

Climate Change Adaptation in the Southwest Indian Ocean: Case Study of the Perception of Risk, Common Coping Strategies and the Potential for Micro-Insurance

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Abstract

Given that climate change is adversely impacting upon the agriculture and tourism industries and the low income labourers in these sectors, this paper reports on household perceptions of climate risks, current coping mechanisms and current coverage of insurance in Mauritius and the Seychelles.

The research methodology included a survey of 586 persons, interviews and workshops with stakeholders in the agricultural and tourism sectors of each country. Approximately 42% of persons surveyed had experienced some loss from an extreme weather event, with some respondents experiencing multiple events. The results demonstrated a reliance on personal savings and government assistance as a form of pseudo-insurance, with as many as 65% of respondents indicating that they utilized savings to cope after an extreme weather event which damaged housing and livestock. The general feedback from interviews in Mauritius indicated that government aid is usually provided to the identified sectors when they are impacted by disaster events. For Seychelles, however, government support was less prevalent.

The use of such asset depleting coping mechanisms forebode the distinct possibility of having to sell possessions or not repair at all should there be future catastrophe events. These findings advance a sound agenda for policy and practice in the Indian Ocean on matters related to climate change adaptation. By discussing the current status of climate risk awareness and resilience in these countries, this paper offers an argument for the inclusion of microinsurance in a comprehensive risk management plan as an alternative financial risk management tool. Introducing microinsurance products designed specifically for climate and weather risk, and which take into account the shortcomings of traditional insurance, may reduce the vulnerability of coastal communities in the face of climate change.

Keywords: Microinsurance for climate change adaptation; Disaster risk management and mitigation; Mauritius; Seychelles; Indian Ocean; Coping strategies; Perception of risk

Objectives

The aim of this study was to examine the environmental and economic conditions which shape vulnerability of low income coastal communities in the Southwest Indian Ocean (SWIO) and their capacity to cope with the adverse effects of extreme weather and climate risk.

The key objectives were to:

1. Identify the most destructive climate risks faced by low income coastal communities.
2. Explore the sufficiency and sustainability of existing coping strategies.
3. Determine whether the current socio-economic and environmental conditions existing in the islands of Mauritius and the Seychelles are conducive to the introduction of microinsurance as a coping strategy.

Introduction

Small Island Developing States (SIDS) are among the most vulnerable to climate change. In the face of global economic challenges, the increasing trend in severe weather hazards due to climate change has exacerbated the necessity for safety nets to protect the most vulnerable communities. SIDS will be affected by global sea level rise, which increases coastal inundation, erosion and magnifies the impact of storm surges and affect coastal agriculture. The impact on coral reefs

and fisheries, through warming of the ocean and ocean acidification, are threats that would undermine food security and livelihood in SIDS. Changes in precipitation will also affect the availability of water, which in turn affects the population, and key economic sectors such as tourism and agriculture, as well as biodiversity and other ecosystems dependent upon water [1].

The dependence of SIDS on agriculture and tourism render them particularly vulnerable to the impacts of global climate change, the projected manifestations of which include an increased frequency and ferocity of extreme weather events, especially tropical cyclones and both high and low rainfall events. The toll taken by these natural disasters on agricultural production (and therefore food security), the tourist industry, infrastructural damages and losses in the industrial and manufacturing sectors are already significant and are projected to increasingly impact the economies of these countries [2]. The examined countries of the SWIO share these inherent vulnerabilities

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to adverse climate change and common challenges to effective climate risk management.

The islands of Mauritius and the Seychelles can be characterized as small, open economies that are largely coastal-based, with varying levels of poverty. These societies already face serious challenges in the interaction between the human population and the environment that sustains them, an underlying stress that is being exacerbated by climate change [3].

The particular characteristics of SIDS cause the economic, social and environmental consequences to be long-lasting and the costs of rehabilitation to be significant as a percentage of gross national product (GNP). The absence or high cost of conventional insurance coverage is also an issue in these countries both at the micro and macro level. To mitigate the potential effects of disasters, measures must be taken to address both the preventative and post-reconstructive efforts required for resilience in the face of climate change [4].

This case study provides an overview of the climate risks and impacts of extreme weather events experienced by low income persons living or working within the coastal communities of Mauritius and the Seychelles. The results section identifies the characteristics of the studied islands in the Southwest Indian Ocean (SWIO) regarding the perception of climate risk and insurance, and the impact these perceptions have on the mitigation measures and adaptation strategies employed. The bearing these results have on the potential for microinsurance as an adaptation strategy is explored in the discussion and conclusion of the study.

Methodology

There were 2 main elements to the research methodology: a community needs assessment (in the form of a demand survey), which provided quantitative data, and in-person interviews and workshops with key organizations and stakeholders in the provision of finance and advocacy, which provided a qualitative information and a context for the analysis.

The survey instrument was developed and undertaken by Dr. Jonathan Lashley, on behalf of Caribbean Risk Managers Ltd (CaribRM), using best practices from related research. Following a review of previous microinsurance demand studies in developing countries, and drawing on previous microfinance studies in the Caribbean, the survey instrument for low income persons for the current study was structured as follows:

1. Background information on location of respondents' residence
2. Key demographic indicators (sex, age, marital status, education, household size, employment status, assets)
3. Organizational membership
4. Business characteristics of the self-employed
5. Possession and views on insurance
6. Risk profile
7. Credit behavior/Remittances/Banking
8. Expenditure and Seasonality

The sample target group was low income persons in tourism and agriculture who would either be affected directly or indirectly by severe weather. Due to the lack of an appropriate sampling frame, specific locations were identified to be able to capture the sample for the

demand survey. The areas targeted included produce markets, beaches, tourist attractions, fishing villages and agricultural areas. A total sample size of 600 was divided equally between Mauritius and the Seychelles, with a response frequency of 299 and 287 for each country respectively. The purpose of the demand survey was to understand the needs of low income groups in managing loss and damage from weather-related events in order to examine potential for a reduction of the effects of loss and damage by the design and implementation of microinsurance products for low income persons in the SWIO.

CaribRM also conducted interviews with decision makers and persons within management roles of governmental and non-governmental organizations including government ministries, insurance regulators, meteorological offices, membership organizations (for example, agricultural societies). The purpose of these interviews was to examine the perceptions about the main constraints in the development of microinsurance products at the client, institutional and regulatory levels. Interviews were conducted with representatives of seven organisation in Mauritius and nine in the Seychelles. During these discussions, interviewees were asked to:

- Provide feedback on the existing socio-economic framework of the communities
- Identify the main constraints and drivers for developing microinsurance products
- Specify any prospective plans for dealing with weather risks
- Determine the potential role of the specific organisation should microinsurance be implemented

A half-day workshop was hosted by CaribRM with a select group of the key representatives from: agricultural and tourism associations, credit unions and banks, disaster management agencies, related ministries including those of finance, fisheries, agriculture, tourism and environment in each of the target countries. The workshop was designed to allow open discussions among the stakeholders and encourage participants to share their expertise and critically analyse the resources available and how to utilise them efficiently within the context of the following objectives:

1. To understand the vulnerability and exposure sensitivities in communities to climate change;
2. To focus on the role of climate-related microinsurance as an adaption strategy for low income earners and sectoral stakeholders at a community level;
3. To estimate the needs, viability, feasibility, and structure for microinsurance in the vulnerable communities;
4. To gather information on the perception and use of microinsurance as an adaptive strategy and other aspects of the project and its' outputs in the key sectors of tourism, fisheries and agriculture.

This produced a more general insight into the respective agencies' perspectives should a product be implemented within the Southwest Indian Ocean. Participants supplied commentary on the provision of microinsurance both within and outside of the groups they represented.

Background to Climate Risk in the Southwest Indian Ocean

The vulnerability of coastal communities to frequent disaster events has a major impact on the economies of SIDS. When persons

in coastal districts, in particular fisher folk and tourism-based workers, are affected by bad weather it is difficult for them to recover without some form of external assistance which is often unsustainable, unreliable or delayed. Climate change is likely to worsen the effects on their livelihoods as disasters increase in frequency and severity. The most vulnerable industries, settlements and societies are generally those along the coast and on river flood plains, those whose economic activities are closely linked with climate-sensitive resources, and those in areas prone to extreme weather events [5].

A number of southern African countries have coastlines, including Mauritius and the Seychelles. The IPCC has concluded with high confidence that climate change will result in low-lying coastal lands being inundated, with resultant impacts on coastal settlements [6]. Observations from satellite data show that the sea level rise from 1993-2006 was 3.3 ± 0.4 mm per year [7] and it is expected that sea level rise will continue even if greenhouse gas concentrations are stabilised [5]. Wave height is also expected to increase as a result of increases in wind velocity. An increase in storm activity and severity is likely to have the most visible impacts in areas already susceptible to erosion.

Mauritius

The Republic of Mauritius is a group of islands situated in the Indian Ocean east of Madagascar and south of the equator; the Islands have a tropical maritime climate [8]. Mauritius is located in the tropics and exposed to a number of natural disasters such as cyclones, tidal surge and torrential rains that commonly cause calamities, including flash floods and landslides [9].

The Ministry of Environment and Sustainable Development in 2011 noted that the effects of climate change are evident in Mauritius with an increase in average temperatures at all stations at the rate of 0.15°C per decade, declining rainfall, sea level rise and more extreme weather events. Sea levels in the Southwest Indian Ocean are forecasted to show a rise and based on reconstructed tide gauge data and Topex/Poseidon altimeter for the period 1950-2001 the rise can vary between 1.3 and 1.5 mm/year. The hydrological cycle over the South West Indian Ocean is said to have been impacted by warming of the atmosphere as long-term time series of rainfall amount (1905-2007) show a decreasing trend in rainfall over Mauritius. The average rate of decrease in rainfall is said to be approximately 57 mm per decade [10]. Highly vulnerable coastal resources, biodiversity, water resources, agriculture and fisheries are already under stress due to climate change. Human wellbeing and security of livelihoods are also at risk [11].

Mauritius has acquired vast experience in dealing with cyclones, in particular from cyclone Carol which killed forty-one and left more than one hundred thousand homeless back in 1960. Research participants suggested that although drought is becoming more frequent in the country, torrential rains and flash floods are the most significant hazards affecting the low-income earning community of Mauritius especially those living in coastal areas and near rivers or reservoirs. One

recent flood, in March 2013, at least eight persons when the capital city of Port Louis was inundated as a result of 152 mm of rainfall in less than one hour [12].

The Seychelles

The Seychelles archipelago is made up of 115 islands situated to the west of the Indian Ocean between 4 and 9 degrees south of the equator. Due to its geographical position and geology, the Seychelles is less exposed to major natural hazards than most of its neighbouring countries and can be considered to be one of the safest countries on the Indian Ocean [13]. According to the Climate Centre for the International Federation of the Red Cross and Red Crescent Societies, Seychelles is similar to many other small islands in that it is economically, culturally and environmentally vulnerable to the impacts of climate change and associated extreme events. Warmer temperatures are set to negatively impact the livelihood of islanders, as their economies are linked to climate sensitive resources, such as agriculture, fisheries and tourism. These effects are already felt, for example, in the form of severe coral bleaching such as the occurrence experienced in 1998 from abnormally high water temperatures. Seychelles has also experienced an increase in natural climate related disasters over recent years such as extreme rainfall, tropical depressions and cyclones, coastal flooding, landslides, forest fires and drought [14].

Located just south of the equator, the main granitic islands are not within the direct track of the tropical cyclones. However, all the islands of the archipelago are affected by the feeder-bands of tropical cyclones in the region and can experience gale-force winds, flash floods and severe thunderstorm activity.

In terms of economic damage cost, Seychelles has had only two major natural disasters over the last 100 years. In August 1997, an El Niño– Southern Oscillation (ENSO) rainfall event caused US\$1.7 million in flood-related damages, and the Indian Ocean tsunami of December 2004 resulted in losses of around US\$30 million [15]. Given the relatively few disaster events in the collective memory of Seychelles, a comparatively low consciousness of vulnerability has historically pervaded the society. Details on the perception of risk exposure are provided in the results section of this study. However, the relatively recent experience of the tsunami, and an even more recent flood event in January 2013 caused by tropical cyclone Felleng, has catalysed a change in perceptions.

Statistics of the case countries over the period 1990 to 2014 show that they have experienced 12 disasters in total, with total damage in excess of US\$371 million (Table 1).

Presentation of Results and Discussion

Perception of risk

The perception of risk was analysed as part of the assessment of the potential for microinsurance as a coping strategy for increasing climate

Disaster Type	Country	Disasters	Killed	Injured	Affected	Homeless	Total Affected	Total Damage (US\$'000)
Drought	Mauritius	1	0	0	0	0	0	175000
Flood	Mauritius	1	11	82	0	0	82	0
	Seychelles	2	5	2	5560	110	5672	1700
Tropical cyclone	Mauritius	6	10	1050	6800	4000	11850	185400
	Seychelles	2	0	0	9800	0	9800	9300
TOTAL		12	26	1,134	22,160	4,110	27,404	371,400

Table 1: Disaster Information by Country (1990 to 2014). Source: EM-DAT- The OFDA/CRED International Disaster Database – www.emdat.be – Université Catholique de Louvain – Brussels – Belgium.

variability within the respective countries. In the demand survey conducted, respondents were asked to self-assess their level of exposure to a number of scenarios related to house damage, crop or livestock loss and loss of employment or customers due to extreme weather events such as flooding, high winds or drought. The assumption is that where the perceived risk is higher, the desire to find ways to mitigate that risk (for example through the purchase of microinsurance) will also be higher.

Flooding

Only 5.5% of SWIO respondents perceived that they were at a high or very high level of risk from house damage due to flooding. These perceptions appear to be borne out in relation to actual experience where very few respondents (4%) had actually experienced house damage due to flooding in the SWIO.

However, the issue of agricultural loss due to flooding appears to be more of a concern in SWIO where 32% consider themselves at a high or very high risk of crop or livestock loss. This increased perception of vulnerability is matched in relation to experience where 23% of SWIO respondents had actually experienced such loss due to flooding.

High winds

For house damage due to high winds, as little as 1.8% of the sample considered that they were at a high or very high level of risk. An overwhelming majority of 78% of the respondents felt that they had no risk at all of house damage resulting from high winds. These perceptions are again closely related to actual experience where only 2% had experienced damage due to high winds in the SWIO.

When assessing perceived risk for crop or livestock exposure to high winds 13% of respondents in the region assessed this as a high or very high risk.

Drought

Drought appears to be a significant concern in SWIO where 40% of respondents consider themselves at a medium, high or very high risk of crop or livestock loss due to drought. This is reflective of their experience, where 20% of SWIO respondents had experienced loss due to drought.

Loss of income

In SWIO there is a high prevalence of entrepreneurs where 84% of respondents self-identified as self-employed. While exposure to crop or livestock loss and house damage as a result of extreme weather conditions is perceived to varying degrees for the majority of respondents in the SWIO, risk of loss of earning capacity is considered as generally higher. In the region, 36% of respondents consider themselves at high or very high risk from loss of customers, while only 16% consider themselves at high or very high risk of loss of employment due to extreme weather.

Based on these results, it appears that weather events that have

affected a country in the ‘recent/in living memory’ past will have an influence on the way climate risk is recognized by a community. For the entire sample, approximately 42% had experienced some loss from an extreme weather event. The experiences of extreme weather events were also quite recent, with 80% of respondents indicating that the most recent experience was between 2011 and 2013.

Experience is based on respondents’ citing of a specific year of experience as not all of those experiencing an event indicated a coping mechanism and year of experience was considered the most useful indicator (Table 2).

Mitigation strategies

The risk management strategies employed by individuals are directly correlated to their perception of risk. It can be argued that the more persons recognize their vulnerability, the more likely they are to take responsibility for securing their livelihoods, property and financial stability. Past events give more information on what the exposures are and what preparations (or recovery tools) can be utilized to help manage the looming risk.

Following a disastrous weather event, individuals within vulnerable coastal communities usually cope using a variety of mechanisms such as: government aid in the form of emergency relief, savings and assets, loans, and other employment. In some cases, where a particular group is noticeably marginalized within a country when it comes to weather hazards, the government may proactively develop social systems to support them. Understanding how this segment of the population copes with disasters of all types is important in developing alternative, sustainable, mitigation measures.

The poorest members of societies living in SIDS are especially at risk from falling deeper into poverty as a result of their vulnerabilities to environmental risks. It is not only important to identify the type of coping mechanisms utilised, it is also important to understand the short and long term effects of the variety of mechanisms utilized. Drawing on the work of Watts who ranked coping mechanisms according to the degree of reversibility and the level of commitment of household resources, Montgomery categorized a series of these mechanisms according to stressor level as low, medium and high. This work was later adapted by [16] in referring to the demand for microinsurance (Table 3). As the table shows, depending on the response to an event, the longer-term impact of a decision can range from a reduction in unnecessary expenditure to social isolation. The classifications in the table were utilized in the demand study and provide a reference for the results presented on coping strategies utilized by persons in Mauritius and the Seychelles.

The actual coping mechanisms utilized by those whom experienced extreme weather events are shown in Tables 4-6 below. These tables outline results of the survey with respect to the actual coping mechanisms utilized in response to extreme weather events experienced by the target group.

Event	% Experiencing Event	% Perceiving High or Very High Risk Exposure
House Damage due to Flooding	4.4	5.5
House Damage due to High Winds	1.5	1.8
Crop/Livestock Loss due to Flooding	23.0	31.6
Crop/Livestock Loss due to High Winds	18.6	13.4
Crop/Livestock Loss due to Drought	20.1	29.7
Loss of Customers due to Storm	25.1	36.0
Loss of Employment due to Extreme Weather	7.2	16.1

Table 2: Experience of Extreme Weather Event and Risk Perception (% of sample).

Stress Level	Responses	Longer Term Impact
Low	Modify consumption	Reallocate household resources
	Improve family budgeting	Reduce unnecessary expenditure
	Call in small debts	Temporary change in lifestyle
	Draw on informal group-based insurance	
	Draw on formal insurance	
Medium	Use savings	Depleted financial reserves
	Borrow from formal and informal sources	Indebtedness- claim on future income flow
	Diversify income sources	Long work hours
	Mobilize labour	Business loss
	Migrate to work	Interference with family life
	Get help from friends	Increased social obligations
	Shift business to residence	
	Use of remittances*	
	Government assistance*	
High	Sell household assets	Loss of productive capacity
	Sell productive assets	Loss of income
	Let employees go	Depleted assets
	Run down business stock	Loss of access to financial markets
	Default on loans	Untreated health problems
	Drastically reduce consumption	Social isolation
	Divest of family ties	
	Take children out of school to work	
	'Do nothing'	

Table 3: Responses to Disasters.

Coping Mechanism	House damage-flooding (%)	House damage - high winds (%)
	SWIO	SWIO
Insurance Payout	5.3	5.9
Used Savings	36.8	58.8
Used Remittances	-	-
Found another job	-	-
Sold possessions	2.6	-
Government Assistance	36.8	17.6
Borrowed (informal)	5.3	5.9
Borrowed (formal)	-	-
Did not repair/replace	10.5	11.8
Other	2.6	-
Number of Responses	38	17
Median Estimated Loss (US\$)	\$750	\$125

Table 4: Actual coping mechanisms utilized in Last Extreme Weather Event: House Damage (% of responses).

Table 4 shows that in response to house damage persons in the SWIO are most likely to utilise coping mechanisms that can be characterized as medium and high level stressors. The three main responses to flooding and high wind damage were use of savings, government assistance and not repairing or replacing. The reliance on savings, government assistance or inertia in particular suggest that over the long-term, there is the potential for detrimental impacts such as a reinforced level of dependency (on government), depletion of asset reserves and loss of productive capacity. What is noticeable is that the SWIO respondents are more likely to rely on government assistance in response to flood damage, and less likely to rely on borrowing or do nothing. This may be due in part to the national level social protection schemes provided, particularly in the case of Mauritius. Systems are in

place to make transfers, including cash, in the face of climate variability [17]. At the macro level, such short-term funding usually requires small economies to re-allocate funds from other areas of their budgets and is often supplemented by external assistance. It must be noted that social protection schemes are becoming increasingly unsustainable due to disaster risk growing more quickly than economies as a whole [3]. As with the results presented above regarding actual responses to house damage, the use of savings as a coping mechanism again dominates in relation to loss of crops or livestock. For agricultural loss due to flooding, the use of savings in SWIO is significant. A similar situation was seen for both losses due to high winds and losses due to drought. Unlike with house damage, those in SWIO were less inclined to use government assistance to address loss of livestock or crops. The trend seen in relation to house damage and loss of crops or livestock is again repeated in relation to loss of earning capacity where the use of savings dominates responses (Tables 5 and 6).

The preceding analysis has revealed that low-income persons in agriculture, fisheries and tourism in the SWIO are at risk of loss of income and/or livelihoods from extreme weather events. In each of the extreme climate scenarios presented, the most likely response to any form of disaster was the use of savings. While this is a medium level stressor with moderate longer term impacts, we must bear in mind that by relying on personal savings in order to facilitate short-term survival each time there is a crisis, this resource is likely to be depleted over the long-run. Noting also that the target of this study is low income persons, we acknowledge that savings are generally small and would

Coping Mechanism	Crop/Livestock loss-flooding	Crop/Livestock-high winds	Crop/Livestock-drought
Insurance Payout	7.6	6.1	6.2
Used Savings	64.6	78.3	59.2
Used Remittances	0.7	-	-
Found another job	-	-	-
Sold possessions	-	-	-
Government Assistance	1.4	0.9	-
Borrowed (informal)	13.2	7.0	17.7
Borrowed (formal)	7.6	4.3	10.0
Did not repair/replace	2.1	-	3.8
Other	2.8	3.5	3.1
Number of Responses	144	115	130
Median Estimated Loss (US\$)	\$1000	\$666	\$1000

Table 5: Actual coping mechanisms utilized in Last Extreme Weather Event: Crop/Livestock (% of responses).

Coping Mechanism	Loss of customers	Loss of employment
	SWIO	SWIO
Insurance Payout	1.9	-
Used Savings	62.6	76.4
Used Remittances	0.6	1.8
Found another job	-	1.8
Sold possessions	-	1.8
Government Assistance	3.2	-
Borrowed (informal)	13.5	3.6
Borrowed (formal)	7.1	1.8
Did not repair/replace	10.3	9.1
Other	0.6	3.6
Number of Responses	155	55
Median Estimated Loss (US\$)	\$500	\$750

Table 6: Actual coping mechanisms utilized in Last Extreme Weather Event: Customers and Employment (% of responses).

likely take a while to be replenished resulting in weakened livelihoods. If a disaster strikes in a period of low savings, there will be a switch to higher stressor coping strategies which have more disadvantageous long-run results [18].

The potential for asset depletion through the use of these mechanisms, and switching to higher stressor approaches, especially in light of increasing frequency or intensity of unpredictable extreme weather events, suggests a need for the introduction of alternative coping strategies. Thus, there is growing interest in developing a menu of risk mitigation products, known collectively as microinsurance. Those products can reduce the economic damage of unanticipated events and can protect low-income households, microbusinesses, and the financial institutions that serve them [19] (Table 7).

Insurance: possession and views

The key elements of insurance are payment of a premium, risk pooling, and reimbursement of loss. The insured person, household, group, or business pays a premium in exchange for coverage. Insurance reimburses the insured party for some or all of a financial loss that is linked to an unpredictable event or risk. Approximately 53% of the SWIO sample possessed some form of insurance. For those with insurance, the most prevalent types of insurance possessed were conventional life insurance, house insurance, and vehicle insurance. Some crop and livestock insurance was also reported.

For respondents that currently had insurance, there was a high degree of satisfaction with various elements of their policies such as premiums, paperwork, location of institutions, and level of coverage. However, there was a relatively lower level of satisfaction with the speed of benefit payout. In terms of general perceptions, respondents do not think insurance premiums are an unnecessary expense but they felt that insurance was useful for them. In terms of the annual cost of insurance, the median value for the SWIO sample was US\$422 (US\$35 per month). As a matter of concern, 26% of SWIO respondents cited cost as the main reason for not having insurance (Table 8).

Apart from the issue of cost, the other main reasons prevalent across the region related to a lack of knowledge or thought about insurance and a lack of trust. There was a definite indication of a lack of trust in insurance companies with only 28% of respondents agreeing that they trusted insurance companies to payout what was promised, and 15% indicating a lack of trust in insurance companies as a reason for not having insurance. The other reasons for not having insurance includes related expenses involved (26% of SWIO respondents), as well as a lack of knowledge of insurance (25%), ‘never thought of getting insurance’ (19%), and insurance not considered relevant to their needs (13%).

	SWIO (%)
Life Insurance	53.9
House Insurance	18.6
Contents Insurance	1.4
Vehicle Insurance	46.4
Personal Accident Insurance	9.5
Medical Insurance	10.2
Crop/Livestock Insurance	25.8
Other type of insurance	9.8
Total	295

Table 7: Types of Insurance Possessed for those with insurance (Note that there were multiple responses to this and therefore percentages will total more than 100%).

	SWIO (%)
Does not know enough about insurance	24.7
Does not know where to get insurance	2.1
Insurance companies too far away	1.3
Insurance is too expensive	26.4
No information on policies	3.8
Never thought of getting insurance	18.8
Insurance not needed/not relevant	13.0
Application for insurance too complex	8.4
Does not trust insurance companies	15.1
Other	6.7
Total Responses (%)	120.3
Total	239

Table 8: Main Reasons for Not Having Insurance (% of cases).

Microinsurance as a potential adaptation strategy for mauritius and the seychelles

Risk transfer instruments, such as insurance, are increasingly contributing to the effects of governments and households to reduce the immediate and long-term losses associated with extreme events. They not only offer funds for post-disaster relief and reconstruction, but can also contribute to support ex ante reductions in vulnerability. Thus, throughout the international climate change negotiations following the Bali Action Plan, risk management and insurance have been increasingly featured as a means to advance climate-change adaptation and manage risks of extreme weather events [20].

It is important to note that amongst low-income groups risk pooling and informal insurance are not new. Informal risk sharing schemes have been around for generations and are particularly prevalent in developing countries. They are, however, usually limited in their reach and the benefits typically cover only a small portion of the loss. It is also equally important to make the distinction that although oftentimes microinsurance is loosely used to refer to general risk prevention and management techniques (e.g. savings set aside for emergency purposes, such as insurance funds), in this context we require that it involves an element of risk pooling [21].

Microinsurance, like traditional insurance, is a risk-sharing mechanism in which premiums are paid by all members of the insurance scheme, and this pool of premiums is used to reimburse those members of the scheme who suffer losses from a pre-defined set of perils [22]. The difference between microinsurance and traditional insurance, however, is that microinsurance specifically sets out to provide affordable and accessible insurance to low-income people who cannot gain access to traditional forms of insurance [23]. As such, the ‘goal of microinsurance is to make appropriate, affordable risk-management tools available to the poor to help support their economic development [24] by providing a precautionary (ex ante) mechanism for coping with losses.

The results presented in the sections above highlight the inadequacies of current practices of local communities in effectively hedging against the effects of catastrophic weather events due to climate change. It is necessary to stabilise the volatility of the income of vulnerable persons if adaptation is to be successful. While there remains an array of unique methods for the management of disaster risk, this paper examines microinsurance as a source of support. Table 9 shows the differences between conventional insurance and microinsurance according to Craig Thorburn, a Senior Insurance Specialist from the World Bank.

	Conventional Insurance	Microinsurance
Premiums	Typically regular annual, quarterly, monthly Based on age or other specific risk characteristics, and collected regularly Mostly from bank deductions	Frequent or irregular premium payments Group pricing with links to other services
Policies	Complex policy document, many exclusions, usually annual terms	Simple language Few to no exclusions Terms appropriate to market May require life and non life benefits
Claims	Claims process for large sums insured may be quite difficult	Claims process for small sums insured is simple yet still controls fraud Rapid claims processing
Delivery Channels	Sold by licensed agents or brokers to wealth, middle class, or companies that typically understand insurance	Often sold by unlicensed non-traditional agents to low-income persons, preferably in groups requiring significant consumer education
Control efficiencies	Screening requirements may include a medical examination, or other tests Death certificates confirming event	If there are any screening requirements, they are very limited to keep costs low Confirmation of death by local leaders

Table 9: Conventional Insurance and Microinsurance [25].

Advantages	Disadvantages
Affordable so that low income earners are able to purchase the products	Possibility of a mismatch of payouts and loss experienced (for index-based products)
Makes insurance available for previously under-served individual and communities. Policyholders benefit from cash payments after an event which reduces their dependence on government aid and personal savings	Quality of product often dependent on the quality of weather data available both currently and historically
Can be linked to expected loss through the use of indices	Distrust of insurance within these groups; interests must be aligned between clients and insurer
Emphasis on timeliness of payouts, greatly enhanced by use of index-based products	Potentially high distribution costs as this group is not normally a major participant in the financial services industry
Level of coverage may be varied to suit the needs of clients	
Less dependency on government	

Table 10: Advantages and Disadvantages of Microinsurance.

Table 9 above shows that many of the challenges indicated by the sample group as it relates to traditional insurance could be circumvented through microinsurance policies. Some of the advantages and disadvantages to introducing non-traditional insurance products catered to the needs of persons living near or below the poverty line are outlined in Table 10 below.

Conclusion

The results of the research suggest that although there is an increasing trend in the development of natural catastrophes that affect a country, low-income individuals of coastal communities often have differing perceptions on risk unless they have personally experienced a disaster. The level of perceived risk and the adequacy of available coping mechanisms are two factors influencing the demand for microinsurance. Loss of crops or livestock and loss of earnings as these were the largest areas of risk exposure as perceived and experienced by all respondents. For the most part the actual mechanisms utilized in the SWIO region to cope with disasters are medium level stressors.

Interpreting the overall results suggests that use of savings is prominent in both Mauritius and the Seychelles, and SWIO respondents were more likely to use savings and seek out governmental assistance after an extreme weather event. The potential for asset depletion through the use of these mechanisms, and switching to higher stressors approaches, especially in light of increasing frequency or intensity of extreme weather events, signifies a need for the introduction of alternative coping mechanisms. Mitigation measures should be put in place to address the particular vulnerabilities of lower income groups in at-risk areas and sectors. One such mitigation measure is the use of

microinsurance as a component of micro-financial services in general [26].

The research has demonstrated that there is a need for alternative financial risk management tools such as microinsurance given the level of risk exposure of low income persons and the asset depleting coping mechanisms currently being utilized. However, the shortcomings of insurance in relation to climate and weather issues also need to be noted in the design of any new product offerings. These shortcomings include: high premiums in high risk areas where the most vulnerable are located; incentivising settlement in high risk areas and disincentivising the adoption of mitigation measures; limited coverage by private insurers in high-risk zones; and inefficiency of publicly funded programs.

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