BUILDING BUSINESSES' CLIMATE RESILIENCE (BBCR)

Report on Baseline Mapping Exercise

PROJECT FOR INNOVATIVE CLIMATE DECISION TOOLS FOR ENHANCING SME RESILIENCE IN SRI LANKA

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Executive Summary

Small and medium enterprises (SMEs) in Sri Lanka are vulnerable to climate risks of heavy precipitation and flooding and suffer consequences of revenue loss, business disruption, cost of rebuilding supply chains and losing customer confidence. However, currently there is limited awareness and capacity amongst SMEs and their support organizations on developing appropriate understanding of climate risks, impacts on different regions and business sectors and the need for adaptation planning. By improving their understanding of future climate risks and investing in adaptation, SMEs will not only be able to 'climate proof' their business operations but will also be instrumental in minimizing climate impacts on local and national economy.

Keeping in view the need to provide technical and knowledge support to SMEs to build their resilience against future climate risks, UNEP DTU Partnership (UDP), Asian Disaster Preparedness Center (ADPC), the Ceylon Chamber of Commerce (CCC) and MPEnsystems Advisory Pvt. Ltd., with funding support from the Nordic Climate Facility (NCF), have created a consortium to implement the project titled 'Building Businesses' Climate Resilience' (BBCR) – Project for Innovative Climate Decision Tools for Enhancing SME Resilience in Sri Lanka. The aim of this project is to develop a disaster risk management (DRM) and business continuity tool targeted at vulnerable SMEs in Sri Lanka.

In order to engage the SMEs in this project from the inception stage and ensure that the DRM tool is based on the realities, actual needs and priorities, the baseline mapping exercise was carried out under the BBCR project. The aim of this exercise was to examine the current vulnerability context of SMEs, characterize flood impacts and losses, identify current adaptation strategies and examine how effective have they been in reducing flood risk. The baseline study further mapped the governance framework formulating policies and financing mechanism that currently supports flood affected SMEs.

Three flood-prone districts, namely, Gampaha, Kalutara and Ratnapura were selected as the study areas. The data collection for the baseline study was based on secondary literature review and primary data through the sample survey of flood-affected SMEs in the selected districts. Garment sector as well as other flood-affected sectors, such as, fast-moving consumer goods (FMCG), light engineering, shoes and bag manufacturing, printing, packaging and food processing, retail outlets and small hotels were covered under the sample survey. Sample SMEs (116 in total) were administered detailed questionnaires to understand their exposure and vulnerability to recurrent floods, characterization and quantification of impacts on their assets, revenue, business continuity, etc., current adaptation strategies used by them and their willingness to opt for a potential DRM tool. The data obtained through the questionnaire was further supported by observations and exploratory and in-depth interviews with key stakeholders, including government departments and institutions, banks and insurance organizations.

Ninety five percent (95%) of interviewed SMEs have faced flood events in the last five years. Majority of them have seen flood waters entering their premises with the flood depth of 8-9 ft and average 14 days of flooding each year during this period. Hence, the damage to physical infrastructure, equipment and products has been substantial. Estimates have been obtained from SMEs on individual items damaged during floods. They provide insights into how building structure like grounds, fence, doors, windows, flooring, etc. is getting damaged almost every year. Other items like air conditioning or heating systems, communication, transport vehicles have been damaged once in 2-3 years. More than damage to physical infrastructure, substantial costs are incurred by SMEs on damaged machinery, raw materials and semi-finished and finished products. SMEs also face very high increased alternative operating costs as production needs to be shifted elsewhere or inventory needs to be moved.

Comparison of average annual damage costs with average annual turnover shows that in absolute terms, small businesses suffer maximum damage cost and medium businesses suffer the least. But in relative terms, micro businesses suffer far more than small and medium businesses in comparison to their annual turnover. This is an important reflection on the state of preparedness of these businesses for flood impacts as well as the relative burden on them. Micro businesses with the least capacity to bear the burden of floods, suffer the most damage costs and small businesses bear the burden in terms of very high absolute damage costs.

Extrapolating the costs for all flood-affected SMEs in the three districts based on suitable assumptions reveals that SMEs have to bear millions of dollars of costs due to damages suffered during floods. The total extrapolated annualized costs for flood-related damages are estimated at LKR 1365.11 million or USD 9.10 million. Similarly, SMEs spend LKR 97.19 million (USD 0.65 million) on recurrent adaptation measures and LKR 388.97 million (USD 2.59 million) on structural measures.

In terms of support from government departments and institutions, policy support is being planned by the Ministry of Industry and Commerce for the SME sector in general. However, disaster risk management needs to become a part of this support, particularly in reducing current biophysical and social vulnerability. For this purpose, BBCR might prove to be a timely project providing the necessary technical inputs into the policy formulation exercise. The knowledge base on current and future climate risks exists but coordination among different government departments is urgently needed to improve the early warnings sent to SMEs to help them protect their assets from disasters. The knowledge base on climate risks also needs to be used in future land use planning to discourage setting up of enterprises in areas which are highly vulnerable to climate risks.

Although insurance is an important tool for protection of SMEs from climate risks, insurance companies are not willing to offer products in areas which are acutely flood prone. If they offer products, the premiums are high and that discourages SMEs from taking up insurance.

There is a need for greater and more transparent dialogue between SME associations and insurance companies.

It is clear from the surveys and interactions with various stakeholders like SMEs, government departments and institutions and banking and insurance companies that they would be willing to cooperate with experts and deliberate on possible solutions for flood risk mitigation. There is keen interest in opting for a DRM and climate adaptation product to build resilience against future climate risks. Based on this, the BBCR project will plan the next steps by involving interested SMEs in further discussions regarding the type of DRM/climate adaptation products, identify suitable measures and overall design of the DRM product, develop the prototype and pilot and demonstrate its use amongst selected SMEs.

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1. Introduction

Climate-related disasters, such as heavy precipitation and flooding, landslides and coastal erosion adversely affect local businesses as well as residents. Such disasters impact vulnerable businesses and households in Sri Lanka in the form of extensive damage to infrastructure, loss of lives and property, damage to productive assets, revenue losses and disruption of economic and social activities. Small and medium sized businesses feel greater impacts of disasters due to limited technical and financial capacity and suffer consequences of revenue loss, business disruption, cost of rebuilding supply chains and losing customer confidence. For example, small and medium enterprises (SMEs) operating in the garment sector in Sri Lanka an integral part of the leading export industry but are facing severe impacts of frequent floods in recent times. Same is true of other sectors like gems and jewellery, tourism, retail businesses and light engineering units. Currently, there is limited awareness and capacity amongst both SMEs and their support organizations on the pertinence of adaptation planning, including an appropriate understanding and available data on climate impacts on different regions and business sectors. By understanding climate risks and investing in adaptation, SMEs will not only be able to 'climate proof' their business operations but will also be instrumental in minimizing climate impacts on local and national economy.

Keeping in view the need to provide technical and knowledge support to SMEs to build their resilience against future climate risks, UNEP DTU Partnership (UDP), Asian Disaster Preparedness Center (ADPC), the Ceylon Chamber of Commerce (CCC) and MPEnsystems Advisory Pvt. Ltd., with funding support from the Nordic Climate Facility, have created a consortium to implement the project titled 'Building Businesses' Climate Resilience' (BBCR) – Project for Innovative Climate Decision Tools for Enhancing SME Resilience in Sri Lanka. The aim of this project is to develop a disaster risk management (DRM) and business continuity tool targeted at vulnerable SMEs[1] in Sri Lanka. This product or tool aims to empower SMEs to make their own decisions to mainstream adaptation practices and enhance their resilience towards climate change. This will allow them to reduce recurring losses from floods, while formulating measures to continue business operation during disruptive events and adapt to climate change in the long-term.

Mainstreaming adaptation amongst SMEs with help from a decision-support tool and related training/guidance requires their involvement at an early stage. This is to ensure that the support tool is based on their actual needs and priorities, as well as the realities in which they operate. For this purpose, the first step of the BBCR project is a baseline mapping exercise, which aims to provide the required in-depth understanding of their vulnerability

[1] The term SME denotes micro, small and medium enterprises in Sri Lanka. SMEs are defined, under the National Policy Framework for SME Development of Ministry of Industry and Commerce, on the basis of annual turnover and number of employees. All enterprises employing less than 300 people in manufacturing sector and less than 200 in service sector with annual turnover of less than Sri Lankan Rupees (LKR) 750 million are considered as SMEs. There are sub-classifications as micro, small and medium using both the criteria. If an enterprise falls under more than one category, number of employees is the deciding factor.

context, the internal dynamics, the broader governance context in which they operate as well understanding the market for the proposed business resilience decision making tool/product . Garment sector, comprising large number of SMEs playing an important role in the supply chain leading to 44% of total exports in Sri Lanka, is the primary target for piloting the decision-support tool. However, other SME sectors facing similar flood impacts have also been covered under the baseline study. Inclusion of diverse sectors in the baseline exercise will improve the understanding of vulnerability of SMEs to floods in general and also offer insights into specific requirements of different sectors while designing the decision-support tool. The baseline exercise will further help in addressing existing knowledge and data gaps that exist in Sri Lanka in this domain.

This report presents highlights of the baseline study carried out in three flood-prone districts of Sri Lanka – Gampaha, Kalutara and Ratnapura. The baseline exercise consists of primary survey among randomly chosen SMEs in the three districts by administering a detailed questionnaire and Key Informant Interviews (KIIs) among selected SMEs, relevant government institutions, banks and insurance companies. The following sections in the report present the analysis of information collected through baseline survey and interviews and presents findings on the damages and costs of floods as well as current coping and adaptation measures implemented by SMEs. The structure of the report is as follows. Section 2 builds the context for the baseline exercise by creating a profile of the selected districts and flood-related issue facing the SMEs. Section 3 describes the research design and methodology used in the baseline exercise. Findings based on data collected through primary survey and KIIs are discussed in Section 4. Section 5 outlines conclusions drawn from the findings and offers next steps for the project based on the findings.

2. Context

In Sri Lanka, SME sector is considered as the backbone of the national economy accounting for more than 75% of enterprises, 45% of employment and 52% of the Gross Domestic Product (GDP)[2]. SMEs are seen by the government as drivers of change for inclusive economic growth, regional development, employment generation and poverty reduction[3]. SMEs account for a large percentage of establishments in urban areas, especially in the Western Province, where the capital city Colombo is located, and they make significant contribution to the employment generation and value addition to the country and urban economy[4]. The western province has seen heavy concentration of SMEs such as textile & apparel, food & beverage, chemical & rubber and mining & minerals. Two of the Districts chosen for the baseline mapping in this report are also from the Western Province and are home to a large number of SMEs operating in different sectors. Ratnapura district is in the

[2] GoSL (2018), National Policy Framework for Small Medium Enterprise (SME) Development, Ministry of Industry and Commerce

[3] *Ibid.*

[4] Sinnathurai (2013), "The status of small and medium enterprises and promotions for their growth in Sri Lanka", Global Business and Management Research: An International Journal · April 2013

Sabaragamuwa Province located in the south-central region of the island. These districts are also flood-prone and several flooding events have occurred here during the last five years.

From an economic perspective, the impacts of flooding can be devastating for the functioning and sustainability of SMEs. Sri Lanka has seen a number of major flood events during the last few years. The combination of intense monsoon rainfall, topography, rapid urbanization, encroachment of waterways, poor planning policies, inadequate maintenance of rivers and canal system are the major reasons for flooding in Sri Lanka. Sand barriers built across river outlets to channelize and store water is another factor that has aggravated the flooding situation. In Gampaha district, for instance, flooding is mainly due to unplanned urbanisation, establishment of settlements in floodplains, infrastructure development neglecting potential flood risk and inadequate maintenance of storm water drainage systems. Frequent floods have had serious impacts on households and businesses and affected local as well as national economy[5].

One of the significant flood events in recent years was the 2016 floods, particularly from an insurance perspective, given the impact on livelihoods and properties around the city of Colombo. In May 2016, a tropical storm hit Sri Lanka and resulted in floods and landslides in 22 of the 25 districts. The Kelani Ganga (Kelani River) is one of the main river basins in Sri Lanka and flows through the centre of Colombo. The Kelani catchment experienced a total of 350mm of precipitation across a three-day period (15 to 17 May 2016). The torrential rain caused inundation, destroyed industrial and residential infrastructures, and resulted in 104 fatalities. Districts in the west and south were the worst hit given the spatial pattern of precipitation. These include highly populated areas such as Colombo and Gampaha (Ministry of Disaster Management, 2016). A year later (May 2017), torrential rain during the same monsoon season caused flooding and landslides in Sri Lanka. It affected at least half a million people and resulted in 140 deaths with widespread losses in Colombo, Gampaha, Kalutara, Galle and Matara. Moreover, the trend pattern of the annual rainfall variation studied for 10 years from 2000 – 2010 shows a significant increase in Ratnapura district. The rainfall has increased approximately by 33.02 mm per year[6] during the last decade showing that there is a possible impact of the global warming on the rainfall pattern in Ratnapura district.

[5]http://www.dailymirror.lk/features/Linking-disaster-risk-management-into-economic-policy-planning-in-Sri-Lanka/185-163931

[6]Nawagamuwa, Udeni & Rathnaweera, Tharaka & L L Rangana, H & P Palihawadana, M. (2019). EFFECTS OF GLOBAL WARMING ON LANDSLIDE FREQUENCIES IN RATNAPURA DISTRICT, SRI LANKA. - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Annual-rainfall-variation-in-Ratnapura-district-from-2000-to-2010_fig1_267426159 [accessed 7 May, 2019]

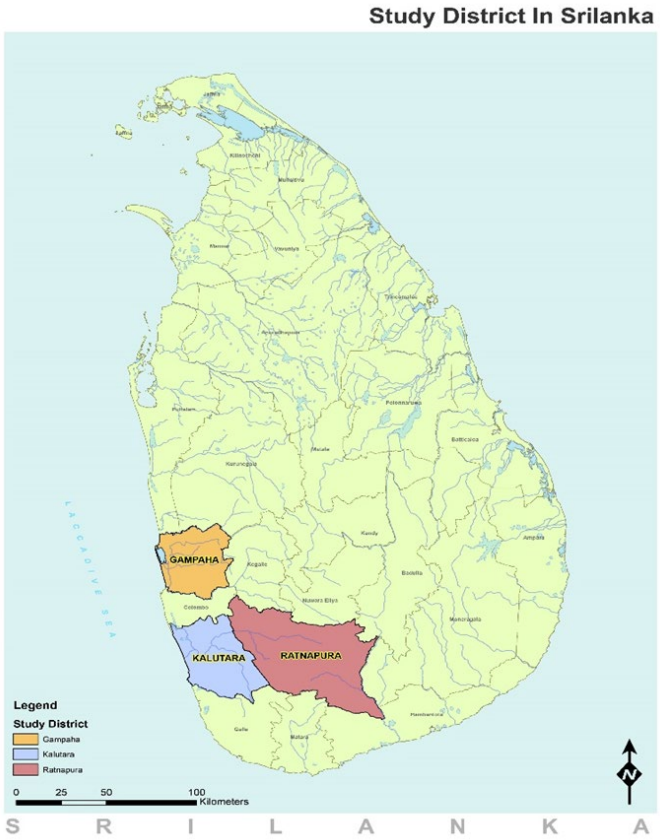


Figure 1 Selected districts for baseline mapping

In order to study the impact of recurrent floods on SMEs and identify current coping and adaptation measures, three districts, namely, Gampaha, Kalutara and Ratnapura have been selected as the study areas. These three districts are known to be most vulnerable and affected by floods during the last 40 years. The location map of the three districts within Sri Lanka is given as Figure 1 above. Gampaha District is located in Western Province and has an area of 1,387 sq. km. It is bound by Kurunegala and Puttalam districts from north, Kegalle District from east, Colombo District from south and Indian Ocean from west. The borders of this district are the Ma Oya on the north, Kelani River on the south and 1,000 ft contour line on the east. Kalutara District is located in the south west of Sri Lanka in Western Province and has an area of 1,598 sq. km. It is bound by Colombo District from north, Ratnapura District from east, Galle District from south, and by the Indian Ocean from west. Ratnapura District is in the Sabaragamuwa Province. This gem-mining centre of Sri Lanka is also a major crossroad between southern plains and the hill country to the east. It is a bustling market city servicing most of the surrounding towns. Many of the prominent gem dealers in Sri Lanka operate from this town. Given the large number of SMEs operating in diverse sectors in these three districts, sample for the baseline study has been chosen from here.

3. Research design for baseline mapping

3.1 Research objectives

The baseline study has formulated the following research objectives as the starting point.

- To examine the current **vulnerability context** of SMEs and characterize recurrent flood impacts and losses (incl. exposure and susceptibility)
- To identify the **current adaptation strategies** and instruments applied, to understand how effective are they in reducing exposure and susceptibility and improving resilience to recurrent flooding (capacity to anticipate, cope and recover).
- To investigate what influences **SME actors' decision-making** with regards to climate risks including their **attitudes, perceptions** and related **behaviors.** Here we explore the extent to which adaptation decisions are a result of internal decisions, or resources and capabilities or due to external pressure/influence.
- To understand **the risk and adaptation governance architecture** in which SMEs operate, including the role of policy interventions and supporting institution.
- To examine the **financial mechanisms** currently available for supporting flood affected SMEs.

Addressing these objectives will help in providing an understanding of the key opportunities and constraints (formal/informal and internal/external) shaping SMEs' climate resilience, which will inform the development of a DRM product or tool intended to enhance their adaptation capacity. For a clear understanding of the baseline study and its objectives, four key research questions are guiding the baseline exercise as shown in Figure 2:

1. How does recurrent flooding impact SMEs in Sri Lanka?
2. What are the current coping and adaptation strategies applied by flood prone SMEs in Sri Lanka?
3. What internal factors influence SMEs' risk management and adaptation decision-making?
4. What is the role of supporting institutions and policy for shaping SME resilience?

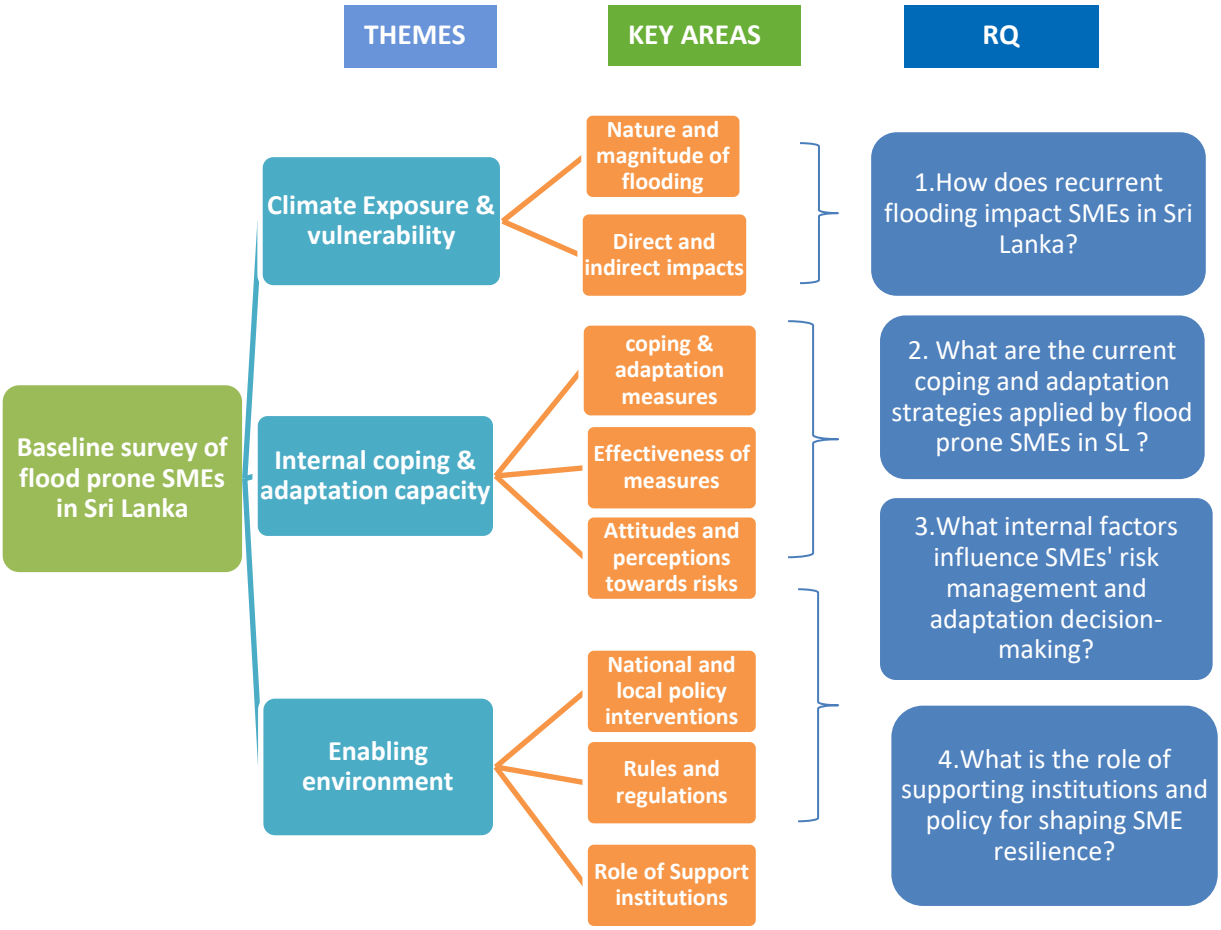


Figure 2 Key themes and research questions

3.2 Methodology and data sources

Table 1 describes the main and subsidiary research questions, proposed methodology and data sources for baseline mapping.

Table 1 Methodology and data sources for baseline mapping

Main research question	Sub research questions	Methodology	Data Sources
Exposure and vulnerability			
How does recurrent flooding impact SMEs in Sri Lanka?	• Who (SMEs) and what (surrounding infrastructure) is exposed to flooding?	• Overlay flood hazard maps of selected districts with location of SMEs • Study land use maps to identify surrounding infrastructure that might add to flood vulnerability	• Flood hazard maps from Disaster Management Centre • List of SMEs from Ceylon Chamber of Commerce and District Chambers
	• What is the nature and magnitude of flooding that SMEs are exposed to?	• Examine rainfall trends in selected districts over last 10 years • Identify trends in frequency, intensity and duration of rainfall events that cause flooding	• Rainfall data from Department of Meteorology • Information on specific rainfall events from government reports and newspaper articles
	• What have been the impacts of flood events on SMEs?	• Systematic random sampling for SMEs in selected districts • Administer questionnaires to sample SMEs to capture impacts • Semi-structured interviews with key stakeholders	• Survey • Key Informant Interviews (KIIs)
	• What are the assets and income losses associated with flooding?	• Administer questionnaires to sample SMEs to capture assets and income losses • Extrapolate numbers for SMEs in Sri Lanka	• Survey • Secondary reports on SMEs for extrapolation exercise
	• Are the impacts homogenous?	• Analyze the impacts to understand if impacts are similar or heterogenous across surveyed SMEs • Identify factors for heterogeneity of	• Survey • KIIs

		impacts, if any	
Coping and adaptation capacity			
What are the current coping and adaptation strategies applied by flood prone SMEs in SL?	• To what extent are C & A strategies effective to anticipate, cope and recover from flood?	• Identify SMEs coping and adaptation options, their costs, source of finance and decision-making process • Examine short to medium term effectiveness of coping strategies	• Survey • KIIs
What internal factors influence SMEs' risk management and adaptation decision-making?	• Who makes decisions regarding risk management? • What are the attitudes and perceptions towards risks? • What are the skills and resources available? • Where do SME actors get climate related information? • What is the experience with business continuity plan? • Whom do they collaborate with?	• Analyze internal company dynamics relevant for risk management decision-making	• KIIs
Enabling environment			
What is the role of supporting institutions and policy for shaping SME resilience?	• What is the role of local and national government in facilitating SMEs' flood resilience? • What are the policy measures currently employed for reducing flood exposure of SMEs? • What are the key barriers for initiating DRM? • What financial	• Examine the role of government services and other support in helping SMEs build flood resilience • Study options like relocation, flood management and other forms of government • Explore the role of bank finance and insurance in providing flood protection	• Secondary data from government reports • KIIs • Secondary data (reports, policy documents etc.)

	mechanisms are available to help SMEs build long-term flood resilience?	intervention	

3.2.1 Data collection methods

The data collection for the baseline survey was based on a **secondary literature review** (scientific articles, books, reports, surveys, policy statements etc.) and **primary data**, which involved carrying out a **sample survey** of flood-affected SMEs in selected districts. As mentioned in the Introduction, garment sector was chosen as the target sector for piloting the decision-support tool. However, other flood-affected sectors were also covered under the sample survey to give a comprehensive understanding of vulnerability and coping capacity of SMEs during frequent floods. There are 300 garment SMEs currently registered as per the preliminary information available with the Ceylon Chamber of Commerce. Apart from Garment SMEs, the study included other industries such as Fast-Moving Consumer Goods (FMCG), Light Engineering, Shoes and Bag Manufacturing, Printing, Packaging and Food Processing, retail outlets and small hotels. All three districts are affected by floods regularly and SMEs located here have suffered from significant losses in recent years. In case of garment SMEs, there have been cascading negative impacts on the supply chain of large garment exporters in Sri Lanka which engage SMEs for different processes involved in garment manufacturing. A sample of garment sector and other SMEs was drawn from the three districts (maps given as Annex 1) and questionnaires (given as Annex 2) were administered to them to understand their exposure and vulnerability to recurrent floods and characterization and quantification of impacts on their assets, revenue, business continuity, etc. The effectiveness of current coping and adaptation strategies applied was also explored. The data obtained through the questionnaire was further supported by **observations** and **exploratory and in-depth interviews** with key stakeholders, including support agencies.

3.2.2 Sampling

Sampling plan was prepared based on the list provided by the Ceylon Chamber of Commerce as well as through visits by local enumerators in the chosen districts to identify locations where different types of SME businesses were operating from. As several SMEs are not registered officially in Sri Lanka, the sampling technique also included snowball sampling and random sampling in the course of data collection to make sure that informal SMEs were also included in the study. For the in-depth interviews, following stakeholders were identified:

- SMEs
- Government ministries and institutions
- Industry and trade associations
- Financial institutions including banks and insurance companies

Table 2 gives details of the number of surveyed SMEs in the selected districts as well as the types of businesses covered under the survey. A large part of the sample consists of garment SMEs, which is the primary target in this project. Other types of industries common to the SME sector are also included in the sample. The diversity of SMEs is expected to add value during the development of the climate change decision-support tool or product.

Table 2 Number of surveyed SMEs in selected districts

Type of industry	Gampaha	Kalutara	Ratnapura	Total
Garment	14	11	13	38
FMCG	3	5	3	11
Light engineering	8	2	3	13
Leather manufacturing	1	1	2	4
Printing, food and jewellery	4	4	3	11
Retail outlets	2	3	4	9
Electrical and electronics	2	1	3	6
Small hotels	6	6	6	18
Others	2	2	2	6
Total	**42**	**35**	**39**	**116**

4. Findings

This section presents the findings of primary surveys carried out among randomly selected SME units in three flood-prone districts of Sri Lanka. In addition to the survey findings, insights obtained from key informant interviews (KIIs) with varied stakeholders like selected SMEs, government organizations, industry associations and financial institutions are also presented here.

4.1 Surveyed SME units

This sub-section creates a profile of the surveyed SMEs in terms of classification based on the annual turnover and number of employees as defined by the Ministry of Industry and Commerce[7], ownership structure, employment pattern and structural characteristics of the premises from where business is operated. This is followed by survey findings on flood exposure and impacts. The extent of flood exposure and cost of damage to physical infrastructure, equipment and products is analyzed in here. These costs are further extrapolated using suitable assumptions to reflect the overall burden of frequent flooding on SME sector in Sri Lanka. In addition, measures undertaken by SMEs for flood protection

[7] GoSL (2018), National Policy Framework for Small Medium Enterprise (SME) Development, Ministry of Industry and Commerce, Government of Sri Lanka

and willingness to pay for a potential Disaster Risk Management (DRM) product are also evaluated here.

4.1.1 Profile of SMEs

The survey was administered amongst 116 SMEs operating in diverse industries such as garments, FMCG, light engineering, printing and packaging, food processing, electrical and electronics, retail stores, small hotels less than 15 rooms and so on. Approximately 79% of surveyed businesses are registered with the Ministry of Industry and Commerce as SMEs and 44% belong to trade associations like Sri Lanka Chamber of Small & Medium Industries and Sri Lanka Chamber of Garment Exporters as well as industry-wise associations such as Association of Tea Factory Owners, Association of Hotel Owners, etc. Further, 79% supply to the domestic market, 7% to international market and 14% engage with both markets. Among those who only deal in domestic market, 15.5% units cater only to wholesale market, 16.5% cater only to retail market and majority (68%) supply to both wholesale and retail consumers.

Classification of SMEs: Official classification of SMEs based on number of employees and annual turnover, as recognized by the Ministry of Industry and Commerce in Sri Lanka, is used in Table 3 to categorize surveyed SMEs. Only 'Small' and 'medium' businesses, based on the number of employees, have been selected for the primary survey. 'Micro' businesses with less than 10 employees are excluded from the baseline exercise as they mostly operate from their homes and would not have the technical and financial capacity or willingness to adopt and implement a DRM product. In terms of the annual turnover, different types of micro, small and medium businesses are covered under the survey. Out of 110 SMEs that reported annual turnover willingly, 27% SMEs have annual turnover less than LKR 15 million (USD 0.1 million[8]), 54.5% have turnover in the range LKR 16-250 million (USD 01-1.7 million) and 18% have turnover of LKR 251-750 (USD 1.7-5.0), which puts them in the medium category of business.

Table 3 Classification of surveyed SMEs based on government criteria[9]

Number of employees	No. of SMEs	Percent	Annual turnover	No. of SMEs	Percent
Micro (Less than 10)	-	-	Micro (Less than LKR 15 million)	30	27.3
Small (11-50)	90	77.6	Small (LKR 16-250 million)	60	54.5
Medium (51-300)	26	22.4	Medium (LKR 251-750 million)	20	18.2
Total	116	100.0		110	100.0

[8]Exchange rate used throughout this report is 1 USD = LKR 150.

[9]GoSL (2018), National Policy Framework for Small Medium Enterprise (SME) Development, Ministry of Industry and Commerce, Government of Sri Lanka

Ownership and employment pattern: Among the surveyed SMEs, 82% are owned and operated by individual owners, 10% are family owned businesses and 5% are business partnerships. Only 2 SMEs have a franchise arrangement and 1 SME unit is part of a big business group. Key decisions regarding environmental sustainability and disaster risk management are mostly taken by owners (68% of SMEs) followed by director/manager (16%), head of sustainability division (4%) and HR officer (2%).

SMEs engage about 60% male employees and 40% female employees on average. However, there are at least 31 SMEs where 90-100% employees are males and such units are mostly engaged in light engineering, electronics, electrical goods and small hotels. Eight SMEs, mostly in the garment sector, have reported that 90-100% employees are females.

Structural characteristics and maintenance: Most SMEs operate from permanent single-floor (38%) or multi-floor structures (54%). Only a few SMEs (8%) have semi-permanent structures and are mostly engaged in light engineering, food processing and retail outlet. Size of the premises vary from 400 sq. ft. to 4,00,000 sq. ft., with the average size of 4,500 sq. ft. The small premises of up to 1,000 sq. ft. are in garment and leather manufacturing or retail outlets. Only 3 businesses – a garment factory, FMCG manufacturing and a small hotel – operate from more than 2,50,000 sq. ft.

Eighty per cent of premises are owned by the respective companies and 82% of the total SMEs also use the whole building for their business. The average rent paid by non-owners is about LKR 38,000 (USD 253) per month. On average, surveyed SMEs have been operating from the same location and premises for past 12 years. Few (14 SMEs) have moved recently (3 years or less) while others (18 SMEs) have been in the same premises for 20 years or more. The annual maintenance amount spent by SMEs is about LKR 50,000 (USD 333). None of the SMEs have reported any formal or informal association of businesses operating in their area. Hence, maintenance of premises, making structural changes in buildings, dealing with government or trade associations is individually handled by SME owners.

4.1.2 Flood exposure and impacts

After profiling the SME respondent, questions related to their exposure to flooding and resultant impacts were administered. These questions pertain to specific damage costs borne by businesses due to impacts on physical infrastructure, equipment and products, employees not reporting to work, suspension of production, overall impact on business operations, and time taken to get business to normalcy. Information is also gathered on insurance coverage for floods and the extent to which insurance can protect or compensate for the losses.

Among 116 SMEs interviewed, 110 (95% of total) have reported flooding as one of the risks experienced by their business in the last 5 years. Other reported risks are theft (24% of SMEs), fire (13%) and drought (5%). Further, 100 SMEs (86% of total) have ranked flooding as the foremost risk regularly faced by them. Pictures 1, 2, 3 and 4 in this section depict the

extent and depth of flooding experienced by SMEs outside and inside their premises. On average, businesses have experienced flooding for about 14 days every year for the past 5 years. In Gampaha and Ratnapura, average flooding days are about 17 per year, but only 6 days in Kalutara, since this district does not get as frequently flooded as the other two districts considered here. However, more than 71% businesses in Kalutara have reported flood water entering their premises compared to average 67% for SMEs in other two districts. On average business premises remain flooded during each flooding event for 48 hours across three districts. The average depth of flooding is 8 ft. with significant differences in Ratnapura with 13 ft. and Kalutara with about 5ft of flooding depth on average. Considering only the garment SMEs, 32 (84% of total) have reported flooding as the most important risk and have experienced 15 days of flooding annually for the past 5 years. Approximately, 68.4% of them have also reported flood waters entering their premises. The average depth of flooding for these units is about 9 ft.

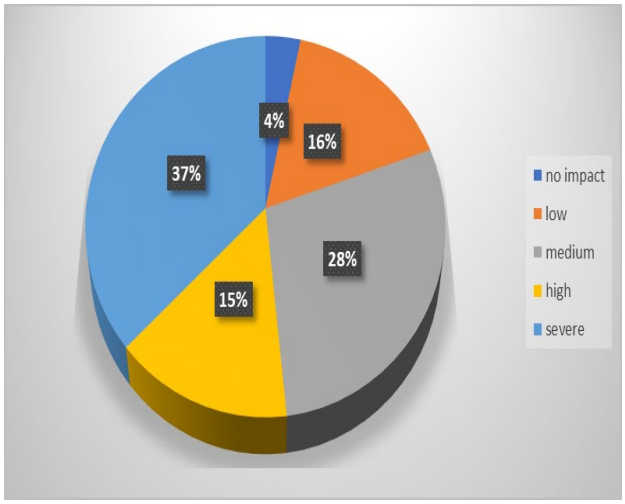
Picture 1 Ratnapura recent floods

Picture 2 Flooding inside printing unit

Picture 3 Main street where many SMEs are located in Ratnapura

The impact of recurrent floods has been rated by all respondents on a five-point scale from severe (rank 5) to no impact (rank 1). Figure 3 shows these ratings with 37% rating the impact as severe followed by 28% with medium impact, 16% with low impact and 15% with high impact. Only 4% have reported no impact of floods on their business. There are, however, significant differences among districts in terms of how flood impacts are rated as seen in the accompanying chart. For example, in Ratnapura, more than 69% have rated the impact as severe. In Gampaha, only 12% have rated flood impact as severe, whereas 33%

have rated it as medium and another 26% have rated it as low. In Kalutara, 45% have rated the impact as medium. Garment sector SMEs have rated flood impacts similar to the overall average.



	Gampaha	Kalutara	Ratnapura	Garment
No impact	9.5			
Low	26.2	22.9		15.8
Medium	33.3	45.7	7.7	36.8
High	11.9	8.6	23.1	15.8
Severe	19.0	22.9	69.2	31.6

Figure 3 Impact ratings for recurrent floods

Picture 4 Flood levels during a recent event

Although the number of flooding days, depth of flooding and severity of impact varies across businesses in the three districts, many have reported frequent damage to physical infrastructure as seen in Table 4 below. Grounds and fence are damaged every year with a very wide range of reported cost of damage. Flooring is also damaged every year or once in 2-3 years with LKR 20,000 as average cost of damage and a very wide range again reported as damage cost. More than 25 SMEs have also reported damage to electrical and lighting systems, foundation and support, walls and doors and windows. More than 20 businesses reported damage to transport vehicles and communication systems.

Table 4 Cost of damage to physical infrastructure in surveyed SMEs (N=116)

Item	No. of respondents	Frequency			Average cost of damage in LKR (Figures in bracket in USD)	Range of damage in LKR (Figures in bracket in USD)
		Every year	Once in 2-3 years	Once in 4-7 years		
Grounds and Fence	53	36	16	1	18,771 ($125)	5,000-1,00,000 ($33-$667)
Foundation and support	26	11	15	-	20,440 ($136)	4,000-1,30,000 ($27-867)
Flooring	46	29	15	2	20,439 ($136)	3,000-1,00,000 ($20-667)
Walls	25	6	17	2	61,727 ($412)	5,000-1,90,000 ($33-1,267)
Doors and windows	27	4	23	-	62,417 ($416)	3,000-4,00,000 ($20-2,667)
Air conditioning system	8	-	8	-	40,167 ($268)	25,000-60,000 ($167-400)
Heating system	6	-	6	-	1,46,000 ($973)	40,000-3,00,000 ($267-2,000)
Water pumping system	9	3	6	-	15,188 ($101)	4,500-40,000 ($30-267)
Electrical and lighting systems	31	24	7	-	47,088 ($314)	5,000-2,75,000 ($33-1,833)
Power backup generators	10	3	7	-	1,22,333 ($816)	12,000-3,75,000 ($80-2,500)
Transport	23	7	12	4	99,733	9,200-4,00,000

vehicles					($665)	($61-2,667)
Communication systems	20	11	9	-	6,479 ($43)	1,200-14,000 ($8-93)
Common sewage treatment plant (STP)	4	3	1	-	4,000 ($27)	2,000-6,000 ($13-40)

Table 5 lists the cost of damage to physical infrastructure district-wise as well as in the garment sector which forms major part of the baseline exercise. Some of the costs which significantly vary from the average are highlighted in red and also underlined. For instance, cost of damage to building structure like grounds and fence, foundation and support and flooring is reported much higher in Kalutara than elsewhere. Damage to doors and windows is much higher than average in Ratnapura as well as for garment SMEs. Heating systems are used extensively in garment units for different fabric processes. Damage costs for these systems are, therefore, much higher in garment SMEs than in other sectors. Similarly, power backup generators have suffered lot more damage in Ratnapura than other districts. This is on account of higher damage costs reported by few SMEs from Ratnapura operating in light engineering, FMCG, electrical works and printing. Lastly, damage to transport vehicles reported from Kalutara is very low compared to other districts' average cost of damage. This is due to the fact that these reported costs are for two small hotels and a garment factory in Kalutara which does not operate many transport vehicles of its own. Thus, depending on the flood exposure and type of industry in the selected districts, average damage costs for physical infrastructure differ from the overall average costs estimated in this report.

Table 5 Average cost of damage to physical infrastructure district-wise and among garment SMEs

	Gampaha	Kalutara	Ratnapura	Garment sector
				Damage figures in LKR (Figures in bracket in USD)
Grounds and Fence	17,063 (114)	40,800 (272)	15,704 (105)	18,500 (123)
Foundation and support	17,500 ($117)	38,000 ($253)	18,100 ($121)	10,143 ($68)
Flooring	14,222 ($95)	33,333 ($222)	19,615 ($131)	13,071 ($87)
Walls	57,333 ($382)	51,667 ($344)	64,438 ($430)	62,875 ($419)
Doors and windows	14,600 ($97)	20,000 ($133)	85,313 ($569)	81,500 ($543)
Air conditioning system	-	36,000 ($240)	41,000 ($273)	25,000 ($167)

Heating system	1,50,000 ($1,000)	-	1,45,000 ($967)	2,25,000 ($1,500)
Water pumping system	23,000 ($153)	7,250 ($48)	15,250 ($102)	17,333 ($116)
Electrical and lighting systems	14,250 ($95)	13,333 ($89)	84,375 ($563)	79,667 ($531)
Power backup generators	18,000 ($120)	-	1,52,143 ($1,014)	32,000 ($213)
Transport vehicles	1,15,600 ($771)	43,250 ($288)	1,16,143 ($774)	90,900 ($606)
Communication systems	-	3,875 ($26)	7,520 ($50)	7,600 ($51)
Common STP	-	2,000 ($13)	6,000 ($40)	6,000 ($40)

Besides the cost of damage to physical infrastructure, surveyed SMEs have reported damage to equipment and products as estimated in Table 6 below. The frequency of damage is mostly once in 2-3 years and these damage costs are far higher than the costs reported for damage to physical infrastructure. Machines and tools have the highest average damage costs followed by damage to finished products. Other costs such as damage to engines or generators, electrical appliances used in manufacturing and raw materials as well as partially assembled products are also quite high. This shows how damage to equipment and products is the most critical damage that SMEs suffer from due to flooding.

Table 6 Cost of damage to equipment and products in surveyed SMEs (N=116)

Item	No. of respondents	Frequency			Average cost of damage in LKR (Figures in bracket in USD)	Range of damage in LKR (Figures in bracket in USD)
		Every year	Once in 2-3 years	Once in 4-7 years		
Machines and tools	25	8	16	1	5,29,273 ($3,528)	10,000-40,00,000 ($67-26,667)
Engines/generators/alternators	5	1	4	-	4,09,333 ($2,729)	28,000-6,00,000 ($187-4,000)
Electrical appliances	23	4	19	-	1,82,619 ($1,217)	20,000-9,00,000 ($133-6,000)
Finished	36	10	24	2	5,06,800	14,000-

products					($3,379)	35,00,000 ($93-23,333)
Raw materials	45	19	24	2	3,15,389 ($2,103)	10,000-20,00,000 ($67-13,333)
Partly assembled/ processed products	54	9	18	27	2,18,357 ($1,456)	2,000-10,00,000 ($13-6,667)

Table 7 shows average damage costs reported in three districts and specifically by garment sector SMEs. Damage to machine tools, finished and partly assembled products is much lower than average in Kalutara. This may be on account of these damages being reported by small hotels and retail outlets in this district which would not be using heavy machinery and also do not have inventory of finished and partly assembled products. In Gampaha, only one shoe and bag manufacturing unit has reported damage costs to engines or generators, which is very low compared to average reported by others, since such units do not use such equipment so extensively. Further, as expected, garment SMEs have reported extensive damage to raw materials compared to the overall average in the three districts. Most garment manufacturers in Sri Lanka import raw material, i.e. cloth and further processing, stitching and screen printing is done in these units. Hence, such units always maintain a large stock of raw material which gets severely damage during floods.

Table 7 Average cost of damage to equipment and products district-wise and among garment SMEs

Item	Gampaha	Kalutara	Ratnapura	Garment sector
Damage figures in LKR (Figures in bracket in USD)				
Machines and tools	1,52,800 ($1,019)	33,750 ($225)	8,26,538 ($5,510)	9,25,500 ($6,170)
Engines/generators/alternators	28,000 ($187)	-	6,00,000 ($4,000)	6,00,000 ($4,000)
Electrical appliances	1,50,000 ($1,000)	1,70,000 ($1,133)	1,87,941 ($1,253)	2,31,250 ($1,542)
Finished products	8,11,286 ($5,409)	97,500 ($650)	4,80,789 ($3,205)	9,85,364 ($6,569)
Raw materials	3,12,000 ($2,080)	1,00,000 ($667)	3,48,095 ($2,321)	6,53,750 ($4,358)
Partly assembled/ processed products	56,500 ($377)	93,333 ($622)	3,55,455 ($2,370)	2,92,417 ($1,949)

Besides damage to physical infrastructure and equipment and products, survey questionnaire captures details on immediate expenses due to floods which are reported in

Table 8. Overall, SMEs face very high increased alternative operating costs as production needs to be shifted elsewhere or inventory needs to be moved. These costs are far higher than average in garment sector where shifting production or inventory is critical. In Kalutara, flood fighting and alternative operating costs are much lower than average as these have been reported by small hotels and FMCG units. In Gampaha, lower than average costs of pumping flood water out have been reported by garment units, small hotels, retail outlets and electronics units. Thus, depending on the types of business, average immediate expenses on account of floods differ among selected districts.

Table 8 Immediate expenses due to floods

Item	Overall	Gampaha	Kalutara	Ratnapura	Garment sector
Damage figures in LKR (Figures in bracket in USD)					
Disinfecting, cleaning and rehabilitation of premises	13,750 ($92)	-	13,333 ($89)	15,000 ($100)	-
Flood fighting and rescue work	37,556 ($250)	41,455 ($276)	7,500 ($50)	41,000 ($273)	34,400 ($229)
Removal of debris and damaged items	49,538 ($330)	81,000 ($540)	20,667 ($138)	52,500 ($350)	76,667 ($511)
Increased alternative operating costs	1,57,200 ($1,048)	1,13,750 ($758)	49,000 ($327)	1,98,350 ($1,322)	2,33,333 ($1,556)
Loss due to suspension of production	12,625 ($84)	9,944 ($66)	7,000 ($47)	27,500 ($183)	17,100 ($114)
Pumping water out of premises	76,875 ($513)	21,000 ($140)	1,26,250 ($842)	88,571 ($590)	72,143 ($481)

Besides the average damage cost estimates obtained in the above tables, it will be interesting to compare annual damage costs reported by SMEs on account of floods as percentage of their annual turnover. Figure 4 below shows the average annual damage experienced by SMEs belonging to three distinct categories on the basis of turnover. These categories are officially used by the Ministry of Industry and Commerce for classifying SME businesses as micro, small or medium. As seen in Figure 4, calculations based on the survey data show that micro enterprises with limited turnover of LKR less than 15 million have reported extensive average annual damage of LKR 11,17,375, which is 11.17% of annual turnover. In comparison, small businesses suffer 1.01% of annual turnover as damage cost due to floods every year and medium businesses suffer 0.18% of damage cost compared to their turnover. Thus, in absolute terms, small businesses suffer maximum damage cost (LKR 13,55,175) and medium businesses suffer the least among the three categories. But in relative terms, micro businesses suffer far more than small and medium businesses when

compared with their annual turnover. This will be an important reflection on the state of preparedness of these businesses for flood impacts as well as the relative burden on them. Micro businesses with the least capacity to bear the burden of floods, suffer the most damage costs and small businesses bear the burden in terms of very high absolute damage costs. These findings will have important policy implications while offering DRM products to the SMEs.

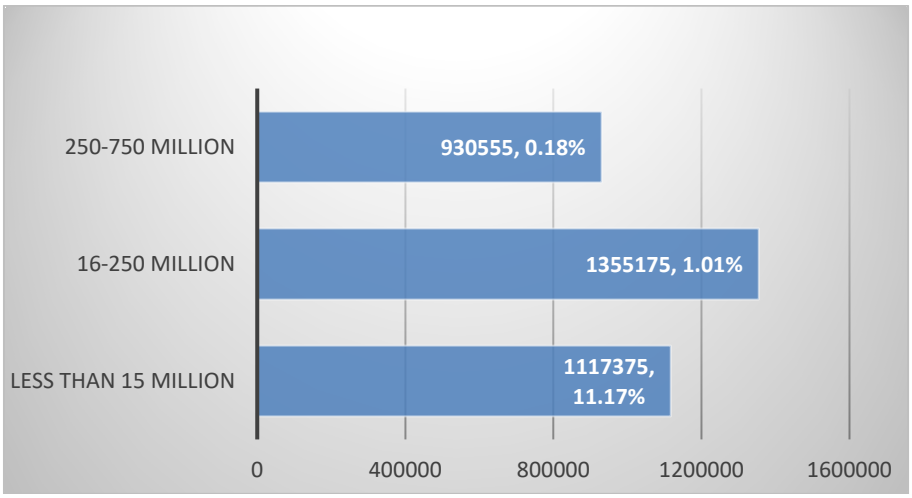


Figure 4 Annual damage cost as % of annual turnover

Impacts on employees: 79.8% of SMEs have reported suspending production on account of floods and the average number of days over which the shut down continues is 7. Employees have also remained absent for an average of 8 days every year for the past 5 years. However, it is important to note that in Ratnapura, 100% of SMEs have reported suspending production due to floods. SMEs in Gampaha have suspended production for an average of 12 days every year and their employees have remained absent for about 14 days a year due to floods. Overall, Figure 5 shows the reasons quoted by SMEs for employees not being able to work during floods. 87.9% reported flooding of access road and 72.4% reported absence of transportation as the reason for employees not reporting to work. Other reasons for employees remaining absent are family obligation, power supply cut and health issues during floods.

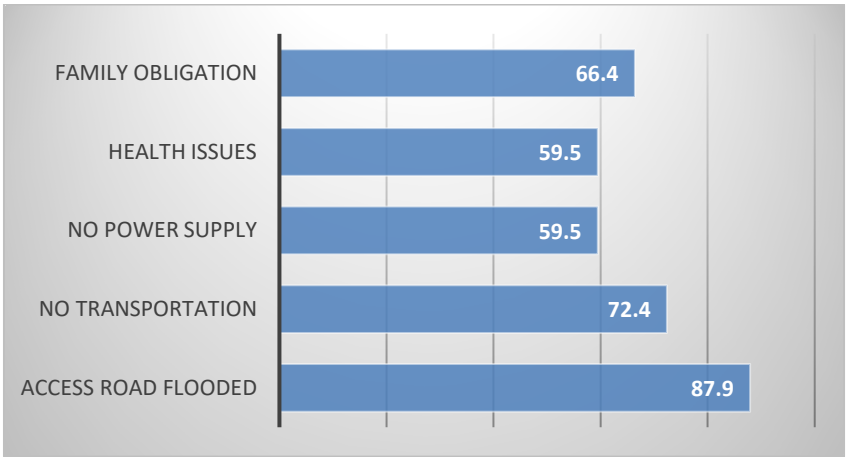


Figure 5 % of SMEs reporting reasons for employees not coming to work during floods (N=116)

23.3% (out of total of 116) of SMEs have further reported that average of 10 employees stay on the premises. This percentage is only 5.3 for garment SMEs but 35.7% for SMEs in Gampaha. Sixteen SME owners (14% of total) have also reported that their employees got stuck on the premises during floods and they spent average LKR 25,000 to take care of stranded employees. Further, 65.5% of SMEs have reported spending money on helping flood affected employees and their families and the average amount is LKR 38,000. 56.9% SME owners have also contributed to flood relief fund in the local area an average of LKR 29,000. In Ratnapura, 95% of SME owners have contributed to flood relief and in Gampaha, this contribution is LKR 82,000 on average. Time taken to get business back to normal has been average of 6 days for all SMEs in the aftermath of floods.

Overall impact on business: Figure 6 shows the overall impact of floods on business on account of floods in the past 5 years. 64.7% SMEs could not meet supply targets in the short-term and 55% faced reduced demand from regular consumers. 34.5% further lost out on contracts as they could not meet supply obligations due to floods. 21.6% SMEs had to relocate some of the business operations elsewhere. However, this percentage remains lower as not all businesses can easily relocate operations due to the nature of business, source of raw materials and proximity to customers. Hence, relocation is not an easy option even though this might ensure protection from floods. The loss of revenue from business due to the above impacts has been about 22% during the last 5 years.

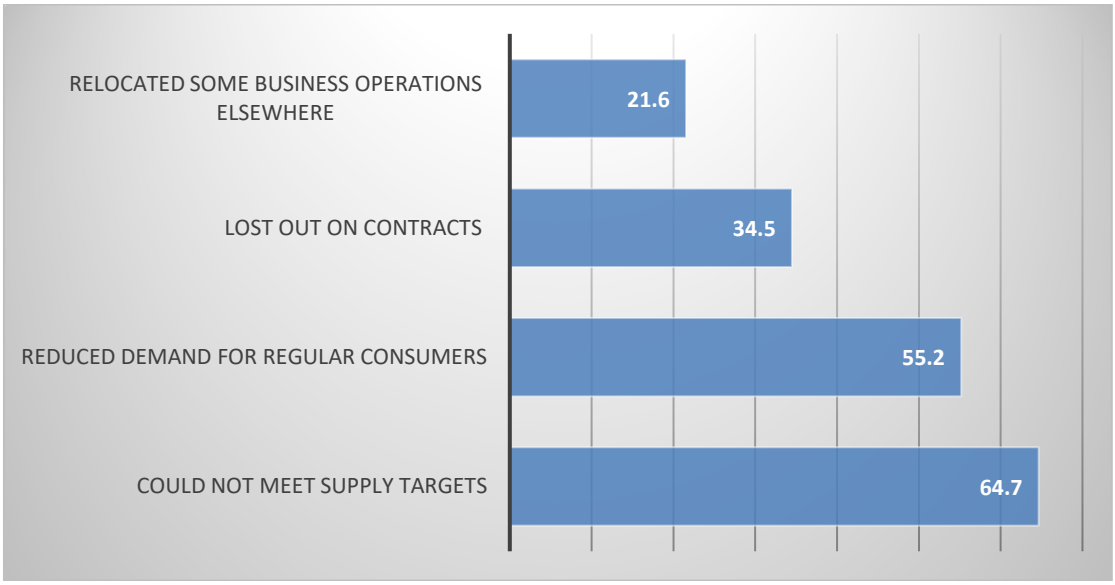


Figure 6 % of SMEs reporting impact of floods on business (N=116)

Insurance coverage: Detailed questions on insurance coverage to compensate for flood impacts were directed at SMEs. Overall, 49% (57 SMEs) have insurance coverage, but this percentage is much higher at 81% in Gampaha and lower at 23% in Ratnapura. This might be due to the fact that Ratnapura experiences frequent flooding events, hence SMEs might find it difficult to access insurance. Among those who have opted for insurance, 54 SMEs (nearly 95% of 57 SMEs taking insurance) have covered only buildings, 48 SMEs (84% of 57 SMEs) have covered equipment and 35 SMEs (61% of 57 SMEs) have covered inventory and produced goods under insurance. Approximately 21% of SMEs had insured 100% of total assets under 'sum assured'. 10 SMEs (0.08% of total) have also hypothecated buildings and machinery to a bank for loan. Those who have not opted for any insurance cover have given the following reasons for the same as shown in Figure 7 below.

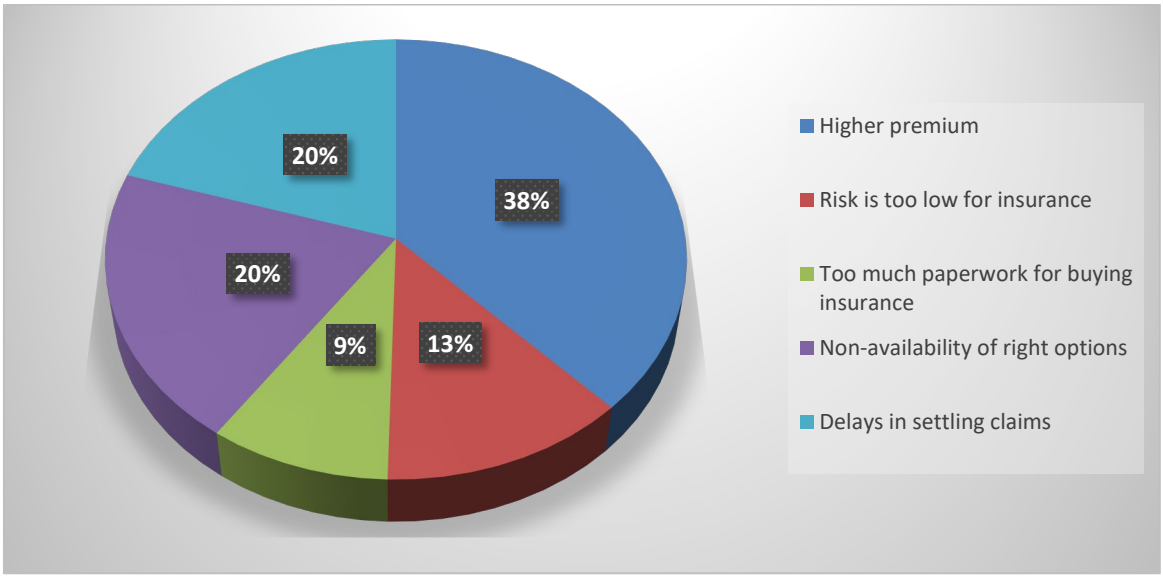


Figure 7 Reasons for not opting for insurance (N=59)

Only 11 businesses (19% of 57 SMEs who have insurance) claimed insurance for flood related damages in the past 5 years and received about 70% of sum assured for buildings, 30-85% for equipment and 100% for inventory and produced goods. However, only 4 SMEs have claimed that the insurance payout was enough to cover for total damage. Five business owners also claimed that it was very difficult to claim the insurance and it took about average 30 days to receive the payout. Reasons for not claiming insurance could be many. One reason could be that many SMEs are not aware if flood related damages are covered under the general business property insurance they have. Another reason could be the underreporting of assets done by some businesses to avoid paying taxes. By claiming insurance for asset damages during floods, government authorities might recognize the underreporting and levy fines. Besides insurance, around 15% of surveyed SMEs received government compensation after floods and the average amount was LKR 44,000. No monetary assistance has been received from larger buyers by any SMEs during the last 5 years.

4.1.3 Measures for flood mitigation and adaptation

This sub-section highlights the measures adopted by SMEs currently for mitigating flood risks to the extent possible and adapting to frequent flooding in Sri Lanka. Table 9 below lists some of the steps taken every year to prepare for floods and average costs for the same. Surveyed SMEs clean premises or surroundings and nearby drains every year before rainy season and repair roof or leakages inside premises. Average costs of these measures in the three districts as well as for garment sector SMEs are given in Table 10. Most of the costs across the three districts are similar to the overall average, with the exception of Kalutara where average costs reported for repairing leakages inside premises are much higher due to the nature of businesses like small hotels.

Table 9 Measures undertaken every year to prepare for floods (N=116)

Item	No of respondents	Average cost of measure in LKR (Figures in bracket in USD)	Range of costs in LKR (Figures in bracket in USD)
Cleaning premises or surroundings	60	11,683 ($78)	1,000-50,000 ($7-333)
Cleaning the nearby drains	43	11,058 ($74)	1,000-50,000 ($7-333)
Repairs inside the premises for leakages	25	14,560 ($97)	4,000-80,000 ($27-533)
Repairing the roof	21	14,143 ($94)	5,000-40,000 ($33-267)
Overhauling machinery	6	21,833 ($146)	7,000-45,000 ($47-300)

Table 10 Annual flood preparation efforts district-wise and among garment SMEs

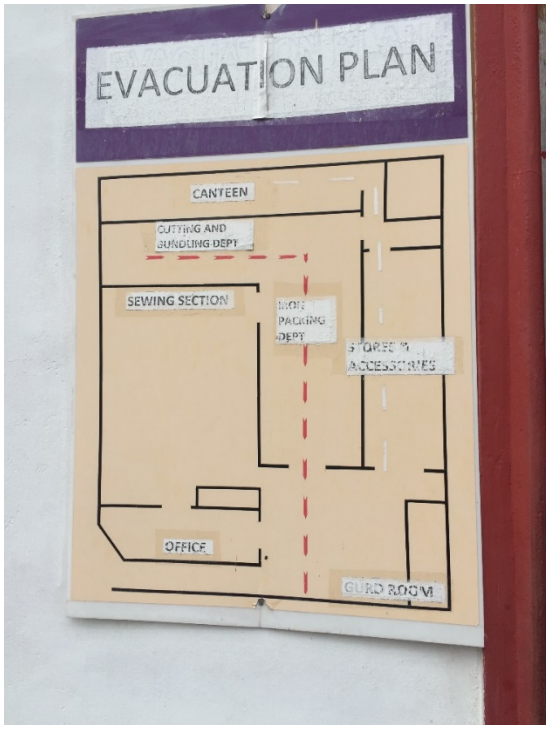
Item	Gampaha	Kalutara	Ratnapura	Garment sector
			Cost figures in LKR (Figures in bracket in USD)	
Cleaning premises or surroundings	8,857 ($59)	14,818 ($99)	12,571 ($84)	10,684 ($71)
Cleaning the nearby drains	11,219 ($75)	8,714 ($58)	11,750 ($78)	10,458 ($70)
Repairs inside the premises for leakages	12,167 ($81)	43,500 ($290)	11,909 ($79)	18,300 ($122)
Repairing the roof	14,909 ($99)	-	13,300 ($89)	13,429 ($90)
Overhauling machinery	18,667 ($124)	-	25,000 ($167)	28,500 ($190)

Besides the measures adopted annually for flood preparation, several SMEs have also opted for structural measures for flood protection as listed in Table 11 and depicted in Pictures 5 and 6. Compared to the damage estimates discussed in the earlier section, cost of structural measures is reasonably small. Table 12 estimates the costs in selected districts and for garment SMEs. Some of the outlier figures are marked in red and underlined and show how depending on the type of business, structural measure costs differ across the three districts.

Table 11 Structural measures for flood protection amongst all surveyed SMEs (N=116)

Item	No of respondents	Average cost of measure in LKR (Figures in bracket in USD)	Range of costs in LKR (Figures in bracket in USD)
Elevating electric meter, equipment, machinery	32	55,469 ($370)	1,500-3,00,000 ($10-2,000)
Constructing flood barriers at the entrance	31	32,081 ($214)	3,000-2,00,000 ($20-1,333)
Shifting raw material and inventory elsewhere	32	62,844 ($419)	9,000-2,90,000 ($60-1,933)
Building new drainage system	35	82,286 ($549)	10,000-10,00,000 ($67-6,667)
Constructing temporary drain channels	20	10,900 ($73)	3,500-20,000 ($23-133)

Picture 5 New wall built in Gampaha SME unit to block flood waters



Picture 6 Gampaha garment SME DRR plan

Table 12 Structural measures district-wide and among garment SMEs

Item	Gampaha	Kalutara	Ratnapura	Garment sector
				Cost figures in LKR (Figures in bracket in USD)
Elevating electric meter, equipment, machinery	10,875 ($73)	69,400 ($463)	70,579 ($471)	55,682 ($371)
Constructing flood barriers at the entrance	31,042 ($207)	82,800 ($552)	14,857 ($99)	36,273 ($242)
Shifting raw material and inventory elsewhere	49,778 ($332)	17,500 ($117)	72,762 ($485)	89,538 ($597)
Building new drainage system	63,933 ($426)	2,84,750 ($1,898)	48,875 ($326)	1,62,154 ($1081)
Constructing temporary drain channels	10,357 ($69)	4,750 ($32)	12,364 ($82)	12,286 ($82)

Effectiveness of measures: Important question is about the efficacy of these measures in helping businesses protect from floods. SMEs were asked to respond about which structural measures would be most effective or least effective according to them. Approximately 31% felt that elevating electric meters, equipment and machinery is the most effective measure followed by 27% selecting new drainage system as the most effective measure.

Approximately, 23% felt that shifting raw material and inventory elsewhere is the most effective measure to deal with floods.

Further, 21% of respondent SMEs claim to have consulted a civil or structural engineer before implementing any of these measures. Approximately 34% also claim to have a documented flood response or business continuity plan to deal with recurrent floods. Several SMEs (18% of total) would also like to implement flood protection measures but are not able to do so due to reasons like insufficient technical know-how, insufficient finances, lack of knowledge about flood protection among people in their area and lack of government support for implementing area-wide measures.

Flood warning: Effectiveness in dealing with floods critically depends on receiving early warning about impending floods. Approximately 73% SMEs have claimed that they received some warning about floods from different sources. Figure 8 reveals the sources from where warning is issued. Among those who received early warning about floods, 89.4% get it through cell phone and 36.5% receive it through radio or TV. Warnings on the cell phone come through family, friends, etc. Formal warnings from government sources are received by very few.

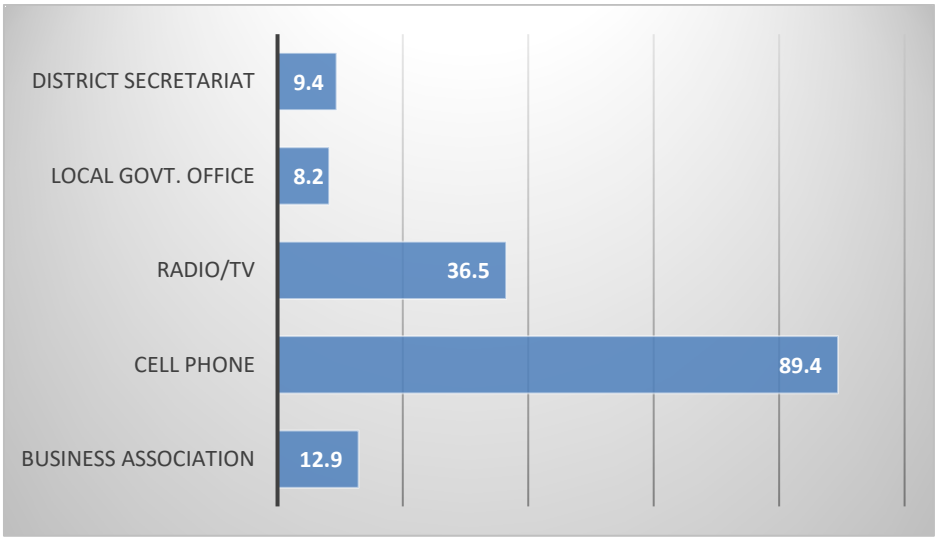


Figure 8 Flood warnings received from different sources (N=116)

Among those who have reported receiving warning about floods, 52% have reported receiving it 1-hour prior, 15% have received it 12 hours prior and another 27% have received it 24 hours prior. When the flood waters start rising, 16% of SMEs contacted local government office, 24% contacted police station and 16% got in touch with disaster management office. However, 36% of businesses, contacted no one.

According to respondents, local government, provincial government, central government and citizens are the important actors who need to play an active role in reducing floods.

Approximately 42% businesses have ranked central government as the top actor, 24% have chosen local government and 20% have chosen citizens to take the lead role in dealing with floods. Some of the suggestions on what these actors can do include proper disposal of waste, cleaning and expanding drainage systems, strengthening administration to ensure implementation of rules, stopping illegal mining and other activities, creating awareness and appointing experts, investing in disaster management and issuing compensation.

4.1.4 Extrapolation of costs for SMEs

The costs related to damage and coping measures for the surveyed SME units have been discussed in the previous sub-sections. This section attempts to extrapolate these costs for all the flood affected SMEs in three flood-prone districts of Sri Lanka – Gampaha, Kalutara and Ratnapura – based on following assumptions:

- Total number of SMEs in the three districts has been estimated based on the Economic Census of 2013-14 where all formal and informal business activities were listed in the first phase[10].
- The map showing distribution of businesses in different districts of Sri Lanka has been used here and superimposed on the flood maps developed earlier in the baseline study. Number of SMEs located in the flood prone locations is then estimated for the three districts based on this map. Flood map with location of SMEs and table showing the total number of SMEs located with flood zones are given in Annexure 1 to this report.
- Total number of micro, small and medium enterprises in the three districts are 14,381, 1,096 and 179 respectively. Most micro enterprises are quite small in terms of size of operations and number of employees. During the survey, only about 30% micro businesses on the basis of annual turnover have been covered. For extrapolation, thus, only 30% of micro enterprises are considered.
- Costs of damage and costs of coping/adaptation measures are, therefore, extrapolated for 5727 SMEs across three districts.

As seen in Table 13, the total extrapolated cost of damage to physical infrastructure is LKR 599.93 million (USD 4.0 million) and the cost of damage to equipment and products is LKR 3145.27 million (USD 20.97 million). In addition to these, the total estimated immediate expenses to get business back to normal are LKR 350.14 million (USD 2.33 million). The total extrapolated costs on account of flood-related damages work out to be LKR 4095.34 million (USD 27.30 million). Most of these costs are borne by the SMEs once every 2-3 years during monsoon. Thus, the extrapolated costs borne by SMEs are annualized and are estimated at LKR 1365.11 million or USD 9.10 million. For each SME, the annual cost of flood-related damage is, therefore, estimated at LKR 2,38,365 or USD 1,589.

[10] GoSL (2014), Non-agricultural Activities in Sri Lanka Economic Census 2013/2014: Listing Phase, Department of Census and Statistics, Ministry of Policy and Planning, Economic Affairs, Child Youth and Cultural Affairs, Government of Sri Lanka

The important point about these costs is they are borne by SMEs themselves through their operating costs or savings and not being compensated through insurance or government compensation mechanism. Such high costs due to recurrent floods pose a huge additional burden on the SMEs in Sri Lanka.

Table 13 Extrapolated costs due to flood-related damages (N=5727)

Item	% of SMEs in survey reporting the costs	Average cost of damage in LKR per SME	Estimated number of affected SMEs in 3 districts	Estimated costs in LKR million
Damage to physical infrastructure				
Grounds and Fence	45.7	18,771	2,617	49.12
Foundation and support	22.4	20,440	1,284	26.24
Flooring	39.7	20,439	2,271	46.42
Walls	21.6	61,727	1,234	76.19
Doors and windows	23.3	62,417	1,333	83.20
Air conditioning system	6.9	40,167	395	15.86
Heating system	5.2	1,46,000	296	43.25
Water pumping system	7.8	15,188	444	6.75
Electrical and lighting systems	26.7	47,088	1,530	72.07
Power backup generators	8.6	1,22,333	494	60.40
Transport vehicles	19.8	99,733	1,136	113.25
Communication systems	17.2	6,479	987	6.40
Common sewage treatment plant (STP)	3.4	4,000	197	0.79
Total estimated cost of damage to physical infrastructure				**LKR 599.93 million (USD 4.00 million)**
Damage to equipment and products				
Machines and tools	21.6	5,29,273	1,234	653.26
Engines/generators/alternators	4.3	4,09,333	247	101.05
Electrical appliances	19.8	1,82,619	1,136	207.37
Finished products	31.0	5,06,800	1,777	900.76
Raw materials	38.8	3,15,389	2,222	700.69

Partly assembled/ processed products	46.6	2,18,357	2,666	582.14
Total estimate cost of damage to equipment and products				**LKR 3145.27 million (USD 20.97 million)**
Immediate expenditure				
Disinfecting, cleaning and rehabilitation of premises	60.3	13,750	3,456	47.52
Flood fighting and rescue work	3.4	37,556	197	7.42
Removal of debris and damaged items	19.8	49,538	1,136	56.25
Increased alternative operating costs	17.2	1,57,200	987	155.22
Loss due to suspension of production	37.1	12,625	2,123	26.80
Pumping water out of premises	12.9	76,875	741	56.93
Total estimated immediate expenditure				**LKR 350.14 million (USD 2.33 million)**
Total Extrapolated costs borne by SMEs due to floods				**LKR 4095.34 million (USD 27.30 million)**
Total annualized extrapolated costs				**LKR 1365.11 million (USD 9.10 million)**
Average annual cost per SME due to floods				**LKR 2,38,365 (USD 1,589)**

Flood affected SMEs have also been undertaking short term measures every year to protect themselves from floods. These measures include cleaning premises, repairing the roof, repairing leakages etc. The extrapolated costs for these measures are seen in Table 14. The costs of these coping measures are LKR 97.19 million (USD 0.65 million) and are spent almost every year before monsoon. This is, thus, a recurring expenditure for SMEs due to recurring floods. Average cost of recurrent measures for each SME works out to LKR 16,969.83 or USD 113.13.

The highest adaptation expenditure of SMEs is on structural measures and is around LKR 388.97 million (USD 2.59 million). Average cost of structural measures for each SME works out to LKR 67,918.10 or USD 452.79. Although this is not a recurring expenditure, the effectiveness of some of these measures is only temporary. The barriers constructed by SMEs at the entrance are only temporary structures and the units get flooded in case of heavy rains. Temporary channels also do not work in case of very heavy rains and they often lead to pushing water out onto adjoining roads and adjoining compounds.

Table 14 Extrapolated costs of adaptation measures (N=5727)

Item	% of SMEs in survey reporting the costs	Average cost of damage in LKR per SME	Estimated number of affected SMEs in 3 districts	Estimated costs in LKR million
Recurrent measures				
Cleaning premises or surroundings	51.7	11,683	2,962	34.61
Cleaning the nearby drains	37.1	11,058	2,123	23.48
Repairs inside the premises for leakages	21.6	14,560	1,234	17.97
Repairing the roof	18.1	14,143	1,037	14.66
Overhauling machinery	5.2	21,833	296	6.47
Total estimated costs for recurrent measures				**LKR 97.19 million (USD 0.65 million)**
Average cost of recurrent measures per SME unit				**LKR 16,969.83 (USD 113.13)**
Structural measures				
Elevating electric meter, equipment, machinery	27.6	55,469	1,580	87.63
Constructing flood barriers at the entrance	26.7	32,081	1,530	49.10
Shifting raw material and inventory elsewhere	27.6	62,844	1,580	99.28
Building new drainage system	30.2	82,286	1,728	142.19
Constructing temporary drain channels	17.2	10,900	987	10.76
Total estimated costs for structural measures				**LKR 388.97 million (USD 2.59**

	million)
Average cost of structural measures per SME unit	**LKR 67,918.10 (USD 452.79)**

4.1.5 Willingness to pay for DRM product

The final section of the questionnaire focused on the willingness of surveyed SMEs to invest in flood protection measures either suggested by experts or trade associations, willingness to purchase flood insurance and paying a monthly fee to use a DRM product or tool, if made available, for securing their businesses from recurrent floods. Table 15 records the responses of SMEs. Overall 55% SMEs are willing to invest in flood protection measures. However, in Ratnapura, where flooding is a serious problem over last 5 years, 95% are willing to make this investment. Whilst 56% are further willing to consider measures recommended by experts or business associations. Again, in Ratnapura, this percentage is very high at 95%. Clearly, SMEs in Ratnapura are looking for opportunities to invest and implementing flood protection measures.

Table 15 Willingness to invest in flood protection (% of SMEs) (N=116)

Response	Overall	Gampaha	Kalutara	Ratnapura	Garment sector
Investing in flood protection measures					
Yes	55.2	38.1	31.4	94.9	57.9
No	30.2	45.2	42.9	2.6	23.7
Not sure	14.7	16.7	25.7	2.6	18.4
Implementing measures recommended by experts or business associations					
Yes	56.0	38.1	34.3	94.9	63.2
No	12.1	21.4	14.3	-	7.9
Not sure	31.9	40.5	51.4	5.1	28.9
Purchasing flood insurance					
Yes	31.2	13.2	17.6	62.2	35.3
No	31.2	50.0	32.4	10.8	23.5
Not sure	37.6	36.8	50.0	27.0	41.2

Pay for DRM product/tool					
Yes	37.1	4.8	31.4	76.9	39.5
No	30.2	71.4	14.3	-	18.4
Not sure	32.8	23.8	54.3	23.1	42.1

As regards to flood insurance, 31% are willing to purchase a flood insurance coverage, however, 37.6% are not sure about it. These SMEs might potentially be convinced to purchase flood insurance if a suitable product is made available by insurance companies or their regulatory association. The proportion of SMEs willing to purchase insurance is, however, quite low at 13.2% in Gampaha and 17.6% in Kalutara. However, in Kalutara, 50% are not yet sure of this decision and can be the potential buyers of flood insurance coverage. Once again, in Ratnapura, 62.2% are willing to purchase flood insurance.

The ultimate objective of the current project is to design and offer a Disaster Risk Management product or tool that can help businesses in minimizing the risks from recurrent floods. Overall, 37% are willing to pay a monthly fee to use such a product if made available and 32.8% are not sure if they would pay for this product. Thus, around 65-70% SMEs can be considered as potential investors in the DRM product. However, there are important differences district-wise. In Gampaha, only 4.8% are willing to invest in DRM product, whereas in Ratnapura, 77% SMEs are willing. It is important to note that the current responses to DRM product are based on the initial understanding of SMEs regarding nature of this product as shared by the enumerators. When the product prototype is available, these responses may undergo significant change and more SMEs might be willing to opt for such a product.

4.2 Key informant interviews

To complement the findings of surveys among SMEs in the chosen districts, Key Informant Interviews (KIIs) have been conducted with various stakeholders to understand the overall situation of the SMEs as far as flooding is concerned; the impact and the subsequent losses SMEs have faced and the current responses they have undertaken to cope with floods. These interviews also provide insights into how policy and institutional support helps SMEs to deal with floods and what is role of banks and insurance sector in meeting the financing needs of flood-affected SMEs. Important insights obtained from KIIs are presented below.

4.2.1 Interviews with SMEs

Besides the survey of SMEs using the questionnaire, open-ended semi-structured interviews were carried out with few businesses to add to the understanding of flood impacts, responses and future support requirements from SME owners' perspective. Picture 7 below

shows one such interview with SMEs in Ratnapura. The insights obtained from them are discussed below:

1. Flood Impacts:
    - The floods in May 2017 affected 49 divisions in Sri Lanka and 24 divisions out of these 49 divisions had SME businesses which were severely affected.
    - In Gampaha district, SMEs located on the riverbanks are severely impacted during floods due to lack of development regulations in place. Several of them have had to relocate their factories to a safer place.
    - In some businesses, machines and materials have been damaged due to floods. Yet, they continue to repay loans for these destroyed machines adding to severe burden on them.
    - Heavy flooding has caused many SMEs huge financial losses in terms of production and inventory and customer base, which has forced them to keep minimum number of employees. This would have led to job losses.
    - Some of the SME owners have their homes located in the same area as their manufacturing units. Therefore, they have had to face dual losses.
    - Many SMEs have stated that they never received any early warning and hence could not salvage some of the assets and equipment as well as ensure business continuity. Even when the warning came, it came so late that it was not effective at all.
    - Some of the SMEs located in industrial zones are protected from flood waters due to their location but face indirect consequences as the employees cannot report to work due to flooded access roads.
    - Other risks and challenges faced by SMEs include:
        - Market fluctuation and manpower shortage post flooding events
        - Pollution and waste management
        - Unequal distribution of donor funds

2. Response:
    - Adaptation measures such as building walls for protection and keeping goods in higher areas were adopted in some SMEs in Gampaha District.
    - Retrofitting buildings using glass and aluminum for easier cleaning post floods has also been tried.
    - Some SMEs have relocated to safer localities and few have spread their operations in different areas.
    - Some of the SMEs trained their staff for other risks, fire, evacuation etc. They have also trained neighbors and other micro businesses on DRR and emergency evacuation as part of CSR.
    - Few SMEs also have an evacuation plan in place.
    - In Ratnapura District, they had formed SME networks to help the community after the floods.

- Some businesses provided transportation for employees, provided foodgrains and clothes and cement to rebuild their damaged homes. Few helped employees' children with educational books destroyed during floods.

3. Future Support Requirements:
   - Early warning of 2-3 days in advance is required for the risks of floods and landslides. This would give time to businesses to prepare and protect their premises as much as they can. This will also give them time to ensure provision of essential services like food, water and transportation to their employees on the premises.
   - Some have expressed the need for a financing app for business purposes, maintaining cash-flow overview, information about how to secure employees in case of floods, how to minimize damage for factory etc.
   - Help from local government is required to not only improve public infrastructure such as drainage system but also provide an information-sharing platform to know their plans well in advance.
   - Fairer distribution of donor funding after a disaster must be ensured.
   - Banks should offer flexible loan repayment models, especially after floods, as SMEs cannot afford to repay.
   - Creation of local risk management groups to communicate early warnings would be useful, as they know the business owners.
   - Train the SMEs especially in flood prone areas on DRM as well as use these groups for communicating early warnings.

4.2.2 Interviews with Government Institutions

Ministry of Industry and Commerce:

- This is a timely project and fits well into the overall work that the Ministry is planning for the SME sector.
- There is lack of robust baseline data on the MSMEs as many are not registered with the Ministry due to multiple registration channels: some register only with local councils, others with the district chambers and only few register with the Ministry. There are many informal SMEs operating in Sri Lanka.
- Flooding is an important issue for the SMEs, especially during the last 5 years and a DRM product to help them deal with floods effectively and minimize losses will add lot of value for this sector.
- Flooding during the monsoon season is a common phenomenon and therefore no early warning signs are provided except for the daily weather forecasts provided by News channels. Early warnings are sent through SMS only for Tsunami.

Picture 7 Interview with SMEs and district chamber of commerce at Ratnapura

NDRM Office (Disaster relief under the Divisional Secretariat):

- Sri Lanka faces major disasters such as floods, draught, landslides and high wind. Year 2013 and 2017 saw major floods.
- The area where the 3 Rivers Kuruganga, Kudaganga, Weganga converge, overflows occur during heavy monsoon.
- Main reasons for flooding are urbanization, poor land use planning and increase in rainfall intensity.
- Relocating SMEs is an issue given their asset, suppliers and customer base.
- Strategies to cope with floods include:
    - Awareness raising, evacuation etc.
    - Irrigation department monitors and gives flood levels every hour.
    - Early warning through loudspeakers in villages.
    - Sending SMS to local authorities such as municipal council, urban council or Pradeshiya Sabha, who then inform local DRM committees.

SME Development Unit / Ministry of National Policy and Planning:

- Conducted ILO supported 'Train the Trainer' program with the Divisional Secretariat, who are now training the local council SME officers and divisional officers on how to prepare for disasters. The ILO TOT program covered 17 divisions in SL.
- Business Continuity Plans preparation along with pre and post-disaster planning for all businesses is also included in this training.
- Many SMEs are not registered with local government and miss out on the training.
- SMEs lack Business Risk Assessment knowledge and techniques.

- Development officers within local council also lack these assessment technique skills and business continuity planning.
- There is a need to change the mindset of SMEs regarding not building factories in flood prone areas.
- Thorough baseline information on SMEs is required for the entire country.
- More innovation and incubation programs are needed for SMEs that demonstrate new market opportunities that are attractive, provide training and capacity building e.g., develop business plans and link them to banks.
- SME owners often have limited education, low financial literacy and lack of business management training; therefore, they need tools that are user friendly and interactive for better understanding.

Local Secretariat and Land-Use Planning Office/Divisional Secretariat:

- The Kalu Gaga River triggers flood when the water level reaches 9.3m. 2017 May floods occurred after 10 years and 49 divisions were affected but only 24 divisions out of 49 had SMEs affected. Further, most of the SMEs that were impacted were in the town center.
- The Insurance Trust Fund provided compensation of LKR 671 million: 1377 SMEs submitted claims for internal content damage and 172 SMEs claimed for building damage. All SMEs who submitted forms received compensation.
- A five-member committee was formed for each division to assess the claims and support the submission of forms. LKR 8 million were given to 172 SMEs and 205 million for building claims.
- Early Warnings are sent using Twitter and Facebook. Awareness programs for floods and landslides are being delivered.
- They work with CBOs in the DS district on awareness raising programs (e.g., riverbank restorations projects by planting indigenous trees like Jackfruit and Koombuk).
- There is a need to raise awareness and training on landslides to Grama Niladrahi committees (particularly before the rainy season). They do not have the technology related to early warning; only the use of SMS and Facebook.
- Post 2017 floods, the Town Planning Development Authority amended the building codes to curb new development / redevelopment within 10-meter buffer of the River on both sides. In addition, new mega plan was developed to relocate the city from flood prone areas to safer locations. All the government buildings and new housing schemes are planned to be built in this area.

Asia Pacific Alliance Sri Lanka:

- The focus of this organization is on how to localize the best practices in Sri Lanka in promoting DRR investments, raising awareness amongst school children, promoting area business continuity plans (BCP) that have a focus beyond the SMEs to include the immediate local community that supports their business as well as work with Chambers in streamlining DRR for the private sector.

- They have 25 NGOs, govt. and private sector teams that have undergone Training of Trainers sessions. They have also included banks such as, DFCC, HSBC and HNB bank, in the training so that banks can give loans to SMEs. Banks are advised to undertake site visits (e.g., seeing if equipment is shifted on higher ground) to SME premises before giving out loans.
- Their work on DRR is also linked to sustainable development and livelihoods.
- According to team from this organization, apart from insurance, SMEs need to invest in building resilience.
- More than considering SMEs as victims during disaster, they should be helped and encouraged to spur the economic development after disaster (e.g., encouraging local consumers to purchase goods from them rather than big chain supermarkets.)
- Their work focuses on the entire country and SMEs are also the focus (e.g., e-pack of emergency numbers) was an initiative for the North East of Sri Lanka.
- Support for SMEs (e.g. risk management tool) needs to include simple/doable activities and check list based (e.g. answers like yes/no) and SMEs need to be motivated to use it.
- APAD has provided an E-pack with emergency numbers and simple advice on what businesses should do. The E-pack can be transformed into an app with information on where floods occurred the last 10 years, drought areas, population mapping, advise on what to do, what not to do, etc.

ILO Department:

- Ministry of Industry and Commerce did a baseline survey of SMEs as part of building back better project.
- Sanasa bank provides flood insurance (weather based) for agriculture SMEs. When rainfall increases over certain level (irrespective of damage) or they do not receive enough rain then they can access insurance.
- Indemnity based insurance is island wide to cover the damage from floods targeting agriculture-based SMEs.
- ILO has directly funded Sanasa to implement the insurance product amongst tea and paddy SMEs.
- SIYB (start and improve your business sustainability) is targeting SME capacity building and training. This is an international and independent for-profit organization in Sri Lanka.
- Capacity of government officials (NADA officers, Industrial development board officers) supporting SMEs in Kalutura and Ratnapura were enhanced through ILO project.
- ILO SME project on Training of Trainers was funded by Japanese Government and the funding may be extended. The program targeted the informal and smaller SMEs. From March-Nov 2019, they will start doing BCP training targeting various SME sectors. They are also developing a booklet on training for govt. officials. Training of businesses policy is to be reviewed and reformed.

- Most SMEs are not registered because they think they will have to pay additional taxes, c so they can't access the govt. Insurance Trust Fund.
- SMEs in Ratnapura became highly demotivated to continue their businesses after the floods. If SMEs are shown the cost and benefits of investing in DRM/CCA then they will do it. So far, SMEs are not offered insurance in affected areas. They would take up insurance even at a higher premium if offered.
- In general, there is lack of information on how many people/businesses are affected. There is urgent need to develop proper mechanisms for data collection of impacts.

Met Department:

- The team in this department consists of climate scientists and they have contributed towards producing the latest climate vulnerability maps for Sri Lanka for the CC Secretariat.
- South Western part of Sri Lanka according to the Met Department is projected to experience more rainfall under business as usual scenario but they have so far not collaborated with land use department to address the challenges using an integrated approach.
- Gampaha region faces water shortages but not affected by droughts, Kalutara experiences saltwater intrusions into the river which affects drinking water quality, thus affecting SMEs in food and beverages and agri-business SMEs.
- Over 500 rain gauges are set up across Sri Lanka, but the challenge is that they have many microclimates (46 agro-ecological zones) with diverse rainfall patterns which are not captured enough for supporting early warning systems. They need more gauges to observe the trends and changing patterns.
- Early warning for floods is given by Irrigation dept. and Met dept. provides warning for only tropical cyclones, strong winds and extreme cyclonic events.
- There is a big demand for seasonal predictions, but they do not have enough staff to undertake this work. They also lack downscaled data for Sri Lanka for the same.
- Monsoon Forum (comprising various govt. agencies) gets together seasonally and takes decisions based on seasonal forecasts.
- There is shortage of expertise in Sri Lanka since academic institutions do not have specific Met or Atmospheric science degree. People working in this area have to go overseas for short-term training programs supported by donors like WMO.

Irrigation Department:

- Climate Resilience Project, started in 2014, is supposed to study the current land use in 20 river basins. They have completed five basin studies so far, but these do not include Kalugange in Ratnapura and Kalutara River since Tahal project already covered these in 2012-2014. Here, they propose three dry dams for Ratnapura and salinity control in Kalutara, but these are yet to be implemented since the community is not supporting the possible resettlement due to these projects.
- The Ratnapura city is located at the bottom of steep slopes where predicting the accuracy of rainfall is difficult due to huge variations between actual rainfall and

monitoring stations. Therefore, early warnings do not work here. There is a proposal to strengthen the early warnings by the Met and Irrigation departments for forecasting flood and rainfalls under the World Bank funded CRIP 2 project to start in 2020 for 5 years.

- Currently, they do not have the facility to run 100 simulations for river levels to give accurate early warnings for flooding.
- There is a collaboration and coordination gap between their departments, local governments, Divisional Secretary offices, Disaster Management Centre and the community.
- The DMC and media is responsible for issuing early warnings to the people. Under CRIP 2, early warning system is proposed to be improved to issue warning 3 days prior via improved timely access to gauging station and model results which can be communicated to the public in advance.
- Emergency warning for communities cannot be improved before improving the river basin gauges and 30-year old diversion weirs. They also do not have enough data related to loss and damage from floods. Also, reservoir operation is a major problem as they need correct forecasts to manage the storage of water from the monsoon (particularly for cultivation).
- River management in general is difficult due to illegal sand mining. They are currently developing new guidelines on assessing site before a mining permit is given, which will come into force this year.

<u>Director General, National Council for Sustainable Development:</u>

- Rainfed SMEs industries like agro based SMEs are more vulnerable to climate change. Landslides also affect the plantation sector badly.
- This office was set up to focus on a holistic and systems-based approach to sustainable development. They work with different govt. agencies in coordinating, mobilizing and overseeing the work of government agencies in ensuring their work is contributing to sustainable development.
- Private sector engagement is critical to this process. Collaboration with private sector in promoting sustainable business models is vital. Most of the private sector is made of SMEs which are struggling for survival of their businesses. There seems to be limited diversity in SME sector, lack of long-term planning, no rationale for taking certain decisions and highly informal sector with many SMEs not registered.
- A conducive climate needs to be built to develop SME skills. They need financial and technical support, soft loans given for enterprise development, improved market linkages, changed attitudes, changed regulations and strengthened institutions.

<u>Ministry of Finance, SME Policy Development:</u>

- SME Policy Framework has been submitted to the government, but it does not have a clause on climate change or disasters.
- Climate Change is addressed more in the Disaster Management Policy, 2013 that states how communities in general can cope with disasters.

- In addition, the innovation and entrepreneurship strategy, developed by Ministry of Strategic Development, covering 10 sectors has been submitted to the government for approval. However, this Ministry does not have good coordination with Ministry of Industry and Commerce, which represents the interests of SME sector.

National Disaster Management Centre:

- Since 2016, Government of Sri Lanka has initiated the NITF insurance scheme. Under this, compensation is offered to households and small businesses that suffer damages due to disasters. The National Disaster Relief Center, under the Ministry of Disaster Management has been providing compensation to flood affected MSMEs in different districts of Sri Lanka.
- It is expected that SMEs which are not insured currently will be covered by the insurance providers since the frequency of floods is continuously increasing.
- Training and awareness raising programs have been developed for SMEs by the Centre, but the participation is very low. SMEs need to take initiative and learn about climate risks.
- SMEs need help with identifying risks to their businesses e.g., during the North monsoon if SMEs had kept limited stock on their premises then losses would have been reduced.
- Govt. agencies that support SMEs do not undertake climate risks assessment for SMEs. Most SMEs do not know how to develop a business plan. Since SME sector as a subject is cross cutting across different govt. agencies, one lead organization is required to coordinate activities for SMEs.
- The Ministry of Industry and Commerce and Sri Lanka Institute of Textile & Apparel is currently working on the development of disaster recovery framework/policy for SMEs together with this Centre and UNDP. The guideline will cover both natural and man-made hazards. The draft guideline is available if any inputs can be given through the BBCR project.

Climate Change Secretariat:

- Based on the suggestion of the Climate Change Secretariat, activities engaging businesses in CC mitigation and adaptation have taken place, e.g., Climate Business Forum in January 2018. 2nd Vulnerability Assessment was conducted and the assessment report was prepared with support from ADB. The Secretariat is currently updating the report.
- There is Learning and Monitoring committee led by the Secretariat and its meeting is organized twice a year. The Climate Change Secretariat has prepared the Readiness plan for the implementation of Intended Nationally Determined Contributions (INDCs) for Sri Lanka.

4.2.3 Interviews with Banks

- Regional Development Centre (RDC) of Central Bank of Sri Lanka has the mandate to support SMEs.
- Scheme for disaster relief was introduced by the Central Bank wherein refinance is provided to banks to extend loan support to flood or drought affected MSMEs. Rates of interest are subsidized and refinance is provided by the Central Bank against this subsidy to commercial banks extending these loans.
- For eligibility, to secure this support funding in the form of loan, certificates are to be issued to MSMEs by village level government agents after verification of impacts and losses post natural disaster.
- 15 commercial banks in Sri Lanka are part of this scheme and maximum amount offered as support loan is LKR 500,000
- Merchant Bank of Sri Lanka is a Subsidiary of Bank of Ceylon and it extends credit to SMEs. It also has plans for expanding loan business for SMEs.
- Credit team from the Merchant Bank is interested in working with BBCR project team to explore if a specific loan product can be designed for vulnerable SMEs.

4.2.4 Interviews with Insurance Companies

- Insurance companies carry out flood risk assessment in different districts before offering insurance products. In identified flood prone areas like Ratnapura, insurance companies are not interested in offering products. Even reinsurance companies are not interested in covering this risk after the experience of 3 years of successive flooding events (2016-2018).
- There is no separate cover for floods under existing products. Only vehicles are covered under insurance for protection against floods. Other assets can be covered under extended protection with higher premiums.
- SMEs often change names when they are refused insurance after flood events. However, companies like HNB Assurance have caught such malpractices and moved out of flood prone areas after LKR 600 million payout in 2 years.
- They also do not insure properties in high-risk areas because there is little client loyalty in the industry (customers can switch between insurance providers quickly).
- Dialogue is required between SME associations and insurance companies to resolve issues related to offering insurance products suited to vulnerable SMEs.
- Large insurance providers are not interested in SME business, but smaller companies can reach out to vulnerable SMEs and offer insurance products. E.g. Sanesa has offered insurance to agriculture SMEs and fishermen.

4.2.5 Key challenges and opportunities

Based on the interviews with key stakeholders like SMEs, government institutions, banks and insurance companies, some of the key challenges and opportunities have emerged as discussed below:

- A number of direct and indirect impacts of recurrent flood events are being experienced by SMEs and they have responded with limited technical and financial capacity by retrofitting existing physical infrastructure. However, there is a clear need for a robust early warning system, business continuity plans and financing mechanism to offer flexibility in loan repayments and assistance to get business back to pre-flood levels.
- Policy makers in the Ministry of Industry and Commerce are aware of the flood impacts on SMEs during past five years and believe that a DRM tool or product will help the SMEs to deal effectively with flood risks and minimize losses. The product to be designed under the BBCR project is considered as a good value addition by the Ministry.
- Database on SMEs is not robust since many are not officially registered. It will be important to update this to reach out to them for awareness building, early warning, timely evacuation for disaster relief.
- SME Development Unit of the Ministry of National Policy and Planning offers business continuity plans training to SMEs; however, it needs to reach a greater number of businesses. Development officers at the local level also need training for carrying out risk assessment and business continuity planning.
- Training and awareness raising programs have been developed for SMEs by the National Disaster Management Centre, but the participation is very low. SMEs need to take initiative and learn about climate risks.
- Early warning plays a critical role in improving the capacity of SMEs to minimize their losses during flood events. The Met department has developed vulnerability maps for Sri Lanka and are aware of future climate risks. However, there is an acute shortage of expertise in the country and hence seasonal predictions cannot be issued.
- There is a collaboration and coordination gap between Ministries, local governments, Divisional Secretary offices, Disaster Management Centre and the community.
- More than considering SMEs as victims during disaster, they should be helped and encouraged to spur the economic development after disaster by encouraging local consumers to purchase goods from them rather than big chain supermarkets, etc.
- Regional Development Department (RDD) of Central Bank of Sri Lanka has the mandate to support SMEs. Scheme for disaster relief was recently introduced by the Central Bank wherein refinance is provided to banks to extend loan support to flood or drought affected MSMEs. However, the loan amount is much smaller compared to the losses that SMEs are suffering from during floods.

- Insurance Trust Fund has offered compensation to flood affected SMEs in 2017. However, with limited funds, all affected SMEs would not receive help. There is a need to offer financing and insurance products to such businesses to cover their losses.
- Weather-based flood insurance products are offered to agriculture SMEs. Similar products can be designed for other types of SMEs.
- In flood-prone areas, insurance companies are reluctant to offer flood insurance as the risk is very high.
- Dialogue is required between SME associations and insurance companies to resolve issues related to offering insurance products suited to vulnerable SMEs.

5. Conclusions and way forward

Analysis of data obtained from the primary survey among SMEs in three flood-prone districts of Sri Lanka, as discussed in the last section, brings out some important points regarding the impacts of recurrent floods, measures undertaken by businesses on their own, effectiveness of these measures in preventing future floods, awareness about future risks and willingness to take up disaster risk management efforts on their own. Interviews with key stakeholders in the government and financial institutions further highlight the support mechanisms that currently exist for the SME sector in the country and how far it can help these businesses deal with future climate risks. Based on the analysis of primary data and key informant interviews in the preceding section, the following points highlight important takeaways:

- SME sector is the backbone of Sri Lanka's economy with contribution to 45% of total employment and 52% of total GDP as mentioned in the introductory section. It is seen by the government as a driver for economic growth, regional development, employment generation and poverty reduction. SMEs also play an important role in key export industries like garments and food-processing.
- This sector has been facing tough challenges in the selected districts during the last few years due to devasting impacts of recurrent floods. In the absence of adequate insurance coverage and compensation pay-out from the government, SMEs businesses have borne the brunt of flood related damages, with repercussions for profitability, growth and long-term sustainability of their operations.
- In order to understand the vulnerability context, impacts of recurrent floods and current coping mechanism, primary surveys have been conducted among SMEs in selected districts of Gampaha, Kalutara and Ratnapura. Industries covered under the survey include garments, FMCG, Light Engineering, Shoes and Bag Manufacturing, Printing, Packaging and Food Processing, retail outlets, small hotels, etc. Micro enterprises with less than 10 employees (as per Ministry of Industry and Commerce Classification) have not been included in the survey as such enterprises are often

home run businesses with very limited technical and financial capacity to adopt and implement DRM tools.

- Most surveyed SMEs are registered with the Ministry of Industry and Commerce and cater to export market. They are owned and operated by individual owners who take all key decisions regarding environmental sustainability, DRM strategy, etc. None of these businesses are part of any formal or informal business associations in their areas. Hence, DRM products developed through the BBCR project will have to cater to individual owners who would not have a collective mechanism readily available to them to implement DRM activities/measures.
- Ninety five percent (95%) of interviewed SMEs have faced flood events in the last five years and have experienced average 14 days of flooding each year during this period. Majority of them have seen flood waters entering their premises with the flood depth of 8-9 ft. Hence, the damage to physical infrastructure, equipment and products has been substantial.
- Estimates have been obtained from SMEs on individual items damaged during floods. They provide insights into how building structure like grounds, fence, doors, windows, flooring, etc. is getting damaged almost every year. Other items like air conditioning or heating systems, communication, transport vehicles have been damaged once in 2-3 years.
- More than damage to physical infrastructure, substantial costs are incurred by SMEs on damaged machinery, raw materials and semi-finished and finished products. As many SMEs cater to export markets, damage to raw materials and products cause substantial cost implications, especially for the garment sector. These are important insights obtained from the baseline surveys that will help the BBCR team to focus on DRM strategies that help SMEs to protect assets which are affected the most, such as, equipment and products.
- SMEs also face very high increased alternative operating costs as production needs to be shifted elsewhere or inventory needs to be moved. These costs are far higher than average in garment sector where shifting production or inventory is critical. This seems to be a very important finding. These expenses are directly related to continuity and recovery of businesses. SMEs currently lack of financial products that will help them restore their operation.
- Besides impacts on physical infrastructure, machinery and products, employees are not able to report to work due to floods. There is a clear loss in terms of incomes for employees and loss of productivity for the employer. Besides, there are health impacts and impacts on employees' families due to which they suffer directly and indirectly during flooding events. Such negative impacts on employees ultimately affect medium to long-term business operations. This is a critical area that can be focused upon while designing DRM strategies and decision-support tool under BBCR.
- Comparison of average annual damage costs with average annual turnover shows that in absolute terms, small businesses suffer maximum damage cost and medium businesses suffer the least. But in relative terms, micro businesses suffer far more than small and medium businesses in comparison to their annual turnover. This will

be an important reflection on the state of preparedness of these businesses for flood impacts as well as the relative burden on them. Micro businesses with the least capacity to bear the burden of floods, suffer the most damage costs and small businesses bear the burden in terms of very high absolute damage costs. These findings will have important implications while offering DRM products to the SMEs.

- Extrapolating the costs for all flood-affected SMEs in the three districts based on suitable assumptions reveals that SMEs have to bear million of dollars of costs due to damages suffered during floods. The total extrapolated costs for flood-related damages work out to be LKR 4095.34 million (USD 27.30 million). The annualized extrapolated costs are estimated at LKR 1365.11 million or USD 9.10 million. For each SME, the annual cost of flood-related damage is, therefore, LKR 2,38,365 or USD 1,589. Similarly, SMEs spend LKR 97.19 million (USD 0.65 million) on recurrent adaptation measures and LKR 388.97 million (USD 2.59 million) on structural measures. Average cost of structural measures for each SME works out to LKR 67,918.10 or USD 452.79.
- About half of interviewed SMEs have insurance coverage for buildings, equipment and inventory but very few have claimed insurance in the last 5 years for flood related damages. They have reported delays and difficulties in claiming insurance. Those who do not opt for insurance do so because of higher premiums, lack of right options and difficulties in settling claims. Insurance companies, therefore, need to address these issues while tapping into the SME market.
- Measures adopted by SMEs currently for flood protection have been identified along with costs of setting them up. However, their effectiveness is doubtful given recurrent flood exposure and damages.
- BBCR project seeks to design and offer a Disaster Risk Management product or tool that can help businesses in minimizing the risks from recurrent floods. More than 35% of interviewed SMEs are willing to pay monthly fee for the use of such a product and another 32% are unsure about it. In Ratnapura, however, there is greater willingness to adopt this product. Thus, this district can be specifically focused while designing and making the DRM product available to SMEs. Further, when the product prototype is available, SMEs responses may undergo significant change and more SMEs might be willing to opt for such a product.
- In terms of support from government departments and institutions, policy support is being planned by the Ministry of Industry and Commerce for the SME sector in general. However, disaster risk management needs to become a part of this support, particularly in reducing current biophysical and social vulnerability. For this purpose, BBCR might prove to be a timely project providing the necessary technical inputs into the policy formulation exercise.
- The knowledge base on current and future climate risks exists but coordination among different government departments is urgently needed to improve the early warnings sent to SMEs to help them protect their assets from disasters. Currently SMEs either do not receive early warnings and such warnings reach them too late.

There is also no business continuity plan in place for most SMEs to respond to warnings.

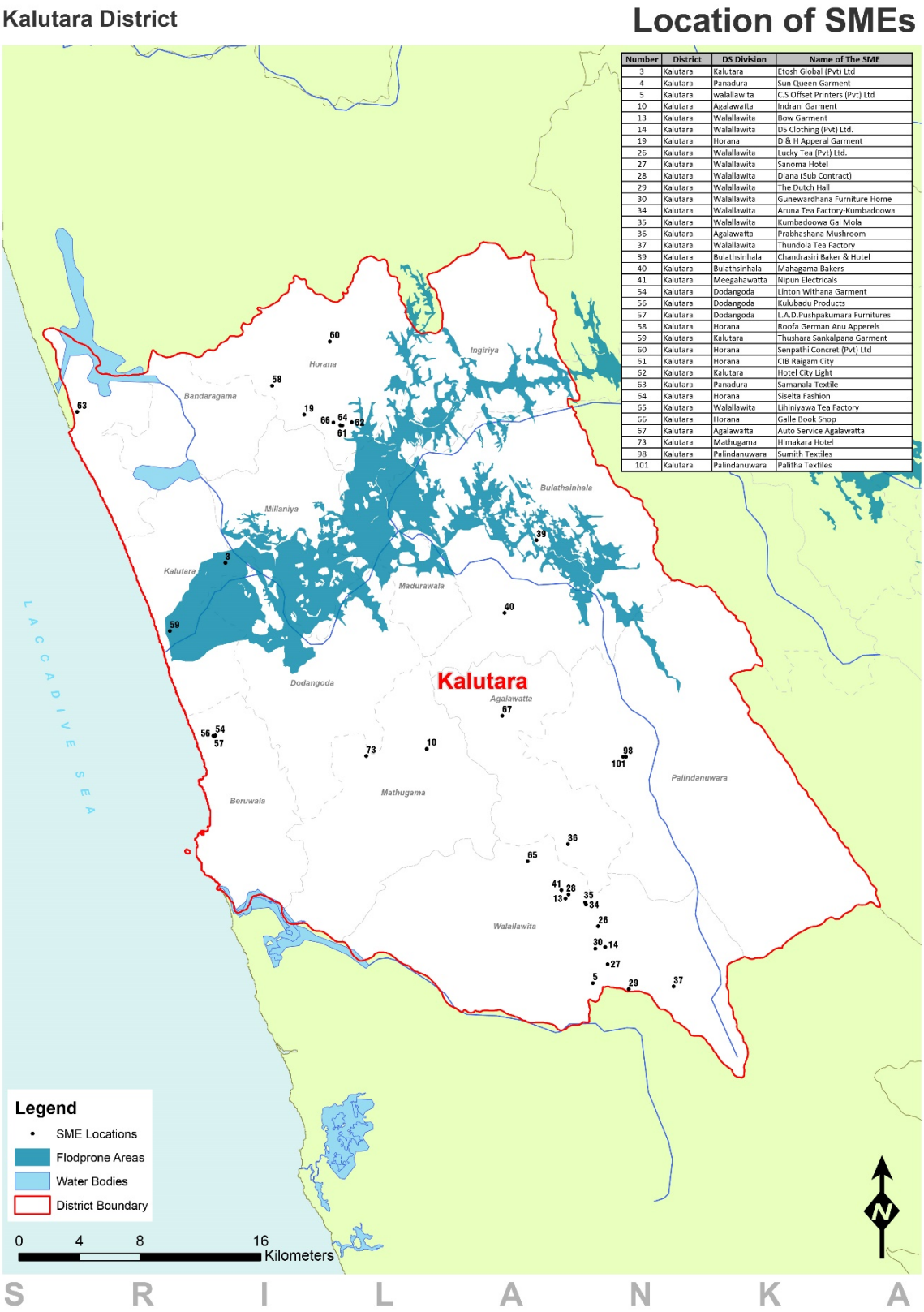
- The knowledge base on climate risks needs to be used in future land use planning to discourage setting up of enterprises in areas which are highly vulnerable to climate risks.
- Government as well as Central Bank are offering compensation to affected SMEs in the form of direct transfer and loan offered at subsidized rates, respectively, for reviving their business. However, the amount offered as compensation and loan is very low compared to the losses suffered by SMEs. Hence, DRM products that can reduce the damages might prove to be a better intervention in the long run.
- Although insurance is an important tool for protection of SMEs from climate risks, insurance companies are not willing to offer products in areas which are acutely flood prone. If they offer products, the premiums are high and that discourages SMEs from taking up insurance. There is a need for greater and more transparent dialogue between SME associations and insurance companies.

Way Forward:

It is clear from the surveys and interactions with various stakeholders like SMEs, government departments and institutions and banking and insurance companies that they would be willing to cooperate with experts and deliberate on possible solutions for flood risk mitigation. There is keen interest in opting for a DRM and climate adaptation product to build resilience against future climate risks. Based on this, following steps can be taken up during the next phase of BBCR project:

1. Involving interested SMEs in further discussions regarding the type of DRM/climate adaptation products and feasibility of uptake of measures recommended under the products.
2. Interactions between SMEs, government institutions and financial institutions with project team and DRR/climate change experts to identify suitable measures and overall design of the products.
3. Developing DRM/climate adaptation product prototypes
4. Pilot and demonstrate the use of DRM/climate adaptation products amongst selected SMEs
5. Conduct awareness building sessions to convince businesses about the need to adopt DRM/climate adaptation products to reduce climate risks and protect their businesses in the long term
6. Conduct awareness raising sessions among support agencies such as trade associations, banks and insurance companies regarding the usefulness of this product and potential business models for its commercialisation.

Annex 1: Maps of surveyed areas



Number	District	DS Division	Name of The SME
3	Kalutara	Kalutara	Etosh Global (Pvt) Ltd
4	Kalutara	Panadura	Sun Queen Garment
5	Kalutara	walallawita	C.S Offset Printers (Pvt) Ltd
10	Kalutara	Agalawatta	Indrani Garment
13	Kalutara	Walallawita	Bow Garment
14	Kalutara	Walallawita	DS Clothing (Pvt) Ltd.
19	Kalutara	Horana	D & H Apperal Garment
26	Kalutara	Walallawita	Lucky Tea (Pvt) Ltd.
27	Kalutara	Walallawita	Sanoma Hotel
28	Kalutara	Walallawita	Diana (Sub Contract)
29	Kalutara	Walallawita	The Dutch Hall
30	Kalutara	Walallawita	Gunewardhana Furniture Home
34	Kalutara	Walallawita	Aruna Tea Factory-Kumbadoowa
35	Kalutara	Walallawita	Kumbadoowa Gal Mola
36	Kalutara	Agalawatta	Prabhashana Mushroom
37	Kalutara	Walallawita	Thundola Tea Factory
39	Kalutara	Bulathsinhala	Chandrasiri Baker & Hotel
40	Kalutara	Bulathsinhala	Mahagama Bakers
41	Kalutara	Meegahawatta	Nipun Electricals
54	Kalutara	Dodangoda	Linton Withana Garment
56	Kalutara	Dodangoda	Kulubadu Products
57	Kalutara	Dodangoda	L.A.D.Pushpakumara Furnitures
58	Kalutara	Horana	Roofa German Anu Apperels
59	Kalutara	Kalutara	Thushara Sankalpana Garment
60	Kalutara	Horana	Senpathi Concret (Pvt) Ltd
61	Kalutara	Horana	CIB Raigam City
62	Kalutara	Kalutara	Hotel City Light
63	Kalutara	Panadura	Samanala Textile
64	Kalutara	Horana	Siselta Fashion
65	Kalutara	Walallawita	Lihiniyawa Tea Factory
66	Kalutara	Horana	Galle Book Shop
67	Kalutara	Agalawatta	Auto Service Agalawatta
73	Kalutara	Mathugama	Himakara Hotel
98	Kalutara	Palindanuwara	Sumith Textiles
101	Kalutara	Palindanuwara	Palitha Textiles

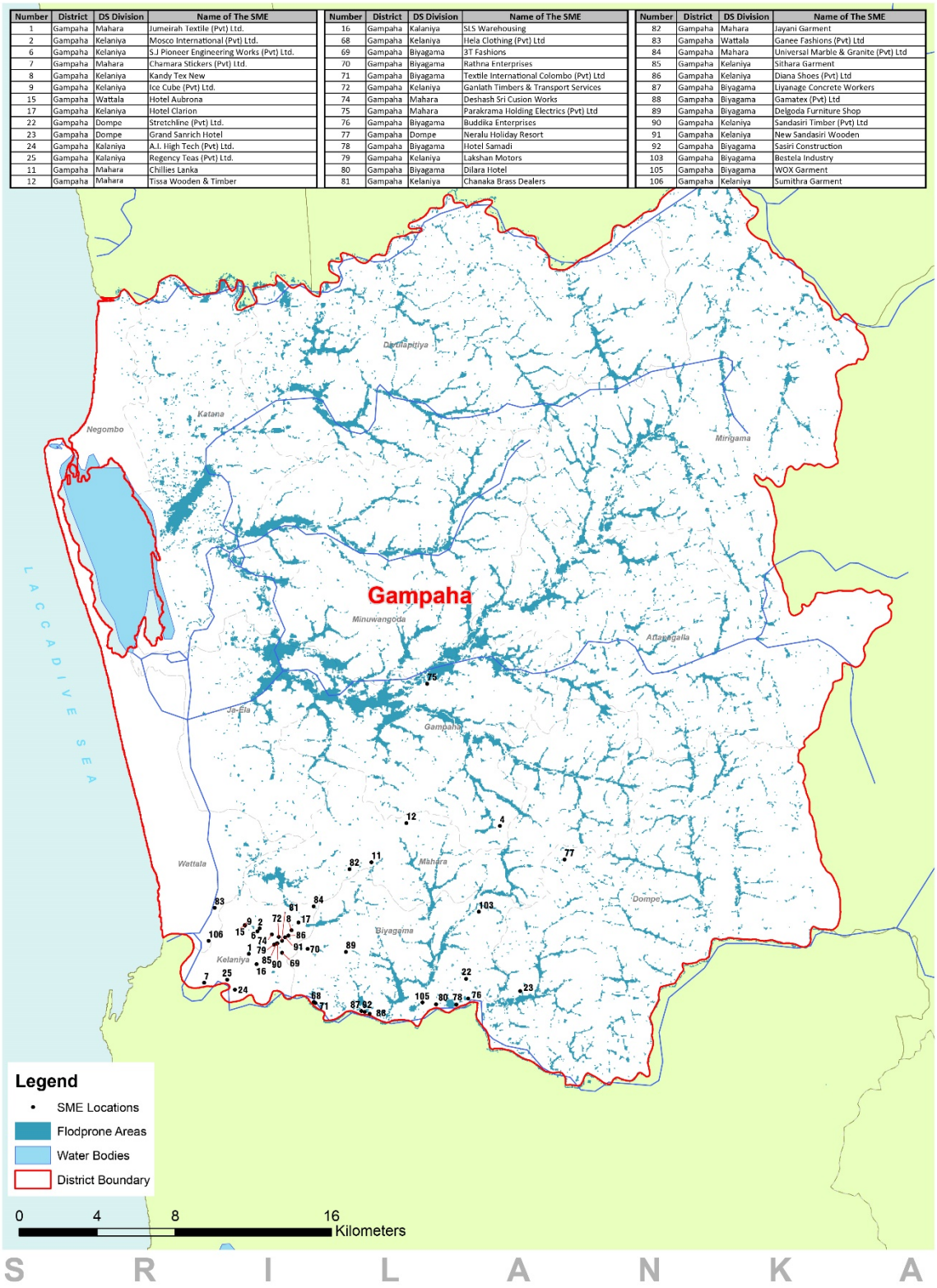
Gampaha District

Location of SMEs

Number	District	DS Division	Name of The SME
1	Gampaha	Mahara	Jumeirah Textile (Pvt) Ltd.
2	Gampaha	Kelaniya	Mosco International (Pvt) Ltd.
6	Gampaha	Kelaniya	S.J Pioneer Engineering Works (Pvt) Ltd.
7	Gampaha	Mahara	Chamara Stickers (Pvt) Ltd.
8	Gampaha	Kelaniya	Kandy Tex New
9	Gampaha	Kelaniya	Ice Cube (Pvt) Ltd.
15	Gampaha	Wattala	Hotel Aubrona
17	Gampaha	Kelaniya	Hotel Clarion
22	Gampaha	Dompe	Stretchline (Pvt) Ltd.
23	Gampaha	Dompe	Grand Sanrich Hotel
24	Gampaha	Kelaniya	A.I. High Tech (Pvt) Ltd.
25	Gampaha	Kelaniya	Regency Teas (Pvt) Ltd.
11	Gampaha	Mahara	Chillies Lanka
12	Gampaha	Mahara	Tissa Wooden & Timber

Number	District	DS Division	Name of The SME
16	Gampaha	Kelaniya	SLS Warehousing
68	Gampaha	Kelaniya	Hela Clothing (Pvt) Ltd
69	Gampaha	Biyagama	3T Fashions
70	Gampaha	Biyagama	Rathna Enterprises
71	Gampaha	Biyagama	Textile International Colombo (Pvt) Ltd
72	Gampaha	Kelaniya	Ganlath Timbers & Transport Services
74	Gampaha	Mahara	Deshash Sri Cusion Works
75	Gampaha	Mahara	Parakrama Holding Electrics (Pvt) Ltd
76	Gampaha	Biyagama	Buddika Enterprises
77	Gampaha	Dompe	Neralu Holiday Resort
78	Gampaha	Biyagama	Hotel Samadi
79	Gampaha	Kelaniya	Lakshan Motors
80	Gampaha	Biyagama	Dilara Hotel
81	Gampaha	Kelaniya	Chanaka Brass Dealers

Number	District	DS Division	Name of The SME
82	Gampaha	Mahara	Jayani Garment
83	Gampaha	Wattala	Ganee Fashions (Pvt) Ltd
84	Gampaha	Mahara	Universal Marble & Granite (Pvt) Ltd
85	Gampaha	Kelaniya	Sithara Garment
86	Gampaha	Kelaniya	Diana Shoes (Pvt) Ltd
87	Gampaha	Biyagama	Liyanage Concrete Workers
88	Gampaha	Biyagama	Gamatex (Pvt) Ltd
89	Gampaha	Biyagama	Delgoda Furniture Shop
90	Gampaha	Kelaniya	Sandasiri Timber (Pvt) Ltd
91	Gampaha	Kelaniya	New Sandasiri Wooden
92	Gampaha	Biyagama	Sasiri Construction
103	Gampaha	Biyagama	Bestela Industry
105	Gampaha	Biyagama	WOX Garment
106	Gampaha	Kelaniya	Sumithra Garment



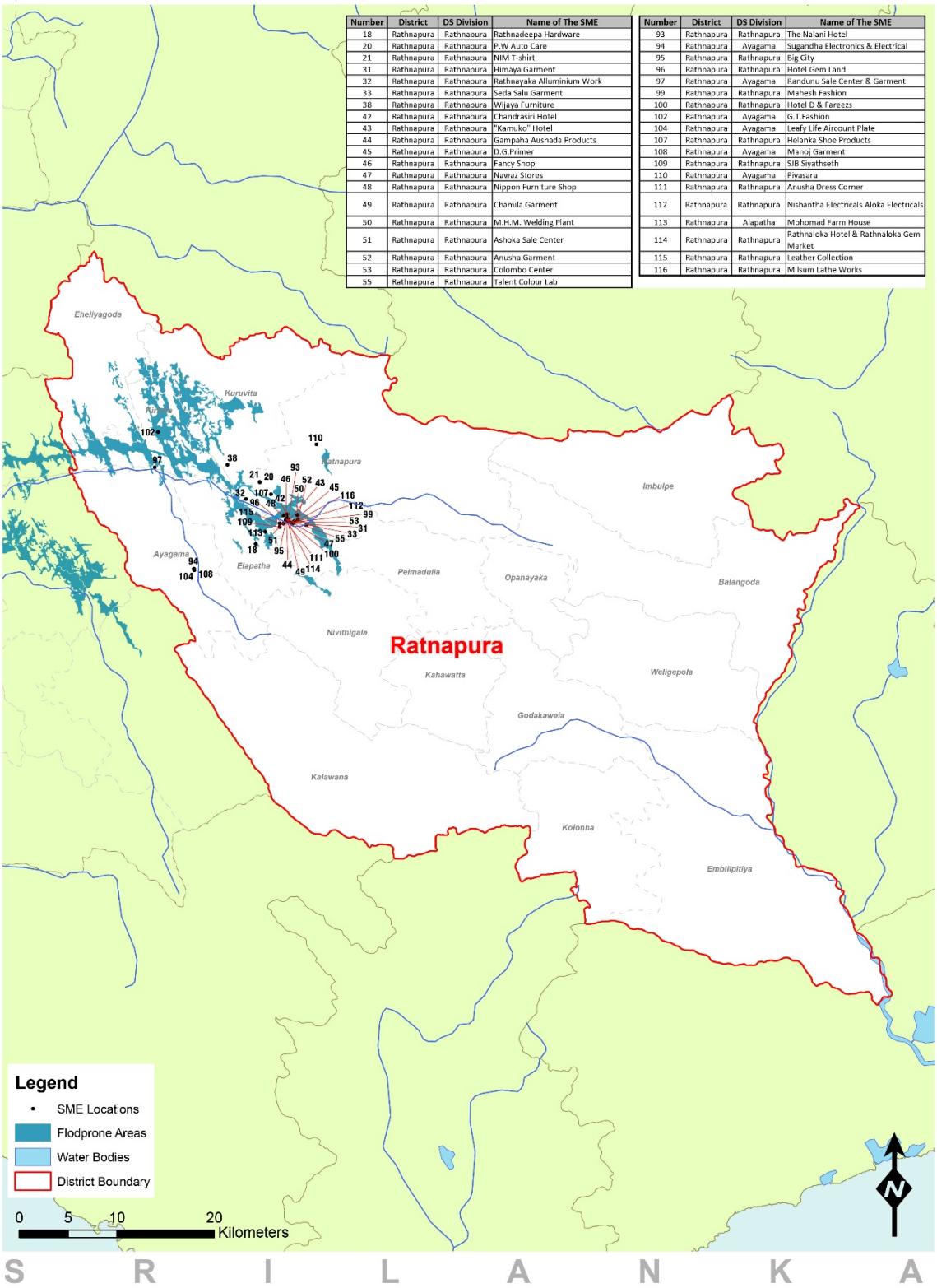
S R I L A N K A

Ratnapura District

Location of SMEs

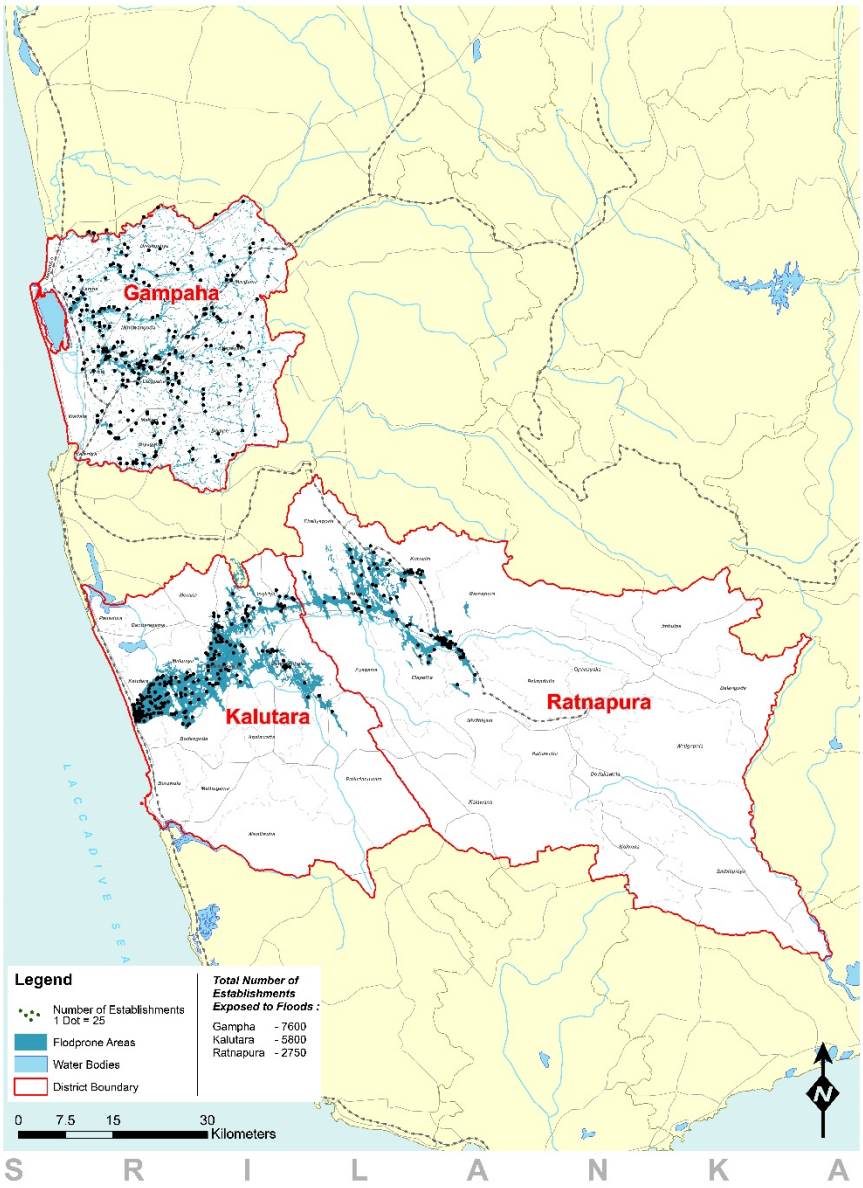
Number	District	DS Division	Name of The SME
18	Rathnapura	Rathnapura	Rathnadeepa Hardware
20	Rathnapura	Rathnapura	P.W Auto Care
21	Rathnapura	Rathnapura	NIM T-shirt
31	Rathnapura	Rathnapura	Himaya Garment
32	Rathnapura	Rathnapura	Rathnayaka Alluminium Work
33	Rathnapura	Rathnapura	Seda Salu Garment
38	Rathnapura	Rathnapura	Wijaya Furniture
42	Rathnapura	Rathnapura	Chandrasiri Hotel
43	Rathnapura	Rathnapura	"Kamuko" Hotel
44	Rathnapura	Rathnapura	Gampaha Aushada Products
45	Rathnapura	Rathnapura	D.G.Primer
46	Rathnapura	Rathnapura	Fancy Shop
47	Rathnapura	Rathnapura	Nawaz Stores
48	Rathnapura	Rathnapura	Nippon Furniture Shop
49	Rathnapura	Rathnapura	Chamila Garment
50	Rathnapura	Rathnapura	M.H.M. Welding Plant
51	Rathnapura	Rathnapura	Ashoka Sale Center
52	Rathnapura	Rathnapura	Anusha Garment
53	Rathnapura	Rathnapura	Colombo Center
55	Rathnapura	Rathnapura	Talent Colour Lab

Number	District	DS Division	Name of The SME
93	Rathnapura	Rathnapura	The Nalani Hotel
94	Rathnapura	Ayagama	Sugandha Electronics & Electrical
95	Rathnapura	Rathnapura	Big City
96	Rathnapura	Rathnapura	Hotel Gem Land
97	Rathnapura	Ayagama	Randunu Sale Center & Garment
99	Rathnapura	Rathnapura	Mahesh Fashion
100	Rathnapura	Rathnapura	Hotel D & Fareezs
102	Rathnapura	Ayagama	G.T.Fashion
104	Rathnapura	Ayagama	Leafy Life Aircount Plate
107	Rathnapura	Rathnapura	Helanka Shoe Products
108	Rathnapura	Ayagama	Manoj Garment
109	Rathnapura	Rathnapura	SJB Siyathseth
110	Rathnapura	Ayagama	Piyasara
111	Rathnapura	Rathnapura	Anusha Dress Corner
112	Rathnapura	Rathnapura	Nishantha Electricals Aloka Electricals
113	Rathnapura	Alapatha	Mohomad Farm House
114	Rathnapura	Rathnapura	Rathnaloka Hotel & Rathnaloka Gem Market
115	Rathnapura	Rathnapura	Leather Collection
116	Rathnapura	Rathnapura	Milsum Lathe Works



S R I L A N K A

Location of SMEs



District Name	Total No. of SMEs	SMEs exposed	% SMEs exposed	Micro	Small	Medium
Gampaha	1,27,734	7600	5.95	6939	540	99
Kalutara	60,717	5800	9.55	5394	342	58
Ratnapura	45,210	2750	6.08	2508	215	22
	2,33,661	16,150		**14841**	**1096**	**179**

Annex 2: Questionnaire for SME surveys

Building Businesses' Climate Resilience in Sri Lanka project (BBCR)

Survey Questionnaire

A: IDENTIFICATION DETAILS

A1	Questionnaire number		
A2	SME Number		
A3	Name of the enumerator		
A4	Date of the interview (DD/MM/YY)		
A5	District		
A6	DS Division		
A7	Name of the SME		
A8	Name of the owner		
A9	Address		
A10	Contact number and email ID		
A11.a	Type of business		
A11.b	Type of business process (for Garment sector SMEs)	Fabric receiving warehouse	1
		Fabric relaxing	2
		Textile manufacturing, including weaving, dyeing, and other finishing products	3
		Garment manufacturing facility centers	4
		Embroidery and screen printing	5
		Logos, graphics and other embellishments	6
		Any other (Specify)	

Key Problems

KP1. Can you please tell me some of the problems do you face when running this business?

KP2. What are some of the support do you expect from the government through this year's budget?

KP3. Have you or as a group of business owners who are doing similar business, approached the government to request any assistance / Support?

1. Yes 2. No

KP4. Can you please tell me for what purpose?

KP3. Have you or as a group of business owners who are doing similar business, proposed any ideas / suggestions to the government regarding your business?

1. Yes 2. No

KP6. Can you please tell me for what are those ideas / suggestions?

B: STRUCTURAL CHARACTERISTICS, LOCATION AND MAINTENANCE

B1	Type of building	Semi-permanent structure (made of unburnt bricks, bamboo, tin sheets)	1
		Permanent structure ground level	2
		Permanent structure multiple floors	3
B2	Location of business in the building	Ground floor	1
		First floor	2
		Upper floors	3
		Whole building	4
B3	Total area occupied (in sq. ft.)	_____ sq, ft.	
B4	Ownership of premises	Owned	1
		Rented	2
B5	If premises are rented, what is the amount of rent paid monthly? Or What percentage of total expenses	_____ LKR	
B6	What is the ownership model of the business? ***(Tick multiple options if applicable)***	Individual owner	1
		Family business	2
		Partnership	3
		Franchise of large business	4
		Part of large business group	5
		Any other (Specify)	
B7	Year of construction of the building		
B8	For how many years have you been operating from these premises?		
B9	How much do you spend annually on maintenance of your premises? Or What percent of total expenses is your maintenance cost	Rs. _____ %. _____	

B10	If other businesses are operating from same premises, do you share the maintenance cost with them? ***(If answer is No, move directly to Section C)***	Yes	1
		No	2
B11	If yes, how much is your share approx. in percentage?	_____ %	
B12.a	Is there any formal association of all businesses operating in your area among all businesses?	Yes	1
		No	2
B12.b	Is there any informal association of all businesses operating in your area among all businesses?	Yes	1
		No	2
B13	What is the regular role of this association? (Tick multiple options if applicable)	Maintenance of common infrastructure	1
		Structural changes in building/premises	2
		Dispute resolution among members	3
		Dealing with local government	4
		Dealing with trade associations	5
		Any other (Specify)	6

C: EXPOSURE TO RECURRENT FLOODS AND IMPACTS

C1	Has your business faced any of these risks in the past 5 years? Can you rank them in the order of importance? ***(Rank 1 for the most important risk followed by other risks in the same order)***	Flooding	
		Landslides	
		Storms	
		Drought	
		Fire	
		Theft	
		Any other (specify)	
C2	How many days on average have you experienced flooding each year for the past 5 years?	_____ no of days	
C3	Does the flood water enter your business premises?	Yes	1
		No	2
C4	For how many hours or days on average	_____ hours	

	do the premises remain flooded each time floods occur?	_____days	
C5	In which year(s) did you experience the worst floods in terms of water depth in the last 5 years?		
C6	What was the depth of flooding then?	_____ft.	
C7	How would you rate the impact of recurrent floods on your business in the last 5 years?	Severe	5
		High	4
		Medium	3
		Low	2
		No impact	1
C8.a	Have your business premises and infrastructure been directly affected by floods in the last 5 years?	Yes	1
		No	2
C8.b	Have your equipment and products been indirectly affected by floods in the last 5 years?	Yes	1
		No	2

(If C8a and C8b No, directly move to C12)

C9 Identify damage to your **business premises and other infrastructure** controlled by your business due to floods and state the frequency. (Tick the stated options)

Item	Every year	Once in 2-3 years	Once in 5 years	Approx. Cost of damage (in LKR)
Grounds and fence				
Foundation and support				
Flooring				
Walls (interior and exterior)				
Doors and windows				
Air conditioning system				
Heating system				
Water pumping system				
Electrical and lighting systems (regular power)				
Power backup generators				
Transport vehicles				

	Communication systems				
	Elevator shaft/elevator				
	Fire water pumping system				
	Common sewage treatment plant				
	Any other (specify)				
C10	Identify damage to **equipment and products** for your business due to floods and state the frequency. (Tick the stated options)				
	Item	Every year	Once in 2-3 years	Once in 5 years	Approx. cost of damage (in LKR)
	Machines and tools				
	Engines/generators/alternators				
	Electrical appliances (refrigerators, etc.)				
	Finished products				
	Raw materials				
	Partly assembled/processed products				
	Any other (specify)				
C11	What is the approximate annual damage that you have suffered in the last five years on account of floods?	Rs. _____			
C12.	Do you have to directly spend money on the following due to flood exposure and how frequently?				
	Item	Every year	Once in 2-3 years	Once in 5 years	Approx. money spent (LKR)
	Disinfecting, cleaning and rehabilitation of premises				
	Flood fighting and rescue work				
	Removal of debris and damaged items				
	Increased alternative operating costs				
	Loss due to suspension of production				
	Pumping water out of premises				
	Emergency expenses during floods				
	Any other (specify)				
C13	Do you have to suspend production on account of floods? If yes, for how many days on average per year?	Yes		1	
		No		2	
		Number of days			

C14	How many days in a year have employees remained absent due to floods in the past 5 years?	_____ days	
C15	Are there any employees living on the premises? If yes, how many?	Yes	1
		No	2
		If yes, how many?	
C16	What is the reason for employees not being able to work during floods?	Access road flooded	1
		No transportation	2
		No power supply	3
		Health issues	4
		Family obligation	5
		Any other (specify)	6
C17	Were there instances of employees getting stuck in the premises during floods in the past 5 years?	Yes	1
		No	2
C18	If yes, how much money did you have to spend on taking care of employees stranded in the premises?	Rs. _____	
C19	Did you spend any amount on employees and their families affected by floods? If yes, how much?	Yes	1
		No	2
		If yes, how much?	_____LKR
C20	Have you contributed to any flood relief fund in the local area? If yes, how much?	Yes	1
		No	2
		If yes, how much?	_____LKR
C21	What is the average time taken to get the business back to normal after floods?	_____ days	
C22	Have you faced any of these impacts on overall business due to floods in the past 5 years?	Could not meet supply targets	1
		Reduced demand for regular consumers	2
		Lost out on contracts	3
		Relocated some business operations elsewhere	4
		Any other (specify)	5
C23	What is the approximate percentage (%) loss of revenue due to the above impacts over last 5 years?	_____%	

C24	Do you have insurance coverage? **(If the answer is No, move to Q. C34 directly)**	Yes	1
		No	2
C25	If yes, what is covered under insurance?	Building	1
		Equipment	2
		Inventory and produced goods	3
C26	What percentage (%) of the total assets are insured under "sum insured"? If insured, what is the name of the insurance company?	_____% _____ Company	
C27	Is the building or machinery hypothecated to a bank for business loan?	Yes	1
		No	2
C28	If yes, does the bank insist on insurance before taking a loan?	Yes	1
		No	2
C29	Have you claimed insurance in the past 5 years for flood related damages?	Yes	1
		No	2
C30	If yes, what percentage (%) of the claim did you receive for each occurrence?	Building	_____%
		Equipment	_____%
		Inventory and produced goods	_____%
C31	Was the insurance claim amount enough to cover all damages?	Yes	1
		No	2
C32	Did you have any difficulties in claiming insurance? If yes, briefly state the		

	difficulties. ***(Record in brief)***		
C33	How much time did it take to get your claim settled from when the claim was made?	_____ days _____ months	
C34	If you do not have insurance coverage, can you state the reasons for not buying it?	Higher premium	1
		Risk is too low for insurance	2
		Too much paperwork for buying insurance	3
		Non-availability of right options	4
		Delays in settling claims	5
		Any other (Specify)	6
C35	Have you received any compensation from the government? If yes, how much?	Yes	1
		No	2
		If yes, how much?	-----
C36	Have you received any monetary assistance from the larger buyer company? If yes, how much?	Yes	1
		No	2
		If yes, how much?	Rs. _____

D: PREPARING FOR FLOODS EVERY YEAR

D1	Are you undertaking any of these activities every year to prepare for floods?	**Activity**		**Approx. cost in LKR**
		Cleaning premises or surroundings	1	
		Cleaning the nearby drains	2	
		Repairing the roof	3	
		Overhauling machinery	4	

		Repairs inside the premises for leakages	5	
		Any other (specify)	6	
D2	Have you undertaken any of these structural measures in the past 5 years to protect your premises from floods?	**Measure**		**Approx. cost in LKR**
		Elevating electric meter, equipment, machinery	1	
		Constructing flood barriers at the entrance	2	
		Shifting raw material and inventory elsewhere	3	
		Building new drainage system	4	
		Constructing temporary drain channels	5	
		Any other (specify)	6	
D3	Which of these is the most effective and the least effective measures? ***(Use the code given in D2 to record response)***	Most effective		
		Least effective		
D4	Did you consult a civil or structural engineer before implementing any of these measures?	Yes		1
		No		2

D5	Do you have any documented plans, e.g., flood response plan, contingency plan, business continuity plan, etc.?	Yes	1
		No	2
D6	Are there any measures or plans that you would like to implement but have not been able to? If so, why?	Yes	1
		No	2
		If yes, please specify the reason	
D7	Do you receive warnings about flooding in your area?	Yes	1
		No	2
D8	If yes, how do you receive the warnings? ***(Tick multiple responses where applicable)***	Business association	1
		Cell phone	2
		Radio/TV	3
		Local govt. office	4
		District secretariat	5
		GN Office	6
		Police	7
		Fire brigade	8
		Any other (specify)	
D9	If yes, how long in advance have you been warned during last five years?	Fifteen minutes prior	1
		An hour prior	2
		12 hours prior	3
		24 hours prior	4
		48 hours prior	5
D10	Which agency do you contact if flood waters start rising?	Local govt. office	1
		Disaster management office	2
		GN office	3
		Police station	4
		Fire brigade	5
		Local elected leader	6
		No one	7
		Any other (specify)	8

D11	Who do you believe are the top three actors who can take the lead role in reducing flood risk in your area? ***(Record the ranks as 1-2-3)***	Local government		
		Provincial government		
		Central government		
		Trade associations and chamber of commerce		
		Citizens		
		Our business itself		
		All above		
		Any other (specify)		
D12	If yes, what can they do?	Top 1	Top 2	Top 3

E: WILLINGNESS TO PAY FOR FLOOD MANAGEMENT

E1	Would you be interested in investing in flood protection measures in your premises?	Yes	1
		No	2
		Not sure	3
E2	If any flood protection measures are suggested by experts or promoted by business associations, would you consider them for implementation?	Yes	1
		No	2
		Not sure	3
E3	If you do not have specific flood insurance coverage, would you be interested in purchasing it for protecting your premises against floods?	Yes	1
		No	2
		Not sure	3
E4	If a Disaster Risk Management (DRM) product or tool that can help minimize your risks, is made available to you, would you be willing to pay a monthly fee to use it? If yes, how much?	Yes	1
		No	2
		Not sure	3
		If yes, how much	Rs. _____

E5	In your opinion, what kind of information and support is needed for the business to overcome future climate-related risks like floods?		

F: SME PROFILE

F1	Which market are you catering to?	Domestic	1
		International	2
		Both	3
F2	If you are catering to the domestic market, which markets are you supplying to?	Wholesale	1
		Retail	2
		Both	3
F3	If you are catering to the international market, which countries are you exporting the products to? (List the countries)		
F4	If you are catering to the international market directly, which brands are you supplying the products to? (List the brand names)		
F5	If you do not cater to international market directly, which export companies do you supply your products to within Sri Lanka? (List the names of companies)		
F6	Are you registered as SME with Ministry of Industry and Commerce?	Yes	1
		No	2
F7	If not, why?		
F8	Do you belong to any particular trade association of SMEs?	Yes	1
		No	2
F9	If yes, which association do you belong to?	Sri Lanka Chamber of Small & Medium Industries	1

		Sri Lanka Chamber of Garment Exporters	2
		Any other (Specify)	
F10	Number of employees (Categories as per SME definition)	Micro (Less than 10)	1
		Small (11-50)	2
		Medium (51-300)	3
F11	Percentage of employees gender-wise (approx. answer)	Males	
		Females	
F12	Average approximate gross annual turnover (in LKR over last 5 years) (Categories as per SME definition)	Micro (Less than LKR 15 million)	1
		Small (LKR 16-250 million)	2
		Medium (LKR 251-750 million)	3
F13	Who makes key decisions within your organization related to environmental sustainability and disaster risk management?	Owner	1
		Director/Manager	2
		Head of Sustainability Group	3
		Any other (Specify)	

G1. Would you like to re-participate in such interviews?

1. Yes
2. No

G2. The above-mentioned company has been planned to conduct a conference within two months. Would you like to take part in it?

1. Yes
2. No

G3. If yes, Can you please give me your contact number & email address?
