological Services
MSME	micro-, small- and medium-sized enterprise
MUR	Mauritian rupee
NDC	Nationally Determined Contribution
NDRRMC	National Disaster Risk Reduction and Management Centre
NDS	National Disaster Scheme
NSDP	National Skills Development Programme
SDG	Sustainable Development Goal
SLR	sea-level rise
SIDS	small island developing State
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

Glossary

IOM Glossary – Key definitions on migration, environment and climate change

Climate migration

The movement of a person or groups of persons who, predominantly for reasons of sudden or progressive change in the environment due to climate change, are forced to leave their habitual place of residence, or choose to do so, either temporarily or permanently, within a State or across an international border. *Note:* This is a working definition of IOM with an analytic and advocacy purpose which does not have any specific legal value. Climate migration is a subcategory of environmental migration; it defines a singular type of environmental migration, where the change in the environment is due to climate change. Migration in this context can be associated with greater vulnerability of affected people, particularly if it is forced. Yet, migration can also be a form of adaptation to environmental stressors, helping to build resilience of affected individuals and communities.

– IOM, 2019a:31

Disaster displacement

The movement of persons who have been forced or obliged to leave their homes or places of habitual residence as a result of a disaster or in order to avoid the impact of an immediate and foreseeable natural hazard. *Note:* Such displacement results from the fact that affected persons are (i) exposed to (ii) a natural hazard in a situation where (iii) they are too vulnerable and lack the resilience to withstand the impacts of that hazard. It is the effects of natural hazards, including the adverse impacts of climate change, that may overwhelm the resilience or adaptive capacity of an affected community or society, thus leading to a disaster that potentially results in displacement. Disaster displacement may take the form of spontaneous flight, an evacuation ordered or enforced by authorities or an involuntary planned relocation process. Such displacement can occur within a country (internal displacement), or across international borders (cross-border disaster displacement).

– IOM, 2019a:51

Disaster

A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. *Note:* The International Law Commission adopted the following alternative definition of disaster, which includes an express reference to mass displacement: “disaster” means a calamitous event or series of events resulting in widespread loss of life, great human suffering and distress, mass displacement, or large-scale material or environmental damage, thereby seriously disrupting the functioning of society.

– IOM, 2019a:50

Environmental migrant

A person or group(s) of persons who, predominantly for reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are forced to leave their places of habitual residence, or choose to do so, either temporarily or permanently, and who move within or outside their country of origin or habitual residence. *Note:* There is no international agreement on a term to be used to describe persons or groups of persons that move for environment related reasons. This definition of environmental migrant is not meant to create any new legal categories. It is a working definition aimed at describing all the various situations in which people move in the context of environmental factors.

– IOM, 2019a:64

Hazard

A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. *Note:* Each year millions of people are displaced by the adverse effects of natural hazards, such as floods, tropical storms, earthquakes, landslides, droughts, saltwater intrusion, glacial melting, glacial lake outburst floods, and melting permafrost. Of these, the great majority is displaced by weather- and climate-related hazards. The largest increases in displacement resulting from the effects of natural hazards are related to sudden-onset weather and climate-related hazards, and floods in particular. In addition, people are increasingly forced to move because of the slow-onset effects of sea level rise, desertification or environmental degradation. Climate change, combined with people’s increasing exposure and vulnerability, is expected to magnify these trends, as extreme weather events become more frequent and intense in the coming decades.

– IOM, 2019a:89

Human mobility

A generic term covering all the different forms of movements of persons. *Note:* The term human mobility reflects a wider range of movements of persons than the term “migration”. The term is usually understood as also encompassing tourists that are generally considered as not engaging in migration. As an example of the emergence of this term, the international organization’s members of the Advisory Group on Climate Change and Human Mobility created in the context of the Parties of the United Nations Framework Convention on Climate Change have started to use the term human mobility to cover all the broad range of types of movements that can take place in the context of climate change.

– IOM, 2019a:93

Internal migration

The movement of people within a State involving the establishment of a new temporary or permanent residence. *Note:* Internal migration movements can be temporary or permanent and include those who have been displaced from their habitual place of residence such as internally displaced persons, as well as persons who decide to move to a new place, such as in the case of rural–urban migration. The term also covers both nationals and non-nationals moving within a State, provided that they move away from their place of habitual residence.

– IOM, 2019a:107

Labour migration

Movement of persons from one State to another, or within their own country of residence, for the purpose of employment. *Note:* In line with the definition of migrant, labour migration is defined as covering both migrants moving within the country and across international borders. This choice is also justified by the significant number of persons moving within the same country for work purposes who sometimes face the same barriers or challenges faced by international migrants, such as discrimination and difficulties in integration. Although such challenges may be greater for migrants moving across borders they are not totally absent also for internal migrants.

– IOM, 2019a:123

Planned relocation

In the context of disasters or environmental degradation, including when due to the effects of climate change, a planned process in which persons or groups of persons move or are assisted to move away from their homes or place of temporary residence, are settled in a new location, and provided with the conditions for rebuilding their lives. *Note:* The term is generally used to identify relocations that are carried out within national borders under the authority of the State and denotes a long process that lasts until “relocated persons are incorporated into all aspects of life in the new setting and no longer have needs or vulnerabilities stemming from the Planned Relocation”.

– IOM, 2019a:157

Reintegration

A process which enables individuals to re-establish the economic, social and psychosocial relationships needed to maintain life, livelihood and dignity and inclusion in civic life. *Note:* Social reintegration implies the access by a returning migrant to public services and infrastructures in his or her country of origin, including access to health, education, housing, justice and social protection schemes. Psychosocial reintegration is the reinsertion of a returning migrant into personal support networks (friends, relatives, neighbours) and civil society structures (associations, self-help groups and other organizations). This also includes the re-engagement with the values, mores, ways of living, language, moral principles, ideology, and traditions of the country of origin’s society. Economic reintegration is the process by which a returning migrant re-enters the economic life of his or her country of origin and is able to sustain a livelihood.

– IOM, 2019a:176

Return migration

In the context of international migration, the movement of persons returning to their country of origin after having moved away from their place of habitual residence and crossed an international border. In the context of internal migration, the movement of persons returning to their place of habitual residence after having moved away from it. *Note:* For statistical purposes, the United Nations Department of Economic and Social Affairs (DESA) defines returning migrants as persons returning to their country of citizenship after having been international migrants (whether short term or long term) in another country and who are intending to stay in the country for at least one year.

– IOM, 2019a:185

“Trapped” populations

Populations who do not migrate, yet are situated in areas under threat, ... at risk of becoming “trapped” or having to stay behind, where they will be more vulnerable to environmental shocks and impoverishment. *Note:* The notion of trapped populations applies in particular to poorer households who may not have the resources to move and whose livelihoods are affected.

– IOM, 2019a:219

Vulnerable group

Depending on the context, any group or sector of society (such as children, the elderly, persons with disabilities, ethnic or religious minorities, migrants, particularly those who are in an irregular situation, or persons of diverse sex, sexual orientation and gender identity (SSOGI)) that is at higher risk of being subjected to discriminatory practices, violence, social disadvantage, or economic hardship than other groups within the State. These groups are also at higher risk in periods of conflict, crisis or disasters.

– IOM, 2019a:230

Executive summary

The impact of the ongoing global climate and environmental change on human mobility has attracted sustained scientific and policy attention over the years. In the face of global warming, it is increasingly acknowledged that climate change will undeniably aggravate extreme events and environmental degradation. This will in turn contribute to increasing population movements particularly in regions that are highly exposed and vulnerable to climate-related risks and shocks. Amidst the ongoing debates on the impact of climate change on human mobility, the issues of return and sustainable reintegration have increasingly gained prominence and are strongly being promoted as part of comprehensive and effective migration management. Given that return migration to the home or receiving community is much more complex and encompassing, the emphasis on facilitating sustainable reintegration in the context of climate and environmental change, and the impact of the COVID-19 pandemic on countries and migration, has informed the need to develop appropriate policy, as well as institutional frameworks and strategy to enhance sustainable reintegration of returnees in local communities.

As a SIDS, Mauritius is exposed and vulnerable to extreme climate change events and related natural disasters. The impact of ongoing climate change and related disasters has amplified the vulnerability of the country with adverse implications for coastal infrastructure, agrarian livelihoods and fisheries subsector. While exposure due to poor housing and location of critical social infrastructure in high-risk coastal areas have been implicated as factors contributing to the vulnerability of coastal communities, increasing climate change-induced hazards and impacts have resulted in the displacement of many communities. Some affected communities have had to relocate as part of planned relocation and risk reduction initiatives. Many others have resorted to migrating out of the country in search of better economic opportunities. Internal migration from rural areas and other smaller islands to urban centres has also taken place. Aside from the multiplicity of complex socioeconomic factors, climate change impact has been identified as a major driver of human mobility in the country.

In addition to the high levels of migration into and out of the country, it is also the case that the national government is actively driving the agenda on increasing the immigration of labour migrants and investors, as well as the return of Mauritian diaspora to work and provide support the economic development of the country. However, an issue that remains a challenge is that returnees often find it difficult to readapt or reintegrate. Given governmental efforts to attract both Mauritian diaspora and investors into the country, the issues of sustainable (re)integration of returnees, immigrants and vulnerable communities being relocated/resettled as part of risk reduction programmes remains a key aspect to facilitate climate adaptation, resilience and inclusive growth in Mauritius.

Besides climate change and related hazards, the impact of COVID-19 on national economies has led to many migrant workers being stranded in destination areas in Mauritius and abroad. Even for the number of risk reduction projects and planned relocation/resettlement schemes that have so far been initiated in Mauritius, they have often been blighted by challenges and with mixed outcomes. At the national level, the Government of Mauritius has been proactive in developing climate change policy, DRR and management, and national development frameworks aimed at enhancing climate adaptation, DRR and resilience in the country. Despite these efforts, the impact of climate change and related hazards may serve to further undermine sustainable (re)integration and the potential of migration and planned relocation/resettlement to enhance long-term climate adaptation and resilience in Mauritius. This study thus examined the impact of climate/environmental change and related disasters on migration, return and (re)integration in Mauritius.

This study has been conducted as part of the IOM research project titled “Mainstreaming Environmental Dimensions in Integration, Reintegration and Relocation Initiatives in Lesotho and Mauritius” and with financial support from the IOM Development Fund. The overall objective of this research project is to explore the interlinkages between environment, climate change, disasters and migration in Lesotho and Mauritius with the aim of contributing to the sustainability of integration, reintegration and planned relocation as adaptation strategies to climate change in a gender-sensitive manner. The project is being implemented under the auspices of the IOM Southern Africa Regional Office, IOM Lesotho and IOM Mauritius.

In the context of Mauritius, this study was guided by the following four broad research questions:

- (a) How does climate change and related environmental degradation impact migration and reintegration in Mauritius?
- (b) What do returnees and internal migrants perceive as their immediate and longer-term needs to become resilient to current and predicted climate change impacts?
- (c) What are the existing best practices in terms of schemes, programmes and policies that support the adaptation of returning workers to climate change and environmental degradation, as well as support the integration of incoming labour migrants to local or national labour markets in Mauritius?
- (d) What policy and programming recommendations can support the sustainable reintegration of returnees and internal migrants, including populations at risk, that have immediate and long-term positive impacts on both the local communities and the environment?

Based on a mixed methodological approach, involving the use of both quantitative and qualitative research methods, the information and data for this study were solicited from selected key national stakeholders and vulnerable populations/migrants, as well as different regions in Mauritius over a period of three months (January to March 2022). For the data collection, two different sets of research instruments were deployed to collect data from key national stakeholders (survey questionnaires) and migrants from vulnerable populations (interview guide) (see Annex 2). In addition to the stakeholder surveys and in-depth interviews, two FGDs were also conducted. These consisted of one FGD each with selected research participants from the vulnerable populations and key stakeholders (see Table 1). Before the field data collection, an extensive desk review and analysis of existing legislation and governance frameworks were conducted to find out how the issues of climate and disaster-related human mobility, sustainable reintegration and gender were being addressed at the national level.

Out of the 30 policies and legislations that have been identified in Lesotho, 11 acknowledge the linkages between climate and/or environmental change, disasters and population movements; 14 raise gender-equality concerns and 6 refer to (re)integration and related issues. No existing green growth policy strategy or framework was identified. In Mauritius, the evidence suggests that the effects of climate/environmental change and related hazards have continued to inflict enormous human suffering and threaten human security in the country. Given the country's vulnerability as a SIDS, the adverse impacts of recurring hazards have affected livelihoods in both the agricultural sector and the blue economy.

The impact of recurring climate-related disasters has often led to destruction, loss of human lives and large-scale internal displacement of people. As a consequence, people have admitted to living in fear and with health problems due to the psychological trauma that they endure from disaster impact. The compounding effect of COVID-19 austerity measures has markedly also eroded economic progress and has undermined ongoing efforts at reducing inequality, as well as the vision of making Mauritius a beacon of sustainable development and prosperity for all. But as a response, several strategies have been adopted by the local populations to cope with years of recurring hazards and disaster impact. Among the strategies mentioned, the sustained localized patterns of mobility, as well as government-assisted relocation can be envisioned. While the observed mobility patterns have mostly been marked by short-term temporal (forced) migration, the spate of relocations are mostly government-assisted as part of long-term risk reduction and climate adaptation schemes. This has often entailed seeking temporary reprieve or shelter in refugee centres (evacuation centres) and the longer-term relocation to safe areas with housing and social support.

While other forms of movement are influenced by economic motivations, the observed patterns of movement are mostly directed to other regions within Mauritius or across the islands – mostly from Rodrigues to mainly the urban coastal areas of mainland Mauritius. The aspects of return migration, as deciphered in this study, relate to short-term flight and return in the wake of a disaster. A major issue that has been highlighted in this study but remains masked or has received little attention in DRR and national policy discussions, relates to “immobility” or the high prevalence of “trapped” populations. While the questions of sustainable (re)integration of migrants were obviously present, they related more to considerations of ensuring sustainable integration and adaptation in the context of relocations as part of ongoing risk reduction and climate adaptation schemes. For the relatively minimal forms of return migration in the context of climate change and disaster, it also implicitly raises concerns of “return” as a cause of “maladaptation” and hence, the need for sustainable reintegration to mitigate the likely translation into being trapped and in a situation of hopelessness.

With the increasing influx of labour migrants from abroad, and ongoing schemes to entice the return of Mauritian diaspora, sustainable (re)integration would be of essence in the face of the country’s vulnerability to climate change impacts and the ever-present related hazard risks. Although, there are already existing policy and institutional frameworks targeted at DRR in Mauritius, promoting sustainable (re)integration and climate resilience will require an integrated and multi-stakeholder approach. This would entail giving consideration to the different sectors of the economy and aspects of the migration process in operationalizing designed measures on the ground. Based on the insights gathered from this study, some recommendations have been outlined to contribute to enhancing sustainable (re)integration, climate adaptation and resilience in promoting inclusive growth and accelerating sustainable development in Mauritius.

Given the potential of green economy to allow for inclusive growth, green, decent and sustainable jobs, and to build back better and resilient societies, the recommendation is to design and integrate green and blue economy strategies into sectoral policies. Given the relative success in the MID project in the creation of green jobs, it is envisaged that the renewable energy sector has the potential to create thousands of green jobs. As such, the proposition is for the Small-Scale Distributed Generation Scheme and Medium-Scale Distributed Generation project to be scaled up to allow for more access and increase the potential to create more green jobs.

Another recommendation is to extend the National Skills Development Programme for vulnerable groups as part of risk reduction and relocation schemes to enhance employability and sustainable (re)integration. Skills training could be added to relocation schemes to enable skills acquisition for persons being moved, given that they may have lost or have had to abandon their livelihoods because of climate change impact or the move. Skills training as part of DRR relocation programming

could be linked as an aspect of the NSDP and in collaboration with the HRDC. As part of the proposed skills training, a special consideration could be made for green skills training of vulnerable groups like women, young people or persons with disabilities. This would help to equip them with the necessary skills and enhance long-term climate resilience. The proposition is also to promote better/enhanced cooperation and coordination between the different ministries and key actors for enhancing adaptation and sustainable (re)integration in the context of climate change and disaster. Other than institutional cooperation, enhancing stronger cooperation and coordination between different policy fields (including environment, climate change, migration, rural development and urban planning), as well as across different scales would allow for synergies and integrated approach to mainstreaming issues of migration, climate change, DRR and sustainable (re)integration in Mauritius.

In addition to also advocating cooperation between the different stakeholders on adequately addressing the issues of MECC, DRR and sustainable (re)integration, the recommendation is also to enhance and broaden social protection schemes, promote sensitization, early warning and a proactive response to natural disasters in marginal coastal areas and remote islands. In ensuring a proactive and timely disaster response, the existing social protection programmes could be reviewed to allow for decentralized distribution of relief and more financial support to affected persons in the wake of disaster impact or for persons being relocated. Other than providing direct cash transfers to disaster victims or displaced persons in the wake of a disaster, the support could come in the form of national climate insurance schemes to enhance long-term climate resilience in vulnerable communities through public-private partnership or with development partners. Special initiatives for the blue economy could come in the form of training, provision of life jackets, first aid kits and subsidized supply of equipment or alternative green opportunities in aquaculture. This would contribute to climate resilience, disaster impact recovery and sustainable (re)integration of the different migrant groups.

Also, the need to improve data collection and availability for planning, climate adaptation programmes and sustainable (re)integration is also encouraged. On the regular collection of data, relevant national agencies such as the Mauritius Disaster Information System Passport and Immigration Service, as well as Statistics Mauritius already capture and present some data on migration, population and environmental statistics in Mauritius. However, the available data on disaster impact or migration at the national level does not present disaggregated information on the “human mobility” dimensions of climate/environmental change, as well as disaster or crisis. Better collection and availability of disaggregated data on the human mobility dimensions and their social, economic or ecological effects is an essential precondition for effective planning and policies. The same is valid for green jobs: local and context-specific data on the potential for green job creation (green skills intelligence or anticipation) in various sectors, as well as for better relocation or resettlement outcomes. Already, the NDRRMC has initiated plans to commence

with the comprehensive capture of disaster-related data and hence, the potential availability of comprehensive disaggregated data in the near future. Nevertheless, instituting strategic efforts to allow for the harmonized and regular collection of disaggregated data and the corresponding pooling of data into a repository would allow for data availability, informed planning, DRR and enhanced sustainable (re)integration programming at the national level.

Altogether, this report is organized into seven sections. After the general introduction and background to this study, the analysis of the existing national governance frameworks and legislation on climate change, environment, disaster and human mobility nexus, and reintegration in Mauritius is presented in the third section. In the fourth section, the discussion narrows down to the questions of climate change, hazards and the impact on populations and livelihoods, as well as responses that vulnerable populations make in the face of climate change impact across rural communities in Mauritius. Furthermore, the section examines the climate/environmental change and related disasters impact on human mobility, return and (re)integration across localities and different regions in Mauritius. In the fifth section, the study examines the nature and effect of planned relocation/resettlement exercises and the effects on local communities. The sixth section highlights the proposed measures from research participants to enhance climate change adaptation. The report concludes by outlining recommendations to address climate-related migration, climate adaptation, resilience and sustainable (re)integration of migrants in the fifth section.

1.

Introduction

The impact of ongoing global climate change and interlinkages with human mobility has attracted a lot of scientific and policy attention around the globe over the years (Piguet, 2013; Ionesco et al., 2017; Flavell et al., 2020). While migration is often also impacted by complex sociocultural, economic and political factors (IOM, 2014a; Piguet and Laczko, 2014; Cattaneo et al., 2019), it is increasingly acknowledged that climate change will undeniably aggravate natural hazards and environmental degradation. This will, in turn, contribute to increasing population movements particularly in regions that are highly exposed and vulnerable to climate-related risks and shocks (Renaud et al., 2011; Hummel et al., 2012; Rigaud et al., 2018).

As a SIDS, Mauritius is exposed and vulnerable to extreme climate change events and related natural disasters (World Bank, 2016; Bündnis Entwicklung Hilft and Ruhr University Bochum – Institute for International Law of Peace and Armed Conflict, 2021). After Cyclone Gervaise in 1975, for instance, Mauritius was severely hit by Cyclone Hollanda/Ivy in 1994 (United Nations Office for the Coordination of Humanitarian Affairs, 1994). The impact of Cyclone Hollanda/Ivy (especially in Northern Mauritius) resulted in the destruction of critical infrastructure and 50 per cent of sugar plantations with damages of up to USD 135 million (ibid.; Government of Mauritius, 2021a). More recently, the passage of Cyclone Enawo in 2017 and Cyclone Gelena in 2019 also resulted in some damages on mainland Mauritius and the Island of Rodrigues. In Rodrigues, for example, the flash floods that were recorded in the wake of Cyclone Gelena resulted in widespread destruction of public infrastructure and homes resulting in the displacement of 259 people (UNEP, 2019). Aside from tropical cyclones, the country is also affected by a host of other hazards including torrential rains, landslides, drought and storm surges, with floods ranked as the second-highest risk after cyclones in Mauritius (World Bank, 2016).

At the global level, the nature of future human mobility due to climate change impact is highly uncertain. However, based on a scenario of sustained carbon emissions and unequal levels of development, the World Bank has projected that sub-Saharan Africa could record more than 85 million climate-related migrants by the end of 2050 (Rigaud et al., 2018). This is in view of the fact that many affected or vulnerable populations may be displaced and thereby forced to migrate or relocate to less vulnerable areas as a last resort to climate and environmental change risks (Sobhee, 2016; Clement et al., 2021; Schraven et al., 2021). On the other hand, vulnerable or affected persons may adapt to the adverse effects of climate change and environmental degradation in situ (Cubie, 2017; Etana et al., 2022). Some others might even be unable to move at all and thereby remain trapped in highly vulnerable conditions (Barnett and Webber, 2010; Black et al., 2013; Nawrotzki and DeWaard, 2018). These vulnerable persons who are unable to move despite environmental threats may be constrained by the lack of capital or appropriate institutional frameworks, which in turn reduce the capability to move (Suckall et al., 2017).

The evidence from empirical studies across Mauritius and other parts of Africa suggests that vulnerable populations and rural communities have long adopted different strategies, including migration, to cope or adapt to the adverse effects of climate change and environmental degradation (Vincent et al., 2013; Piguet and Laczko, 2014; Sobhee and Blocher, 2015). The importance of existing local or indigenous strategies has undoubtedly instigated calls for a participatory approach and to mainstream local adaptation strategies into national development planning and climate action for enhancing resilience to climate and environmental change (Mertz et al., 2009; Stringer et al., 2009). Nevertheless, the potential of migration as an adaptation strategy to climate and environmental change has also been widely recognized in both scientific and policy circles (Scheffran et al., 2012; Afifi et al., 2015; IOM, 2014a; Melde et al., 2017).

Amidst the ongoing debates, the issues of return migration and sustainable reintegration have increasingly gained traction and are strongly being promoted as part of comprehensive and effective migration management (IOM, 2017 and 2021a). The increasing focus on sustainable reintegration may have partly been invigorated by the rise in large-scale irregular migration and efforts to promote effective migration management and address the root causes in especially origin countries (Koser and Kuschminder, 2015; IOM, 2020a; Wahba, 2021). Given that return migration to the home or community of origin is much more complex and encompassing, the emphasis on facilitating sustainable reintegration in the context of climate and environmental change and the impact of the COVID-19 pandemic on countries and migration, informs the need to develop appropriate policy and institutional frameworks and strategies to enhance sustainable reintegration of returnees in local communities (IOM, 2020a and 2020b; International Centre for Migration Policy Development, 2022).

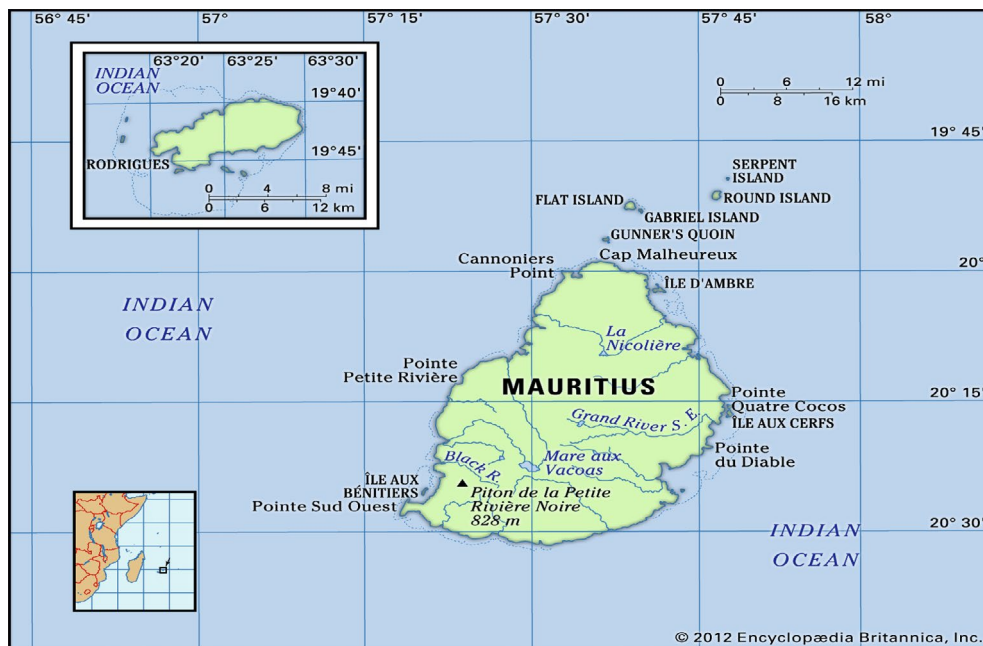
1.1. Background and context of this study

1.1.1. The context: Country profile of Mauritius

Mauritius is an archipelagic State consisting of mainland Mauritius and the outer islands of Rodrigues, St. Brandon (Cargados Carajos Archipelago), Agalega, Toromelin and the Chagos Archipelago (see Figure 1) (Government of Mauritius, 2010). Administratively, the country is divided into nine districts namely Port Louis, Plaines Wilhems, Moka, Pamplemousses, Black River, Flacq, Grand Port, Riviere du Rempart and Savanne (ibid.). The outer island of Rodrigues is an autonomous region of Mauritius, while Agalega and Cargados Carajos are considered as dependencies. The country has a total land surface area of 2,040 square kilometres with an EEZ of up to 2.3 million square kilometres (Government of Mauritius, 2021a). The relief of Mauritius is generally characterized by mountainous ranges with mountain peaks, plateaux and hills, which are remnants of past volcanic eruptions (ibid.). The highest point in Mauritius is 828 metres above sea level, while that of Rodrigues is 398 metres (ibid.).

Due to its location in the south-west of the Indian Ocean, Mauritius and the outer islands experience relatively similar conditions of a mild tropical climate. The climate is marked by a summer season that starts from November to April with occurrences of tropical cyclones, and a relatively dry and cool winter season that spans from May to October. Long-term mean annual rainfall is 2,010 millimetres, with the wettest months being February and March while the driest month is October (Government of Mauritius 2021a; MMS, n.d.). Temperatures also range up to 24.7°C in summer. The coolest months are typically July and August, where temperatures can drop to 16.4°C (MMS, n.d.). In the face of the ongoing global climate change, Mauritius and the outer islands have witnessed an increase in frequency and severity of extreme events like tropical cyclones, floods and other related natural hazards. In view of its location as SIDS and exposure to climate change risks, the country is highly vulnerable to related natural disasters.

Figure 1. Map of Mauritius



Source: Bowman, 2022.

Note: This map is for illustration purposes only. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the International Organization for Migration.

According to Statistics Mauritius (2022a), Mauritius has an estimated population of 1,263,888 people as of 2021. The majority of the population (96.5%) is located on the island of Mauritius, followed by 3.5 per cent in Rodrigues and the rest scattered on the other outer islands. For both Mauritius and Rodrigues, a considerable proportion of the population tend to reside in rural areas and with critical infrastructure in close proximity to the coast. What this means is that the people are vulnerable and will continue to be exposed to climate change and hazard impact. Other than agricultural production, the blue economy will also face risks with negative implications for the fisheries subsector in the country (Government of Mauritius, 2012).

The agro-industry (sugarcane production and agroprocessing) has been the backbone of the economy for years with the share to the GDP of 3.9 per cent and total employment of 40,300 (EDB Mauritius, n.d.). Nonetheless, the national economy has diversified over the years, with the majority of the population in active employment engaged in the tertiary sector (72.9%) as of 2021 (Statistics Mauritius, 2022b). As one of the best performing economies, and now an upper middle-income country in Africa, Mauritius has, over the years, recorded GDP growth from USD 7.03 billion in 2006 to USD 14.44 billion in 2019 (World Bank, n.d.a). This economic progress has translated into relatively lower poverty levels with about 36,500 households (9.6%) consisting of 131,300 persons (10.4%) living under the relative national poverty line¹ of MUR 7,509 (Statistics Mauritius, 2020).

Although the country achieved some success in adopting a proactive approach to forestalling the adverse impact of the COVID-19 pandemic, the austerity measures that were instituted by the Government came at a cost to the national economy (Bertelsmann Stiftung, 2022). The 2021 *African Economic Outlook* report indicate that the tourism industry, which has a spillover effect on the other sectors, was the worst hit with an estimated loss of up to 75 per cent of value added (African Development Bank, 2021). Other economic sectors like the export of seafood, textiles and apparel industry, as well as sugar exports were also affected by the disruptions in global supply and demand (ibid.). Overall, the general decline in economic activity that came with the lockdown measures saw a considerable decline in GDP for 2020 to USD 10.92 billion dollars. The corresponding impact on employment was an increase in unemployment rates within the period (Bertelsmann Stiftung, 2022). This invariably also had adverse implications for low-income households, as well as both internal migrants and migrant workers (UNDP, 2020).

1.1.2. Historical antecedents and evolution of (labour) migration in Mauritius

Mauritius has generally been characterized by high levels of human migration and hence, its designation as a “high migration State” (Lucas, 2008; Sobhee, 2016; Sultan, 2017). This designation is largely grounded on the observed different mobility patterns over the years, which have contributed to the considerable growth of its diaspora, as well as sustained internal migration within and across the mainland and from Rodrigues and the other outer islands (IOM, 2014b; Ramtohol, 2021). Between 2006 and 2011, for instance, over 90,000 (8%) of the total population aged five years and above moved to another area within the country (Statistics Mauritius, 2014). In the context of mainland Mauritius alone, movement was even higher – with 95.3 per cent reporting as having changed residence within the island during the intercensal period (2006–2011) (IOM, 2014b). Similarly, the share of foreign-born population in Mauritius has also witnessed a remarkable increase from 1.3 per cent in 2000 to 2.1 per cent as of the last 2011 Census (Statistics Mauritius, 2012). Given recent initiatives to attract Mauritian diaspora and skilled migrants, as well as the

¹ That is, half median monthly household income per adult equivalent (MUR 7,509).

impact of climate change, it is envisaged that the nature and patterns of movement would have changed considerably since the last population census in 2011.

Generally, Mauritius has had a chequered history of population mobility that has largely been shaped by periods of both voluntary and forced migration (Fokeer, 1922; Allen, 1999). Hitherto its independence in 1968, Mauritius was first settled by the Dutch (1598–1710), followed by the French who ruled from 1715 to 1810, until the subsequent takeover by the British between 1810 and 1968 (Moree, 1998; Harmon, 2011; Luchmun, 2021). The advent of these aforementioned major historical periods in a way suggests that Mauritius does not have an indigenous population. However, the country's multicultural and ethnically diverse population derives from past years of slave and contract labour that were brought to the island to work on sugarcane plantations from East and West Africa, India and China (Allen, 1999; Ramtohol, 2022).

Most of the early immigrants that were initially brought as slaves were mainly from India, Madagascar and Mozambique (Fokeer, 1922; Neumann, 2004). With the abolition of slavery, cheap labour was subsequently contracted and brought to the island to continue providing farmhands on the sugarcane plantations (Allen, 1999). In addition to Chinese migrants who arrived during the period as cheap labour and later as merchants and traders, the recruitment of indentured labour saw the arrival of over 170,000 Indian labourers during the 1850s relative to the 42,000 who departed the island (Neuman, 2004:4). These historical antecedents of migration in Mauritius are monumental happenings that provide context for appreciating the country's plural society – consisting mainly of immigrants and different generations of their descendants (IOM, 2014b; Hordvik, 2016).

Contemporary migration patterns in Mauritius have mainly been marked by high rates of internal migration, immigration of labour migrants and business merchants, as well as the emigration of Mauritians abroad. From an estimated migrant workforce of 12,100 in 2007, the number of migrant workers in Mauritius is posited at 48,000 as of March 2020 (UNDP, 2020:64). The majority of these migrant workers are mainly from Bangladesh, China, India and Madagascar, who are mainly concentrated in the garment, manufacturing and construction sectors, which were most affected by COVID-19 restriction measures (*ibid.*). As outlined by Lincoln (2012:7), however, contemporary migration patterns in Mauritius can be categorized into five distinct types namely: (a) sustained emigration of highly skilled Mauritian migrants that has increasingly led to brain drain in the country; (b) high levels of internal migration mostly from Rodrigues and other outer islands to mainland Mauritius; (c) circular migration of young workers to Canada to work for limited periods; (d) influx of high net worth migrants as investors or highly skilled professionals to work and to attain citizenship or residence as part of the Mauritian Residence/Citizenship by Investment Scheme; and (e) contract migrant workers being recruited from abroad to come and work in Mauritius.

Aside from the high-net worth migration, which saw the evolution of different investor migration schemes to attract investors into the country under the auspices of the Government, the emergence of the nascent export processing zone also led to the influx of contract workers (Ramtohul, 2016). All these different migration patterns and historical antecedents have in part been instrumental in transforming Mauritius as a multicultural society with strong ties to its “ancestral diaspora or homelands” (Ramtohul, 2022). These ties have translated into a burgeoning cultural and trade relationship with China, France and India over the years. Mauritius has continued to recognize and foster ties with its ancestral diaspora. In effect, the country has continued to benefit from development aid and economic support from especially China, France and India (Ramtohul, 2021).

Besides the strong ties to its ancestral diaspora, Mauritius also has a large diaspora. This large diaspora is built on years of high emigration rates from the country during the turbulent period to independence and in the immediate aftermath of independence (ibid.). This was mainly the case due to the fact that the country, in addition to being hit by the two devastating cyclones Alix and Carol in 1960, was also grappling with economic challenges. Several other Mauritians were unsure of their personal liberties and also had reservations that the Hindu majority could dictate and impose their religion on other sections of the population on the island (Eisenlohr, 2006). Nevertheless, the corresponding high levels of population growth, unemployment and poverty meant that there was economic hardship, and that the individual economic prospects for the future were bleak (Harmon and Karghoo, 2015).

In response to the uncertainty that had engulfed the country during and in the early years after independence, many Mauritians emigrated mainly to Australia, Canada and South Africa (ibid.; Luchmun, 2021). Following this wave of emigration, it was estimated that over 71,000 Mauritians left the country between 1933 and 1982 (Jahangeer-Chojoo, 2018). Several others also emigrated to the United Kingdom and France following the establishment of the Ministry of Immigration in the 1970s (Selvon, 2012). The Ministry of Immigration was reportedly active in encouraging Mauritians to emigrate to other countries for employment opportunities due to the high levels of unemployment that had engulfed the country at the time (Ramtohul, 2021).

A more recent wave of international migration in Mauritius relates to the circular migration programmes that have been signed by Mauritius, IOM and some selected Canadian employers and also with France for work and studies (Rahim et al., 2021). Since 2008, more than 300 Mauritians have taken up employment in the food and agribusiness sector in Canada (Mansoor et al., 2012). As of 2016, a total of 15,900 Mauritians were estimated to be residing in Canada (IOM, 2021a). The bilateral migration agreement with France also reportedly resulted in more than 10,000 visa opportunities for work and study in France (Rahim et al., 2021:51). These migration opportunities have seen the increasing emigration of young Mauritians to pursue higher education in China, France, North America and the United Kingdom (Roopchand et al., 2020). According

to recent estimates by the Higher Education Commission (2021:10), there are 7,117 Mauritian students abroad (1,419 in France; 1,380 in Australia; 1,004 in the United Kingdom; 885 in Canada; and 752 in India). While this marks a decline from 8,200 students in 2018 (Tertiary Education Commission, 2019), the decline is attributed to the impact of COVID-19 restrictions on travel (Higher Education Commission, 2021). Currently, it is estimated that there are close to 200,000 Mauritians living abroad, representing about 15 per cent of the total population of Mauritius (European Union Global Diaspora Facility, 2020; IOM, 2021a).

In regard to these different migration patterns, the developmental benefit to the country has been the inflow of remittances and the conscious efforts to attract Mauritians back to invest and promote the tourism industry (IOM, 2014b). According to the Bank of Mauritius estimates, remittances from abroad recorded an increase from MUR 645.50 million in 2017 (USD 17.5 million) to an all-time high of MUR 886 million (USD 20.4 million) in 2020 (Bank of Mauritius, 2022). This total amount of remittances received accounted for about 2.5 per cent of GDP in 2020 (World Bank, n.d.b). Following the observed global recovery of remittance flows from the impact of the COVID-19 pandemic in 2021 (Ratha et al., 2021), inward remittances to Mauritius recorded an increase of MUR 787 million (USD 17.5 million) in the third quarter of 2021 to MUR 1 billion (USD 23 million) in the fourth quarter (Bank of Mauritius, 2022). Given that remittances to Mauritius are primarily personal or private capital, the significant chunk of the money is often channelled to service household expenditure, construction of housing, as well as payment for medical bills and school fees, as well as for charitable or faith-based organizations (IOM, 2014b). Despite the seeming little use of remittance for long-term investment, it is undeniable that the multiplier effect of migrant remittance has contributed to improving the socioeconomic well-being of families left behind (Jahangeer-Chojoo, 2018; European Union Global Diaspora Facility, 2020).

The Mauritian Diaspora Scheme, for instance, encourages Mauritian diaspora with skills, talent and experience to return and support the economic development of the country. Although recent analysis of the scheme by Jahangeer-Chojoo (2018) suggests limited awareness and impact, the diaspora scheme highlights the recognition of the Government on the role of migration and Mauritian diaspora in contributing to accelerated economic development of the country (Ramtohul, 2021). Moreover, the inflow of migrant remittances has been key to providing household income and improving the socioeconomic well-being of families left behind. The recent adoption of the proposed Mauritius National Migration and Development Policy perhaps reflects the vision and resolve of the Government to adopt a holistic approach in enhancing the developmental impact and benefits of migration, while addressing its challenges to national development (Government Information Service, 2018).

1.1.3. Climate/Environment change, disaster and migration in Mauritius

As a SIDS, Mauritius is ranked (51 out of 181) as one of the most vulnerable countries to climate change and disaster risks and impacts across the globe (Bündnis Entwicklung Hilft and Ruhr University Bochum – Institute for International Law of Peace and Armed Conflict, 2021). This ranking is primarily based on the fact that the country has witnessed significant changes in its climatic patterns, as well as the frequency and severity of associated hazards over the years. According to the MMS (n.d.), there has been an increase in average temperatures at a rate of 0.15°C per decade across the mainland and outer islands. In Agalega, for example, the rate of temperature increase has been estimated to be 0.11°C. When compared with the long-term mean from 1960 to 1990, it is observed that the increase in temperature across the country has ranged between 0.74°C and 1.2°C (ibid.). Mean annual precipitation has also recorded a decline by 8 per cent since 1950, with the average rate of decline estimated to be 57 millimetres per decade (Government of Mauritius, 2015a; MMS, n.d.). Besides increasing temperatures, there is also an observed increase in the intensity of extreme climatic events like tropical cyclones, flash floods and storm surges, while SLR is estimated to have steadily increased at a rate of over 1.5 millimetres per year in Port Louis and 1.3 millimetres in Rodrigues since 1987 (Government of Mauritius, 2010; MMS, n.d.).

The impact of ongoing climate change and natural disasters has amplified the vulnerability of the country with adverse implications for coastal infrastructure, agrarian livelihoods and fisheries (Government of Mauritius, 2012; Sobhee, 2016). Within the period of 1960–2018 alone, Mauritius recorded a total of 2,892 disasters, with 55 per cent of these being weather-related (cyclones, floods, mud flows, torrential rain, tidal waves and severe weather) (Government of Mauritius, 2021a). Besides the impact of sea surface temperature on marine biodiversity and coral bleaching, the advent of rapid urbanization, loss of tree cover due to agriculture and rock quarrying has contributed to land degradation in Mauritius and Rodrigues (Government of Mauritius, 2012; UNCCD, 2018). Climate change and disaster (cyclone) impact has also adversely affected agricultural production, with the effect being notably on the production of tomatoes, chillies, creepers and cabbage (Jönsson, 2011; Ramlall, 2014).

Within the blue economy, climate change impact on fisheries has also seen an erratic productivity and a general decline in the sector. Between 2009 and 2010, for example, the fisheries subsector recorded a 19.1 per cent decline from 6,978 metric tons to 5,647 metric tons (Government of Mauritius, 2012). More recent estimates have pointed to an increase in fisheries production from 31,411 metric tons in 2018 to 31,663 metric tons by the close of 2019 (Government of Mauritius, 2020a; World Bank, n.d.c). The estimation is that the fisheries sector alone employs up to 22,000 people and accounts for 19 per cent of total national exports (Government of Mauritius, 2020a). However, in the medium- to long-term, it is envisaged that climate

change and environmental degradation in Mauritius would threaten agricultural livelihoods, while fisherfolks will find it difficult to sustain their fishing livelihoods (Government of Mauritius, 2012). As such, the nature and impact of climate change are of major concern in Mauritius, as this will in turn define the frequency and magnitude of impact of related hazards across the island.

While exposure due to poor housing and location of critical social infrastructure in high-risk coastal areas have been implicated as factors contributing to vulnerability of coastal communities, increasing climate change-induced hazards and impacts have resulted in the displacement of many communities (Gemenne and Magnan, 2011; Government of Mauritius, 2021a). Some affected communities have had to relocate as part of planned relocation and risk reduction initiatives. Many others have resorted to migrating out of the country in search of better economic opportunities. Internal migration from rural areas and other smaller islands to urban centres such as Port Louis and Beau Bassin-Rose Hill has also been on the high (Statistics Mauritius, 2014; Sultan, 2017).

Aside from the multiplicity of complex socioeconomic factors, climate change impact has been identified as a major driver of human mobility in the country (Sobhee, 2016). Despite evidence to suggest varying preference or willingness to relocate in the face of climate change risks and hazards in Mauritius (Sobhee and Blocher, 2015), it is also confirmed that migrant households witness improvement in environmental conditions after moving from areas of high risk to tropical cyclones, landslides, storm surges and floods to less-vulnerable areas (Sultan, 2017). The observation is also that young people are mostly open to relocation from hazard-prone areas in comparison to older people (Sobhee and Blocher, 2015). While the youth are found to be open-minded and often have intentions to move to urban areas, older people, despite the fears of climate change risks, do not wish to relocate. This is mainly because of their cultural and historical ties to their home areas, and the wish not to abandon lands bequeathed to them by their ancestors (Gemenne and Magnan, 2011; Sobhee and Blocher, 2015).

With the ongoing global climate change, Mauritius will continue to face risks or hazards including torrential rains, floods, droughts and cyclones. In view of this recognition, the Government of Mauritius has been proactive in developing climate change policy, DRR and management, and national development frameworks aimed at enhancing climate adaptation, DRR and resilience in the country (Government of Mauritius, 2012, 2021a and 2021b). As exemplified by the 2008 MID project and the much-recent Mauritius Vision 2030 document, it is envisaged that greening the different sectors of the economy will create green and decent jobs and make Mauritius a model of sustainable development (Sultan and Harsdoff, 2014; Government of Mauritius, 2017 and 2020b). Within the context of the Updated National Climate Change Adaptation Policy Framework, the Government of Mauritius has also reiterated the need to avoid, minimize and adapt to the adverse impacts of climate change on vulnerable local communities and critical sectors such as agriculture and fisheries, as

well as water resources and ecosystems (Government of Mauritius, 2012 and 2015a; HEAT GmbH, 2021). More recently, the National Disaster Risk Reduction and Management Policy (2020–2030) has also outlined the resolve of the Government and need for broad and cross-sectoral engagement in addressing disaster impact and risk reduction across the country (Government of Mauritius, 2021b).

Amidst the high levels of migration into and out of the country, it is also the case that the national government is actively driving the agenda on increasing the immigration of labour migrants and investors, as well as the return of Mauritian diaspora to work and support the economic development in Mauritius. According to Statistics Mauritius (2014), about 25,000 people reported living abroad (mainly Europe) five or more years prior to the 2011 Mauritius Population and Housing Census. Out of this number, a total of 5,290 were Mauritian nationals and the rest were foreign nationals. While these numbers may serve to give an impression of return migration and immigration into the country, the case is also that other assisted voluntary return and reintegration programmes and other initiatives like the Mauritian Diaspora Scheme being implemented have also recorded a number of returns to the country (IOM, 2019b).

An issue that remains a challenge is that returnees often find it difficult to readapt or reintegrate upon return. Given the governmental efforts to attract both Mauritian diaspora and investors into the country, the issues of sustainable (re)integration of returnees, immigrants and vulnerable communities being relocated/resettled as part of risk reduction programmes remains a key aspect to facilitate climate adaptation, resilience and inclusive growth in Mauritius (IOM, 2019c). In addition to climate change, the impact of COVID-19 on national economies has rendered many migrant workers stranded in destination areas in Mauritius and abroad (Statistics Mauritius, 2014; Foley et al., 2022). Even for the number of risk reduction projects and planned relocation/resettlement schemes that have so far been initiated in Mauritius, they have often been blighted by challenges and with mixed outcomes (see Gemenne and Magnan, 2011; Sobhee and Blocher, 2015).

These challenges may serve to undermine sustainable (re)integration and the potential of migration and planned relocation/resettlement to enhance long-term climate adaptation and resilience in Mauritius. Yet, given the positive outcomes often associated with human migration as an adaptation strategy, there is the need to examine the climate change–human mobility² nexus in the context of Mauritius. This would provide the empirical basis and points of entry in mainstreaming the issues of climate change-related human mobility in development planning, as well as effective (re)integration of migrants and consideration of climate change in labour markets and host populations. Thus, strategic efforts at recognizing the potential of migration as a climate adaptation strategy could prove beneficial in improving the welfare of vulnerable populations in hazard-prone areas and the sustainable (re)integration in Mauritius.

² Human mobility in the context of climate change encompasses migration, displacement and planned relocation (see the United Nations Advisory Group on Climate Change and Human Mobility, 2014).

1.2. Scope and objective of this study

As the United Nations Migration Agency, IOM recognizes the enormity of the impact and challenges climate change, environmental degradation and disasters caused by natural hazards pose to countries and societies across the globe (IOM, 2021b). Through the lens of human security, therefore, IOM is committed to putting vulnerable people at the centre of its responses to climate and environmental change pressures. In line with this perspective, IOM identifies that well-managed migration can enhance and provide safe opportunities for the adaptation of people to climate and environmental change risks and impacts.

To this end, IOM's Institutional Strategy on Migration, Environment and Climate Change (MECC) 2021–2030 outlines its vision to “support States in their efforts to achieve orderly, safe, responsible, and regular international migration and to ensure that all people on the move and those internally displaced by the adverse impacts of climate change, environmental degradation, and disasters due to natural hazards, are assisted and protected” (IOM, 2021b:2). Underpinned by six guiding principles³ and in line with the objectives of other international policy frameworks,⁴ the MECC Strategy is aimed at guiding IOM on how to strengthen its capacity to develop and implement a comprehensive, evidence- and right-based approach to addressing challenges posed by environmental degradation, climate change and disasters due to natural hazards, for the benefit of migrants and societies (ibid.). The goal is to support States, migrants and other stakeholders to develop evidence-based policies and programmes that are effective and innovative for the well-being of migrants and societies.

In line with the foregoing background, this study has been conducted as part of the IOM research project titled Mainstreaming Environmental Dimensions in Integration, Reintegration and Relocation Initiatives in Lesotho and Mauritius. With support from the IOM Development Fund, the overall objective of this research project is to explore the interlinkages between environment, climate change and migration in Lesotho and Mauritius with the aim to contribute to the sustainability of integration, reintegration and planned relocation as adaptation strategies to climate change. The project is being implemented under the auspices of the IOM Southern Africa Regional Office, IOM Lesotho and IOM Mauritius.

³ These six guiding principles include the following: (a) committing to a rights-based approach; (b) promoting an innovative and effective approach to migration governance and practice; (c) adopting a gender-responsive approach; (d) implementing a migrant-centred and inclusive approach to enhance positive outcomes; (e) promoting a human security approach; and (f) supporting policy coherence and enhancing partnerships.

⁴ Such as 2030 Agenda on Sustainable Development, the Paris Agreement on Climate Change, the Global Compact for Migration, the Sendai Framework for Disaster Risk Reduction and the Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change (Nansen Initiative).

In the context of Mauritius, the study is guided by the following four broad research questions:

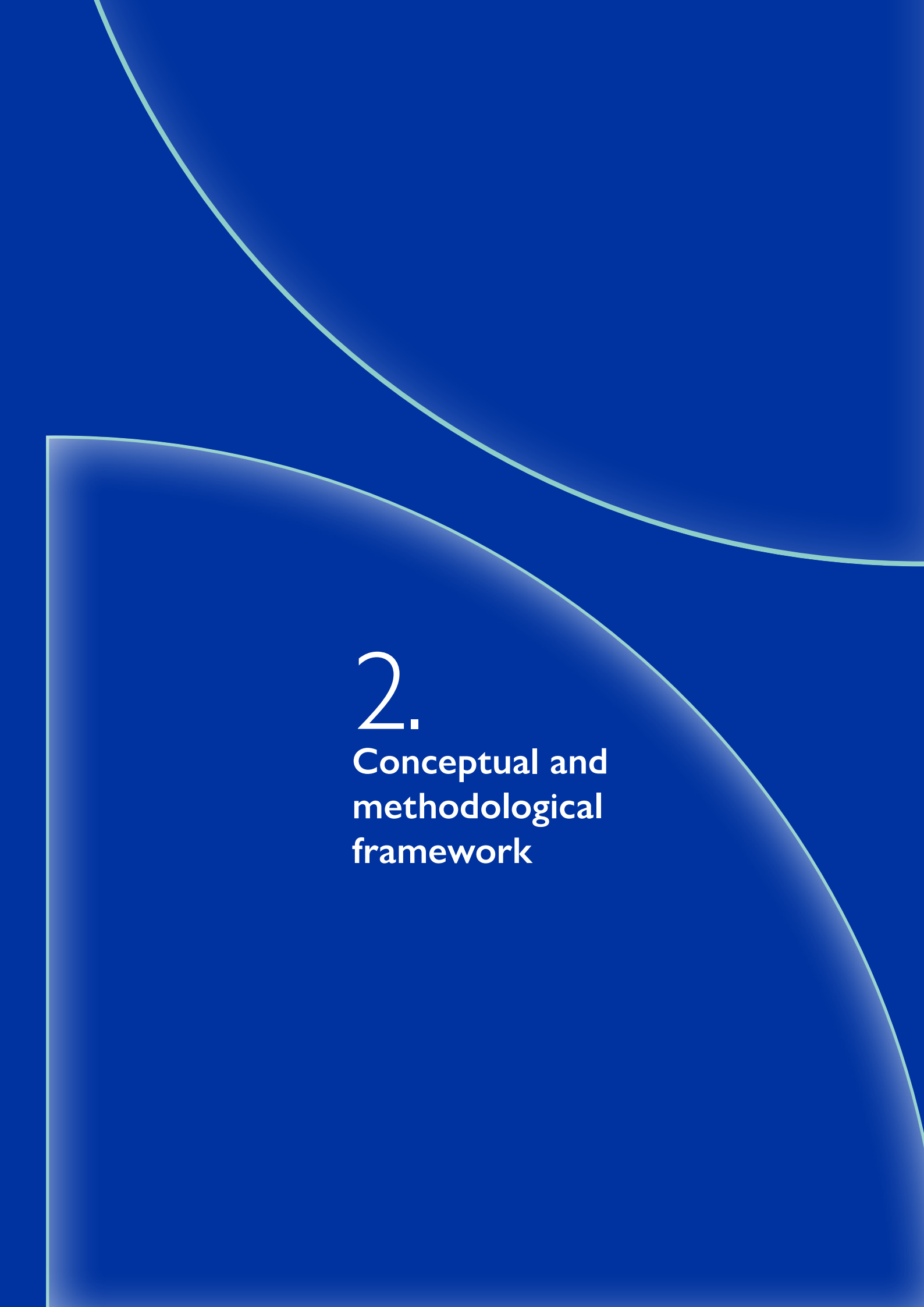
- (a) How does climate change and related environmental degradation impact migration and reintegration in Mauritius?
- (b) What do returnees and internal migrants perceive as their immediate and longer-term needs to become resilient to current and predicted climate change impacts?
- (c) What are the existing best practices in terms of schemes, programmes and policies that support the adaptation of returning workers to climate change and environmental degradation, as well as support the integration of incoming labour migrants to local or national labour markets in Mauritius?
- (d) What policy and programming recommendations can support the sustainable reintegration of returnees and internal migrants, including populations at risk, that have immediate and long-term positive impacts on both the local communities and the environment?

It is envisaged that the evidence collected on the aforementioned issues will contribute to informing policymakers, as well as relevant government agencies and stakeholders, in designing and adapting policies and programmes on integration, reintegration and planned relocation to more sustainably support internal and international migrants, returnees and populations who may be vulnerable to environmental degradation and climate change. Special attention is given to the vulnerable segments of the population or migrants (that is, children, female migrants and populations at risk). Furthermore, efforts have been made to explore avenues to enhance diaspora investment, as well as reintegration for those who wish to return to Mauritius. In addition to exploring areas to attract skilled labour and investment from abroad, views were solicited on how to enhance skills transfer and development in driving the sustainable development agenda in Mauritius and the outer islands of Rodrigues and Agalega.

1.3. Rationale of the study

Like many SIDS, Mauritius is exposed and vulnerable to the impacts of ongoing climate change. Besides the observed changes in temperature and rainfall, the impact of climate-related natural disasters has often resulted in the destruction of infrastructure, loss of human lives and displacement of people. Between 1960 and 2018, for instance, a total of 814,330 persons were directly affected by disasters, with 98 per cent due to the impact of cyclones (Government of Mauritius, 2021a:11). Out of the 490 disaster-related fatalities, 41 per cent were due to cyclones while 12 per cent were caused by other weather-related extreme events (*ibid.*). The corresponding impact on the tourism and agricultural sector will pose significant threats to livelihoods, food security and sustainable development (Brizmohun, 2019; Ramborun et al., 2020).

With migration (internal and international) rates also high, the concern is that climate change and disaster impact could undermine the prospect of migration/planned relocation as climate adaptation and DRR strategies. Given that return (international) migrants have already expressed frustrations at the existential challenges to reintegrating in Mauritius (Jahangeer-Chojoo, 2018), it is envisaged that the impact of climate change and related disasters could further hinder the sustainable (re)integration of returnees, foreign labour migrants and investors, or even vulnerable persons being relocated as part of risk reduction programmes. This could derail the economic progress, inclusive growth and vision of transforming Mauritius into a high-income, innovative and globally competitive nation by 2030. Addressing the structural constraints and enhancing climate change impacts is thus crucial to sustainable (re)integration and climate change adaptation/resilience in Mauritius. To this end, adopting an integrated and cross-sectoral approach would be key to promoting sustainable (re)integration, DRR and climate resilience in the country. But first, there is a need to provide a conceptual understanding of the climate/environmental change-human mobility nexus. An engagement with ongoing conceptual and policy discussions on the subject in the following section will further help to appreciate the nature and complex interrelationship between climate/environmental change risks and human mobility in the context of Mauritius.



2.

**Conceptual and
methodological
framework**

2.1. Conceptual framework: Understanding the environmental change–human mobility nexus and outcomes

The impact of environmental factors as drivers of human mobility has long been an important theme of scientific inquiry and theorization (Flavell et al., 2020). Earlier classical migration theories generally focused on trying to explain the role of environmental factors, as well as scarcity and spatial distribution of natural resources in shaping patterns of human migration (Piguet, 2013). Nonetheless, the theorization of migration has since evolved, with the increasing focus on considering different parameters to understand and effectively address the impact of ongoing environmental change on human migration (Renaud et al., 2011; Ionesco et al., 2017).

Much recent attention to DRR and climate change adaptation policy has rekindled efforts to mainstream the human mobility dimensions of climate and disaster impact in political, development and climate action (Mercer, 2010; Wilkinson et al., 2016; IOM, 2018). The calls to address climate change impacts on human mobility were perhaps made more cogent in paragraph 14(f) of the Cancun Adaptation Framework (COP16) and the corresponding evolution of the National Adaptation Plans (NAPs) process stipulated under Decision 5/CP.17 of UNFCCC COP17 in Durban, South Africa (UNFCCC, 2011 and 2012). At the global level, some relative progress has been made in highlighting the impact of climate and environmental change on human mobility in international migration, climate action and development policy frameworks⁵ (IOM, 2018; Clement et al., 2021).

Following the creation of the Climate Change and Displacement Facility during COP21 in Paris, the Task Force on Displacement was created in the context of the Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts (UNFCCC, 2013). This Task Force on Displacement was tasked to make recommendations that will provide the framework to help address the negative impacts of climate change. The set of recommendations that emerged from the work of the Task Force on Displacement were subsequently adopted as part of the proceedings of the 24th session of UNFCCC (COP24) in Katowice (UNFCCC, n.d.). As outlined in Decision 10/CP.24, the recommendations as presented in the report by the Executive Committee of the Warsaw International Mechanism for Loss and Damage specifically spelled out (in paragraph 2(g/ii)) the need to “enhance research, data collection, risk analysis and sharing of information to better map, understand and manage human mobility related to the adverse impacts of climate change in a manner that includes the participation of communities affected and at risk of displacement related to the adverse impacts of climate change” (UNFCCC, 2019:43).

⁵ Such as the Sendai Framework for Disaster Risk Reduction (2015–2030), the Nansen Initiative, Global Platform for Disaster Risk Reduction (2015–2030), Global Compact for Safe, Orderly and Regular Migration and SDGs.

In the context of these ongoing efforts, and to provide some clarity to understanding human mobility in the context of climate change, the United Nations Advisory Group on Climate Change and Human Mobility (2014) has distinguished between three types of climate-related human mobility, namely migration, displacement and planned relocation (see Text box 1).

Text box 1. Human mobility in the context of climate change

Migration describes movements that are voluntary with the decision often influenced by complex and multiple drivers (Black et al., 2013; Warner et al., 2013).

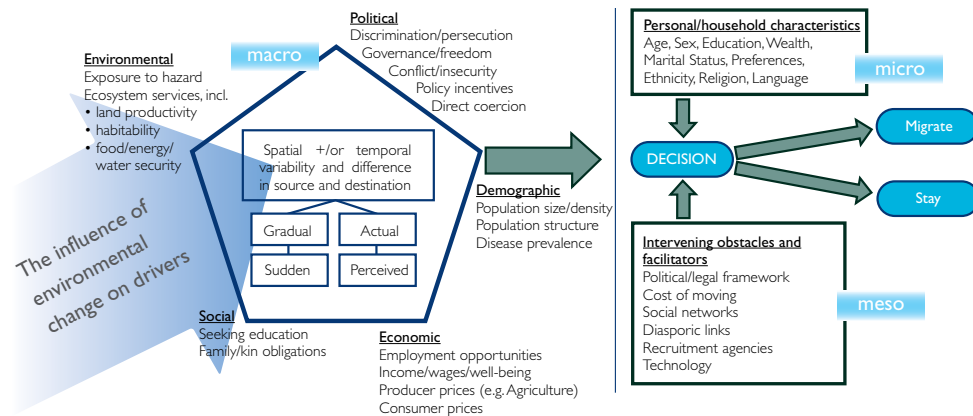
Displacement refers to situations where people are forced to leave their usual place of abode due to the severity or impact of the risk. Displacement and migration can take place within a country or across borders (see Afifi et al., 2015).

Planned relocation entails the planned relocation or conscious resettlement of a vulnerable community to reduce or mitigate any potential climatic risks. Relocation can be voluntary or forced, and it is most often initiated, planned and supervised by the public authorities although the processes may be initiated by the communities under threat (McAdam and Ferris, 2015; Melde et al., 2017).

Source: Authors' development based on the United Nations Advisory Group on Climate Change and Human Mobility (2014:3).

This distinction between the different types of human mobility within the context of climate change has undoubtedly contributed to enhancing conceptual clarity and in designing strategies at addressing the mobility dimensions of climate change and disaster (Wilkinson et al., 2016; Bower and Weerasinghe, 2021). On the other hand, the distinction may further be seen as lending some credence to the fact that a host of complex and multiple factors interact to drive mobility in the face of climate change/environmental change risks and disaster (Black et al., 2011; Warner et al., 2013; Ionesco et al., 2017). This thus underscores the need for a better appreciation and framework that recognizes and allows for the identification of pathways to effectively address the complexity of migration processes in the context of climatic and environmental changes. In this regard, the Foresight (2011) conceptual framework provides a comprehensive overview in understanding mobility decision-making and outcomes in the context of environmental change.

Figure 2. Foresight migration decision framework



Source: Foresight, 2011:12.

As illustrated in Figure 2, the Foresight migration framework emphasizes that environmental change affects migration or can precipitate movement by influencing existing drivers. In this light, it should be noted that climate/environmental change may both precipitate or prevent migration. The framework posits that the mere existence of migration drivers does not necessarily translate into actual movement, but that the decision or likelihood that migration will take place or not is influenced by existing intervening or institutional factors (see Figure 2). According to the Foresight framework, any mobility outcomes (including displacement and the decision to stay or being unable to leave) are influenced by a multiplicity of complex interrelated factors operating at the macro (social, economic, environmental and political), meso (mostly intervening obstacles and facilitators) and micro (personal and household characteristics) levels (Foresight, 2011). What this means is that vulnerability or exposure to environmental risks does not necessarily translate into migration. While human agency is at the core of mobility decision-making and outcomes, other intervening factors interact to determine whether migration will take place or not.

The broad approach of the Foresight framework in defining the relationship between environmental change and migration has allowed for a better appreciation of the ways in which different mobility drivers interact, and also with environmental change to precipitate migration. This also means that the decision to stay or move in the face of climate and environmental risks is inherently contextual. With the explanation advanced, it may be seen that the framework has not only avoided the pitfall of making predictions on the future numbers of environmentally related migrants, but advocates a broader policy approach to addressing the series of different outcomes and impacts as against a focus on seeking to prevent or restrict the number of people who move. Hence, policy should look to tap into the benefits of (planned) migration in enhancing adaptation and long-term resilience to climate and environmental change impact (ibid.).

The Foresight framework seems to endorse “spatial planning” over measures of planned relocation because of its pitfalls as a response to climate and environmental change risks. Notwithstanding this seeming endorsement, planned relocation has remained an important aspect of both policy and scientific discussion in addressing climate change and disaster impact (Bower and Weerasinghe, 2021). Nevertheless, the general recognition in both policy and scientific circles is that migration presents opportunities to facilitate adaptation, environmental change and long-term climate resilience through effective planning and management (Melde et al., 2017).

2.2. Migration as adaptation to climate and environmental change

Most often, climate/environmental change-related migration happens within national borders or cross-border to neighbouring countries (Waldinger, 2015; Cubie, 2017; Ionesco et al., 2017). Despite ongoing debates and reservations on the number of people who may be on the move due to environmental factors (Myers, 2002; Gemenne, 2011; Ionesco et al., 2017), there are growing concerns at both national and global levels that the impact of ongoing climate change and environmental degradation on socioecological systems could trigger the increase in migration and displacement of people across the globe in the coming decades (Rigaud et al., 2018). Yet the potential of migration as an adaptation strategy to climate and environmental change impact has continued to gain prominence in academic and policy discussions (Black et al., 2011; Afifi et al., 2015; Schraven et al., 2021). The increasing recognition of migration as an adaptation strategy is also partly informed by the growing evidence that migration and planned relocation/resettlement could serve to facilitate climate change adaptation in the short- to long-term in rural communities (Melde et al., 2017; Jha et al., 2017).

Nevertheless, recent empirical studies have also been critical about the ongoing simplistic and positive narrative on the efficacy of migration as an adaptation strategy to climate change (Gemenne and Blocher, 2017; Guodaar et al., 2020; Luetz and Merson, 2020; Vinke et al., 2020). The criticism is that the narrow framing of migration as an adaptation strategy largely neglects the forced dimensions of climate or environmental-related migration and other complex limiting socioeconomic and spatial factors, and instead optimistically project the potential benefits, which when well-managed could enhance climate adaptation (Lietaer and Durand-Delacre, 2020; Vinke et al., 2021). In some instances, migration has been considered as an erosive and “maladaptive” phenomenon that rather exacerbates the dire situation of affected households or communities through labour shortages and food insecurity, rather than improving socioeconomic well-being (Warner and Afifi, 2014; Jacobson et al., 2019). Another shortcoming is that the framing narrowly focuses on persons who have the possibility to leave without paying attention to the persons who

may be trapped and unable to migrate because of other challenges or even climate barriers (Sakdapolrak et al., 2016). Meanwhile, planned relocation, which is another dimension of human mobility, may have positive outcomes as an adaptation strategy in short to medium term but can be blighted by maladaptive consequences in the longer term (see Foresight, 2011; Arnall, 2019; Bower and Weerasinghe, 2021).

While the criticisms and divergent perspectives will in no doubt serve to further strengthen the conceptualization of migration as climate adaptation, it is the case that circular mobility is a common feature of migration linked to the effects of climate change and environmental degradation (Cattaneo et al., 2019). In the context of the climate-mobility nexus, it is very common for migrants to leave their households, which have been affected by the adverse effects of ecological change, to work for some time – the period might range from several months up to several years – and return to their homesteads, which might happen either on recurring basis or permanently (Henry et al., 2004; Nielsen, 2019). Migrants who decide to return to areas that do not have jobs to match their skills or communities that are highly vulnerable to natural hazards or facing severe environmental degradation, may find it difficult to re-establish or rebuild sustainable livelihoods upon return to their community of origin (Mensah and Naidoo, 2011; Morojele and Maphosa, 2013; Dziva and Kusena, 2013).

2.3. Migration, return and (re)integration

The issue of migrant (re)integration has increasingly become topical in policy discussion and initiatives relating to return migration and migration management (IOM, 2017). Reintegration⁶ has become necessary in view of the growing emphasis on instituting measures to help minimize or address environmental and structural factors that tend to force people to leave their communities, and facilitate the sustainable reintegration of returnees (IOM, 2020a). The call for sustainable reintegration of returnees is also aligned with global frameworks, such as the 2030 Agenda for Sustainable Development (SDGs), the Global Compact for Migration and the Sendai Framework for Disaster Risk Reduction. While SDG 10.7 and the 2015 Sendai Framework respectively focus on promoting safe, orderly and regular migration and DRR for resilient communities/countries (United Nations, 2015a; United Nations Department of Economic and Social Affairs, 2020), Objective 21 of the Global Compact for Migration specifically details the need for countries to “cooperate in facilitating safe and dignified return and readmission, as well as sustainable reintegration” (United Nations, 2018:26).

⁶ Defined as “the reinsertion of a returning migrant into the social structures of his or her country of origin or country of nationality” (IOM, 2019a:177).

In the debates on the meaning of mobility processes regarding the social resilience of a household and its adaptive capacities, return migration and reintegration are often linked to monetary or in-kind remittances like food, which in turn might increase the households' potential to adapt to the adverse effects of climate change and environmental degradation (Barnett and Webber, 2010; Scheffran et al., 2012; Milan et al., 2016). However, in some settings, return migration might also increase socioeconomic hardships, pressure on scarce natural resources, social services and environmental problems such as soil degradation (Gini, 2011; Dziva and Kusena, 2013; Mpandeli et al., 2020).

As already highlighted, IOM has long been active in promoting a more positive and balanced view of migration, acknowledging human mobility as a beneficial adaptation strategy to environmental pressures since the early 2000s (Laczko and Aghazarm, 2009; Ionesco et al., 2017). As part of its three strategic objectives set out in the MECC Strategy (2021–2030), for example, IOM outlines its mandate as follows (IOM, 2021b:17):

- (1) “[W]e develop solutions for people to move” by managing migration in the context of climate change, environmental degradation, and disasters due to natural hazards;
- (2) “[W]e develop solutions for people on the move” by assisting and protecting migrants and displaced persons in the context of climate change, environmental degradation, and disasters due to natural hazards;
- (3) “[W]e develop solutions for people to stay by making migration a choice by building resilience and addressing the adverse climatic and environmental drivers that compel people to move.

Besides ongoing assisted and voluntary return programmes that have emerged as part of broader migration management schemes, return migration and sustainable reintegration of migrants are of high significance in the context of climate change-related mobility (IOM, 2020a). This is because sustainable reintegration of returnees has important socioeconomic or ecological implications (IOM, 2017 and 2021c). In this light, reintegration may then be considered to be sustainable when returnees are economically empowered and self-sufficient, and well established in their communities of return and have the psychologically sound mind to be able to make informed decisions and cope with drivers that may be pushing them to (re)migrate (IOM, 2019c). As revealed by Jahangeer-Chojoo (2018), Mauritian returnees often find it difficult to reintegrate upon return.

From their observation, there is quite some level of continuous connection between the Mauritian diaspora and the country. As such, many Mauritians abroad tend to visit home quite frequently. However, the desire to return on a permanent basis was rather mixed. For those who returned, they mostly found it difficult to reintegrate due to constraints in finding the right jobs or not being able to adequately use their skills

and competences in the public work sphere (Jahangeer-Chojoo, 2018:50). Several other returnees expressed frustrations about contrasting cultural expectations and existing structural constraints that limited the possibility to progress or make any positive change upon return (ibid.). With some also expressing regret about their return, the possibility is that some returnees may be looking to remigrate or even discourage other diaspora from returning.

Although most major economies are beginning to recover from the global impact of the COVID-19 pandemic, the fact is that many Mauritian migrants would have also borne the brunt of job losses or been stranded in destination countries and looking to return. Despite the austerity measures that saw the Government injecting MUR 11.4 billion between March and June 2020 to cushion the economy, COVID-19 measures and lockdown accounted for disruptions in the labour market, as well as an enormous impact on the different sectors of the economy and households (UNDP, 2020). In regard to national employment, the UNDP assessment report estimates that national employment declined from 534,800 in the first quarter of 2020 to 405,400 (that is, 24.2% decline) by 2020 (UNDP, 2020:23). Within the same period, the unemployment rate increased by 3 per cent.

What this means is that the economic impact of COVID-19 and decline in national employment would have put internal migrants from other outer islands and village council areas, as well as migrant workers under difficult circumstances. In this light, many would have returned or perhaps seeking to do so to areas of origin. There have also been reports of migrant workers being confined to their dormitories and unable to send remittances back home to families abroad during the lockdown in Mauritius. Some migrant workers (especially Bangladeshi migrants) were reported to have had delays in receiving their salaries, while some were allegedly given just a percentage of their salary during the period of COVID-19 restriction in the country (UNDP, 2020:65). In addition to these challenges, the compounding effect of climate and disaster impact on populations would undermine the possibility of migrant workers to integrate, improve their socioeconomic well-being and families back in countries of origin, as well as their ability to contribute to the economic development of Mauritius.

The Government of Mauritius has developed migration, climate, disaster and development policy frameworks to enhance climate, DRR and migration governance in the country. Nevertheless, the gap remains that environmental and climate change mitigation policies do not account for environmental-related migration. It is thus within the remit of these existential and expected challenges that this study examines the impact of climate/environmental change and disaster on migration, return and (re)integration in Mauritius. Based on the findings, the study outlines recommendations to facilitate the mainstreaming of climate change and related migration into (re)integration and national development programmes. The hope is that this would facilitate sustainable (re)integration, continued economic growth and also enhance ongoing efforts at shared prosperity, inclusive growth and socioeconomic well-being in Mauritius.

2.4. Research design and approach

2.4.1. Methodological approach

To examine the aforementioned issues of focus in Mauritius, this study adopted a mixed methodological approach. This involved the collection of data through quantitative and qualitative methods. The underlying reason for adopting a mixed approach to the study was to allow for adequate collection of data and also solicit the emic perspectives, as well as gain much more in-depth and nuanced understanding on the complex issues of migration, climate/environmental change, return and sustainable reintegration (Hennink et al., 2020). The triangulation of methods allowed for the in-depth discussion and collection of information through expert and key informant interviews, as well as surveys and FGDs with key stakeholders (public and private sector), vulnerable populations and migrants.

2.4.2. Sampling approach and study sites

The field data collection for this study was mainly undertaken in two phases. The first phase of the data collection entailed the extensive desk-based review of literature, text (content) analysis of documents, policies and strategic initiatives on issues of climate change, existing national migration, climate and development policy frameworks. The desk review allowed for the collection of information, review of literature and existing policy documents on the issues being studied. This helped the research team to have an appreciation of what already exists in terms of information on the themes and identify gaps that could further be examined during the design and data collection process. As part of the desk review, an identification and mapping of relevant national agencies and stakeholders working on the themes of focus was also done. In addition to the desk-based mapping of key stakeholders for interviews, the expert knowledge of the national consultant on the local context, and the support of IOM Mauritius and IOM Lesotho were keys in providing some guidance to selection of relevant stakeholders and identifying vulnerable areas for the research.

Based on the stakeholder mapping, a list of relevant stakeholders from across the public and private sectors, international organizations and civil societies was compiled. The inception workshop that was organized to brief stakeholders in Mauritius at the start of the research project also provided the opportunity to further identify and solicit the support of stakeholders. The presence of different national agencies, actors and relevant stakeholders allowed for engagement to further explore and identify innovative ways and aspects that could be examined as part of the study. The list of stakeholders, which was compiled from the mapping and inception workshop, served as a sampling frame to select research participants.

The study employed non-probability sampling techniques (judgemental and snowball sampling) to select research participants for data collection. Although the sample selection was non-probabilistic, the research made a conscious effort to ensure a balanced coverage of the different stakeholders and key informants who were

drawn from vulnerable populations/segments.⁷ The underlying motive for this consideration was to draw diverse and rich insights from different perspectives. Hence, in collaboration with the national consultant and under the guidance of the IOM Mauritius Project Officer, a purposive sampling was applied to select a total of 34 key stakeholders (24 males and 10 females) for data collection (see Annex 1 for the full list). These key stakeholders were perceived to be actively working and knowledgeable on issues of migration, environment, climate change and related issues in Mauritius and hence, their selection.

In regard to identifying research participants for the vulnerable populations (individuals, households and migrants), cues were taken from the Regional Development Index and other existing studies on the topic to identify vulnerable areas for data collection (Sobhee, 2016; UNCCD, 2018). In Mauritius, Regional Development Index is used by Statistics Mauritius as a mechanism to rank the level of development in regions/villages. Based on this ranking, for example, Sobhee (2016:49–50) identified areas of high vulnerability to climate change impacts in Mauritius. These studies and the extensive knowledge of the national consultant on the local context and themes of focus provided some reference for the selection of the research sites. Given that most areas within mainland Mauritius, and the outer islands of Agalega and Rodrigues tend to face relatively similar climatic and environmental challenges and human mobility patterns, the study adopted a purposive and snowball sampling to select research participants. The selected research sites and interviews are highlighted in Table 1.

Table 1. Selected research sites

Site/Region	Number of interviews		
	Male	Female	Total
South-East coast			
Grand Port	2	0	2
Grand Sable	1	0	1
Camp Ithier	1	0	1
Quatre Soeurs	1	0	1
South			
Nouvelle France	1	0	1
La Flora	1	0	1
Mare Chicose	2	0	2
Marie Jeanie, Rose Belle	1	0	1

⁷ Vulnerable populations include internal and international migrants, returnees and populations who may be vulnerable to environmental degradation and climate change. Vulnerable segments of the population include children, female migrants and populations at risk.

Site/Region	Number of interviews		
	Male	Female	Total
Centre-North (near Port Louis) inland			
Chitrakoot/Vallée des Prêtres	2	0	2
Ti-Rodrigues, Cite La Cure	2	0	2
Vallee Pitot	3	0	3
Centre-West (near Port Louis) inland and coast			
La Butte	2	1	3
Canal Dayot	0	2	2
Pointe Aux Sable	0	1	1
Venus	1	0	1
West-South-West coast			
Petite Riviere Noire	1	0	1
Case Noyale	1	0	1
Le Morne	2	1	3
South-West and Southern regions			
Rivière des Galet	3	0	3
Soulliac/Le Battelage	1	0	1
Rodrigues			
Anse Ally	1	0	1
Roche Bon Dieu	1	0	1
Anse Quitar	1	0	1
Plaine Corail (Les Salines)	1	0	1
Montagne Goyave – Route Baladirou	1	0	1
Total	33	5	38

Source: Results from the research/survey (2022).

To facilitate the collection of data in communities across the selected districts, it was important to first make community entry. But due to COVID-19 restrictions and the requirement for researchers to quarantine up to seven days, there was not much time to conduct transect walks and engagements to allow for interaction, build rapport and enhance entry into the local communities. In Agalega and St. Brandon, for example, one needed prior permission from the Ministry of Foreign Affairs, Regional Integration and International Trade and the Passport and Immigration Office at Port Louis. But in view of the tight timeline of the data collection process, coupled with the bureaucratic procedures that often characterize official processes, the research team was unable to travel or have direct contact to interview some of the research participants in these areas. With the research sites that were visited, a purposive sampling technique was employed to first identify and interview one person in the selected research sites. This person then recommended someone, and for the research team to identify more key informants for interviews through snowballing.

2.4.3. Data collection and characteristics of research participants

The second phase of this study involved field data collection, analysis, consultations with IOM team and drafting of the study report. Altogether, two sets of questionnaires were designed to cater for the different research participants that were earmarked for data collection in Mauritius (see Annex 2). The underlying reason to deploy distinct questionnaires was to allow for varied perspectives and wider coverage on the issues of focus. In this regard, one of the questionnaires was targeted at the key stakeholders. These included government officials, international organizations, academia, and civil society organizations working on the themes of focus in Mauritius.

The other questionnaire (interview guide) was focused on research participants considered as vulnerable populations and migrants across the selected study sites across Mauritius and the outer islands. In addition to these two distinct sets of questionnaires, a generic FGD guide was developed for both stakeholders and vulnerable populations. The questions for the FGDs sought to further examine the themes of focus and clarify issues that had emerged during the field data collection and policy analysis. Although the FGD guide was somewhat generic, some of the questions were slightly changed for the key stakeholder FGD.

Both questionnaires (key stakeholder and vulnerable populations) were mainly semi-structured – consisting of predefined close-ended and open-ended questions that allowed research participants the flexibility to give wide-ranging views on the issues being examined. The questionnaires were structured along the four broad questions outlined in this study. Although two distinct questionnaires were deployed for data collection, the questions did not differ much. Nonetheless, the research team made conscious efforts to allow for disaggregation and gender considerations by integrating questions specific to the different vulnerable groups and also specifically on women during the design of the questionnaires (see Annex 2). In addition to thoroughly reviewing questionnaires in close collaboration with the IOM project team in both Mauritius and Lesotho, a pretest was done in the field prior to actual data collection. The pretest helped to identify some limitations relating, for example, to difficulty in doing on-the-spot wealth ranking, providing predetermined options on main sources of income, the volume and sequencing of the questions in the questionnaire, and the use of a concept like “community” and the different contextual meaning it holds in some of the localities, as well as other complex terminologies that were difficult to comprehend. As such, the pretest of the questionnaires and the challenges detected allowed the research team to further refine the questionnaires.

The field data collection and processing spanned January and March 2022. For the key stakeholder surveys (34), the initial plan was to conduct one-on-one interviews. The motive was that this would help to further clarify any issues during the interviews. However, due to the possibility of directly completing the questionnaire, as well as COVID-19 restrictions instituted by the national government, some key stakeholders

opted to directly do so themselves and then return the completed forms. Face-to-face interviews were nonetheless conducted with several others as well. On the part of the vulnerable populations and migrants, a total of 38 in-depth interviews were conducted, with key informants consisting of males and females from across the four selected districts (see Table 1). Detailed characteristics of the different categories are further elaborated in Annex 1.

A total of two FGDs were also conducted as part of this study. These consisted of one FGD with selected vulnerable persons and the other with key stakeholders (see Table 1). The first FGD for vulnerable populations (five participants) was conducted in Quatres Soeurs (South-East). This is a typical coastal village that is vulnerable and has witnessed migration and relocation due to climate and related disaster impacts. With the FGD for the stakeholders, it was held at the IOM Head Office premises in Port Louis. The stakeholder FGD consisted of five participants or representatives from across national agencies, ministries, international organizations and civil society (see Table 1). The participants for the two different FGDs were drawn during the data collection process in the field. With the consent of all participants, all the FGDs were audio-recorded with the aid of a digital audio recorder for transcription.

**Table 2. Composition of focus group discussions
(Vulnerable populations and stakeholders)**

Category	Gender		Area (District)/Composition
	Male	Female	
Vulnerable population/Migrants	4	1	Quatre Soeurs in the south-east of Mauritius
Stakeholders	2	2	Ministry of Environment, Solid Waste Management and Climate Change; National Disaster Risk Reduction and Management Centre (NDRRMC); Ministry of Social Integration, Social Security and National Solidarity (Social Security Division); Ministry of Housing and Land Use Planning.

Source: Results from the research/survey (2022).

The FGD for the stakeholders was held in English, while that of the vulnerable populations/migrants were conducted in Creole. On average, FGDs for both the vulnerable population and the key stakeholders lasted around one and a half hours. The national consultant acted as moderator for all FGDs and was supported by research assistants in taking notes. Their knowledge of the issues being discussed, Creole, English and French language capabilities, as well as experience as researcher helped in elaborating the issues and moderating discussions. This helped to further probe and bring different perspectives on some of the issues that had emerged during stakeholder surveys and interviews with vulnerable persons.

2.4.4. Data processing and analysis

All the data collected were cleaned and checked for any issues that needed some clarification. Based on the two distinct questionnaires and the nature of the questions, two Microsoft Excel data entry templates were developed. These templates were designed to separately enter data collected from key stakeholders and informants within the vulnerable populations/migrants. After the initial trial of the template, several adjustments were made to allow for effective data entry. The data (both quantitative and qualitative) were then directly entered into the Microsoft Excel template for analysis.

The audio recordings were transcribed verbatim for analysis. All discussions in Creole were directly translated into English and transcribed. The qualitative data from the transcripts and those captured in the Excel template were manually sorted into a matrix based on the deductive codes already derived from the themes as outlined in the research questions and Foresight framework. Nonetheless, inductive codes were also identified and categorized within the related main themes for analysis. As shown by the qualitative quotes, the qualitative data from both the in-depth interviews and FGDs provided complementary insights and further clarity to the issues examined as part of the study (see Annex 3).

2.4.5. Ethical considerations and limitations of the study

Every research process raises questions of ethics. Ethical considerations in research often relates to the safety of the research participants, the manner in which data was acquired, issues of morality, deception and generally making sure that the research will not in any way affect or cause harm to the subjects being studied (Punch, 2014). Ethical issues also border on the validity of the outcomes of the research – as in how far the issues being reported are accurate or reflective of what is on the ground. Other than these concerns, the power that researchers often wield and their “positionality” can have significant implications for the findings of the research or studies they often conduct.

Since this study also entails reporting and detailing the personal lives and circumstances of vulnerable people in rural communities, it was important to address the ethical issues pertaining to data collection and the whole research process. In this regard, the research team made it a point to be transparent in explaining the aim and purpose of the research in all the research sites that were visited in Mauritius and Rodrigues. Research participants were often also made aware that their participation was voluntary and that they could decide to opt out at any point in time during the interview. Assurances were also given to them that all information collected was going to be anonymous and no names were going to be mentioned. This was followed up in making sure that their consent was always sought before audio recording. Recordings are also secured, and transcripts were shared with only the research team and only for purposes of analysis.

At the start of the data collection phase, a consent form was designed, and all participants were required to read and sign if in agreement. This allowed for some level of guarantees in terms of the confidentiality of whatever was going to be discussed. During the period of the research, the weekly team meetings also allowed not only for critical reflexivity of the whole research process, but also of themselves as researchers and the personal biases that might evolve. This helped to maintain a good level of objectivity and also the integrity of the whole research process and findings. The transparency emanating from the open-review process of the data analysis and reporting by both the research and IOM teams has also ensured checks and verified the issues being reported.

Other than the ethical considerations, a major limitation of the study is that the total number of research participants were quite limited. Ideally, the desire would have been to cover as many research participants and communities as possible, maybe reach out to all the village council areas, as well as the outer islands of Agalega and St. Brandon. It is also believed that the study would have benefited from the perspectives of Mauritian diaspora in other countries. However, due to the tight timeline of the study, this was practically impossible. Moreover, because a host of issues were being covered as part of the study, several questions were asked that did not necessarily apply to the different research participants. This led some participants to have no input on the issues discussed and skip some questions. What this meant was that insights on such specific issues being asked were thus limited to participants who had knowledge or expertise on the issues being probed by the questions. This in a way could have narrowed the wide and varying scope of insights that had been imagined during the design of the questionnaires.

Although a conscious effort was also made to ensure some gender balance in terms of the selection of research participants, some male dominance in the number of persons interviewed for both the key stakeholders and vulnerable populations/migrants has also been detected. As such, the possibility is that the insights gathered may be seen to reflect more of perspectives from males. Given that the data collection was also done during the period of the COVID-19 pandemic, the corresponding restrictions on movement and fear of infection from both the research team and participants made it a bit difficult to access research participants and sites in St. Brandon and Agalega. As such, insights on the issues being examined seemed to be limited to perspectives from research participants in mainland Mauritius and Rodrigues. Despite the aforementioned limitations, the necessary measures were put in place to maintain the integrity and validity of this study. In view of the missing information emanating from the gaps in the completed questionnaires, more information was further sought through an extensive desk-based literature review of empirical studies and grey literature on the different topics in Mauritius. Alongside, a thorough analysis of existing policy frameworks and legislation on the themes of focus was done to gain more insights and complement the data that had been collected. Furthermore, much consideration was given to views shared by the

female research participants, as exemplified in the interview quotes highlighted in the findings and discussion section of this report. In instances where a selected research participant could not also be reached for any reason, the technique of “sampling by convenient replacement” was employed to replace or substitute for the missing or absent research participant (see Bernard, 2002:243). To provide context in order to effectively analyse the findings, the insights drawn from analysis of the existing climate change, disaster and migration policy and governance frameworks in Mauritius are highlighted in the following section.

3.

**National governance
of the climate and
environmental change,
disaster and human
mobility nexus: A focus
on Mauritius**

At the national level, a number of policy and legal frameworks have been developed to enhance efforts in addressing (forced) population movements, climate impacts and risks, as well as DRRM in Mauritius. As shown in Table 3, the identified policies and legislations straddle the thematic areas of migration, climate and environmental change, DRR, and cross-cutting issues such as development and gender. The analysis thus examined in how far these frameworks acknowledge human mobility in the context of climate and/or other environmental change, and whether there are any corresponding provisions for the following: (a) promotion of gender equality; (b) sustainable (re)integration of returnees and internal migrants (including populations at risk); and (c) development of green projects.



Climate change contributes substantially to agricultural challenges, leading to human displacement.
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Table 3. Policies and legislation related to migration, environment, disaster risk reduction and other areas of relevance in Mauritius

Governance sphere	Year	Policy and/or legislation	Acknowledgement of the climate and environmental change, disaster, and human mobility nexus	References to (re)integration and related issues	References to gender and related issues	References to green jobs and/or projects
Migration	2020	Mauritian Diaspora Scheme Guidelines ^a	No	No	No	No
	2019	Know Your Rights Guide ^b	No	No	No	No
	2019	Workers' Rights Act (No. 9 of 2019) ^c	No	No	No	No
	2018	National Migration Policy and Action Plan ^d	Yes	No	Yes	No
	2018	National Migration and Development Policy ^e	Yes	No	Yes	No
	2015	Mauritian Diaspora Scheme Regulations ^f	No	No	No	No
	2015	Guidelines for Work Permit Application ^g	No	No	No	No
	1970 (Revised in 2019)	Immigration Act (No. 13 of 1970) ^h	No	No	No	No
Environment	2016	Strategic Plan for the Food Crop, Livestock and Forestry Sectors (2016–2020) ⁱ	No	No	Yes	No
	2007	National Environment Policy ^j	No	No	Yes	No
	2002	Environment Protection Act (No. 19 of 2002) ^k	No	No	No	No



Governance sphere	Year	Policy and/or legislation	Acknowledgement of the climate and environmental change, disaster, and human mobility nexus	References to (re)integration and related issues	References to gender and related issues	References to green jobs and/or projects
Climate change	2021	Update of the Nationally Determined Contribution (NDC) of the Republic of Mauritius ^l	Yes	No	Yes	No
	2020	Climate Change Act 2020 (No. 11 of 2020) ^m	No	No	Yes	No
	2019	Climate Change and Non-Governmental Organisations Manual ⁿ	No	No	Yes	No
	2016	Third National Communication under the United Nations Framework Convention on Climate Change ^o	Yes	No	Yes	No
	2015	Intended Nationally Determined Contribution (INDC) for the Republic of Mauritius ^p	Yes	No	Yes	No
	2010	Second National Communication under the United Nations Framework Convention on Climate Change (UNFCCC) ^q	No	No	Yes	No
	1999	Initial National Communication under the United Nations Framework Convention on Climate Change ^r	Yes	No	No	No

Governance sphere	Year	Policy and/or legislation	Acknowledgement of the climate and environmental change, disaster, and human mobility nexus	References to (re)integration and related issues	References to gender and related issues	References to green jobs and/or projects
Disaster risk reduction	2021	National Disaster Risk Reduction and Management Strategic Framework 2020–2030 ^s	Yes	No	Yes	No
	2021	National Disaster Risk Reduction and Management Policy (2020–2030) ^t	Yes	No	Yes	No
	2021	National Disaster Risk Reduction and Management Action Plan (2020–2030) ^u	No	No	No	No
	2019	Mauritius Meteorological Services Act ^v	No	No	No	No
	2018	Local Government (Amendment) 2018 (No. 10 of 2018) ^w	No	No	No	No
	2016	National Disaster Risk Reduction and Management Act 2016 (No. 2 of 2016) ^x	Yes	No	No	No
	2015	National Disaster Scheme (NDS) ^y	Yes	No	Yes	No
	2012	DRR Strategic Framework and Action Plan ^z	No	No	No	No

Governance sphere	Year	Policy and/or legislation	Acknowledgement of the climate and environmental change, disaster, and human mobility nexus	References to (re)integration and related issues	References to gender and related issues	References to green jobs and/or projects
Other policies and legislation of relevance	2018	Three Year Strategic Plan 2018/19–2020/21: Pursuing Our Transformative Journey ^{aa}	Yes	No	Yes	No
	2017	Mauritius Vision 2030: Innovative and Globally Competitive ^{bb}	No	No	No	No
	2008	The National Gender Policy Framework ^{cc}	No	No	No	No
	2004	Planning and Development Act 2004 (No. 32 of 2004) ^{dd}	Yes	No	No	No

Sources: ^a Government of Mauritius, 2020b; ^b Government of Mauritius, 2019a; ^c Government of Mauritius, 2019b; ^d Government of Mauritius, 2018a; ^e Government Information Service, 2018; ^f Government of Mauritius, 2015b; ^g Government of Mauritius, 2015c; ^h Government of Mauritius, 1970 and 2020d; ⁱ Government of Mauritius, 2016a; ^j Government of Mauritius, 2007; ^k Government of Mauritius, 2002; ^l Government of Mauritius, 2021d; ^m Government of Mauritius, 2020c; ⁿ Government of Mauritius, 2019c; ^o Government of Mauritius, 2016b; ^p Government of Mauritius, 2015a; ^q Government of Mauritius, 2010; ^r Government of Mauritius, 1999; ^s Government of Mauritius, 2021a; ^t Government of Mauritius, 2021b; ^u Government of Mauritius, 2021c; ^v Government of Mauritius, 2019d; ^w Government of Mauritius, 2018b; ^x Government of Mauritius, 2016c; ^y Government of Mauritius, 2015d; ^z Government of Mauritius, 2012; ^{aa} Government of Mauritius, 2018c; ^{bb} Government of Mauritius, 2017; ^{cc} Government of Mauritius, 2008; ^{dd} Government of Mauritius, 2004.



3.1. (Im)migration policies and legislation

The identified legislation or legal framework on migration in Mauritius relates to the 1970 Immigration Act. In addition to stipulating situations in which individuals may remain in Mauritius for holding the status of citizen, (permanent) resident or exempted person, the Act also prescribes regulations for cases involving immigration, loss of (permanent) resident, prohibited immigrants, short-term occupation permit, as well as other rules for non-citizens (Government of Mauritius, 1970). In 2019, the national government amended the 1970 Immigration Act to reflect evolving migration governance. Among others, the revision repealed provisions on the prohibition of non-citizens likely to be a charge on public funds from entering Mauritius (section 8/1g), replaced the definition of “dependent child”, and enabled the extension of permit validity during COVID-19 period (9G/a, b) (Government of Mauritius, 2020d). Provisions of the Act that outline that a dependent child of a non-citizen permanent resident ceases to be a resident upon the age of 18 will, for example, have negative implications for (re)integration of both returning migrants and migrant investors/workers or those coming as part of the Mauritian Diaspora Scheme (see sections 6/3 and 5/1 respectively). Another provision that could also affect the possibility of return and thereby sustainable reintegration relates to the provisions outlined under section 8 on “Prohibited immigration” and the enormous discretionary powers it gives to immigration officials in determining who could and not be admitted into Mauritius.

With regard to the Mauritian diaspora, the national government has established initiatives in attracting members of the diaspora to participate in the economic development of the country. In this context, two policy documents that encourage members of the diaspora to return and contribute to the economy are to be highlighted: (a) the Mauritian Diaspora Scheme Regulations of 2015; and (b) the Mauritian Diaspora Scheme Guidelines of 2020. In short, the former policy document established the EDB, which is composed of a committee that evaluates and manages the applications received every month. As for the eligibility criteria, it describes a member of the Mauritian diaspora as any national who, “before 24 March 2015, has been living and working outside Mauritius and has the necessary skills, talent, and experience and who is willing to return and serve Mauritius” (Government of Mauritius, 2015a:5). In turn, the latter policy document was prepared by the EDB and sets up the application procedures under the Mauritian Diaspora Scheme. In addition to detailing the eligibility criteria, the Guidelines lists documents needed, issuance of registration certificate, claiming of incentives, as well as other terms and conditions (Government of Mauritius, 2020b).

The country also has clear and transparent laws to govern the situation of migrant workers in Mauritius. With the aim of combating abusive labour recruitment practices, the Guidelines for Work Permit Application (Government of Mauritius, 2015c) clarifies the requirements to be followed by national employers for the

recruitment of foreign labours, which can opt for one of the following categories of working permits: (a) Occupation Permit; (b) Work Permit; and (c) Certificate of Exemption. The Occupation Permit combines work and residence permits, allowing foreigners to work and reside in Mauritius under three subcategories (investor, self-employed and professional). The granting of Work Permit is governed by the 1973 Non-citizens (Employment Restriction) Act, which stipulates that a “non-citizen shall not engage in any occupation in Mauritius for rewards or profit or to be employed in Mauritius unless there is in force in relation to him/her a valid permit and he/she engages in the occupation” (Government of Mauritius, 1973). In turn, Certificates of Exemption are granted to certain categories of expatriates who are exempted from a work permit during their period of employment in Mauritius (*ibid.*).

Following these legal requirements, the country has adopted additional measures to facilitate the ethical recruitment of migrant workers. In 2019, for instance, the Ministry of Justice, Human Rights and Institutional Reforms, in collaboration with various stakeholders, released the Know Your Rights Guide (Government of Mauritius, 2019a). This Guide, which has been published in several languages, informs migrant workers of their rights and possible legal remedies in case of violations (*ibid.*). Still, all workers – including migrants – are protected against discrimination by the Workers’ Rights Act of 2019, which specifies that an agreement shall not be terminated by an employer direct and indirect discrimination based on, *inter alia*, ethnic origin, place of origin, colour, sex and race (Government of Mauritius, 2019b).

Notably, none of the legislation on migration in Mauritius identified so far makes references or specific provisions relating to the regulation of those who move in the context of climate and/or other environmental changes, nor addresses the issues of migrants’ (re)integration or with specific attention to gender considerations in (re)integration programmes. However, by aiming to handle the challenges related to migration governance in a proactive way, the national government has recently adopted the National Migration and Development Policy of 2018. Aligned with SDG 10.7,⁸ the Policy seeks to maximize the positive outcomes and impacts of migration for socioeconomic development at the national level. Also, the Policy emphasizes the need for the following: (a) enhance data collection on migration as a result of environmental drivers; (b) better understand the role of migration as an adaptation strategy; and (c) assess the effectiveness of disaster risk management to cope with the distinct realities faced by migrants (that is, access to information) (CADRI, 2020:53).

An action plan was developed by an interministerial Migration and Development Steering Committee to achieve the Policy’s objectives. In this regard, the National Migration Policy and Action Plan of 2018, envisages the establishment and maintenance of “governance and management structures for sustainable tourism and human settlements that bring together responsibilities and expertise in the areas

⁸ “Facilitate orderly, safe, regular, and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies” (United Nations, 2015b).

of tourism, environment, health, DRR, culture, land and housing, transportation, security and immigration, planning and development, and enabling a meaningful partnership approach among the public and private sectors and local communities” (CADRI, 2020:52).

3.2. Climate and environmental change policies and legislation

As highlighted earlier, the national government of Mauritius has developed climate and environmental policies to address the threats and impacts of climate and other environmental changes in the country. Despite the seemingly proactive response by way of policy development and implementation, not much attention has been given to the issues related to human mobility in the context of climate and other environmental changes. Out of the twelve climate- and environmental-related policy documents examined, only four address the topic (see Table 3).

None of the three policies that focus strictly on environmental issues cover and/or acknowledge population movements as a result of climate or environmental impacts.⁹ The Environment Protection Act of 2002, for instance, makes provision for the establishment, organization, functions and powers of the National Environment Commission, the Department of Environment and other public bodies involved in the administration of matters relating to environmental protection (Government of Mauritius, 2002). The Act provides for the following: (a) legal framework and related mechanisms to protect the environment; (b) planning of environmental management and coordination of environmental issues; and (c) proper implementation of national policies necessary for the protection of human health and the promotion of a sustainable use of environmental resources in Mauritius (*ibid.*). It is thus not surprising that the Act does not address issues of (re)integration of returnees and (internal) migrants and gender equality.

With the National Environment Policy of 2007, the goal is to set appropriate environmental protection objectives and strategies through the establishment of a coherent policy framework. Based on key environmental challenges and opportunities at the national level, it seeks to: (a) mainstream environmental consideration in domestic development programmes; (b) enhance ecosystems management, promoting sustainable economic growth; and (c) contribute to better living conditions of the Mauritian population (Government of Mauritius, 2007). Despite not acknowledging human mobility in the context of climate and other environmental changes, the Policy considered social and/or cultural factors that stimulate environmental protection, including gender-related considerations (*ibid.*).

⁹ Differently from the other spheres of governance investigated in this study, the analysis of national environmental policies was not exhaustive. The analysis included only those policies that could be related to the human mobility – climate/environmental change nexus, leaving documents that address the energy sector – for instance – aside.

Another framework that is worth noting is the Strategic Plan for the Food Crop, Livestock and Forestry Sectors (2016–2020). The Plan focuses on facilitating the sustainable development of the agricultural sector for improved food security in the country. The overall goal of the plan is to enhance food security by “maintaining self-sufficiency in those agricultural products where it is possible and generating a significant, concomitant increase in local production of others” (Government of Mauritius, 2016a:2). Specifically, the Strategic Plan emphasizes the role of the agricultural sector for women employment, especially those women that are heads of households and/or single parents. With many often into agroprocessing and small-scale livestock production, it is envisaged that enhancing these economic ventures will allow them to take care of other activities and home care (ibid.).

Specifically, the human mobility–climate/environmental change nexus has readily been acknowledged in most of the Mauritian climate policy documents submitted to the UNFCCC. The Initial National Communication on Climate Change of 1999, for instance, draws attention to the fact that temperature and SLR, combined with changes in the local hydrological cycle, will adversely impact population mobility patterns (Government of Mauritius, 1999). The Third National Communication on Climate Change of 2016 went further to dedicate an entire section to “migration and adaptation to climate change” (Government of Mauritius, 2016b). It has also referred to the project Migration, Environment and Climate Change: Evidence to Policy (2014–2016), which was developed in collaboration with IOM.

The Migration, Environment and Climate Change: Evidence to Policy project was implemented in six pilot countries, including Mauritius, and contributed to the global knowledge base on the linkages between migration, climate and other environmental change, thereby presenting policy options on how migration can serve as a climate adaptation strategy. In Mauritius, surveys were conducted in Port Louis, Flic en Flac/Bambous and Rodrigues, enabling the better understanding of the phenomenon at the national level (ibid.). In addition to that, the Third National Communication suggests the implementation of a major infrastructural scheme, as well as planned relocation plans, to reduce the vulnerability of coastal areas to climate change. It advocated a holistic approach to the implementation of the proposed strategies, considering the social, economic and environmental impacts of a changing climate (ibid.).

In regard to gender, considerations were identified in the Second and Third National Communications on Climate Change. While the Second National Communication stated that the impacts of climate change will threaten the survival of most vulnerable populations, including women (Government of Mauritius, 2010), the Third National Communication included a section addressing gender and related issues (Government of Mauritius, 2016b). Besides highlighting the crucial role played by women in climate adaptation and mitigation actions, the policy document called for sectoral interventions capable of promoting women’s equal participation in decision-making (ibid.).

On the other hand, Mauritius' INDC listed adaptation plans to address the impacts of climate change at the national level, such as the following: (a) development of a DRR strategy; (b) protection of infrastructure from climate-related impacts; and (c) improvement of coastal zone management and resilience. With regard to human mobility in the context of climate and other environmental changes, the INDC underlined that the high costs of such adaptation measures may hamper their effective implementation, which could result in the migration of its population. Importantly, the country's actions on climate change presented in the INDC took into account gender issues (Government of Mauritius, 2015a). In turn, the updated 2021 NDC made generic references to human displacement and other damages caused by Cyclone Berguitta, which hit the country in January 2019. Furthermore, the NDC recommended enhanced social inclusion through engagement with local communities for gender-responsive adaptation measures, as well as the mainstreaming of the topic in national climate policies (Government of Mauritius, 2021a).

Aside from the aforementioned policy documents that have been submitted to the UNFCCC, Mauritius has developed a set of policies aimed at alleviating the impacts of climate change at the national level. These include the following: (a) National Climate Change Adaptation Framework of 2012; (b) Climate Change and Non-Governmental Organisations Manual of 2019; and (c) the Climate Change Act (No. 11 of 2020). The Updated National Climate Change Adaptation Framework of 2021 is an update to the previous National Climate Change Adaptation Framework in 2012. It serves as an integrated framework aimed at integrating and mainstreaming climate change into various sectors and core national development policies, strategies and plans of Mauritius (HEAT GmbH, 2021). In acknowledging that measures towards climate resilience must ensure an equitable and sustainable future for all Mauritian citizens, the Adaptation Framework outlined the following adaptation strategies: (a) avoid, minimize or adapt to the impacts of climate change on key sectors (agriculture, water, fisheries and ecosystems); (b) avoid or reduce damage to human settlements and infrastructure; (c) promote capacity-building for the better understanding and timely response to climate change impact at the national level; and (d) integrate and mainstream climate adaptation and related issues into development policies, strategies and plans (HEAT GmbH, 2021:14). Thus, by addressing the impacts of climate change on human settlements and infrastructure, which includes the possible loss of lives, the issue of human mobility has been indirectly recognized among the strategic objectives of the policy framework.

The impacts of climate change have also been analysed from a broader perspective, encompassing socioeconomic indicators, as well as gender and health as cross-cutting issues (ibid.). More importantly, the Updated National Climate Change Adaptation Framework also addresses the need for green jobs¹⁰ in the context of climate

¹⁰ Green jobs that contribute to preserving or restoring the environment, either in traditional sectors such as manufacturing and construction or in new emerging sectors such as renewable energy and energy efficiency. Green jobs seek to: (a) improve energy and raw materials efficiency; (b) limit greenhouse gas emissions; (c) protect and restore ecosystems; and (d) support adaptation to the effects of climate change (Government of Mauritius, 2012).

interventions. The Framework indicates that nature-based solutions can enhance climate adaptation and reduce risks, while the creation of green jobs also help to preserve or promote environmental sustainability, climate mitigation and inclusive growth (HEAT GmBH, 2021). In contrast to this recent Updated National Climate Change Adaptation Framework, the Climate Change and Non-Governmental Organisations Manual of 2019 implicitly refers to population movements by affirming that disasters (such as flooding, droughts and cyclones) often cause the destruction of properties and related assets (Government of Mauritius, 2019c). In relation to the gender perspective, the Manual highlights that not everyone presents the same vulnerability level as this depends on distinct factors, such as geographic location, health and wealth. Also, vulnerability is also tied to age and gender: for instance, women, children and older people tend to be more vulnerable to the impacts of climate change (ibid.).

Furthermore, the Climate Change Act (No. 11 of 2020) also provides a climate framework for Mauritius. Among others, it has provided the framework to create the Department of Climate Change within the Ministry of Environment, Solid Waste Management and Climate Change. This department seeks to: (a) foster adaptation and mitigation measures in all sectors; (b) implement mitigation procedures and reporting mechanisms; (c) develop a database managing climate-related topics; (d) promote education and information access on climate-related matters; (e) monitor the implementation of mitigation and adaptation policies; and (f) release inventories on greenhouse gas emissions (Government of Mauritius, 2020c). While the Act is silent on population movements in the context of climate and/or other environmental changes and disasters, it urges the Department of Climate Change to commission studies on climate change, taking into consideration human rights, cultural heritage and gender issues (ibid.). However, by mandating the Department of Climate Change to formulate a National Climate Change Adaptation and Mitigation Strategy and Action Plan, the Act provides the opportunity for issues, such as human mobility (including reintegration), gender equality and green jobs to be properly addressed from the national climate agenda.

3.3. Disaster management policies and legislation

In terms of DRR, Mauritius has been progressively improving its ability to address disaster risks and impacts. With reference to the Hyogo Framework for Action (2005–2015), the country started developing a disaster risk management strategy. The DRR Strategic Framework and Action Plan of 2012 was established in regard to nine main national priorities, which includes the following: (a) prioritization of flood, coastal inundation and landslide hazards besides cyclones; (b) provisions for coastal zone and marine ecosystems conservation; (c) implementation of a national platform dealing with disaster management; (d) development of a national DRR strategy; (e) adoption of a spatial data mechanism; and (f) establishment of an emergency fund for disaster response and recovery (Government of Mauritius, 2012).

To improve DRRM, Mauritius adopted the NDS. The Scheme encompasses the whole spectrum of the disaster cycle and has been used as the primary source of information for agencies and individuals working on disaster prevention and post-disaster recovery. With emphasis on a coordinated multi-agency approach, the NDS guides national agencies and stakeholders both in understanding and undertaking their roles and responsibilities in the wake of a disaster in Mauritius (Government of Mauritius, 2015d). In addition to calling for effective actions in safeguarding life through evacuation of vulnerable people such as women (including the identification of evacuee shelters and the establishment of plans for their effective management), the Scheme aims to: (a) collect disaggregated data on the number of households affected and displaced in disaster contexts; (b) assess the extent of damage, such as loss of livelihoods and properties; and (c) ensure safe return of displaced persons to their respective homes (ibid.). Further, the NDS has established the National Disaster Risk Reduction and Management Council and the NDRRMC. Whereas the former is tasked with the responsibility of formulating a national policy framework for implementing concrete disaster risk management measures, the latter acts as the main institution for coordinating and monitoring the implementation of disaster risk activities in Mauritius (Government of Mauritius, 2015c).

Another important disaster legislation in Mauritius is the National Disaster Risk Reduction and Management Act (No. 2 of 2016). The Act establishes not only the foundations for disaster management, but also the legal basis for the institutional set-up for DRR at the national level. Besides listing the roles of the National Disaster Risk Reduction and Management Council and the NDRRMC, the Act has stipulated the structure to be activated in crisis situations, such as the National Crisis Committee, the National Emergency Operations Command, the Disaster Response Unit, as well as Local DRR Committees and Local Emergency Operation Commands (Government of Mauritius, 2016c). The Act does not present specific provisions for preventing and addressing the displacement impact of disasters. Nevertheless, it considers short-term displacement triggered by rapid-onset events, such as cyclones or flash floods (ibid.).

Most importantly, the Act includes provisions for the establishment of a multi-hazard early warning system, while assigning the MMS the responsibility to “develop and improve warnings and advisory systems for all natural hazards affecting Mauritius” and “implement a national multi-hazard emergency alert system to provide accurate and timely advice to the public and key stakeholders” (Government of Mauritius, 2016c:22). Subsequently, the Mauritius Meteorological Services Act established the MMS as the official national authority in charge of providing climate services. It is also responsible for issuing warnings for cyclones, torrential rains, tsunamis, high waves and strong winds (including warning for non-meteorological events as well) (Government of Mauritius, 2019d). Yet the Act does not acknowledge human mobility in the context of climate and/or other environmental change and correlated cross-cutting issues (that is, gender, (re)integration of returnees and internal migrants and development of green projects).

More recently, Mauritius developed a National Disaster Risk Reduction and Management Strategic Framework (2020–2030) and a National Disaster Risk Reduction and Management Policy (2020–2030), both under the 2016 National Disaster Risk Reduction and Management Act. Initially, the National Disaster Risk Reduction Council and Management published the National Disaster Risk Reduction and Management Strategic Framework (2020–2030). The Strategic Framework, which guides the country's approach to DRR, is composed of four broad interlinked strategic pillars: (a) enhance risk management; (b) avert and reduce current risks; (c) avoid new risks and/or rise in current risks levels; and (d) ensure effective and efficient disaster preparedness, warning, response and recovery (Government of Mauritius, 2021a:40–41). Based on a multi-agency approach (encompassing affected and/or communities at risk), the Strategic Framework also incorporates good practices linked to disaster risk management and provides attention to gender-related issues (*ibid.*).¹¹ Considering that climate change tends to intensify the incidence of hazards and increase communities' vulnerabilities to disasters, the policy document affirms that coherent climate adaptation measures are key to effective DRRM. This would prevent climate-induced displacement and loss of livelihoods reliant on ecosystem services (*ibid.*). Lastly, it also presents generic provisions for the implementation of emergency shelters and development of evacuation plans.

With regard to effectively addressing disaster impact in Mauritius, the National Disaster Risk Reduction and Management Policy (2020–2030) emphasizes that “disaster impacts should be proactively reduced to the lowest levels possible with available local and external resources” (Government of Mauritius, 2021b:8). To this end, the National Disaster Policy provides guidance to risk reduction, preparedness, warning, response and recovery in Mauritius. In summary, it establishes the context for the vision, targets and objectives set out in the National Strategic Framework. Under the National Policy, the definition of disaster responses (which include evacuation plans) and other damage reduction measures is to be underpinned by the better understanding of hazards, vulnerabilities and other risks faced within the national territory. Furthermore, the National Policy notes the different impacts of disasters on women, children, as well as those experiencing disabilities (*ibid.*).

The development of specific actions for implementation of the National Strategic Framework and the National Policy was stipulated by the National Disaster Risk Reduction and Management Action Plan (2020–2030). Based on the four specific objectives set out in the National Strategic Framework, the National Action Plan details 189 actions to be taken by 2030 to promote DRR in Mauritius, and the total estimated costs of such actions (Government of Mauritius, 2021c). The actions to

¹¹ In this regard, the Strategic Framework highlights the need to mainstream gender considerations in disaster risk management: “Addressing gender, age and health status issues which increase disaster risk is not a single-focus effort. It requires that gender, age and health status be given first consideration in understanding disaster risks, in reducing these risks, and in how warning, response and recovery are delivered. As a result, gender, age and health status considerations are set out in the National Disaster Risk Reduction and Management Policy and mainstreamed across the National Strategic Framework's vision, strategy, and objectives, and in the work set out in the National Action Plan” (Government of Mauritius, 2021a:18).

be implemented at the national level were distributed in four thematic axes: (a) risk governance; (b) risk reduction; (c) warning and alert; and (d) preparedness, response and recovery. References to the human mobility dimension, more specifically to the establishment of evacuation plans, were found within response measures (ibid.).

An additional dimension of the national regulatory framework for DRR is also contained in the Local Government Act of 2018. This Act amends the 2011 Local Government Act by redefining “development works”¹² and providing for the control of such activities. It also revised the 2012 Building Control Act with respect to permit for the implementation of development works (Government of Mauritius, 2018b). Despite making provisions related to illegal constructions, stipulating penalties and enabling mandatory pulling down orders by District Courts, this Act does not address the distinct dimensions of the human mobility–climate/environmental change nexus (ibid.).

3.4. Other policies and legislations of relevance

Other relevant policies and legislations in distinct governance spheres are also worth highlighting in this study. This is because besides recognizing population movements that may result from climate and/or other environmental changes, they address cross-cutting issues of relevance, such as the (re)integration of returnees and/or internal migrants, the promotion of gender equality or green jobs development opportunities. These are as follows:

- (a) **National Gender Policy Framework (2022):** The Policy Framework presents generic information on gender equality and lists the positive outcomes from mainstreaming the gender perspective into development interventions. As such, it acts as a handbook that guides how to apply gender considerations in policies from different sectors. Importantly, the Policy Framework underlines that it does not cover sector-specific gender issues. It is rather an overarching policy that provides the framework for each national sector, agency, private and civil society organizations to take ownership and develop their own sector-specific policy. As such, it does not cover the needs of women and children, vulnerable groups within cross-cutting thematic areas (that is, climate change, education, health, labour, migration). It is therefore not surprising that the document makes no reference to the linkages between gender and human mobility, climate risks and impacts, nor the reintegration of migrant women into the national territory (Government of Mauritius, 2022).

¹² Development works include, among others, the division of land and any construction on any drain, river, canal or any other watercourse (Government of Mauritius, 2018b).

- (b) **Planning and Development Act (No. 32 of 2004):** This Act outlines provisions for land use planning and development in Mauritius. In this regard, the legislation targets the following: (i) promotion of orderly and economic use and development of land; (ii) use of land for public purposes; (iii) support of ecologically sustainable development; and (iv) management and conservation of natural resources for the purposes of social and economic welfare (Government of Mauritius, 2004). The relevance of this Act lies in the fact that it allows for the compensation of individuals that lose their land due to the implementation of development projects. Specifically, the Act stipulates that “where any person is likely to be required to move from where he is living or where he is using land for his livelihood by the development, the arrangements to be made by the developer to provide that person with alternative living accommodation and alternative methods of obtaining his livelihood or other forms of compensation” (ibid.).
- (c) **Vision 2030: Innovative and Globally Competitive (2017):** This growth strategy aims to transform the country into a high-income country by 2030 by reducing current and emerging risks faced by the country, as well as losses and damages in the wake of disasters. To this end, it proposes the following: (i) increasing investments at the national level; (ii) fostering the use of clean and renewable energy; and (iii) promoting inclusive growth (Government of Mauritius, 2017). Nevertheless, Mauritius’ Vision 2030 has not addressed the issues of human mobility in the context of climate and/or other environmental changes, (re)integration of returnees and/or internal migrants nor women empowerment. As part of Vision 2030, the government recognizes and advocates the shift to renewable energy with the view to increase renewable energy sources by 35 percent by the close of 2025. It also aims to transcend the conventional forms of renewable energy (such as solar and wind) to tap into the power and energy potential of the ocean.

Despite the overt government resolve to promote renewable energy, this growth strategy does not acknowledge the potential of the renewable energy sector to unleash thousands of green and decent jobs. While Vision 2030 also earmarks skills development in the banking sector to become globally competitive, it does not emphasize the need for green skills intelligence to ascertain the skills gaps, and develop the necessary skills and competences to fill the green jobs that will be created with the expansion of the renewable energy sector.

- (d) **Three Year Strategic Plan (2018/192020/21): Pursuing Our Transformative Journey (2018):** This was designed as an annual rolling plan with a clear strategic framework which is itself formulated based on the long-term Vision 2030. The Strategic Plan covers all economic and social sectors, all of them grouped according to the priorities of the national government including education, energy, gender mainstreaming, housing and land, land drainage/ flood control, law and order, reducing poverty and inequality, road safety, water, and youth employment (Government of Mauritius, 2018b). Regarding climate-induced migration, the Strategic Plan refers to the National Migration and Development Policy, which intends, among others, to ensure the following: (i) coherent migration management that responds to Mauritius' socioeconomic priorities; (ii) safe and orderly migration processes that prevent abuse and exploitation; and (iii) resilience to climate change impacts and related disasters (ibid.). The Strategic Plan also emphasizes the need for gender balance in decision-making processes, enabling the mainstreaming of the topic in all national programmes and policies. In this regard, a host of measures to address gender issues relating to high female unemployment rate, gender wage gap, domestic violence, poverty among women, and equal opportunities in education have been advanced (ibid.).



4.

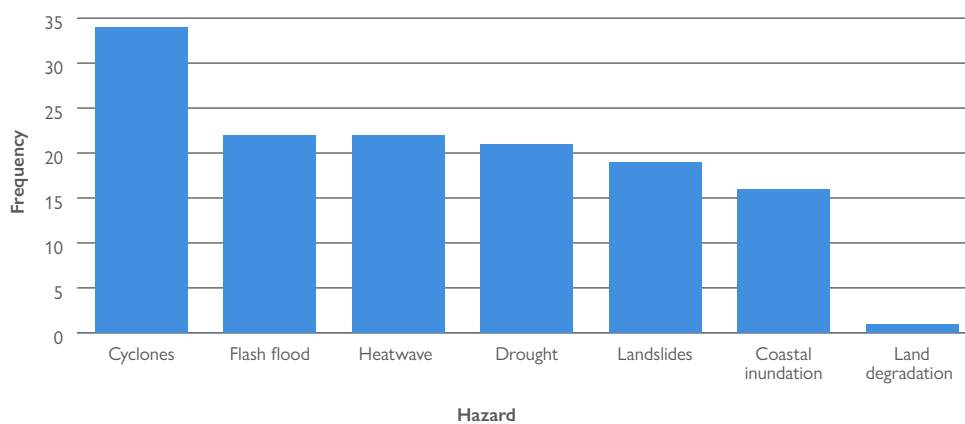
**Climate/environmental
change, hazards and
impacts**

As a SIDS, Mauritius is exposed to a diverse array of environmental risks. This is further exacerbated by the high levels of vulnerability due to the concentration of population, livelihoods and infrastructure in close proximity to low-lying coastal areas. Climate change is directly and amply perceptible in Mauritius, given that the recurring disasters and hazardous events often hit with calamitous impact (Government of Mauritius, 2021a). But the question that often lingers is whether these extreme events or disasters are characteristic of normal weather events over the years or more aggravated by ongoing global climate change manifesting at a local scale. In contrast to scientific observations of current climatic and environmental conditions, what are the perceptions and experiences of local populations on climate change and related hazards over the last three decades? The next section highlights the perceptions/experiences of climate change and disaster impacts in Mauritius and the outer islands.

4.1. Perceptions of climate/environmental change and hazards

From the research, what seems to be obvious is that ongoing global climatic changes, or more broadly speaking, environmental change, have manifested on the island in several ways. As illustrated in Figure 3, almost all research participants in the vulnerable population have alluded to observed climatic changes and the increase in frequency and severity of extreme events in the last 30 years, indicating a high prevalence of related natural hazards on both mainland Mauritius and the outer islands. This is especially reflected by the natural hazards that have been mentioned as having been experienced across the island. In particular, the increased frequency in the occurrence of cyclones (34), flash floods (22) and heatwaves (22) have been mentioned as notable climate-related hazards they have witnessed in the last few decades (see Figure 3).

Figure 3. Perceptions of climate/environmental change and related hazards



Source: Results from the fieldwork (2022).

Several others also reported the observed increase in frequency of droughts (21) and landslides (19) as environmental hazards that they have experienced over the last three decades. Some research participants indicated that SLR, lack of vegetative cover due to land degradation and the strong winds that come with cyclones are to blame for the coastal inundation and the recurrent severe flash floods they witness in the different coastal areas across Mauritius. In making a submission on the observed climate and environmental changes they have witnessed, one research participant noted that:

Sea level has risen; the weather has become hotter. When it rains constantly for one hour, there is flash flood. Long ago it was not there (not like this). Before, there was greenery everywhere. Nobody plants vegetation this time, and all flood comes down, and the land becomes rocky. Many others use pesticides. The topsoil has become loose, and all the topsoil is being washed away because of the flash floods. [Emphasis by authors]

– Male participant 1, Vulnerable population FGD, Quatre Soeurs Village, 2022

Other interrelated climate-related events that were also reported as becoming rampant in all parts of Mauritius are heatwaves and drought. Besides the prolonged drought impact on freshwater availability and agricultural production, the heat that comes from the heatwaves is often unbearable and the cause of health problems. In the view of research participants, and also from historical records of disaster impact in Mauritius (see, for example, Government of Mauritius, 2021a:12), the occurrence of weather-related disasters is not an uncommon occurrence in Mauritius. However, what seems to resonate with both key stakeholders and vulnerable research participants is that the increase in frequency of these extreme events, and the accompanying devastation, has been the cause of human suffering often experienced across the islands. While the differing perceptions of climate change and experience of related hazards may serve to give an appreciation of the nature of ongoing changes being experienced, the observations of the research participants may serve as good indicators for the respective weight that these hazards possess for the environmental change perceptions of local residents.

4.2. Climate/Environmental change impact and hazards

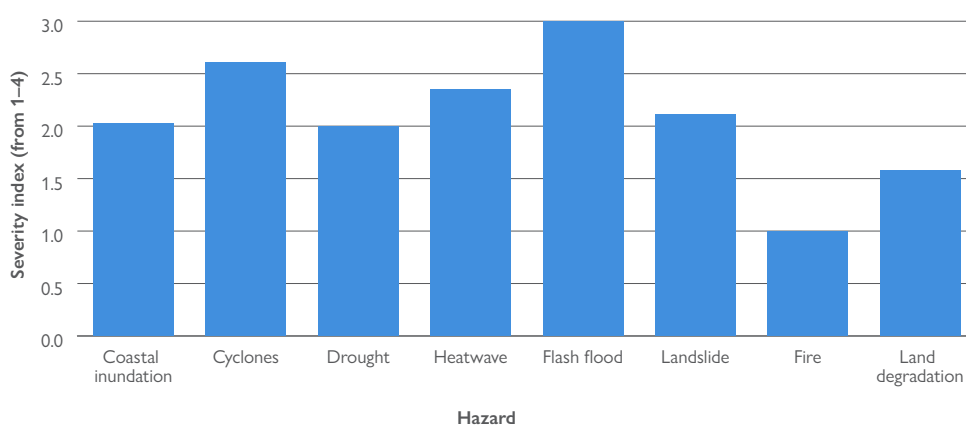
The high occurrence of cyclones and flash floods is also acknowledged by the occurrence-severity ranking by the research participants. In what may seem to corroborate the experiences or observation of vulnerable research participants, the impact of cyclones was ranked as the most severe hazard experienced in the last couple of years. Many others referred to the impact of flash floods that have mostly occurred in the aftermath of heavy rainfall (see Figure 4). In the view of the one of the key stakeholders surveyed:

Mauritius is a small island, which is isolated and vulnerable to climate shocks – intense tropical cyclones, accelerated sea-level rise, increasing flooding and drought – and depends mostly on imports (90%) for food security. Flash flood had been increasing and exacerbating damage to property and loss of life. Increasing soil erosion is affecting agricultural outputs. Decreased rainfall (8% since the 1950s) is causing water scarcity in many places across the island.

– Male key stakeholder 1, Phoenix, 2022

According to research participants, the strong winds that come with the cyclones have often led to the destruction of crop plantations. Indeed, Tropical Cyclone Gelena (UNEP, 2019), which affected Rodrigues in February 2019, was recounted by research participants as bringing widespread loss and damage to them. In the locality of Anse Quitar (Rodrigues), a research participant who was still rueing over his loss, bemoaned that he had lost all his coconut trees and some of the livestock he had been rearing. In the Roche Bon Dieu locality, similar sentiments were shared by research participants who reported the destruction of housing and critical social infrastructure, as well as losing animals (pigs and poultry). Other than the power cuts and loss of electricity, the associated flooding and coastal inundation often tend to compound the destruction that the recurring cyclones often unleash in their wake. What the ranking suggests is that these two hazards (flash floods and cyclones) also occur with the highest regularity and also exert the most notable impact in Mauritius.

Figure 4. Average (perceived) occurrence and severity of climate/environmental change events and hazards



Source: Field work (2022).

Based on long-term historical records of disasters in Mauritius, it is apparent that the occurrence of cyclones and floods has been a feature of seasonal weather-related events over a long time. Hence, cyclones and floods are not unfamiliar occurrences to local populations. However, the recent observations and concerns of local inhabitants point to the fact that these extreme events have become much more

frequent and even more destructive. The corresponding destruction of property and loss of lives have often inflicted widespread human suffering on people across Mauritius. A consequence is that most residents, especially those who live in close proximity to the coast, have had to constantly live in fear and in anticipation of when the next disaster was going to strike.

A direct and visible impact of climate change is the flash flood that occurred in 2013 where several people lost their lives. A second impact is the rise in sea level causing coastal inundation, which is an example of environmental degradation caused by the destruction of ozone layers. And the ozone layer is being destroyed as a result of man-made activity – air pollution and use of chlorofluorocarbons being the main cause.

– Female key stakeholder 2, Port Louis, 2022

The inhabitants of the coastal regions live in fear since they are already affected by the rise of water level during the cyclonic season and heavy rainfall. Landslides also are caused due to continuous rainfall for days. Flash floods or normal floods are becoming a common factor in certain regions such as Chemin Grenier.

– Female key stakeholder 3, Port Louis, 2022

Other than the occurrence of heavy rainfall and the subsequent lack of vegetation or land degradation, the lack of adherence or total disregard for building codes or regulations was also identified as a major cause of flooding in most parts of Mauritius. The general complaint is that many people construct or build across drains without approval from the council. As a consequence, surface run-off of rainwater does not get channelled away in the drains and thereby, causing flooding in residential areas and across the village council areas. During the FGD for the vulnerable population, one of the councillors disclosed that:

Most inhabitants have constructed without any study or approval. Most houses are constructed on drains, which leads to flooding. They (people) have constructed their houses near the road. That is why we are having this problem (floods). Some persons constructed their houses, but they did not keep one inch away from the road. If I will report to the district council (*zot pou dire mo bezere*), they will take me wrong. They do not respect the laws. ... When it is raining, it causes floods and then it is too late. Nowadays, we must submit building permits to build houses, but it is different. [Emphasis by authors]

– Male participant 2, Vulnerable population FGD, Quatre Soeurs Village, 2022

While the wanton construction of buildings across drains without recourse to obtaining permits or feasibility studies may seem to be a challenge, the situation also suggests the lack of enforcement of existing regulations by the appropriate authorities in the different councils. But in providing context to the situation of people undertaking constructions without prior approval, one of the key experts explained during the FGD that:

Like suppose they engage in adaptation measures. These adaptation measures are going to have a lot of positive externalities that it can create positive effects for the community, and people do not want to pay for that. This is what the public has to pay – a private action cannot have any impact on [the] public. So, for this reason, they do not respond. ... Sometimes you have stringent laws that do not allow them to take certain measures. ... When they (people) have to make certain modifications to their houses, sometimes they do not get the permit for example. They cannot just be calm and then wait on it. They want to construct it (house). This is not allowed. So they are forced to construct from the base, and this is what causes flooding. This is another reason and other things that we have seen like – you know – flood prevention is very expensive and because it is very expensive, people do not want to do or engage in final decision. They believe that this happens once in a while. [Emphasis by authors]

– Male key stakeholder 4, Stakeholder FGD, Port Louis, 2022

The problem of non-compliance to building regulations may thus emanate from bureaucratic delays, lack of communication and trust on the part of vulnerable populations and authorities. These reservations seem to resonate with similar findings from Seeboon and Proag (2019), who also identified the issues of miscommunication, improper planning and absence of supervision as factors contributing to high costs and construction of substandard building projects in Mauritius. In this light, a proactive approach and timely evaluation and approval of building projects can contribute to addressing the issues of indiscriminate construction of building and DRR in different localities.

As further shown in Figure 4, the impact of heatwaves was also ranked or mentioned by research participants as being severe, indicating the strong perceptions of heat impact within the vulnerable or local population in Mauritius. The explanation widely advanced by research participants is that the heatwaves and high humidity tend to make the weather very hot and unbearable. In the locality of Canal Dayot (north-west of Port Louis), for example, a research participant reported suffering from dehydration during the 2013 heatwave. According to ILO (2019a), high temperatures and heat stress due to global warming accounts for a significant decline in labour productivity. Hence, it is estimated that temperatures ranging between 33°C and 34°C will result in up to 50 per cent loss in work capacity. In translating this to the context of Mauritius, what this will imply is that the impact of recurring heatwave would also have adverse implications for labour productivity and general well-being.

This is particularly evident in Rodrigues, where residents of Anse Ally and Roche Bon Dieu respectively complained of being unable to concentrate and work, as well as suffering from dehydration and fatigue.

In addition to the aforementioned climate-related extreme events, the impact of coastal inundation and drought are other natural hazards that have been mentioned as gravely affecting people and also with severe consequences for local livelihoods. Other than the beach erosion and the associated destruction of personal property with the inundation of salt water, drought impact has often manifested in acute freshwater scarcity for household use. Some other effects of drought disaster that were mentioned relate to the withering of crops and the observed decrease in pressure from taps.

The issue of land degradation has also been a major environmental challenge to livelihood and efforts at environmental sustainability in Mauritius. As revealed by the recent UNCCD (2018:5) land degradation neutrality target setting report, for instance, Mauritius has lost up to 10 per cent of its land under forest cover over the last 15 years. In Rodrigues, for instance, the loss of forest cover and grassland due to agricultural expansion and overgrazing of pastureland have been the main causes of land degradation. In corroborating these observations, both the stakeholders and vulnerable research participants were unequivocal that the spate of rapid urbanization and transformation of agricultural land to other land uses were factors accounting for the current spate of land degradation in Mauritius. As such, the corresponding impact of land degradation has been on the livelihoods of subsistence farmers.

On the other hand, the poor disposal and management of waste and the attendant health problems have been major concerns to people. Research participants in Mare Chicose (South Region), for example, registered their displeasure about the fact that all the rubbish or waste generated on the island was being disposed in their locality. Members of the locality indicate that other than the impact on the environment, the dumping of rubbish in the locality is causing a lot of health problems for inhabitants. Another concern is also that flood hazards will increasingly be devastating in Mauritius, as the loss of vegetation cover will facilitate surface water run-off and flow into settlements and urban areas.

Aside from the impact of unfavourable agricultural practices and increasing mechanization and use of inputs on the environment, it is explained the recent increase in occurrence of wildfires (see Figure 4) had compounded the rapid loss of vegetation cover on especially mountain slopes. The compounding effect of the ongoing climate change has been impacting the agricultural production with many small-scale farmers and the fisheries subsector witnessing declines in output. This has resulted in some farmers having to abandon their farmlands and livelihoods, with most of them often migrating to mainland Mauritius in search of alternative livelihoods.

Climate change and environmental degradation will have an impact on farmer's livelihood, crop yield, soil quality and cropping patterns. It will also impact aquatic life, water quality and the water table. Farming activities have a direct impact on environmental degradation due to soil erosion and other mechanization processes in agriculture, such as land preparation, tilling and mechanical harvesting leading to soil compaction and poor drainage. The consequence being recurrent floods and water accumulation.

– Male key stakeholder 5, Reduit, 2022

Rodrigues Island is already experiencing the impacts of climate change. For instance, the island usually faces long dry periods and regular shortage of water. The pattern of rainfall has changed in contrast to the past, and this situation is affecting different sectors of the economy like the agricultural sector, whereby farmers cannot practise agriculture effectively due to irregular rainfall patterns and long dry periods. As it is difficult to practise agriculture now, many farmers have abandoned their land, and many agricultural plots are left bare and unattended. The result is that land degradation occurs whereby the soil is washed away easily during flash floods and as Rodrigues is a steep slope island, all the degraded soil goes directly into the sea and causes lagoon sedimentation and destroys the marine fauna and flora. Moreover, the summer season is now hotter, and it is colder during the winter. The climate is not stable, and the economy is being greatly affected.

– Male key stakeholder 6, Port Mathurin, Rodrigues, 2022

The general view among research participants is that the impact of climate/environmental change and related disasters tend to gravely affect the different groups of the population. In other words, almost every person is exposed and vulnerable to the risks and effects of climate and environmental change as inhabitants in Mauritius. However, older people, daily wage earners, people living below the poverty line, as well as vulnerable groups like women, children and persons with disabilities were widely identified as the most vulnerable to climate change and disaster impact in the country. On the part of vulnerable communities, the coastal areas, such as Quatre Soeur, Vallée des Prêtres, Chemin Grenier, Rivière des Galets, La Butte, Souillac, Western and others have been identified as the most vulnerable to climate change and related hazards. This is in view of the fact that the coastal areas are faced with coastal erosion and SLR – often leading to loss of part of their land and also the risk of loss of lives. Also, most of the inhabitants in these areas are people living below the poverty line and do not have access to basic facilities, such water, electricity, and no possibilities to move due to poverty. Given that inhabitants are also mostly farmers and fishers depending on day-to-day earnings, their situation is further worsened as they cannot go to sea due to bad weather, as well as faced with declining agricultural productivity.

The whole coastal zone is particularly at risk, because of a combination of environmental disruptions (sea-level rise, cyclones, coastal erosion and tsunamis, among others). In the short term, protection by seawalls has been opted for in view of refusal of affected residents to move to other alternative location offered by authorities. However, in the long-term protection, will no longer be effective and relocation will be the only option. Flooding of riverbanks would also force residents in the vicinity of rivers to be relocated. Special consideration needs to be given to St. Brandon and Agalega. With accelerated SLR, these islands could be covered and sea-declared international waters. This could pose a problem to claim the current large EEZ. Hence, one solution is to contemplate building floating cities as being done in countries, such as the Maldives, the Netherlands and United Arab Emirates. [Emphasis by authors]

– Male key stakeholder 1, Phoenix, 2022

Given that Mauritius is a relatively small island and does not display major differences in ecological zones, the impacts of climate/environmental changes are spread throughout the country. However, what seems to be apparent is that the research participants in the capital region of Port Louis, by their ranking of severity of extreme events, display the most awareness of environmental shocks. This could be related to the vulnerable conditions of most of the city's inhabitants in cramped and overcrowded spaces, and perhaps substandard residential dwellings that are vulnerable to the impact of extreme events. In contrast, awareness or experiences of both land degradation and drought are more pronounced in the southern parts of the island, while they do not seem to be as relevant in Port Louis and the adjoining areas of the city. On the other hand, Port Louis and the adjoining urban areas seem to be especially vulnerable to the impacts of sudden-onset hazards, such as flash floods, cyclones and landslides, which all depict a comparably high occurrence/severity index. Additionally, the residents of urban areas in Mauritius by far emphasize the increasing impact of heatwaves the most.

The occurrence and impact of heatwaves, landslides and flash floods rather appear to occur cumulatively in specific areas, while hazards, such as droughts, land degradation and floods are relatively evenly spread across the island. This can possibly explain the role of urban centres as heat islands, whereas landslides and flash floods as localized events require the necessary conditions – for instance regarding topography or hydrologic characteristics – in order to unfold in full force. Coastal inundation is also evenly spread around the island, with certain hotspots in the south-east and south-west regions. Even though land degradation and drought are slow-onset events, the impacts tend to be widespread across the different regions. Nevertheless, the small size of the island and its geographic location has continued to expose the population to the occurrence and impact of tropical cyclones.

Overall, what the findings suggest is that the people of Mauritius have a very high level of awareness for both the occurrence and the resulting severity of impact regarding the diverse array of climate/environmentally related hazards. Due to the location of the island, hydrological events represent the major source of threat to human security, livelihoods and general well-being, particularly concerning flash floods and cyclones that emerge as the most dangerous risks. The inherent differentiation by socioeconomic, demographic and geographic categories point to the differential and underlying vulnerabilities and place-specific characteristics that environmental changes usually display. What this means is that mainstreaming DRR into national development planning and climate action will be of prime importance in addressing disaster impact in Mauritius.

While the need to effectively address disaster impact has seen the design of DRR policy and governance frameworks in Mauritius (see Table 3), it is also a fact that ongoing global climatic changes and the associated extreme events will continue to manifest at the local scale. As such, vulnerable SIDS like Mauritius will continue to be afflicted by these aggravated disasters into the near future. While this may seem to hold true for Mauritius and many other vulnerable areas in the Global South, it is also a fact that local or vulnerable populations are not passive to the existential environmental risks and hazards that continue to afflict them. Most Mauritians have long adopted differences to respond to climate/environmental change and related disaster impact on their livelihoods and well-being. Most vulnerable or affected populations have often drawn on their human agency to either make spontaneous responses in the short-term to cope or long-term adaptation strategies. The assortment of responses that Mauritians have often adopted in face of climate/environmental change and disaster are further highlighted in the following section.

4.3. Responses to climate/environmental change and natural hazards

Whenever vulnerable populations or rural households are faced with adverse environmental conditions or risks, they usually resort to a range of coping or adaptation strategies in order to maintain a sustainable livelihood and their socioeconomic well-being. While coping strategies encompass the short-term, immediate measures in the wake of an environmental hazard, adaptation strategies describe long-term, pre-planned approaches that ought to prepare the households or promote resilience of vulnerable populations for future risks (Rademacher-Schulz et al., 2014).

In order to appreciate the variety of responses to climate/environmental risks and disasters in Mauritius, a “free listing”¹³ approach was used to elicit information on the strategies that vulnerable populations have often employed to cope or adapt to the threats on their socioeconomic well-being and human security. The aim for using the free listing approach was to allow for research participants to freely list or mention strategies they have ever adopted or any responses they ever made in the face of environmental risks. As shown in Table 4, an extensive list of different measures or strategies can be derived from the responses mentioned by the vulnerable populations or research participants who have been directly affected by the aforementioned climate/environmental-related hazards.

Table 4. Free listing of coping strategies to climate/environmental change and hazards

Event	Response/Coping strategy	Assistance received		Assistance from who
		Yes	No	
Coastal inundation	<ul style="list-style-type: none"> • Sought help from neighbours • Did walling to prevent sea water from getting into the house • Built drains themselves 	2	1	<ul style="list-style-type: none"> • Survey was conducted by authorities and vouchers distributed • Support from neighbours
(Flash) Flood	<ul style="list-style-type: none"> • Did nothing – accepted flood in the house • Paid for labour to dig drains/ build canals so that water can move out/constructed drainage system themselves • Waited for water to subside • Personally had to do construction to have better standard to prevent water 	3	4	<ul style="list-style-type: none"> • Received government grant to restart plantation • Government enlarged existing drains • Survey done by risk and disaster management/ government gave grants • No assistance from authorities; police never reverted back to them even after reporting

¹³ *Free listing* is an anthropological research method that allows for an individual to list or freely identify issues or items within a given domain. It describes a mental inventory of issues in a particular category and helps to appreciate different perspectives of individuals on topical issues across groups (see da Silva Chaves et al., 2019 and Quinlan, 2019).

Event	Response/Coping strategy	Assistance received		Assistance from who
		Yes	No	
Tropical cyclone	<ul style="list-style-type: none"> Stayed/waited for the time being/did nothing Reinforced windows and doors with other means due to cracks Restarted plantain and livestock production Constructed another <i>casier</i> (compartment) Relocated to refugee centre 	1	5	<ul style="list-style-type: none"> Had to put up with nearby relatives in their residence Government provided food
Land degradation	<ul style="list-style-type: none"> Lived under unpleasant conditions due to dumping of waste Remained in the locality because of lack of finance 	2	-	<ul style="list-style-type: none"> Government has come up with policy of delocalization Only received land to relocate; compensation still under process
Landslides	<ul style="list-style-type: none"> Survey by engineers from abroad Had to be more careful due to cracked wall and damaged floor Relocated to refugee centre Had to stay inside 	2	2	<ul style="list-style-type: none"> Relocated by authorities to a rented house and then to a plot of land at present residence and also with some funds Requested by authorities to relocate
Drought	<ul style="list-style-type: none"> Phoned the CWA for water supply 	1	-	<ul style="list-style-type: none"> Had water through the CWA
Heatwave	<ul style="list-style-type: none"> More rest time/improved ventilation system of the house and drank more water 	-	1	

Source: Results from the field work (2022).

From the free listing in Table 4, for example, most of the research participants tend to employ coping strategies or undertake ad hoc measures in order to keep their home and belongings safe from water-related damages. As such, the responses or measures taken in the wake of coastal inundation of sea water or floods straddled the construction of drains and/or canal systems to building walls and barriers to prevent water from entering their homes. Many others intimated having to personally commit some resources to pay labourers to dig drains in order to get flood water out of the house. For those who may not have the means or capacity to reinforce buildings or construct drains to channel flood water, they mentioned having to wait for the water to subside or did nothing in anticipation of support from relatives nearby or the Government. In many of the instances of coastal inundation or flood disaster, research participants admitted to receiving support in the form of grants from the Government or authorities coming to assess damage and issue vouchers or grants.

In the case of tropical cyclones, most research participants reported having to solely respond by repairing damage or reinforcing doors and windows, as well as mending visible cracks that have been caused by the force of the strong winds. Given the displacement that is often caused by the loss of homes and properties, affected persons indicated having to seek refuge in shelter centres (evacuation centres) or temporarily staying with relatives nearby. Some others indicated that they had no alternative or means to cope but just waited or did nothing during the disaster. Similar instances of being trapped or unable to do anything were also identified by persons who mentioned having to live in unpleasant environmental conditions due to waste or rubbish being dumped in their locality (especially in Mare Chicose). While some admitted to being offered land by the Government to relocate, many others indicated they did not have the financial means to move to a different place and hence, had no choice than to continue to live in the unfavourable environmental conditions. With regard to the risks of landslides, drought and heatwaves, the responses have mainly been precautionary, with research participants pointing to exercising caution due to cracked walls or taking steps to improve ventilation in their homes, as well drinking more water to deal with the dehydration that comes from the heatwave (see Table 4).

The free listing of strategies that vulnerable populations undertake as responses gives the impression of little governmental support in enhancing adaptation and resilience of affected populations. However, a number of research participants admitted to receiving support from both neighbours, relations and government authorities. As one of the measures listed as a response to landslides, for example, some research participants mentioned that authorities rented houses and relocated them. They were also later offered some financial support and a plot of land to resettle. Others reported being relocated to refugee centres (evacuation centres) and the Government providing them with food.

“[V]ulnerable people are asked to move to community centres or social welfare centres, which are open to them. Financial assistance is also provided to these persons by the Ministry of Social Security. Bad weather allowance also is allotted to registered fishermen and farmers.”

– Female key stakeholder 7, Port Louis, 2022

One of the key stakeholders, for instance, also revealed that during the period of Cyclone Gelena, the Prime Minister’s Office was proactive in offering support to displaced or affected persons. In addition, the Social Security Office was also reported as having given various forms of assistance to families (including relief items, provisions, housing and oars). Attention was also drawn to the fact that Mauritius was a signatory to several environmental protocols for climate change (SDGs, Montreal Protocol, Kyoto Protocol, COP23 and others) and is well versed with the impact of

climate change in SIDS. Hence, all stakeholders in Mauritius – including the Mauritius Oceanography Institute – are actively involved in working towards mitigating the impact of climate change.

In another account, a research participant in Case Noyal locality (West Region) disclosed that he made a phone call to the CWA for water as response to the water scarcity that was caused by the drought disaster in 2021. As a follow-up, the CWA readily brought him water. While the study could not ascertain whether some form of payment was done for the supply of water, it may suffice as an explanation that the research participant's status as *capitaine bateau* (boat captain) could have enhanced his ability to request the water supply as compared to people living below the poverty line.

A few others, however, contested receiving any form of assistance from authorities when they were affected by floods. They indicated rather receiving support from neighbours and no form of assistance from any government authorities. In supporting their claims, they indicated reporting their situation to the police but never heard anything from them again. In the Chittrakoot locality (North-East Port Louis), a research participant recalled that following a range of environmental risks, government authorities paid his family and neighbour a visit in 2005 but did not order or recommend relocation. After having invested considerable financial resources into properties and the house, the authorities reappeared in 2022, stating that a relocation is already indispensable.

A family neighbour was moved to Morc Raffray in Terre Rouge. We (own family) too forced the Government to move us for so many years in 2005. We were not taken seriously. After the survey was done by relevant authorities, they said that my house is at no risk, and that I can stay safely. Today (2022), we have been informed by authorities that we need to vacate our plot in the following year, although I have spent all my savings in reconsolidation of my house. [Emphasis by authors]

– Male participant 3, Vulnerable population interview, Chittrakoot Locality, North-East Port Louis, 2022

The capabilities of vulnerable populations to adequately respond or enhance their resilience to climate or disaster in Mauritius is partly constrained by the lack of capital (including social, physical, human, financial and natural capital) and lack of proactive approach on the part of the appropriate authorities. Even for the interventions or responses from both sides (authorities and vulnerable population), they have merely been reactive or short-term measures to alleviate suffering in the interim without any clear indication of how long-term adaptation and resilience could be enhanced. Indeed, some accounts that point to lack of governmental support or have no ideas on future climate adaptation/resilience prospects give a sense of hopelessness; and with many affected or vulnerable populations resigned to being trapped in perpetual

conditions of vulnerability and fear for the future. At the national level, therefore, there is the need to effectively operationalize the recently developed National Disaster Risk Reduction and Management Policy and Action Plan (2020–2030) (see Government of Mauritius, 2021b and 2021c). This will allow for a holistic, pragmatic and timely approach to enhance disaster response and long-term disaster resilience in Mauritius.

Generally, migration has been identified as both a crucial adaptation and coping strategy in the light of environmental adversity, and is often utilized by households to diversify risks, spread household income and seek temporary or long-term refuge elsewhere (Rademacher-Schulz et al., 2014; Ionesco et al., 2017; Melde et al., 2017). Other than the responses outlined as part of the free listing, migration or temporal/permanent relocation has long been one of the main strategies that people often adopt as a livelihood or coping strategy to climate and environmental change in Mauritius (see Sobhee, 2016; Sultan, 2017; Ramtohol, 2021). But considering also that Mauritius is marked by high rates of population mobility and with people moving for different reasons, there is thus the need to examine the role of climate/environmental change and disaster in precipitating population movements in Mauritius, and the implications for sustainable reintegration for returning migrants.

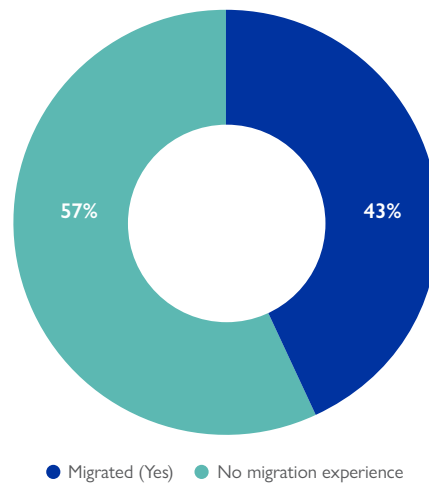
4.4. Climate/Environmental change, disaster and human mobility

Migration within the context of climate/environmental change can adopt various forms and types, depending on the nature of the environmental hazard, the capabilities of the affected and a range of contextual factors. In particular, the nature of the environmental hazard experienced is crucial for determining the direction, length and dynamics of the associated movement. For example, sudden-onset hazards, such as floods, cyclones or fires tend to trigger short-term, temporary movement, often in the form of relocation to nearby shelters or relatives. Most of the affected or vulnerable populations often have the intention of returning to their communities of origin to rebuild what was lost. On the other hand, slow-onset and creeping disasters often involve fairly long-term planning and thus, also incorporate movements to farther destinations for longer periods of time in the search for a new livelihood (Renaud et al., 2011; Afifi et al., 2015).

In the case of Mauritius, sudden-onset hazards predominate, and the movements tend to be within the island. Climate or disaster-related migration patterns tend to follow short-term and short-distance mobility or involve (government-led) relocation. Within the context of this study, many of the vulnerable research participants (60.5%) reported as being natives in the communities they were residing, while the remaining 39.5 per cent had moved to their current location of residence and thus migrated into a new environment. Nevertheless, when vulnerable research participants were asked about their migration experience, some (16) reported as having migrated

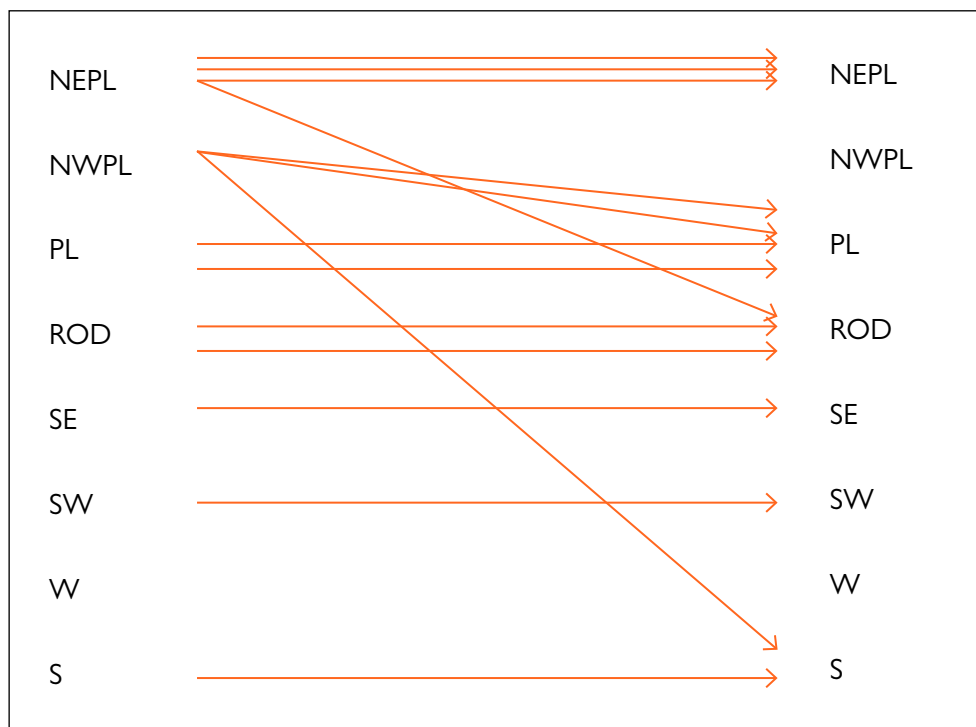
or temporarily relocating to another area, relative to more than half (21) of them indicating no migration experience of any kind (Figure 5). The number of persons without migration experience seems to converge with persons who reported as natives residing in their communities. At the same time, the considerable number of research participants with migration experience implicitly also suggests migrants that may have left their community once but have returned.

Figure 5. Migration/Relocation experience



Source: Results from the field work (2022).

Figure 6. Nature and direction of movement (Regions)



Source: Results from the field work (2022).

Notes: NEPL = North-East Port Louis; NWPL = North-West Port Louis; PL = Port Louis; ROD = Rodrigues; SE = South-East; SW = South-West; W = West; S = South.

As illustrated in Figure 6, the major places of destination and direction of migration have been interregional and intraregional and across the islands, mostly from Rodrigues to Mauritius. While much of the movement seems to be directed towards the capital city or region of Port Louis, some movements can also be observed to happen from Port Louis (North-East Region) to Rodrigues. Altogether, what the patterns seem to suggest is that movement of any kind is primarily internal and within regions or over short distances to other regions. On the other hand, international movement in the context of the ongoing climate/environment changes appear to be non-existent, while cross-island return movement was only for return migration from Mauritius to Rodrigues. Hence, mobility patterns are clearly of an internal, short-distance and temporary nature while long-term movements are not particularly pronounced per the observation in this study. This reinforces the assumption that sudden-onset hazards tend to trigger short stints of mobility and underline the limited geographical and financial potential to move farther away in a SIDS setting.

For those who indicated as not having moved or with no migration experience, most of them reported living in their localities since birth, with many others also indicating that they are building their livelihoods from the sea. In La Flora (South Region), for instance, a research participant explained that he had lived in the community since birth and thus had become accustomed to the village. He had worked and inherited land from his parents. As such, it was inconceivable for him to abandon his ancestral home and land no matter the circumstances. Another research participant in expressing similar sentiments noted that as house owner, he has certain responsibilities that keep him in his particular location. Moreover, he specified that the fear of not being accepted in a potential new location and thus not being able to integrate was also a key consideration to stay put, despite the hazard risks in the locality. Such accounts highlight the importance that place attachment, valued objectives and a sense of belonging exert for environmental migrants in determining their migratory aspirations and mobility decisions.

Several other vulnerable research participants detailed innovative ways to cope or adapt in situ and hence, no need to move. These strategies included digging canals or channelling flood water out of their homes. It is also the case that some of the vulnerable people were requested to relocate or had actually been allocated some land by the Government to move, but chose to stay in anticipation of the financial compensation that was also promised to be given to them. A research participant in Mare Chicose Village (South Region), for instance, admitted that due to environmental degradation (caused by the landfill site) some residents in the area were given land and compensation to move and build houses in Rose Belle. He was also allocated land but did not move because he was awaiting his compensation.

Another notable reason for not moving, which seems to reflect the situation of persons being trapped and unable to move despite the desire, is the fact that some affected persons simply did not have any place to move to. This situation was particularly evident in the Cite la Cure locality (North-East Port Louis), where a research participant expressed the desire to move or be relocated to a decent house by the Government. But because they were squatters and did not have money, they simply had no place to go or move into. Moreover, the important role of family networks and communal support in facilitating environmental change-related movements also seem to be limited or suffer in the case of island-wide natural disasters such as cyclones or floods and thus, unable to absorb expected financial needs in facilitating movement of any kind.

Many of those affected by environmental changes, usually most vulnerable families, do not have the resources or the land that would allow them to relocate their activities. It is also difficult for affected families to move. They expect the authorities to find solutions in situ. For example, at Rivière des Galets, seawalls have to be built as the residents refused to move elsewhere. Hence, in the short time, it is most likely that relocation due to climate-related events will be a solution. In the long term, it will depend how climate change and environmental degradation evolve.

– Male key stakeholder 1, Phoenix, 2022

While the inability to move may seem to give an indication of many more people in such helpless situations in the different villages, the findings tend to corroborate similar observations from studies conducted in Mauritius. As observed by Sultan (2017:31), for example, a high percentage of households in their study reported that they were willing to move during extreme climate and environmental events, but were unable to do so or stayed due to the lack of capital or related constraints. In this light, there is thus the need for DRR measures or programmes being designed or under implementation to consider vulnerable groups who may be trapped because of their circumstances or the lack of necessary capital/resources to move or migrate. The measures could also be to consider those who may desire in situ adaptation without having to move from the original place of risk.

In regard to the underlying reasons or motivations for movement, a host of different factors were advanced by research participants. Interestingly, the reasons for movement seem to be mostly directly correlated with environmental factors or risks to their personal safety. From the analysis, most research participants reported migrating or having to relocate to refugee centres (evacuation centres) because of the impact of tropical cyclone, flood or inundation due to the associated heavy rains and rising sea level (Table 5).

Table 5. Underlying reasons for migration

Reasons for migration	Percentage
Moved due to tropical cyclone (community/refugee centre); house crumbled due to heavy rainfall/landslide/because of deterioration of environment/health problems	22.6
Flood/high tide/rising water level; inundation forced family to move to safe location	32.3
Drought/heatwave	9.7
Government-assisted relocation; Government forced them to move; development related (airport relocation/extension)	16.1
Unsuccessful integration; fear for life and safety	16.1
Lack of job opportunities	3.2

Source: Results from the field work (2022).

For those who moved or sought refuge at shelters, they were either forced to do so because of displacement or as a precautionary measure due to real or imagined fear of losing their lives and property. In Rivière des Galets (South-West), a research participant recalled that the high tide in 2018 led to their house being inundated. After being displaced momentarily and as a precautionary measure, he and his family were forced to seek refuge at the compound of the Winners Supermarket throughout the night. Another participant in La Butte Community (Port Louis) stated that he and his family escaped or fled out of fear during the cyclone period to a neighbouring community for two days. This was done to avoid risks of the building collapsing on them.

In Camp Ithier (South-East), similar heavy rainfall across the community had resulted in landslides with destruction to houses. In narrating his experience, one research participant indicated that his house had totally crumbled under the rubble of the landslide that had occurred due to the continuous period of heavy rain. So he and many other community members had no choice but to seek refuge elsewhere. What can also be observed from the analysis is that some of these disaster-induced movements were sometimes assisted by the Government, and in one case by a Japanese aid team as part of the JICA Project of Landslide Management in the Republic of Mauritius. But in most of the times, people were left to their fate or took their own initiative to move out of danger.

When research participants were asked whether they were aware of somebody in the family that had migrated for environmental reasons, more than half (22 out of 38) responded in the affirmative. To further emphasize the seeming dominance

of the environmental risks factors as drivers of migration in the context of this study, other reasons for moving were rarely mentioned and included inter alia development-related displacement, economic reasons and unsuccessful integration at the prior location (Table 5). Also, government-led relocation or promises of better prospects by authorities at other places likewise influenced migratory decisions. In some research sites visited, people also recounted instances of forced relocation as they did not want to leave their communities. While these claims could not be independently verified within the scope of this study, a research participant in the Marie Jeannie locality (South), for example, disclosed that he and his family were ordered by the Government to relocate to Rose Belle due to the deterioration of the environment and related health problems in their area.

Overall, economic motivations for migration or mobility to another area were quite limited. Only a few of the research participants listed the lack of jobs or pursuit of work opportunities as the motivation to move from their home village. Despite the seeming limited influence of economic reasons as a driver for migration and mobility, the insights from the vulnerable FGD revealed a quite optimistic view of migration from some areas to mainland Mauritius as not only due to climate change impact.

You know, just because so many migrants are travelling to Mauritius, specifically maybe because when we are talking about communities, climate change having impacts on agriculture, water and around the coast also, and because the lagoon has been depleted for so long, we do not know whether it is directly linked to a change because we do not have the basic information. But still, there are so many people from Rodrigues they are maybe travelling for economic reasons, other than climate change.

– Female key stakeholder 8, Stakeholder FGD, Port Louis, 2022

Another observed motivation relates to the introduction of the Sheltered Farming Scheme. The case is that some of the farmers are beginning to transition from traditional open-field cultivation to sheltered farming as a strategy to stem the effects of climate change and boost agricultural production. This means that there is the need for adequate skills, time and labour efficiency. However, the explanation is that there is a seeming lack of interest from the youth to engage in agriculture in Mauritius. With farmers saddled by the compounding challenge of an ageing workforce, there is a growing shift to the use of imported labour. This growing resort to foreign labour has become even more heightened by the high wage rates and prices of inputs. This has seen the influx of both skilled and semi-skilled labour migrants into Mauritius.

Some traditional planters are migrating towards sheltered farming and may have recourse to cheaper labour sources for skilled/semi-skilled workers from other countries such as Bangladesh. Another observed phenomenon is that the new generation of the youth are not so keen to invest in traditional agriculture but in white colour jobs rather. On the other side, the population of farmers in the country is an ageing population and also being faced with an ageing labour force. Due to lack of interest from the youth and relatively less efficient labour productivity, planters have started to consider the importation of labour to cater for manual operations. Another observed fact is that wage rate in the agricultural sector has been on the ascendancy over the past years leading to soaring of operational costs. This fact has further motivated established planters to consider labour importation.

– Male key stakeholder 5, Reduit, 2022

Amidst these observed different patterns of movement, it is also important to note that immobility is likewise present and partly even outweighs migratory movements in Mauritius. In many of the instances of immobility, a certain insecurity or uncertainty about future prospects is evident. Besides these uncertainties, some vulnerable persons appear to be eager to hang on to their homes and belongings and rather prefer to adapt and cope in situ as far as possible. These observations tend to resonate with similar findings from studies highlighting the reluctance of vulnerable populations in Mauritius to leave their habitual place of residence and also due to attachment at the place of origin (see Gemenne and Magnan, 2011; Sobhee and Blocher, 2015).

What the different mobility patterns and underlying motivations and drivers suggest is that the risks and effects of natural hazards tend to largely influence localized forms of movements in Mauritius. While it is the case that local dwellers tend to move to the urban areas in pursuit of economic opportunities, the perceived or real effects of environmental risks are the main precursors of localized short-term and anticipatory forms of movements as coping strategies to disaster risks. The policy implications will thus be for ongoing DRR measures to allow for extensive engagement with local populations. This will allow for the integration of the expectations of vulnerable local populations and to pay special attention and protection of vulnerable groups and localities with people living below the line of poverty in the design of DRR measures and relocation programmes. Consideration for the different vulnerable groups will also help to address circumstances of persons who may be unable to move or trapped due to the constraints relating to lack of resources or because of place attachment.

4.5. Impact of climate/environmental change and disaster-related human mobility

The different mobility patterns that have been observed across the different islands and localities have also had varying impacts on households, communities and livelihoods. Given that the observed patterns of migration and/or relocation in Mauritius has mostly been a temporary short-distance strategy in the wake of an imminent or already transpiring environmental hazard, the impressions of research participants on the varying impacts of migration and mobility seems to be more negative than positive.

From the analysis in Table 6, a major impact of climate-related mobility (be it planned relocation or forced migration) on households relates to the displacement and subsequent disruption of the family unit. As observed in many societies, the visions and values of a family describe one that lives together or close by and tend to offer support to each other in times of joy and crisis. However, many research participants (13) stated that the displacement and subsequent loss or separation of family is an impact that tends to undermine this valued aspect of Mauritian society (see Table 6).

Table 6. Impact of climate/environmental change and disaster-related human mobility

Household	Frequency	Livelihoods	Frequency
Difficult for children to adapt to new environment and school/not easy to setup – no electricity, difficult to build house	8	Loss of jobs/livelihood/loss of workdays/ livelihood becomes complicated/lower income	7
Displacement/separation of families/families “morally” disturbed	13	Stressful bureaucratic procedures to start new enterprise	6
Good housing/provision of all facilities	9	Good/job security	2
Psychological stress/health/fear and no security	7		

Source: Results from the field work (2022).

The challenge of children finding it difficult or not being able to adapt to the new environment was also widely identified as another impact of climate-related mobility. In addition to finding it difficult to settle or rebuild a house in the new location, the general complaint relates to the difficulty in setting up or starting afresh. The notion of loss and damage also seems to weigh strongly on many of the affected participants. This has been a source of psychological stress that has tended to also have negative

health implications for them. Despite the negative impacts enumerated, some other research participants were more positive in stating that migration or relocation often also bring opportunities for good housing and access to good facilities. Although persons who shared this view admitted that the prospect of having to move to a new environment and start afresh is quite depressing, any movement is often necessitated by some kind of need or risk. When the relocation or movement is well planned, it allows for access and to enjoy good facilities and services like potable water, schools for children and good health care.

On the part of livelihoods, the impact of climate-related human mobility has mainly been on the loss of jobs and decline in income. Considering that the nature and patterns of mobility observed so far have tended to be reactive or as coping measures as opposed to being proactive and long-term strategies, the half of vulnerable persons interviewed bemoaned the adverse impact of migration/relocation on the loss of jobs and livelihoods. By moving to an entirely new environment, one often has to adjust or perhaps, may have already lost their livelihood due to displacement prior to migration or relocation. For livelihoods that can be transferred, it is also the case that the process of migrating or relocating often results in the loss of workdays. The loss of workdays invariably also means that income for those days will also be lost.

The stress and frustration relating to the bureaucratic procedures that characterize the process of registering and starting a new business at the new place of destination was also widely highlighted during the interviews (see Table 6). Some research participants were critical that authorities often do not provide enough assistance and thereby leaving people to grapple with complicated relocation processes all by themselves. In their view, the delays and stressful bureaucratic processes tend to be factors discouraging them from starting new enterprises. A few other research participants were, however, of the view that migration and (planned) relocation impact positively and help to promote job security. The explanation being that moving away from threats or effects of climate-related hazards to better and safer locations allowed for job security and hence, the positive perspective. With the relocation or settlement in new locations, people were more optimistic and hopeful about better prospects for the future than what was the case in the former places of habitation.

4.6. Migration, return and (re)integration in the context of climate and environmental change

At the national level, the focus of governmental policies and programmes on return migration have mostly been targeted at enticing the return of Mauritian diaspora and for skilled professionals to come, work and contribute to the accelerated economic development of the country. While these initiatives undoubtedly also raise questions about sustainable (re)integration of these returnees and migrants from abroad, the issue of perceptible return migration has not readily stood out within the context of this study. With the nature of climate or hazard-related movements often mostly characterized by both long-term relocation and temporary movements between different localities and across islands, the issues of return and hence, sustainable reintegration for long-term climate adaptation and resilience is thus of essence in the context of Mauritius. In this light, the impact of return migration and the associated implications for climate change adaptation and DRR in Mauritius was examined as part of this study.

Table 7. Return migration, climate/environmental change and impact on local communities

Impact of returnees				Climate/Environmental change impact and returnees	
Home/Local communities	Frequency	Labour markets	Frequency	Impact of returnees on climate/environmental change adaptation	Frequency
Improved housing/ more job opportunities/ better infrastructure	17	Creation of more job opportunities/ establishment of new businesses/skills training	17	Sensitization and awareness/ change in habits/ adapt to new environmental changes	9
Higher standard of living/improved information	5		3	Build better houses/ infrastructure/ drains to avoid disasters	3
Suspensions/ tensions from local community	1	Loss of jobs/high unemployment/ competition for jobs	3	High risk of health problems/ discouraged or fear of returning	6
No effect – conditions remain the same	3	No impact/ effect	4	Good weather/ climate and for agricultural production	4

Source: Results from the field work (2022).

From the analysis in Table 7, return migration (both internal and from abroad) has had varying implications for local communities, livelihoods and returnees. From the perspectives of research participants, one main effect of return migration is that returnees tend to contribute immensely to improved housing and the creation of more job opportunities for locals. Many of the research participants (17) argued that returnees who may have lived and worked abroad or in urban areas for a long time normally tend to invest and foster economic diversification, as they bring along new ideas and open up new businesses. This opens up the local economies and helps the development and prosperity of local communities.

Given also that standard and climate-resilient construction of housing in Mauritius is blighted by many challenges (see, for example, Seeboo and Proag, 2019), it is intimated that the buildings that returnees construct largely contribute to improving the housing situation in both urban and rural areas. These buildings are often better equipped to withstand climate/environmental hazards, for example, through the prompt installation of adequate drainage systems. The perceptible importance of such construction-based improvements is deeply embedded in the environmental change context of the island and related to the destructive and sudden nature of potential environmental hazards, particularly when considering worsening future climate change prospects.

With reference to the impact of returnees on the labour market, the majority of research participants (17) also shared similar sentiments relating to the contribution of returnees to job creation and skills training in the local communities. The cumulative effect of these job opportunities and improved housing conditions translates into improved living conditions in the local communities. This stems from the fact that locals tend to earn some income from the jobs created or acquire some skills that allow them to engage in income-earning activities. In contrast to the positive views, some other research participants were critical that returnees rather contribute to high unemployment. The reasoning being that whenever migrants return (whether from abroad or other places within Mauritius), they add up to the labour market and thus tend to compete or take up the limited job opportunities from locals and thereby, leading to job losses. In the wake of the competition for limited job opportunities, local communities tend to distrust and resent returnees based on the perception that they are taking over their jobs (see Table 7). These kinds of simmering tensions tend to adversely complicate the potential for reintegration into the local labour market.

In terms of the impact of migrants and returnees for climate change adaptation, the views of research participants re-echoed or were more directed at their complementary role in supporting the efforts of the Government in building improved infrastructure and thus, better prospects for human and livelihood security in the short to long term. Interestingly, some of the research participants also mentioned a growing awareness about the occurrence and implications of environmental changes

that help to change the habits of local communities to climate risks. In this aspect, the role of returnees is reflected in their support on sensitizing and pinpointing possible adaptation needs in their respective households and communities and thereby helping enhance adaptation to environmental risks. Yet, in regard to the direct impact on returnees, it was widely advanced that climate change and hazards can impose enormous health risks to returnees. Most especially, the devastation often caused by recurring cyclones or heatwaves may serve to discourage or deter other migrants from returning or even making investments of any kind.

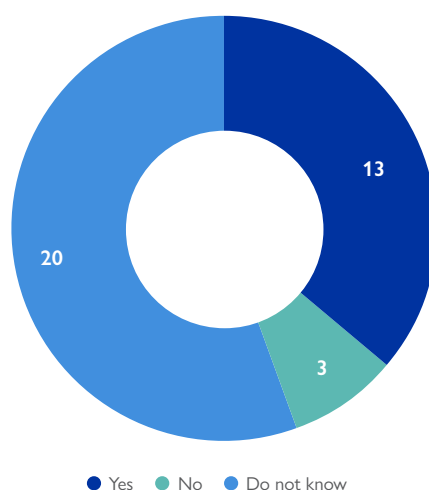
Although the views on the impact of return migration on local communities seem to be mixed, the insights from the foregoing analysis suggest that the possibility to leverage the potential of incoming migrants and returnees in facilitating climate resilience and economic development largely depends on smooth and sustainable (re)integration. It further draws attention to the need to not only consider (re)integration for returning diaspora and labour migrants, but also in programming for planned relocation schemes as part of wider climate change and DRR efforts at the national level. This would help avoid the pitfalls of relocation/resettlement programmes and thus, long-term climate adaptation and DRR in Mauritius. To this end, the study also solicited the views of research participants on the potential of planned relocation in enhancing long-term climate adaptation and DRR in Mauritius. The findings are further elaborated in the next section.

5.

**Planned relocation/
resettlement, climate/
environmental change
and effects on local
communities**

The promise of planned relocation as a tool to enhance climate adaptation, DRR and safeguard human security in vulnerable or hazard-prone areas have generally been well documented (McAdam and Ferris, 2015; Bower and Weerasinghe, 2021). Despite the widespread acknowledgement, there are also still reservations in view of the challenges that often constrain or blight the expected outcomes of planned relocation exercises (Foresight, 2011; Arnall, 2019). While experiences of other relocation exercises may seem to provide justification for the reservations, planned relocation is gaining prominence in international policy discourses and DRR as an important and proactive tool to enhancing protection and promoting human security in vulnerable areas (Ferris and Weerasinghe, 2020). Based on these divergent views, the study sought the opinions of research participants on whether planned relocation/resettlement schemes, as witnessed so far in Mauritius and elsewhere, contribute to climate change adaptation or not.

Figure 7. Perceptions on whether planned relocation/resettlement contribute to climate change adaptation



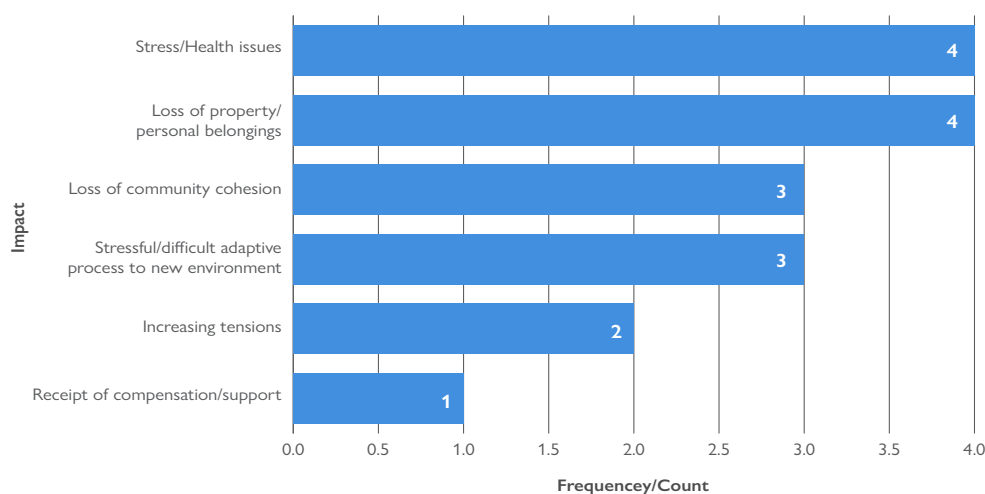
Source: Results from the field work (2022).

As illustrated in Figure 7, a few of the research participants indicated that planned relocation/resettlement does not in any way contribute or enhance long-term adaptation to climate change. If anything, they feel that relocation/resettlement exercises are rather often just temporary measures that do not contribute to any change from what was previously the case. All the same, a considerable share of the research participants (20) answered in the affirmative that planned relocation/resettlement schemes have shown great promise in enhancing adaptation and resilience to disaster impact per their experience of the ones that have been conducted so far in Mauritius. In advancing the reasons informing their position on the promise of planned relocation/resettlement, research participants noted that it allows for people to move to better and safe environments, as they are often well-planned and government-assisted exercises. As such, people feel secure and are able to perform their economic and social activities without any anxiety. Many others are often allocated or have access to land for farming as opposed to their former degraded farmlands.

But when it is also considered that more than half of the research participants indicated that they were unsure or did not know whether relocation/resettlement initiatives were viable strategies to enhancing climate adaptation, resilience and DRR, it also provides the basis to examine their real or perceived effects on the receiving or local populations. This is even more justified as the available evidence on planned relocation/resettlements carried out in other parts of the world have often pointed to different outcomes and unintended impacts on the persons being relocated, as well as the local or host communities (Bower and Weerasinghe, 2021).

In appreciating the views of research participants, the perceived impact of planned relocations on the local communities did not diverge much from those expressed on the other forms of mobility highlighted in Table 6. Most of the research participants identified the stress associated with relocation process as unbearable and sometimes degenerating into critical health problems for them (Figure 8). Although there was a general consensus among research participants that relocation can help them to avoid risks and move to safe locations, they argued that the stress that comes with moving and the notion of having to abandon their usual place of habitation and move to an entirely new environment is a major bother to them.

Figure 8. Perceived effects of planned relocation on local/receiving communities



Source: Results from the field work (2022).

Aside from the loss of personal belongings or property, it is also argued that relocation often also results in the loss of community relationships and an overall strain on community cohesion. All these impacts tend to cumulatively affect the health and socioeconomic well-being of the displaced persons who are already ruing their losses. In one notable instance in Chitrakoot (North-East Port Louis), a research participant, in confirming the health problems and general sense of fear, painfully recollected a situation where the husband suffered heavy stroke because of the mental stress, fear and anxiety following the move to Morc Raffray in Terre Rouge.

A few others highlighted that planned relocation allowed them to get some land allocation and compensation often in the form of money and government-assisted housing. In confirming this view, a research participant mentioned that he relocated from Quatres Soeurs to Camp Ithier. When he first arrived, he rented a house and was later provided his own house by the Government. Another participant interviewed also admitted that upon being asked to move from Marie Jeannie to Rose Belle, he was provided land and compensation. In further lending some credence to the claims of governmental support, a key stakeholder also recounted several relocation exercises where persons were given new houses:

Some inhabitants of Chitrakoot were relocated to other places in Vallée des Prêtres. They were relocated in newly built houses. They easily adapted to their new location, which had all the amenities. ... Inhabitants of Quatre Soeurs were relocated in Central Flacq; they were also placed in newly built homes. All the inhabitants of Mare Chicose were relocated to Rose Belle. They too got into newly built houses. They too easily adapted to their new location, which had all the amenities.

– Male key stakeholder 9, Stakeholder FGD, Vacoas, 2022

Many research participants were, however, dismissive that most of the programmes they had already seen and experienced all occurred in different time spans and rather seem to represent independent and ad hoc responses to addressing hazard risks or disasters. In their view, these programmes were often not well-planned and did not consider the views and circumstances of the persons being moved. Even with the land allocation, one has to start all over again, while the process of compensation takes long to come. This sometimes leads to tensions on the part of the parties involved in the relocation process.

Normally, simmering tensions tend to emanate from the side of both the affected persons being asked to move, as well as with the inhabitants or local populations of the receiving area. These may come from the fact that affected persons being relocated may not want to leave behind land bequeathed to them or villages they have built some attachment and livelihoods over the years only to start all over elsewhere. On the other hand, research participants also noted that competition for scarce resources with local population sometimes translates to suspicions and tensions. Instances of tensions degenerating into violent confrontations were not recorded in this study. Nevertheless, the issues of increased competition and hostile reception from local populations are not peculiar to Mauritius. These observed effects or challenges markedly resonate with similar experiences in other instances of relocation exercises carried out in other parts of Africa and Asia (Arnall, 2019; Bower and Weerasinghe, 2021).

While this study did not undertake any independent assessment of relocation programmes in Mauritius to ascertain or determine the claims of research participants, it is undeniable that planned relocation or resettlement schemes still present better alternatives to promoting human security and DRR in the country. Without relegating the perceived impacts and existential challenges to the background, research participants have made several propositions to enhance climate change adaptation, as well as promote resilience and DRR in Mauritius.



6.

**Proposed measures to
enhance climate change
adaptation**

In the face of ongoing changes in global climatic and ecological systems, it is expected that the associated impacts will become far more widespread and with devastating consequences at the local scales. Irrespective of the concerted climate action to stem global warming, the general consensus is that climate change will continue into the near future. What this implies is that Mauritius and other SIDS will continue to be affected by climate change impacts and natural hazards. In light of these expectations, the views of research participants were sought as to what measures could be taken to enhance climate adaptation and long-term resilience in vulnerable rural communities.

As presented in Table 8, several different and overlapping measures have been proposed to help address the different climate-related hazards to alleviate suffering in the interim and promote adaptation and resilience in the long term. With regard to the frequent occurrence and impact of flash floods, many of the vulnerable research participants (15) called for the construction and regular maintenance of drainage systems across the different districts. This proposition is informed by the fact that whenever there are heavy rains, there are often no better drains to quickly channel water away from residential areas into the sea. The existing drainage system is not also wide or deep enough. As such, water easily overflows whenever it rains, heavily leading to flash floods with devastating consequences. It is envisaged that the construction of an effective drainage system or deep canals will help channel surface run-off and thereby prevent flash floods. As a complementary long-term measure to avoid the recurrence of flash floods, research participants advocated the frequent cleaning of the drainage systems.



Severe warming, floods and drought result in the decrease of yields. © IOM 2022.

Table 8. Proposed measures to enhance climate change adaptation

Event	Measure			
	Immediate term	Frequency	Long term	Frequency
Coastal inundation/erosion/SLR/high tide	Early warning/sensitize/share information with coastal residents	3	Fill in the beaches/build higher walls to the sea to prevent water from affecting families/construct sand banks	4
	Evacuation to a safe place	1	Frequent checks and cleaning of drains/visits by a specialist to see outcomes	4
	Construct barrage to avoid inundation/hold eroded beach in place/cemented walling	4	Coastal tree planting/restoration	2
Flash flood	Build and maintain drainage system/canals	15	Clean and maintain drains/deep canals/enlarge roads	16
	Build decent housing and high walls to prevent water from entering/relocate people to safe places	3	Educate and sensitize people	1
	Financial support to buy basic necessities	1	Build new and safe houses/relocate and provide land for families	4
Tropical cyclones	Build concrete facilities/consolidate weak housing	3	Assist to move to a safer place/location	2
	Construct drains	1	Build concrete houses to resist cyclone/drains	3
	Early warning system	1		
Heatwave	Sensitize people on heatwave and impact	1	Reduce carbon emission	1
Landslide	Create appropriate canals to drain water/construct barrage to stop erosion	2	Authorities provide housing/relocate to safe place	2
	Provide temporary shelter and psychological support for affected families	1	Provide loan facilities/financial support	2
	Better road infrastructure and maintenance	2	Road maintenance/concrete wall fencing	1

Event	Measure			
	Immediate term	Frequency	Long term	Frequency
Land degradation	Provide facilities to settle in new environment	1	Provide land for families to relocate/financial support	2
	Sensitize people not to throw waste everywhere/take care of the environment	1	Increase fines for persons who throw away waste	1
	Relocate/move to a safe place	2		
Drought	Rainwater harvesting	1	Design tree replanting plan/ plant seedlings	2
	Effective water use and management	1	Build water tanks	1

Source: Results from the field work (2022).

On the issue of coastal inundation, some research participants ($n = 4$) also proposed the construction of barrages along low-lying coastal areas to immediately check saltwater inundation in coastal communities (Table 8). Besides the call for a proactive approach to relocate or provide shelter for persons that have been displaced by landslides, the construction of barrages was also identified as a viable measure to stop erosion and keep loose soil in check. On the other hand, the call is also for the Government to invest in better road infrastructure, concrete walling and regular maintenance as long-term measures to minimize the destructive effects of landslides on roads and other infrastructure.

The construction of strong infrastructure to enhance resilience also highlights the overlapping proposition of constructing concrete housing and facilities as an adaptation measure to disaster impact. The reasoning is that the concrete housing and walls have the capacity to withstand the strong winds or storms that often come with tropical cyclones. This proposition can be seen to readily overlap as a measure of stemming flash floods. Still in relation to the risks of cyclones, flash floods and landslides, the outright relocation of vulnerable or affected families was also recommended. To ensure that persons being relocated are safe and able to integrate into the new environment, the complementary provision of land and financial support were identified as measures that could be deployed as viable responses in the immediate aftermath of the disaster and enhance long-term adaptation. By this, the suggestion is to also design early warning systems, create awareness about heatwaves and coping strategies, and more importantly, provide psychological support to affected families.

On land degradation as one of the major challenges facing local communities, research participants argued for authorities to intensify efforts at sensitizing people on effective waste and environmental management. To enhance long-term environmental conservation, research participants advocated punitive measures by asking the appropriate authorities to impose heavy fines for persons who violate the environment by disposing of waste indiscriminately. It is noted that the strict enforcement of punitive measures will help forestall further environmental degradation, as well as promote DRR in the long run.

The foregoing discussion and propositions in Table 8 bring into perspective the varying views of research participants on what could be done to enhance DRR and climate resilience in the short to long term in Mauritius. Nevertheless, it will suffice for the purposes of this study to indicate that most of the propositions align with measures that have already been earmarked or already being implemented within the context of wider environmental protection, DRR governance and policy frameworks at the national level. More recently, the National Disaster Risk Reduction and Management Strategic Framework (2020–2030) has been categorical in defining the country's multi-agency approach to DRR along four broad pillars (Government of Mauritius, 2021a).

To operationalize the strategies at DRR in the country, the National Disaster Risk Reduction and Management Action Plan (2020–2030) has detailed a total of 189 actions targeted at DRR in Mauritius. These actions are to be taken along the four broad pillars that have been drawn from the priority areas for action in the context of the Sendai Framework for Disaster Risk Reduction 2015–2030 and the five objectives set out in the Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 in Africa (Government of Mauritius, 2021a and 2021c).

Other projects, like the Mauritius landslide management project (Government of Mauritius, 2015d), have also made strides in already designing strategies that also overlap with the propositions advanced by research participants to enhance climate adaptation. Against this background, there is thus the need for concerted commitment and a multi-stakeholder approach to not only effectively operationalize the actions and measures earmarked as part of the national DRR and management action plan, but to also make consideration in mainstreaming the critical aspects of sustainable (re)integration for long-term climate adaptation, resilience and DRR in Mauritius.



7.

Conclusion and recommendations

This study sought to explore the interlinkages between environment, climate change, disasters and migration in Mauritius. The underlying rationale for examining these relevant questions is to contribute to sustainable (re)integration and planned relocation in promoting DRR and long-term climate resilience and adaptation in Mauritius. From the findings and discussion, it is apparent that the effects of climate/environmental change and related hazards have continued to inflict enormous human suffering and threaten human security in Mauritius. Given the country's vulnerability as SIDS, the adverse impacts of recurring hazards have affected livelihoods in both the agricultural sector and blue economy.

The impact of recurring climate-related disasters has often led to destruction, loss of human lives and large-scale internal displacement of people. As a consequence, people have admitted to living in fear and with health problems due to the psychological trauma that they endure from disaster impact. The compounding effect of COVID-19 austerity measures has markedly also eroded economic progress and undermined ongoing efforts at reducing inequality, as well as the vision of making Mauritius a beacon of sustainable development and prosperity for all. But as a response, several strategies have been adopted by the local populations to cope with years of recurring hazards and disaster impact. Among the measures highlighted, the sustained localized and different patterns of mobility, as well as government-assisted relocation, can be envisioned. While the observed mobility patterns have mostly been marked by short-term temporal (forced) migration, the spate of relocations are mostly government-assisted as part of long-term risk reduction and climate adaptation schemes. This has often entailed seeking temporary reprieve or shelter in refugee centres (evacuation centres) and the longer-term relocation to safe areas with housing and support.

While other forms of movement are influenced by economic motivations, the observed patterns of movement are mostly directed to other regions within Mauritius or across the islands, mostly from Rodrigues to mainly urban coastal areas of mainland Mauritius. The aspects of return migration, as deciphered in this study, relate to short-term flight and return in the wake of a disaster. A major issue that has been highlighted in this study, but remains masked or has received little attention in DRR and national policy discussions, relates to "immobility" or the high prevalence of trapped populations. Although this study did not in any way make an inventory of persons who are unable to move due to constraints, the findings largely point to the aspirations of vulnerable people to move or relocate to safer locations. Yet, they are unable to do so because of constraints ranging from lack of financial resources, delay or lack of governmental action to help alleviate their precarious conditions to simply not wanting to move because of place attachment. As such, they have no choice than to remain trapped in perpetual conditions of vulnerability.

What can thus be inferred from the findings of this study is that climate hazards and disaster impact tend to be major amplifiers of observed mobility patterns in Mauritius. While the question of sustainable (re)integration of migrants is obviously present, they relate more to considerations of ensuring sustainable integration

and adaptation in the context of relocations as part of ongoing risk reduction and climate adaptation schemes. For the relatively minimal forms of return migration in the context of climate change and disaster, it also implicitly raises concerns of return as a cause of maladaptation and hence, the need for sustainable reintegration to mitigate the likely translation into being trapped and in a situation of hopelessness.

With the increasing influx of labour migrants from abroad, and ongoing schemes to entice the return of Mauritian diaspora, sustainable (re)integration would be of essence in the face of the country's vulnerability to climate change impacts and the ever-present related hazard risks. While there are already existing policy and institutional frameworks targeted at DRR at the national level, promoting sustainable (re)integration and climate resilience will require an integrated and multi-stakeholder approach that will consider the different sectors of the economy and aspects of the migration process in operationalizing designed measures on the ground.

7.1. Recommendations to enhance climate adaptation and sustainable (re)integration

Based on the insights gathered from this study, the following recommendations are hereby outlined to contribute to enhancing sustainable (re)integration, climate adaptation and resilience in promoting inclusive growth and accelerating sustainable development in Mauritius.

7.1.1. Policy framework/strategy

Integrate green and blue economic strategies into sectoral policies for sustainable jobs and climate resilience: In the wake of climate change and efforts to facilitate recovery from the global impact of the COVID-19 pandemic on national economies, a shift to green economy has widely been recognized as a key growth strategy for recovering and building back better and resilient societies. This is based on the recognition that nature-based solutions provide great promise in addressing climate change impact and DRR in vulnerable countries. It is also acknowledged that a shift to green economy can unleash thousands of green jobs and livelihood sustainability in the blue economy. This would help to propel inclusive growth and efforts at sustainable development.

At the national level, relative strides have been made in terms of integrating green perspectives in the different sectors of the economy (ILO, 2018). Already, the Government of Mauritius has established a ministry dedicated to marine resources, fisheries, shipping and other ocean-related activities. Other than the milestones achieved in terms of green job creation as part of MID project (ILO, 2013a; Government of Mauritius, 2013), the efforts of the Government in greening the economy have translated into opportunities arising in the blue economy to include development in fisheries, aquaculture, energy, transport and trade, tourism and

marine biotechnology. Opportunities for green jobs have mostly straddled jobs in renewable energy, environmental protection, green transformation in agro-based industry, ecotourism, recycling and waste management.

The Government of Mauritius has developed the Long-Term Energy Strategy (2009–2025) to drive the increase in share of renewable energy to 35 per cent of total electricity production by 2025 (Government of Mauritius, 2009:3). Given the potential of the renewable energy sector to create thousands of green jobs, national renewable energy generation initiatives such as the [Small-Scale Distributed Generation Scheme](#) and [Medium-Scale Distributed Generation](#) projects could further be upscaled to allow for more access and by extension the creation of more green jobs. The expansion of the renewable energy sector will mean the need for photovoltaic panels installers, wind turbine engineers, technicians and sales executives. The potential of green jobs will allow for alternative sustainable livelihoods, decent jobs and incomes for vulnerable populations whose livelihoods have been gravely affected due to climate hazards or disasters. The opportunities for stable jobs and income will go a long way to enhance economic empowerment and climate resilience in long run, as this might also allow for vulnerable populations to be able to afford and build better standard housing that will be resilient to natural hazards.

Text box 2. Green decent jobs for youth in the building construction sector in Zambia (2013–2018)

As part of the Zambia Green Jobs Programme, one of its three target areas is aimed at promoting sustainable jobs and competitiveness among MSMEs with a focus on the youth (ILO, n.d.). Within the context of the building construction sector, the greening is to enhance job creation by providing services to promote the development of green businesses, skills development and creating an enabling environment for the growth of MSMEs. The approach was centred on the following: (a) educating and changing attitudes and behaviour in order to tap into the benefits of green buildings and the associated potential for green jobs; (b) supporting policy regulation and reforms to promote green building practices among stakeholders in the housing sector; and (c) supporting capacity-building of both actors within the private sector and service providers to enhance access to financial services and improving technical-vocational skills training (ILO, 2013b and n.d.). In terms of the support provided, it covered all actors across the construction sector, from plant growers, manufacturers and retailers of building materials, processors to buyers of green housing. Initially, the target was to create more than 5,000 green jobs for the youth, as well as support and improve the quality of more than 2,000 jobs in MSMEs by 2018. But, as of the end of 2015, close to 2,660 green jobs were created, while the quality of over 2,000 jobs were improved through the provision of social protection, and safety and health services were extended to building construction workers (ILO, 2016). In total, 4,300 jobs were created by the end of 2018. Of these total jobs created, 75 per cent were for the youth (ILO, 2019b).

In regard to the challenge of indiscriminate building over drains or substandard quality without recourse to approval from the authorities, the recommendation is for strict monitoring and sensitization of the public on the need to adhere to established building codes or regulations. In addition to providing capacity-building and resourcing the appropriate agencies to undertake regular cleaning and maintenance of drains across the different localities, the recommendation is also for commitment at facilitating the timely evaluation and approval of building project requests. A mechanism could be the review of the regulations and a time frame for evaluation and approval of a building project request. This could contribute to addressing the issues of delays, administrative challenges and indiscriminate constructions and DRR in the different localities.

7.1.2. Programming/Operationalization of existing strategies

Extend national skills training programme to vulnerable groups as part of risk reduction and relocation schemes for enhancing employability and sustainable (re)integration: A major issue that has often been a challenge relates to the inability of effectively adapting and integrating into the local or receiving communities. This often stems not only from the lack of job opportunities and facilities, but also the lack of alternative economic avenues to make a living. Besides the high levels of unemployment, the challenges relating to skills mismatch and gaps in the country have grown over the years (ILO, 2018). At the national level, the Government has initiated the NSDP under the auspices of the Ministry of Labour, Human Resource Development and Training and being implemented by the HRDC. The programme is aimed at providing technical skills training and matching skills of unemployed youth (within the ages of 16–30 years) to allow for their employability and subsequent integration into the national labour market (Government of Mauritius, 2018c:8).

As part of planned and ongoing DRR programmes, skills training could be added to relocation schemes for enabling skills acquisition for persons being moved, given that they may have lost or have had to abandon their livelihoods because of climate change impact or the move. Similar to the Skills Development Support Scheme for Foreign Direct Investment module, skills training as part of DRR relocation programming could be linked as an aspect of the NSDP and in collaboration with the HRDC.

With the shift to renewable energy as part of broader national green growth strategies, special consideration could also be made for green skills training of vulnerable groups like women, young people or persons with disabilities. As exemplified by the Emplea Verde and Emprende Verde (Green Entrepreneurship) programmes in Spain (Cedefop, 2018:24), the support for the vulnerable groups mentioned could be in the form of fine-tuning the Mauritius' Turbine Business Incubator initiative to include the promotion of green start-ups and build blue resilience through innovation, financed apprenticeships and capital (financial and tools/equipment) to

start after their training. Considering the need also for quality and standard housing to promote resilience against hazards like cyclones, flash floods and landslides, the green training could target the construction sector. As piloted in Zambia (see Text box 2), greening the building sector would allow for the creation of decent green jobs, promotion of the development of green businesses and for resilient housing for DRR and climate resilience in the medium to long term.

7.1.3. Institutional framework

Promote better/enhanced cooperation and coordination between the different ministries and key actors to enhance adaptation and sustainable (re)integration in the context of climate change and disaster: As highlighted in this study, vulnerable populations in Mauritius have often adopted different strategies to cope and adapt to the adverse effects of climate change and disaster. However, this capacity is fairly limited when it comes to long-term resilience and adaptation. Those capacities can only be enhanced if a stronger cooperation and coordination between different policy fields is achieved (this includes, among others, environment, climate change, migration, rural development and urban planning). However, it is not only about vertical cooperation; likewise, the cooperation between international, regional, national, subnational and local actors needs to be improved. In particular, the integration of communal participation in these measures will be vital. On the other hand, the role of human mobility for these efforts will be highly important – given the economic role of labour mobility and the ecological consequences of (return) migration.

In this context, the cross-sectoral coordination could also be extended to include the EDB as the trustee of the Mauritian Diaspora Scheme and for investment promotion in the country. Like the [Skills Development Support Scheme for Foreign Direct Investment](#) collaboration between the EDB and the HRDC, for instance, NDRRMC could partner with the EDB, the Ministry of Foreign Affairs, Regional Integration and International Trade and relevant agencies to review and mainstream components of DRR mechanisms as part of the Mauritian Diaspora Scheme and Investment Programme. In this vein, strategic training, awareness creation and support to develop long-term adaptation measures could enhance sustainable (re)integration of both returnees and investors for accelerated economic development on the one hand.

On one hand, the sensitization could be targeted at ensuring that their activities and investments will strictly adhere to environmental conservation and sustainability as a measure for DRR in Mauritius. The emphasis on environmental conservation measures could be tied or made as a conditionality for tax reliefs (maybe as a percentage) or tax holidays being offered on investments as part of diaspora and investment migration schemes. When it is also recognized that vulnerable or affected populations being relocated as part of DRR schemes can also actually aggravate environmental degradation in receiving communities, it is incumbent that strategic considerations should be made to mainstream sustainable (re)integration into future

programming or operationalization of already designed risk reduction schemes. These considerations should also include perspectives on returning Mauritian diaspora and labour migrants.

In order to enhance institutional and inter-sectoral cooperation, and in effectively mainstreaming issues of MECC and DRR into sectoral policies and programmes, there is also the need to first of all take a critical look at the Disaster Risk Management Capacity Diagnosis that was conducted to ascertain the different capacities and needs in addressing disaster impact in Mauritius (see CADRI, 2020). As a cue from the gaps and challenges identified in the diagnosis, a recommendation will be to establish a national outfit with the sole responsibility of coordinating and creating synergies across the different institutions in developing a comprehensive approach to addressing climate change, disaster and related human mobility and (re)integration. This outfit could operate in the form of a technical working group or interdepartmental working group consisting of technical persons from across the different national agencies and stakeholders. Other than establishing a monitoring mechanism, a national focal point could be appointed from within the proposed working group to coordinate the activities of the group and across the different institutions. This would facilitate a more coordinated and comprehensive approach in addressing climate change impact, DRR and management, as well as enhancing sustainable (re)integration in Mauritius.

Enhance and broaden social protection schemes, sensitization, early warning and proactive response to natural disasters in marginal coastal areas and remote islands: The findings of this study point to the fact that the people living below the line of poverty and vulnerable populations who derive sustenance from climate-sensitive livelihoods tend to reside in high-risk coastal areas, rural areas and remote islands. In the wake of resource and capacity constraints, what this means is that early warning or emergency alerts can delay in trickling down to vulnerable populations, especially in remote areas to enhance preparedness. At the national level, the NDRRMC is actively involved in providing emergency prompts in different languages with the help of the media.

Also, the Ministry of Technology, Communication and Innovation runs an emergency alert mobile application that is accessible to everyone, including migrants. Besides these initiatives, there are also routine Community Disaster Response Programmes and simulation exercises organized by the NDRRMC and local authorities to enhance disaster response and disaster preparedness. Beyond these DRR initiatives, however, there is the need for the NDRRMC and other actors to be well resourced to broaden the sensitization and education on the existing hazard risks, as well as inculcate a culture of risk reduction and a proactive self-help/evacuation during disasters. Innovative early warning and emergency alerts should be enhanced to trickle down to vulnerable populations in remote island areas in Rodrigues, Agalega and the dependencies.

In ensuring proactive and timely disaster response, the existing social protection programmes could be reviewed to allow for the decentralized distribution of relief and more financial support to affected persons in the wake of disaster impact or for persons being relocated. Other than providing direct cash transfers to disaster victims or displaced persons in the wake of a disaster, support could come in the form of national climate insurance schemes to enhance long-term climate resilience in vulnerable communities. With this strategy, the Government could partner with the private sector and development partners to subsidize insurance premiums with a special attention to climate sensitive economic activities, livelihoods and vulnerable groups. Special initiatives for the blue economy should come in the form of training, provision of life jackets, first aid kits and subsidized supply of equipment or alternative green opportunities in aquaculture. In reference to small-scale farmers, migrants (internal and labour migrants from abroad) and young persons who may want to engage in sheltered farming, the Government could make provisions to offer specialized training and financial assistance thereof as part of the flagship Sheltered Farming Scheme or the ongoing Sea Cucumber Project. The complementary effects would offer opportunities for DRR, climate resilience and sustainable (re)integration of the different migrant groups.

7.1.4. Data collection/availability for planning

Improve the data capture and availability for planning, climate adaptation and sustainable (re)integration: As in many countries or (sub)regional contexts, data on mobility processes in and out of Mauritius is quite limited. The availability of disaster data is mainly sourced from international data sources like the DesInventar Database and Mauritius Disaster Information System. In terms of migration and environmental data, the Passport and Immigration Service collects administrative data on entries and departures from the various ports, while Statistics Mauritius presents data on population distribution, number of citizens abroad, foreign-born population and tourists' arrivals, as well as environmental statistics in Mauritius. However, the available data on disaster impact or migration at the national level does not present disaggregated information on the mobility dimensions of disaster or crisis.

Better collection and availability of disaggregated data on the various migration types and their social, economic or ecological effects is an essential precondition for the other recommendations outlined. The same is valid for green jobs: local and context-specific data on the potential for green jobs creation (green skills intelligence or anticipation) in various sectors, as well as for better planned relocation or resettlement outcomes. Although most relocation exercises in Mauritius are planned and initiated under the auspices of the relevant national agencies and authorities, the observation is that most of them are often done as part of wider DRR schemes without recourse to the socioeconomic and psychological implications for the affected persons and the local or receiving communities.

Aside from the inability of affected persons being relocated to integrate because of the lack of necessary basic social facilities, the affected persons are often unable to cope or access resources to continue with their livelihoods. Aside from the complaint of being left after moving to deal with the stressful relocation procedures, the psychological impact and the associated health challenges are also worth considering for sustainable integration and DRR. As a strategy to enhance sustainable (re)integration into receiving or local communities, the promotion of community cohesion and inclusion should be considered as an integral aspect of relocation programmes. On the other hand, measures could be instituted to equip local government functionaries to allow for proactive and continuous support to migrants and persons being relocated at the local levels.

Promoting participation for sustainable (re)integration at the local level could be modelled in the form of public local community engagements, involvement and training of local leaders, representatives of associations, as well as local government authorities or administrators on strategies to promote inclusion and ways to effectively deal with challenges that may arise due to the relocation or return of migrants. These initiatives could be designed in the framework of CADRI training for local authorities, community members and vulnerable populations being relocated, as well as returning migrants. This would allow for participation and to identify ways of addressing the real and potential challenges and collectively design strategies to sustainably address them for peaceful coexistence and sustainable (re)integration.

To allow for the implementation or operationalization of the recommendations outlined, an implementation or oversight multi-stakeholder committee could be formed to oversee and guide the implementation process. As a complement, an implementation action plan could be drawn. This would serve as a framework to guide the systematic implementation of the recommendations outlined for improved climate resilience, DRR and sustainable (re)integration and development in Mauritius.



Annexes

Annex 1. Research participants

Affiliation	Job title	Gender	Location
1. Commonwealth Climate Finance Access Hub, (Information Technology (IT) Department	IT Officer	Male	Port Louis
2. Ministry of Foreign Affairs, Regional Integration and International Trade	Office Management Assistant	Male	Port Louis
3. Food and Agricultural Research Extension Institute	Economist/Senior Economist	Male	Reduit
4. MMS	Acting Divisional Meteorologist	Male	Vacoas
5. Ministry of Gender Equality and Family Welfare	Research Officer	Female	Port Louis
6. Planning Division, Ministry of Housing and Land Use Planning	Town and Country Planning Officer	Male	Ebene
7. NDRRMC	Coordinator for Community Mobilization	Female	Port Louis
8. UNDP Mauritius	Registry Unit	Female	Port Louis
9. Commonwealth Climate Finance Access Hub Administrative Department/ Stakeholder	Stakeholder	Male	Port Louis
10. Association Pour le Développement Durable	President	Male	Phoenix
11. Private retailer business/vehicles spare parts	Owner/Manager	Male	La Butte, Port Louis
12. Private businessowner/importer	Manager	Male	Port Louis/La Butte/Venus
13. Private retailer – Tabagie Brabant	Owner	Male	Venus Port Louis
14. Private businessowner	Business Director	Male	Port Louis
15. Painting businessowner	Director	Female	La Butte, Port Louis
16. Private general retailer	Owner/Manager	Male	La Butte, Port Louis
17. Passport and Immigration Office	Second-in-charge, Director of Public Prosecutions	Male	Port Louis
18. National Empowerment Foundation	Communication Manager	Male	Port Louis
19. Ministry of Labour, Human Resource Development and Training	Director (Acting)	Male	Port Louis
20. Statistics Mauritius	Acting Deputy Director	Male	Port Louis

Affiliation	Job title	Gender	Location
21. UNDP Mauritius	Head of Socioeconomic Development Unit	Female	Anglo-Mauritius House, Port Louis
22. Ministry of Foreign Affairs, Regional Integration and International Trade	Deputy Commissioner	Male	Port Louis
23. Forest Service	Assistant Conservator of Forest	Male	Curepipe
24. Commission for Environment, Forestry, Tourism, Fisheries and Marine Parks, Rodrigues	Fisheries Protection Officer	Male	Pointe Monier
25. UNDP (Rodrigues)	Project Manager	Male	Rodrigues, Mauritius
26. Commission for Environment, Forestry, Tourism, Fisheries and Marine Parks, Rodrigues	Technical Officer	Female	Port Mathurin, Rodrigues
27. Ter-Mer Rodriguez Association (NGO)	Founder and Coordinator	Male	Port Mathurin, Rodrigues Island
28. Rodrigues Disaster Risk Reduction and Management Centre	Woman Police Constable	Female	Pointe Canon, Rodrigues
29. Mauritius Oceanography Institute	Associate Research Scientist	Female	Albion
30. District Council of Black River – Ministry of Local Government and Disaster Risk Management	Local Disaster Management Coordinator	Male	Geoffroy Road, Bambous
31. Ministry of Social Integration, Social Security and National Solidarity (Social Integration Division)	Former Assistant Secretary-General, National Economic and Social Council	Female	Port Louis
32. Ministry of Environment, Solid Waste Management and Climate Change	Acting Divisional Environment Officer	Male	Port Louis
33. National Development Unit	Project Manager	Female	Port Louis
34. Ministry of Local Government and Disaster Risk Management (Local authorities)	Local Disaster Management Coordinator	Male	Municipality of Vacoas-Phoenix

Annex 2. Questionnaires

(a) Questionnaire for key stakeholders

Part I. Personal and contact information

1. Respondent information:
 - 1.1. Gender/sex of respondent: _____
 - 1.2. Job title of respondent: _____
 - 1.3. Affiliation of respondent: _____
 - 1.4. Location: _____
 - 1.5. Email/Tel. no.: _____
 - 1.6. To what extent do you know climate change and its impacts?
 Quite a lot A little bit Not at all
 (If not at all, please skip to Part III.)
 - 1.7. Migration and (re)integration processes
 Quite a lot A little bit Not at all

Part II. Climate change and environmental impact on migration and reintegration in Mauritius

2. Based on your perceptions of climate change and environmental degradation, how would you assess the severity of the impact of climate change/related hazards and other environmental degradation processes in the country? Please circle or tick number in the box below as appropriate.

No/hardly any impact	Little impact	Medium impact	Severe/significant impact	Very severe/ devastating impact
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- 2.1. Please provide reason(s) or explanation for the choice you have made in Q2 above.

3. What are the current/recurring climate change (risks/hazards/events) and other environmental degradation processes in the country? Please tick as appropriate (click inside the checkboxes).

Impacts of climate change and other environmental degradation processes in the country	Frequency in the past two decades (2000–2020)		
	Does not/ hardly occurs ^a	Occasionally ^b	Occurs frequently ^c
Coastal inundation (SLR)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extreme weather events (tropical cyclones)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heatwave	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flash flood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landslide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deforestation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water (ocean) pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water scarcity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Others:			

Notes:

- a Not occurring at a regular interval, not often, seldom, rarely.
 b Occurring from time to time, now and then, once in a while, irregularly at infrequent intervals.
 c Frequent intervals.

4. Are you aware of any scientific projections and/or any observed patterns on the nature and impacts of climate change and other environmental degradation processes in the country?

1) Yes 2) No (If no, please skip to Q5.)

4.1. If yes, please describe (and list and share relevant documents if available).

4.2. Do you know if these scientific projections acknowledge mobility patterns (i.e. migration, displacement, planned relocation) as being influenced by climate change and other environmental degradation processes?

1) Yes 2) No (If no, please skip to Q4.4.) 3) Do not know

4.3. If yes, how do these scientific projections link climate change and/or other observed environmental degradation processes to human mobility? Please explain.

4.4. In the case of any observed patterns, why and how would you link them to mobility patterns? Please explain.

5. Which communities or villages do you think are most vulnerable to the impacts of climate change and/or other environmental degradation processes? Please mention them.

6. Why do you think the communities or villages mentioned in Q.6 are vulnerable? Please explain.

6.1. Which groups of people or sections of the population do you think are most vulnerable to the impacts of climate change and/or other environmental degradation processes and why?¹⁴

Part III. Migration and reintegration processes affected and/or caused by the impacts of climate change and/or other environmental degradation processes

7. List examples of cases (or instances) of human mobility (migration, displacement, relocation, (re)integration and other mobility processes) affected or associated with the impacts of climate change and/or other environmental degradation processes at the national level, based on the following information:

Climate event and/or environmental degradation process that led to the migration	Communities involved: Place of origin – final destination	Which measures were put in place to support affected persons or migrants (irrespective of length of stay)?	How sustainable were the measures? Please provide some explanations and/or reasons.

a. Migration

7.1. How did these measures (measures mentioned above) address vulnerable groups? Please elaborate.

Vulnerable group	Measures	Comments/Remarks/Explanation
Women		
Children		
Elderly persons and persons with disabilities		
Vulnerable economic groups (e.g. fisherfolks, smallholders, informal sector)		

¹⁴ These could include the following: seasonal labour migrants; displaced persons and migrant-sending or vulnerable communities who depend on natural resources such as rain-fed farming communities; fisherfolks; vulnerable migrant groups such as women and children, or those suffering from ill health, forthwith described as “populations at risk”.

b. Displacement

Rapid- or slow-onset climate event and/ or environmental degradation process that led to the migration	Communities involved (Place of origin – Final destination)	Measures were put in place to support affected persons or migrants (irrespective of length of stay)?	How sustainable were the measures? Please provide some reasons.

7.2. How did these measures address vulnerable groups? Please explain.

Vulnerable group	Measures	Comments/Remarks/ Explanation
Women		
Children		
Elderly persons and persons with disabilities		
Vulnerable economic groups (e.g. fisherfolks, smallholders, informal sector)		

c. (Planned) relocation

Rapid- or slow-onset climate event and/or environmental degradation process) that led to the migration	Communities relocated (Place of origin – Final destination)	Who initiated the relocation and planning process?

7.3. What measures were put in place to support affected or displaced persons who were relocated to sustainably integrate into the local community (if any)?

- 7.4. What measures were put in place to support or address the likely impact on the local community to which persons had been relocated (if any)?

- 7.5. In your opinion, how sustainable will be the planned response measures put in place to support both affected persons being relocated and the local or host community?

- 7.6. How do these planned measures address vulnerable groups? Please explain.

Vulnerable group	Measures	Comments/Remarks/ Explanation
Women		
Children		
Elderly persons and persons with disabilities		
Vulnerable economic groups (e.g. fisherfolks, smallholders, informal sector)		

8. In what ways does/can climate and environmental change affect (re)integration of migrants (returnees (from abroad, labour migrants and internal migrants))? Please elaborate.

Part IV. Immediate and long-term needs of returnees, labour migrants and internal migrants to become resilient to current and predicted climate change impacts and environmental degradation processes

9. Rank the most significant impacts of climate change and/or other environmental degradation processes (episodes) the country has experienced in the past five years (tick or checkboxes as appropriate):

Natural hazards	Impact was not severe	Moderate impact	Severe impact	(Since) when did the hazard occur (first) (Month and year)?	What was the nature of impact (type)? (Please elaborate the nature of impact.)
Coastal inundation (SLR)					
Tropical cyclones					
Drought					
Heatwave					
Flash flood					
Landslide					
Fires					
Land degradation					
Loss of biodiversity					
Air pollution					
Water (ocean) pollution					
Earthquake/Volcanic/Tsunami					
Water scarcity					
Others					

- 9.1. On such occasions (of events selected above), are you aware or did national authorities take any measures to assist affected individuals and/or communities?

1) Yes 2) No

- 9.2. If yes, please explain.

9.3. If no, why was there no form of assistance? Please explain.

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9.4. How did these measures address the needs of vulnerable groups? (Please mention and elaborate where necessary.)

Vulnerable group	Measures	Comments/Remarks/Explanation
Women		
Children		
Elderly persons and persons with disabilities		
Vulnerable economic groups (e.g. fisherfolks, smallholders, informal sector)		

9.5. In your opinion, what are the immediate and long-term needs of returnees, internal migrants and diaspora to help them sustainably reintegrate¹⁵ into local communities or places of origin and become resilient to current and predicted impacts of climate change and/or other environmental degradation processes? Please elaborate.

Category	Needs (Please explain)	
	Immediate	Long term
Returnees		
Internal migrants		
Diaspora (those who may have intentions to return)		

¹⁵ "Reintegration can be considered sustainable when returnees have reached levels of economic self-sufficiency, social stability within their communities, and psychosocial well-being that allow them to cope with (re)migration drivers. Having achieved sustainable reintegration, returnees are able to make further migration decisions a matter of choice, rather than necessity (IOM, 2017:11).

Part V. Best practices in terms of schemes, programmes and policies that support the adaptation of returning workers to climate change and environmental degradation, as well as support the integration of labour migrants into local or national labour markets and/or host communities in Mauritius

10. Does the country have specific policy and legal frameworks dealing with migration and related issues?

1) Yes 2) No (If no, please skip to Q11.)

10.1. If yes, please name and list them.

10.2. Do these national policy/legal frameworks recognize and address mobility patterns associated with the impacts of climate change and/or other environmental degradation processes?

1) Yes 2) No

10.3. If yes, in what context and how?

10.4. If no to Q10.2 above, please explain in your opinion the reasons why these frameworks do not recognize or address the human mobility dimensions of climate and environmental change.

10.5. Do these national policy/legal frameworks support the adaptation of (returning) migrants to the impacts of climate change and/or other environmental degradation processes?

1) Yes 2) No

10.6. If yes, how? Please elaborate.

10.7. If no, why don't they support the adaptation of (returning) migrants?
Please explain.

10.8. Do these national policy/legal frameworks support the (re)integration of return(ing) migrants, labour migrants, diaspora or displaced persons into local or national labour markets in Mauritius or local (host) communities?
1) Yes 2) No

10.9. If yes, how? Please explain.

10.10. If no to Q.10.8 above, please explain in your opinion why these frameworks do not support the (re)integration of return(ing) migrants, labour migrants, diaspora or displaced persons into local or national labour markets in Mauritius or local (host) communities. Please explain.

11. Do the existing national policy/legal frameworks make provision or provide opportunities for the development of the blue and green economy for sustainable and decent jobs?

1) Yes 2) No (If no, please skip to Q11.2.)

11.1. If yes, please explain how these frameworks support the development of the blue and green economy for sustainable jobs?

11.2. Are you aware of any blue economy or green jobs programmes?

1) Yes 2) No (If no, please skip to Q11.4.)

11.3. If yes, please mention or list them.

11.4. Do existing national policy/legal frameworks support reskilling¹⁶ and/or upskilling¹⁷ of (returning) migrants and vulnerable populations for alternative livelihoods in the green and blue economy?

1) Yes 2) No

11.5. If yes, kindly explain how these frameworks support reskilling and/or upskilling of (returning) migrants and vulnerable populations for alternative livelihoods in the green and blue economy.

11.6. If no Q11.4 above, please explain in your opinion and/or reasons why these frameworks do not support the reskilling or upskilling of returnees for alternative livelihood opportunities in the blue and green economy.

¹⁶ Refers to learning a new skill to be able to take up/do a new or alternative job/livelihood.

¹⁷ Refers to teaching workers new skills or advanced skills to match changing job demands.

12. Are there any existing best practices and/or programmes in the country that support the adaptation of returning (diaspora) workers to the impacts of climate change and/or other environmental degradation processes?

1) Yes 2) No

12.1. If yes, please mention.

- 12.2. If no, what measure or strategies could be instituted to help returning diaspora to adapt to climate change impacts and sustainably reintegrate please mention and elaborate how.

13. Are there any existing best practices and/or programmes in the country that support the integration of incoming (labour) migrants/returnees (from abroad and internal migrants) or displaced persons into local or national labour markets/ host communities? Kindly elaborate.

1) Yes 2) No (If no, please skip to Q14.)

13.1. If yes to Q13, please mention and elaborate on the practice or programme below:

Best practice/programme	Category (returnees) [Kindly elaborate]	
	Internal migrants	Returnees from abroad/ diaspora

14. What (sustainable) measures or recommendations will you propose to address the impact of climate change on:

Vulnerable group	(Sustainable) Measures (Kindly elaborate.)
Vulnerable communities/displaced persons	
Women	
Elderly persons and persons with disabilities	
Youth/Children	
Vulnerable economic groups (e.g. fisherfolks, smallholders, informal sector)	

15. Do you have any questions, opinions and suggestions about the study?

Thank you.

(b) Questionnaire for vulnerable populations

Location

* To be filled before start of interview

1. Location information:
 - 1.1. Commune/Village/Town:

Part I. Respondent information/Household structure

2. Respondent information (Please enter appropriate):

Household member	Sex 1 = Male 2 = Female	Age in years	Marital status 1 = Married 2 = Single (never married) 3 = Divorced 4 = Widowed	Relationship to head of household 1 = Head (himself/herself) 2 = Spouse 3 = Son/Daughter 4 = Grandchild 5 = Other relative	Highest level of education attained 1 = Tertiary 2 = Secondary 3 = Vocational/Technical 4 = Primary 5 = Uneducated
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

2.1. Occupation _____

3. Do you come from this community?
 - 1) Yes 2) No
 - 3.1. If no, where did you come from?
4. How long have you lived in this location?
 - 1) Since birth 2) Months/Years 3) Do not know

5. What are your main sources of income?

Part II. Climate change and/or other environmental degradation processes impact on livelihoods

6. Have you experienced any climate/environmental change-related extreme event(s) or hazards in the past 5–10 years?

1) Yes 2) No (If no, please skip to Q.9.)

6.1. If your answer to Q.6 is yes, please answer the following in terms of occurrence, significance, severity and month and year for each of the mentioned natural hazard. (Check boxes or tick boxes as appropriate.)

(Natural) hazards/ Climatic events	Did not occur	Occurred, but the impact was not severe	Occurred, moderate impact	Occurred, severe impact	(Since) when did the hazard occur (first) (month and year)?	What was the nature of impact (type)? (Please elaborate the nature of impact.)
Coastal inundation (SLR)						
Tropical cyclones						
Drought						
Heatwave						
Flash flood						
Landslide						
Fires						
Land degradation						
Others						

6.2. What is the impact of climate/environmental change (indicated Q6.1 above) on you and your household, and the coping/adaptation strategies employed?

Climate/ Environmental change event/hazard	Household/Member (Kindly elaborate.)		
	Impact	Coping/Adaptation strategy	Assistance received

Part III. Migration as an adaptation/coping strategy to the impacts of climate change and/or other environmental degradation processes

7. Have you ever migrated and/or decided or forced to relocate?
 1) Yes 2) No

7.1. If yes, what circumstances or underlying reason informed the decision to migrate or relocate? Please explain.

7.2. If no, what informed the decision not to migrate or move? (Skip to Q7.3 if the answer is yes.)

7.3. Where did you migrate or relocate to? Please mention the place of destination.

- 7.4. Of all the underlying reasons you mentioned, could you please rank the top three most important? (If no to all, please skip to Q10.)
- a) First: _____
 - b) Second: _____
 - c) Third: _____
 - d) Do not know

8. Do you know of anyone (or family) who migrated or left due to climate/ environmental change impact or related hazards?

- 1) Yes 2) No (If no, skip to Q8.1.) 3) Do not know

8.1. If yes, where did they go?

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8.2. What do you think is/are the impact(s) of migration on households and livelihoods?

Impact of migration	
Household	Livelihood

9. How in your opinion will migrant returnees (internal and from abroad) affect home communities, labour markets and climate change adaptation in Mauritius?

Impact of returnees		
Home/Local communities	Labour markets	Climate change adaptation

10. How in your opinion will climate and environmental change affect returnees/migrants (internal migrants, from abroad and labour migrants). Please elaborate.

11. How have relocation programmes initiated so far in Mauritius affected displaced persons and local or receiving communities? Please elaborate.

Relocation programme (from – to – destination)/ year	Effect	
	Displaced persons	Local/Receiving community

12. Does migration or planned relocation(resettlement) contribute to climate change adaptation and resilience in Mauritius?
 1) Yes 2) No 3) Do not know

12.1. If yes, how?

12.2. If no, why? Please explain.

Part IV. Immediate and long-term needs of returnees (from abroad (diaspora), labour migrants and internal migrants) to adapt or become resilient to observed and predicted impacts of climate/environmental change

13. What measures do you think or propose should be instituted to better cope with impacts and promote resilience to climate and environmental change and related hazards in the short to long term? Please explain.

Climate/ Environmental change event/ hazard	Suggested measures	
	Immediate/Short term	Long term

14. For persons that have been displaced or are being resettled due to climate risks/hazards, what could be done to help them integrate into local communities?

15. What measures should be instituted to help returnees (from abroad, labour migrants or returning internal migrants) to sustainably (re)integrate into local communities? Please mention and elaborate.

Measures		
Category (returnees) (Kindly elaborate.)		
Internal migrants	Returnees from abroad/ diaspora	Labour migrants (immigrants)

16. What specific recommendations will help address climate change impact on vulnerable groups?

Vulnerable group	(Sustainable) Measures (Kindly elaborate.)
Women	
Elderly persons and persons with disabilities	
Young people/children	
Vulnerable economic groups (e.g. fisherfolks, smallholders, informal sector)	
Vulnerable communities/ displaced persons	

17. Any questions, comments or suggestions?

Thank you.

Annex 3. Analysis (Codes)

Theme	Deductive codes	Inductive codes	Interview quote	Impact
Climate/Environmental change, hazards and impacts	Perceptions		<ul style="list-style-type: none"> • Sea level has risen; the weather has become hotter. When it rains constantly for one hour, there is flash flood. Long ago it was not there (not like this). Before, there was greenery everywhere. Nobody plants vegetation this time and all flood comes down and the land becomes rocky. Many others use pesticides. The topsoil has become loose, and all the topsoil is being washed away because of the flash floods. (Male participant 1, Vulnerable population FGD, Quatre Soeurs village, 2022) 	<ul style="list-style-type: none"> • Group of persons most vulnerable (climate change and disaster impact): Older people, women, persons with disabilities, daily wage earners, people living below the poverty line, children. • Most vulnerable communities: Quatre Sœurs, Vallée des Prêtres, Chemin Grenier, Rivière des Galets, La Butte, Souillac, Western and other coastal areas.
				<ul style="list-style-type: none"> • The whole coastal zone is particularly at risk, because of a combination of environmental disruptions (SLR, cyclones, coastal erosion and tsunamis, among others). In the short term, protection by seawalls has been opted for in view of refusal of affected residents to move to other alternative locations offered by authorities. However, in the long-term, protection will no longer be effective and relocation will be the only option. Flooding of riverbanks would also force residents in the vicinity of rivers to be relocated. Special consideration needs to be given to St. Brandon and Agalega. With accelerated SLR, these islands could be covered and the sea should be declared as international waters. This could pose a problem to claim the current large EEZ. Hence, one solution is to contemplate building floating cities as being done in countries such as the Maldives, the Kingdom of the Netherlands and the United Arab Emirates.

Theme	Deductive codes	Inductive codes	Interview quote	Impact
	Cyclones		Mauritius is a small island, which is isolated and vulnerable to climate shocks – intense tropical cyclones, accelerated SLR, increasing flooding and drought – and depends mostly on imports (90%) for food security. Flash floods had been increasing and exacerbating damage to property and loss of life. Increasing soil erosion is affecting agricultural outputs. Decreased rainfall (8% since the 1950s) is causing water scarcity in many places across the island. (Male key stakeholder 1, Phoenix, 2022)	<ul style="list-style-type: none"> • Destruction of property. • Loss of human lives. • People or inhabitants live in fear.
	Flash floods		<ul style="list-style-type: none"> • A direct and visible impact of climate change is the flash flood that occurred in 2013 where several people lost their lives. A second impact is the rise in sea level causing coastal inundation, which is an example of environmental degradation caused by the destruction of ozone layers. And the ozone layer is being destroyed as a result of man-made activity – air pollution and use of chlorofluorocarbons being the main cause. (Female key stakeholder 2, Port Louis, 2022) 	
			<ul style="list-style-type: none"> • The inhabitants of the coastal regions live in fear since they are already affected by the rise of water level during the cyclonic season and heavy rainfall. Landslides also are caused due to continuous rainfall for days. Flash floods or normal floods are becoming a common factor in certain regions such as Chemin Grenier. (Female key stakeholder 3, Port Louis, 2022) 	

Theme	Deductive codes	Inductive codes	Interview quote	Impact
			<p>Other causes:</p> <ul style="list-style-type: none"> • Most inhabitants have constructed without any study or approval. Most houses are constructed on drains, which leads to flooding. They have constructed their houses near the road. That is why we are having this problem. Some persons constructed their houses, but they did not keep one inch away from the road. If I will report to the district council (<i>zot pou dire mo bezere</i>), they will take me wrong. They do not respect the laws. ... When it is raining, it causes floods and then it is too late. Nowadays, we must submit building permits to build houses, but it is different. (Male participant 2, Vulnerable population FGD, Quatre Soeurs Village, 2022) 	
			<ul style="list-style-type: none"> • Like suppose they engage in adaptation measures. These adaptation measures are going to have a lot of positive externalities that it can create positive effects for the community, and people do not want to pay for that. This is what the public has to pay – a private action cannot have any impact on public. So, for this reason, they do not respond. ... Sometimes you have stringent laws that do not allow them to take certain measures. ... When they have to make certain modifications to their houses, sometimes they do not get the permit for example. They cannot just be calm and wait on it; they want to construct it. This is not allowed, so they are forced to construct from the base, and this is what causes flooding. This is another reason and other things that we have seen like, you know, flood prevention is very expensive and because it is very expensive, people do not want to do or engage in final decision. They believe that this happens once in a while. (Male key stakeholder 4, Stakeholder FGD, Port Louis, 2022) 	

Theme	Deductive codes	Inductive codes	Interview quote	Impact
	Heatwave	Hot weather (+ high humidity)		<ul style="list-style-type: none"> • Dehydration (e.g. research participant – 2013 heatwave). • Inability to concentrate and work due to dehydration and fatigue (e.g. in Rodrigues).
	Drought			<ul style="list-style-type: none"> • Water scarcity for domestic use. • Crops wither. • Low pressure from taps (flow of water).
	Landslide	Japanese aid (JICA project)		<ul style="list-style-type: none"> • Destruction of houses.
	Coastal inundation			<ul style="list-style-type: none"> • Saltwater inundation. • Destruction of property. • Beach erosion.
	Land degradation	<ul style="list-style-type: none"> • Poor waste disposal and management • Use of chemical agricultural inputs and mechanization • Increasing spate of wildfires 	<ul style="list-style-type: none"> • Climate change and environmental degradation will have an impact on farmer's livelihood, crop yield, soil quality and cropping patterns. It will also impact aquatic life, water quality and the water table. Farming activities have a direct impact on environmental degradation due to soil erosion and other mechanization processes in agriculture, such as land preparation, tilling, mechanical harvesting leading to soil compaction and poor drainage. The consequence being recurrent floods and water accumulation. (Male key stakeholder 5, Reduit, 2022) 	<ul style="list-style-type: none"> • Health challenges. • Devastating flood hazards due to loss of vegetation. • Impact of agriculture and fisheries subsector. • Farmers abandoning farms and migrating.

Theme	Deductive codes	Inductive codes	Interview quote	Impact
			<p>Rodrigues Island is already experiencing the impacts of climate change. For instance, the island usually faces long dry periods and regular shortage of water. The pattern of rainfall has changed in contrast to the past, and this situation is affecting different sectors of the economy like the agricultural sector, whereby farmers cannot practice agriculture effectively due to irregular rainfall patterns and long dry periods. As it is difficult to practise agriculture now, many farmers have abandoned their land and many agricultural plots are left bare and unattended. This result is that land degradation occurs, whereby the soil is washed away easily during flash floods and as Rodrigues Is a steep slope island, all the degraded soil goes directly into the sea and causes lagoon sedimentation and destroys the marine fauna and flora. Moreover, the summer season is now hotter, and it is colder during the winter. The climate is not stable, and the economy is being greatly affected. (Male key stakeholder 6, Port Mathurin, Rodrigues, 2022).</p>	

Theme	Deductive codes	Inductive codes	Assistance received
Responses to climate/ environmental change and hazards	Coastal inundation	<ul style="list-style-type: none"> • Help from neighbours • Built wall to prevent sea water from getting into the house • Built drains themselves 	<ul style="list-style-type: none"> • A survey was conducted by authorities and vouchers were distributed. • Support from neighbours.
	Flash flood	<ul style="list-style-type: none"> • Did nothing • Accepted flood in the house • Paid labour to dig drains • Built canals so that water can move out • Constructed drainage system themselves • Waited for water to subside • Personally constructed to have better standard to prevent water 	<ul style="list-style-type: none"> • Received government grant to restart plantation. • The Government enlarged existing drains. • Survey done by risk and disaster management/ government gave grants. • No assistance from the authorities. • Police never reverted back to them even after reporting.
	Tropical cyclone	<ul style="list-style-type: none"> • Waited for the time being/did nothing • Reinforced windows and doors with other means due to cracks • Started plantain and livestock production • Constructed another <i>casier</i> (compartment) • Relocated to refugee centre 	<ul style="list-style-type: none"> • Had to put up with nearby relatives in their residence. • Government provided food.
	Land degradation	<ul style="list-style-type: none"> • Lived under unpleasant conditions due to dumping of waste • Remained in the locality because of lack of finance 	<ul style="list-style-type: none"> • Government – Policy of delocalization. • Received land to relocate – compensation still under process.

Theme	Deductive codes	Inductive codes	Assistance received
	Landslides	<ul style="list-style-type: none"> • Survey by engineers from abroad • Had to be more careful due to cracked wall and damaged floor • Relocated to refugee centre • Had to stay inside 	<ul style="list-style-type: none"> • Relocated by authorities to a rented house and then to a plot of land at present residence and also with some funds. • Requested by authorities to relocate; assisted by Japanese aid team (JICA Project of Landslide Management in the Republic of Mauritius). • Vulnerable people are asked to move to community centres or social welfare centres, which are open to them. • Financial assistance is also provided to these persons by the Ministry of Social Security. • Bad weather allowance also is allotted to registered fisherfolks and farmers. (Stakeholder in-depth interview, receiving assistance and recommendation for relocation from authorities). Family neighbour was moved to Morc Raffray in Terre Rouge. We too forced the Government to move us for so many years in 2005. We were not taken seriously. After the survey was done by relevant authorities, they said that my house is at no risk. I can stay safely. Today (2022), we have been informed by authorities that we need to vacate our plot in the following year, though I have spent all my savings in reconsolidation of my house. (Male participant 3, Vulnerable population interview, Chitrakoot Locality, North-East Port Louis, 2022)
	Drought	<ul style="list-style-type: none"> • Called the CWA for water supply 	Water supplied by the CWA.
	Heatwave	<ul style="list-style-type: none"> • More rest time/improved ventilation system of the house and drank more water 	

Theme	Deductive codes	Inductive codes and assistance received
Climate/Environmental change impact and human mobility	Major places of destination	<ul style="list-style-type: none"> • Mostly interregional and intraregional and across islands (Port Louis) popular destinations – mostly from Rodrigues • Return migration from Mauritius to Rodrigues
	Reasons for migration	<p>Climate-related mobility:</p> <ul style="list-style-type: none"> • Due to tropical cyclone (community/refugee centre); house crumbled due to heavy rainfall and landslide; because of deterioration of environment and related health problems; due to flood caused by high tide and rising water level; sea water inundation forced family to move to safe location; due to drought and heatwave; forced movement to refuge or evacuation centres • Government-assisted relocation; government forced them to move; family moved due to airport development and extensions (development related) • Unsuccessful integration; fear for life and safety • Lack of job opportunities • Interview (economic motivations) • You know, just because so many migrants are travelling to Mauritius, specifically maybe because when we are talking about communities, climate change having impacts on agriculture, water and around the coast also, and because the lagoon has been depleted for so long, we do not know whether it is directly linked to a change because we do not have the basic information. But still, there are so many people from Rodrigues they are maybe travelling for economic reasons, other than climate change. (Female key stakeholder 8, stakeholder FGD, Port Louis, 2022)
		<p>Sheltered farming (importation of labour – skilled/semi-skilled):</p> <ul style="list-style-type: none"> • Some traditional planters are migrating towards sheltered farming and may have recourse to cheaper labour sources for skilled/semi-skilled workers from other countries such as Bangladesh. Another observed phenomenon is that the new generation of the youth are not so keen to invest in traditional agriculture but in white collar jobs rather. On the other side, the population of farmers in the country is an ageing population and also being faced with an ageing labour force. Due to lack of interest from the youth and relatively less-efficient labour productivity, planters have started to consider the importation of labour to cater for manual operations. Another observed fact is that wage rate in the agricultural sector has been on the ascendancy over the past years leading to soaring of operational costs. This fact has further motivated established planters to consider labour importation. (Male key stakeholder 5, Reduit, 2022)
	Reasons for immobility	<ul style="list-style-type: none"> • Birthplace and place of living; livelihoods mainly from the sea; house owner and own property; fear of not being accepted in a new location • Adapted in situ; no place to move despite desire to move (*trapped population); lack of money to move. • Many of those affected by environmental changes, usually most vulnerable families, do not have the resources or the land that would allow them to relocate their activities. It is also difficult for affected families to move. They expect the authorities to find solutions in situ. For example, at Rivière des Galets, seawalls have to be built as the residents refused to move elsewhere. Hence, in the short time, it is most likely that relocation due to climate-related event will be a solution. In the long term, it will depend how climate change and environmental degradation evolve. (Male key stakeholder 1, Phoenix, 2022)

Theme	Deductive codes	Inductive codes and assistance received
	Impact of climate/ environmental change- related migration	<ul style="list-style-type: none"> • Household: Difficult for children to adapt to new environment and school; not easy to set up; no electricity; difficult to build house; displacement; separation of families; families “morally” disturbed; good housing; provision of all facilities; psychological stress; impact on health; fear for life; no security. • Livelihoods: Loss of jobs and livelihood; loss of workdays; livelihood becomes complicated (especially after moving or relocation); lower income; stressful bureaucratic procedures to start new enterprise with movement or relocation. • Positive impacts: Good job and job security (especially after relocation).
Migration, return and (re)integration in the context of climate and environmental change	Impact of returnees	<ul style="list-style-type: none"> • Home and local communities: Improved housing; more job opportunities; better infrastructure; higher standard of living; improved information; suspicion and tensions from local community; no effect, conditions remain the same. • Labour markets: Creation of more job opportunities; establishment of new businesses; skills training; loss of jobs; high unemployment/competition for jobs; no impact or effect.
	Climate/Environmental change impact and returnees	<ul style="list-style-type: none"> • Impact of returnees on climate/environmental change adaptation: Sensitization and awareness; contributed to change in habits; adapted to new environmental changes; built better houses and infrastructure; constructed drains to avoid disasters; often vulnerable or have high risk of health problems; often discouraged or have fear of returning; returned to enjoy good weather; took advantage of good climate and for agricultural production.
Impact: Planned relocation/resettlement	Adaptation to climate change	<ul style="list-style-type: none"> • Yes: Allowed for people to move to better and safe environments; well-planned and government-assisted; people felt safe; allowed for people to perform economic and social activities; provided opportunity for land allocation; received compensation. • Governmental support: Some inhabitants of Chitrakoot were relocated to other places in Vallée des Prêtres. They were relocated in newly built houses. They easily adapted to their new location, which had all the amenities. ... Inhabitants of Quatre Soeurs were relocated in Central Flacq. They were also placed in newly built homes. All the inhabitants of Mare Chicose were relocated to Rose Belle. They too got into newly built houses. They too easily adapted to their new location, which had all the amenities. (Male key stakeholder 9, Stakeholder FGD, Vacoas, 2022). • No: Tensions with local community; stressful and difficult to adapt to new environment; stress and other health problems; loss of community cohesion and solidarity; loss of property; loss of personal belongings.
Measures – Climate change adaptation (proposed)	Coastal inundation/beach erosion/SLR/high tide	<ul style="list-style-type: none"> • Immediate: Early warning; sensitized and shared information with coastal residents; evacuated vulnerable and affected people to a safe place. • Constructed barrage to avoid inundation and hold eroded beach in place; constructed cemented walling. • Long-term: Filled in the (eroded) beaches; built higher walls to the sea to prevent water from affecting families; constructed sand banks; frequent checks and cleaning of drains; facilitated visits by specialist to see outcomes of constructions and measures; coastal tree planting and restoration.

Theme	Deductive codes	Inductive codes and assistance received
	Flash flood	<ul style="list-style-type: none"> • Immediate: Built and maintained drainage system and canals; built decent housing and high walls to prevent water from entering; relocated people to safe places; financial support to buy basic necessities • Long-term: Cleaned and maintained drains; constructed deep canals and enlarged roads; educated and sensitized people; built new and safe houses; relocated vulnerable persons from risk areas and provided land for families
	Tropical cyclones	<ul style="list-style-type: none"> • Immediate: Built concrete facilities; consolidated weak housing; constructed drains; early warning system • Long-term: Assisted people to move to a safer place or location; built concrete houses to resist or withstand cyclone; constructed drains
	Heatwave	<ul style="list-style-type: none"> • Immediate: Sensitized people on heatwave and impact • Long-term: Reduced carbon emission
	Landslide	<ul style="list-style-type: none"> • Immediate: Created appropriate canals to drain water; constructed barrage to stop erosion; provided temporary shelter and psychological support for affected families; better road infrastructure and maintenance • Long-term: Authorities provided housing and relocated vulnerable persons from risk areas to safe places; provided loan facilities and financial support to persons being relocated (vulnerable/affected persons); road maintenance and constructed concrete wall fencing
	Land degradation	<ul style="list-style-type: none"> • Immediate: Provided facilities to settle in new environment; sensitized people not to throw waste everywhere and to take care of the environment; relocated and moved vulnerable people to safe places • Long-term: Provided land for families to relocate; provided financial support; increased fines for persons who throw away waste
	Drought	<ul style="list-style-type: none"> • Immediate: Rainwater harvesting; promoted effective water use and management • Long-term: Design tree replanting plan to plant more trees; planted seedlings; built water tanks





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* All hyperlinks were working at the time of writing this publication.

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