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SRI LANKA

Consolidated Livelihood Exercise for Analysing Resilience

A special report prepared by the World Food Programme
and the Ministry of Economic Development

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INTRODUCTION

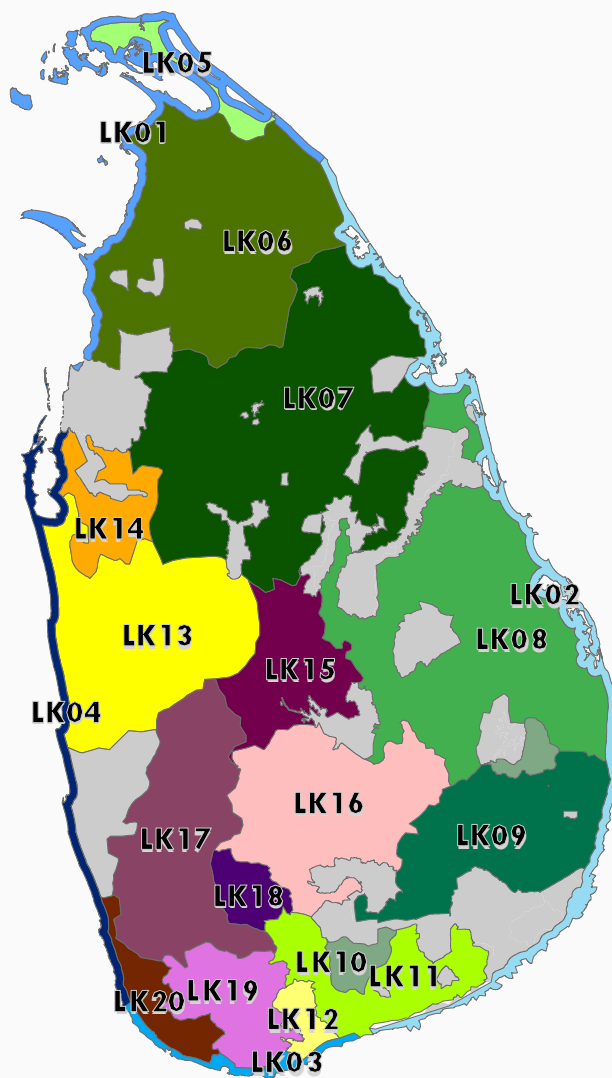
Livelihoods in Sri Lanka are highly diverse. In part, this is due to the differences in topography, agro-climatic conditions and socio-economic features, as well as to the rapid development seen in recent years; in 2010, Sri Lanka was re-classified as a middle-income country. Nonetheless, over 80 per cent of the population is still considered as rural and household livelihood activities are closely intertwined with agricultural industries, whether as producers, processors, retailers, or elsewhere in the market chain. This then provides a justification for focusing on livelihood mapping in rural areas to better understand broadly similar spatial patterns of livelihood and vulnerability.

Rural livelihoods in Sri Lanka are broadly influenced by agro-climatic and topographic features. Households in the 'Dry Zone' of the country are traditionally engaged in paddy farming, made possible by the extensive irrigation network of over 11,000 tanks of which most of major tanks are fed by mahaweli irrigation scheme. In areas of the Dry Zone where tanks are functioning on a seasonal basis, households have slowly diversified into export cropping and livestock rearing.

Livelihoods in the intermediate climatic zones are largely differentiated according to topography. In flatter regions, households typically rely on coconut plantations (especially in the so-called 'Coconut Triangle' and a small coconut area in the southern part of the country in the southern parts of the country). The mid- and up-country areas of the country have optimal conditions for perennial plantations such as tea and rubber and also a major supplier of fresh vegetables and spices. The more vulnerable households in these areas depend almost exclusively on daily wages earned from estate farming. Cultivation of cash crops, such as cinnamon and other spices, is also possible in this agro-climatic zone. Activities related to the gem mining industry are concentrated primarily in a small part of Rathnapura (the 'Gem City'), while ad-hoc mining occurs in other zones on a limited basis.

In coastal areas, households are mostly engaged in activities related to fishing, including catching and drying. Fishing activities are influenced by seasonal patterns – during the respective monsoon periods, poorer fisherfolk are unable to fish along the coast and engage in other activities (tourism services, paddy farming, or informal labour) depending on their location to make ends meet.

Figure 1. Livelihood Zones of Sri Lanka




	LK01	Northern shore fishing
	LK02	Eastern fishing
	LK03	Southern coastal tourism and fishing
	LK04	Western fishing
	LK05	Jaffna mixed agriculture
	LK06	Northern mixed agriculture & palmyra plantation
	LK07	Mahaweli mixed farming & livestock
	LK08	Eastern irrigated farming and livestock
	LK09	Southeastern rain-fed paddy farming & OFC
	LK10	Sugarcane
	LK11	Small holder agriculture with dense fruit farming
	LK12	Southern coconut & mixed agriculture
	LK13	Coconut and agriculture triangle
	LK14	North-western livestock & paddy
	LK15	Small holder tea & export cropping
	LK16	Upcountry tea estates
	LK17	Mixed perennial plantation (tea & rubber)
	LK18	Gem mining
	LK19	Small holder tea plantation
	LK20	Mixed farming and cinnamon
		Not mapped (urban or national parks)



Photo: WFP/Helen Kudrich/Sri Lanka

METHODOLOGY

This livelihood zoning and profiling exercise has been carried out using a rapid livelihood assessment that aims to identify and describe generalizable trends and patterns in livelihoods that can then serve as a starting point for analyzing food security and vulnerability. It is based on the method used by both FEWS NET and the Food Economy Group for livelihood assessment.

In addition to the delineation of geographic areas based on patterns of livelihood activities, this exercise furthered the analysis by ranking the livelihood zones according to their experiences of food security, diversity of livelihood activities and sensitivity of income to climate-related hazards. This analysis relied heavily on the expert knowledge documented in the livelihood profiles, review of secondary data, and discussion. Based on these relative rankings, an overall resilience profile by livelihood zone was established.

As such, the methodology in this exercise can be described through three steps:

Step One: Delineation of Boundaries

36 representatives from different Ministries and Government Departments were brought together in a workshop to delineate livelihood zones on a national map of Sri Lanka. The zones were drawn according to which areas have relatively similar geography (agro-ecology and topography), livelihood activities and infrastructure, including roads and access to markets.

Step Two:
Development
of Profiles

Descriptions, or 'profiles', of each livelihood zone were drafted at the national workshop, identifying the key characteristics of livelihoods and differences between wealth groups found within each zone.

Step Three:
Relative
Ranking

A review of relevant secondary data and information sources, including food and nutrition security assessments, climate trend analyses, current and planned infrastructure developments, etc. was undertaken. Based on this accumulation of data and together with expert knowledge, each livelihood zone was ranked relative to the other livelihood zones in terms of the overall experience of food insecurity, the extent of diversification of livelihood activities, and the sensitivity of income to climate-related hazards within the zone.

The results were disseminated to government representatives, non-governmental organisations, and international organisations for further validation and feedback.

A RESILIENCE PROFILE

Resilience refers to the capacity of livelihood groups, households, communities and individuals to manage stressors and shocks with no long-lasting adverse effects on development. From a livelihoods perspective, four important factors contribute to resilience outcomes:

The existing **food security status** of different livelihood groups provides a indication of the concurrent vulnerabilities to future food insecurity in the event of a shock. For example, livelihood groups that experience chronic food insecurity are often exposed to high levels of poverty which reduce their resilience capacity.

Livelihood diversity contributes to resilience. Livelihood groups that depend on one major activity throughout the year may be unable to meet their livelihood needs when a significant climatic stressor or shock damages their primary activity. In contrast, those livelihood groups that have a diverse range of activities are better able to withstand the impact of certain climatic shocks. To illustrate, paddy farmers who engage solely in rainfed agriculture would experience significant losses from a drought and may be unable to obtain sufficient income or food. Other households who engage in a number of activities may be able to invest more time in a different task – such as petty trade – during this period to better manage climate risk.

Livelihood groups that depend on **climate-sensitive income activities** are more vulnerable to climatic stressors and shocks. Examples of climate-sensitive income sources include sale of rain-fed agricultural products, livestock productions and fish products. Climate sensitivity of income sources becomes a particular challenge in areas located at the margin of

key agro-climatic zones where shocks are more unpredictable and can lead to lower resilience capacity. This becomes ever more important in the context of climate change.

Households that depend on **climate-sensitive food sources** are more likely to be affected by climatic shocks or stressors and may be more likely to experience seasonal food insecurity. Food sources that are sensitive to climate risk include consumption from own production in rain-fed agricultural areas, or purchase of crops grown in rain-fed areas.

Using these indicators it is possible to identify livelihood-based resilience patterns that can help inform programmatic interventions. For the analysis presented below, the focus has been on the poorest households to allow for comparability between the different livelihood zones.

Developing a resilience profile

**Food Security
Status**

**Livelihood
Diversity**

**Climate Sensitivity
of Income Sources***

**Climate Sensitivity
of Food Sources***

Resilience

* Climate sensitivity of food sources was not included in the analysis in Sri Lanka as data was insufficient at the time of the analysis.



Photo: WFP/Krishna Krishnamurthy/Sri Lanka

FOOD SECURITY

The poor households in the up-country tea estates (LK16), southeastern rain-fed paddy farming & OFC (LK09) and sugarcane (LK10) zones are considered to be chronically food insecure. In LK16 and LK10, poor households depend heavily on wage labour for income at low daily rates. They often maintain small homesteads for limited household food production, but mostly depend on markets to purchase sufficient food for the household. In LK09, many of the poorer households continue to rely on slash-and-burn rain-fed paddy production with limited productivity and low yields. As a result, they also depend heavily on market purchases to satisfy household needs.

Road access and thereby access to larger and more diverse daily markets is poor in these zones, contributing further to the status of chronic food insecurity for the poorest households that tend to be the most isolated. Lack of roads also impedes access to key education and health facilities that negatively impacts the utilization of nutrients in food.

Three zones in the south and four zones in the north are considered as seasonally food insecure: Small holder agriculture with dense fruit farming (LK11); Small holder tea plantation (LK19); North-western livestock & paddy (LK14); Northern mixed agriculture & palmyra plantation (LK06); Jaffna mixed agriculture (LK05); and Northern shore fishing (LK01). Poor households in these zones tend to experience lean season food insecurity, although the factors driving food insecurity differ between the north and the south.

In the LK01, LK05 and LK06, the conclusion of the conflict, resettlement and steady but slow rehabilitation of infrastructure continue to negatively impact households' livelihoods, making them more vulnerable to seasonal food insecurity. While conditions are reportedly improving, many households remain relatively pessimistic about their livelihood recovery. Indebtedness is a major concern, perpetuating the cycle of seasonal food insecurity as households are forced to take loans with high interest rates to obtain sufficient food in the lean season (WFP 2012).

In LK11 and LK19, seasonal food insecurity is driven by the limited own production of food and low profits from small scale agricultural production, despite the production of some higher value crops. In the small holder tea plantation zone, the quality of the tea is poorer than in the upcountry areas and generates less profit; in the dense fruit farming zone, limited road access affects profitability from sale of the fruit.

The relatively most food secure zones are the Mahaweli mixed farming & livestock (LK07), coconut & agriculture triangle (LK13), southern coconut & mixed agriculture (LK12), gem mining (LK18) and mixed farming & cinnamon (LK20) zones. Despite being in the center of the dry zone, households in the Mahaweli mixed farming & livestock zone remain relative food secure during the dry season due to the extensive network of large tanks that facilitate year-round agricultural production. Owning livestock is also common in this area providing an additional source of nutritious food.

Households in the coconut and agriculture triangle (LK13) and southern coconut and mixed agriculture (LK12) are also considered to be amongst the most food secure zones based on year-round profitability of coconuts and relatively stable production of food on homestead plots. Access is good in both areas as road networks extend from Colombo and Galle respectively.

Figure 2. Relative Food Insecurity

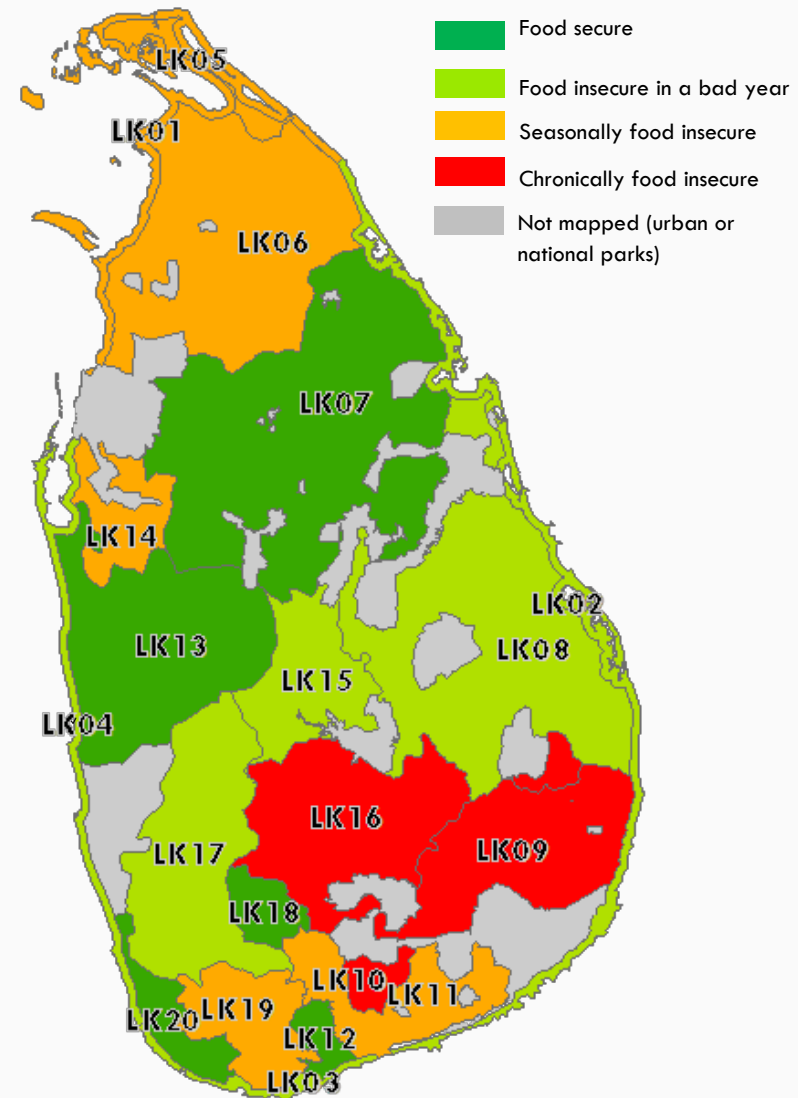




Photo: WFP/Hamish Appleby/Sri Lanka

LIVELIHOOD DIVERSITY

Sri Lanka is exposed to a diversity of climate-related hazards, including floods, droughts, landslides and storms. Extreme climate events can have detrimental effects on livelihoods, for example, through destruction of livelihood assets (farming tools, fishing boats, water tanks for irrigation) and destruction of agricultural land which may take several months or years to recover.

Historical trends suggest that the number of people being affected by climate-related hazards is increasing, from an average of approximately 400,000 people affected every year between 1980 and 1990 to an average of 750,000 affected annually between 2000 and 2013. The majority of the affected population is exposed to drought or flood—both of which are linked to failure or high intensity of the monsoon rains. The increase in exposure is largely due to erratic monsoon patterns resulting in more frequent and intense floods and droughts. In addition to increasing magnitude, recent evidence suggests that both hazards are occurring where they typically do not.

Over the past two decades, the severity of landslides has increased in the highland regions through a combination of heavy rains, geological changes in the hill country, and deforestation.

Cyclones often affect the northern region of the country, especially in

the months of November and December. There is no evidence to highlight whether cyclones are becoming more intense or frequent, and though historically their severity has been moderate, projected changes in sea-level could result in higher cyclone impact in coastal areas with significant impacts on fisherfolk.

To cope with climate risk, households may diversify their livelihoods. The most diversified livelihoods are located in the Dry Zone, where dry spells can occur more frequently. Here, the poorest households engage in different on-farm and off-farm activities. The least diversified livelihoods are in the coastal areas where households may depend exclusively on their catch, in the up-country tea estates where the poorest live off wage labour, and in the small-scale tea plantation zone, where households almost exclusively dedicate their time to the cultivation of tea. Households in the southeastern paddy zone also have relatively low levels of diversification, largely because the region is remote and alternative livelihood activities are not feasible.

Figure 3. Relative Livelihood Diversification

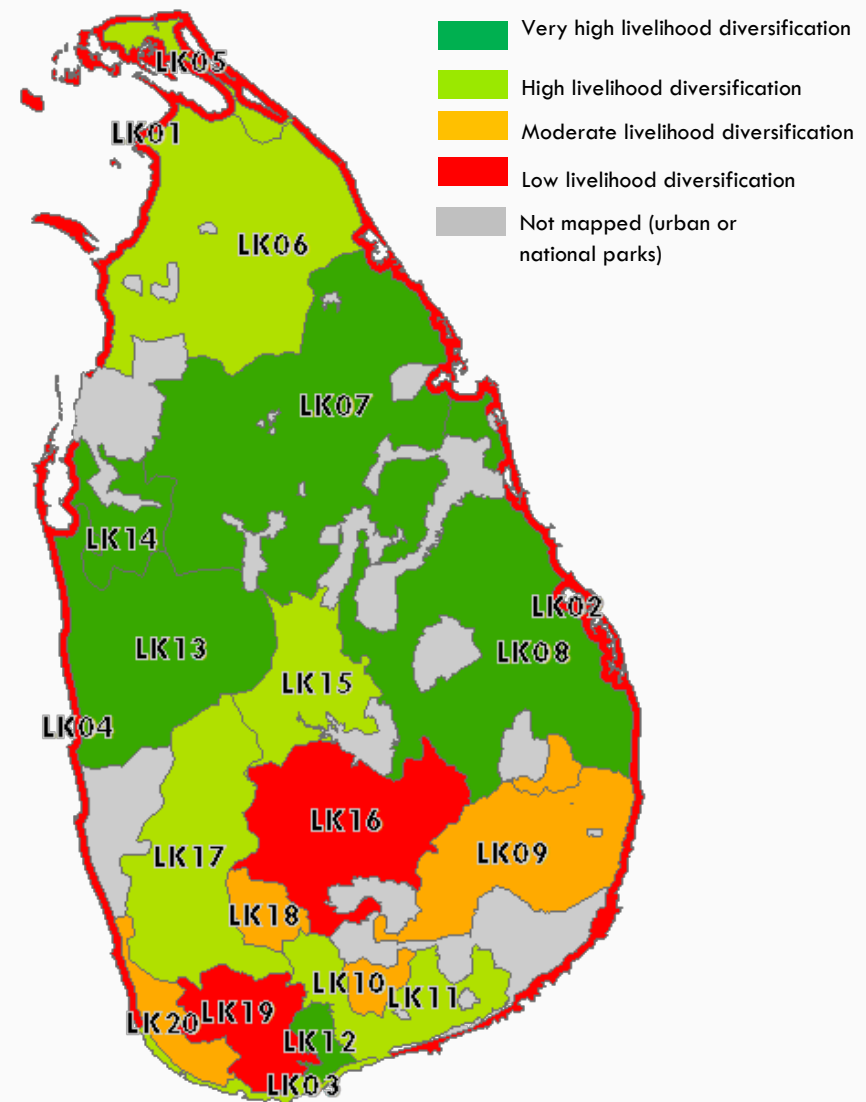




Photo: Gurinder Osan/Associated Press

INCOME SENSITIVITY

Changes in climatic patterns, both long-term and seasonal, have a detrimental effect on livelihoods that depend on climate-sensitive income, such as seasonal or daily agricultural labour, sale of rain-fed crops, and fishing.

Incomes for the poorest households are particularly climate-sensitive in most of the Dry Zone, as well as in the coast. In the northernmost parts of the country, agricultural activities are possible due to the availability of groundwater which is replenished annually following the northeast monsoon rains. Increasingly erratic northeast monsoons therefore increase the sensitivity of livelihoods in this region. Micro-tanks exist in these zones, but they require upgrading in order to provide more reliable water sources

Fishermen in the northern coast of Sri Lanka are also highly vulnerable to climate risk—during the northeastern monsoon, fishing is not always possible and therefore households have to engage in unskilled labour. The availability of labour in this period is not always predictable.

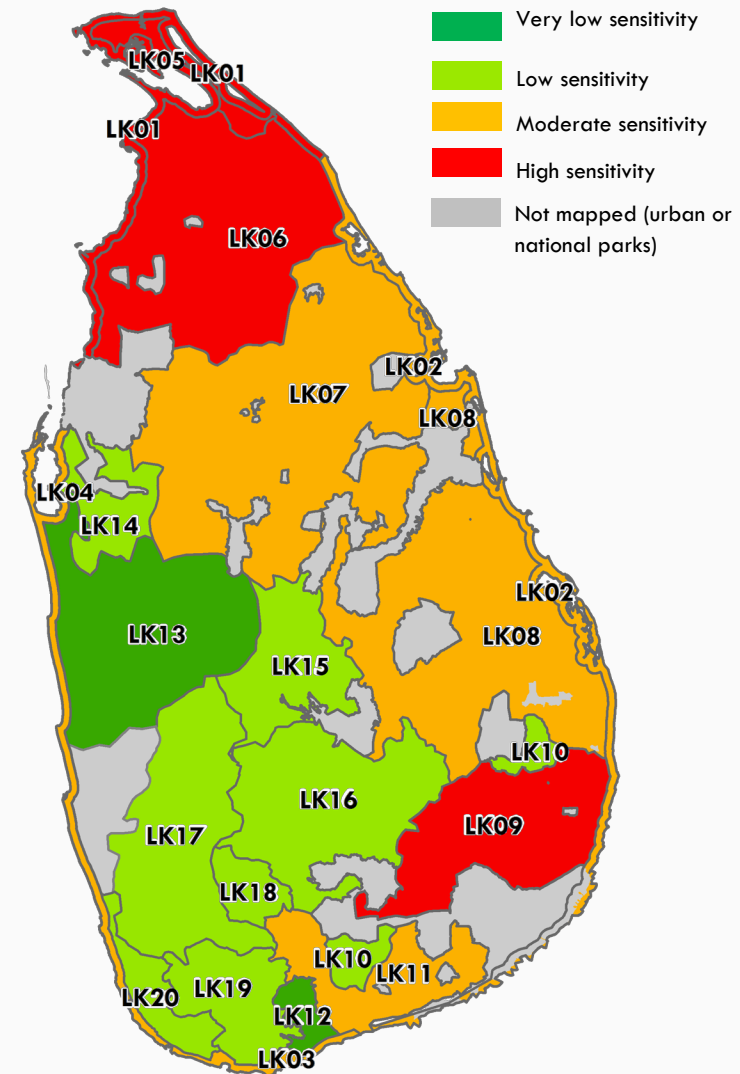
Paddy in the southeastern region of the country is usually cultivated in small holdings, and the poorest households depend almost exclusively on rainfall. Here, two important climate trends could affect livelihoods. First, rainfall is decreasing rather rapidly compared to climatology. Sec-

ond, this region depends on rains from the northeastern monsoon which are becoming increasingly unpredictable. These two trends exacerbate the vulnerability of the poorest households, and reduce their resilience capacity.

Sensitivity of income in the Mahaweli mixed farming zone is lower compared to other livelihoods. This is due to the availability of an extensive network of micro-tanks which provide sufficient water even in the dry months, and due to higher diversification of livelihoods to non-climate sensitive activities.

Most households in the intermediate and wet zones have low sensitivity of income. As there is sufficient and reliable rainfall from the southwest monsoon in these zones, households have diversified into a variety of agricultural activities that are not affected by seasonal fluctuations. Such activities include cultivation of tea, rubber, cinnamon, and other field crops for export. This diversification into non-sensitive activities allows households to be more resilient to the impacts of climate change.

Figure 4. Relative Climate Sensitivity of Income





OVERALL RESILIENCE

Livelihoods in Sri Lanka have geographically distinct patterns of resilience. The most resilient livelihood groups are those in the Mahaweli mixed farming & livestock, and in the coconut & agriculture triangle. This is largely due to a combination of access to a diversity of income and food sources, relatively good access to major cities and economic centres, and access to micro-tanks to better manage the impact of drought. However, multi-year droughts or particularly severe droughts may challenge this resilience in the future, as seen in the recent erratic weather patterns of 2013/14.

Generally, there is poorer resilience in the north, and in the southeastern parts of the country. Resilience capacity in the Jaffna mixed agriculture and northern mixed agriculture and palmyra plantation zones is likely to improve rapidly over the next years following the end of a protracted crisis which affected millions of livelihoods - especially as critical infrastructure is enhanced and developed.

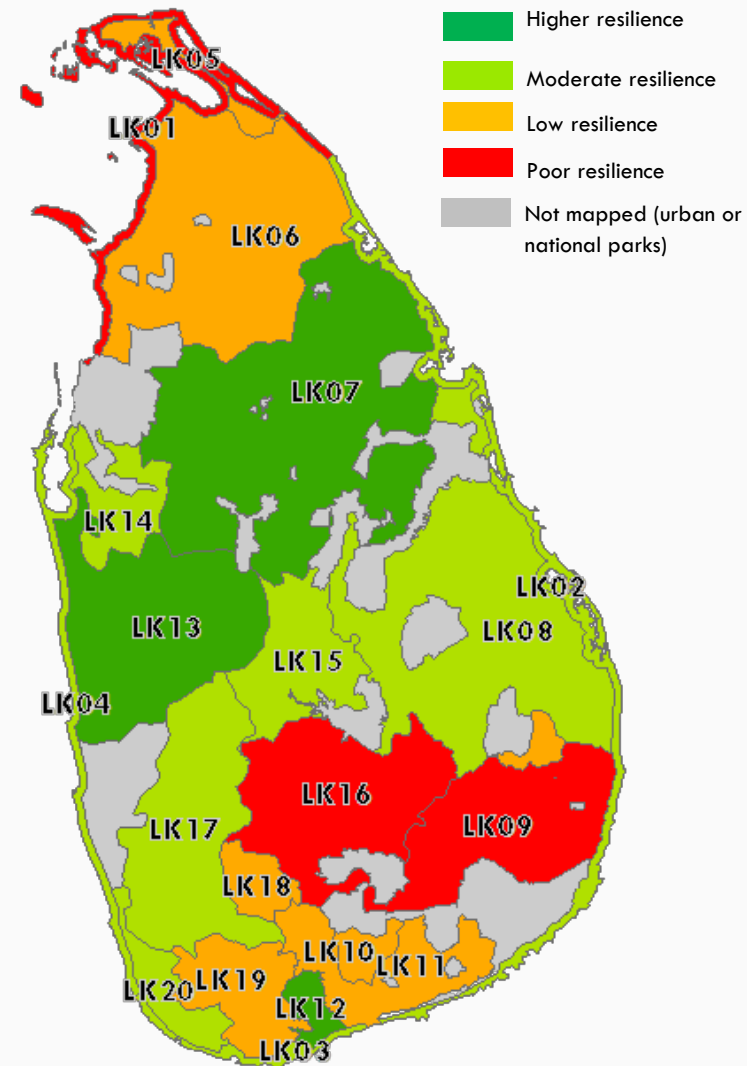
Households that depend on fisheries in the northern part of the country have poor resilience as they have limited livelihood diversity and are often hit by typhoons which significantly impact on their catch.

The poorest households in the tea estates have poor resilience due to chronic poverty and very low diversity of livelihoods. Although their pri-

many livelihood activity – namely tea plucking – is not particularly climate-sensitive, the high reliance on this activity means that households are susceptible to income variability based on demand for tea elsewhere. Moreover, as households do not have access to different livelihoods, they may be unable to manage the impacts of large-scale economic shocks.

The southeastern rain-fed paddy & OFC zone also has poor levels of resilience. Households in this livelihood zone generally live in remote areas with poor access to roads and basic services such as education and markets. This zone, spread over the dry, intermediate, and wet climatic zones, is also highly sensitive to climate variability given the high reliance of households on rain-fed agriculture. This is of significant concern given two important climate trends. First, historical trends indicate that the northeastern monsoon – on which most of the households in the easternmost part of this zone depend – is becoming increasingly erratic and unpredictable. Second, the intermediate and wet climatic zones are moving westward and essentially shrinking, which may result in less rainfall available for rain-fed farming.

Figure 5. Relative Overall Resilience



VULNERABILITY TO CLIMATE

- Climate risk is one of the key challenges to ensuring food and nutrition security in Sri Lanka. Climate variability and change disproportionately affect the poorest and most food insecure through a combination of decreasing crop production, decreasing resource availability, higher magnitude of disasters, and unpredictable weather.

Recent events such as floods (2011, 2012, and 2013), droughts (2010, 2012 and 2013), coastal hazards such as tsunamis (2004) and tropical storms (Cyclone Nisha in 2008), combined with increasingly erratic weather all highlight the sensitivity of livelihoods to climate-related risks.

Rainfall is the key climatic variable influencing food security in Sri Lanka. Reliable rainfall is needed for sufficient harvests of rain-fed crops—particularly rain-fed paddy in the southeastern parts of the country. Similarly, adequate rainfall during the monsoonal periods is required to replenish and maintain water in the microtanks. Sufficient rainfall from both the SWM and the NEM allow for irrigated agriculture of paddy and other field crops in the northern and eastern regions of the country.

In light of a projected long-term increase in rainfall variability and the accompanying intensity and frequency of floods and droughts, as well as hazards such as sea-level rise, coastal inundation and soil salination, water management and climate adaptation strategies are becoming ever more necessary. Demands on water for agriculture, energy, industry, drinking, sanitation and other sectors will continue to increase with population growth and managing these demands requires a national approach (MIWRM 2010). Developing appropriate climate adaptation efforts will also be mandatory for avoiding detrimental effects on livelihoods.

Historical climate variability

Climate change over the past century has manifested itself in a noticeable decreasing trend in rainfall across most of the island—except in the northeast. Mean annual rainfall has decreased by 144 mm (accounting for 7% of the annual total) compared to the period 1931-1960.

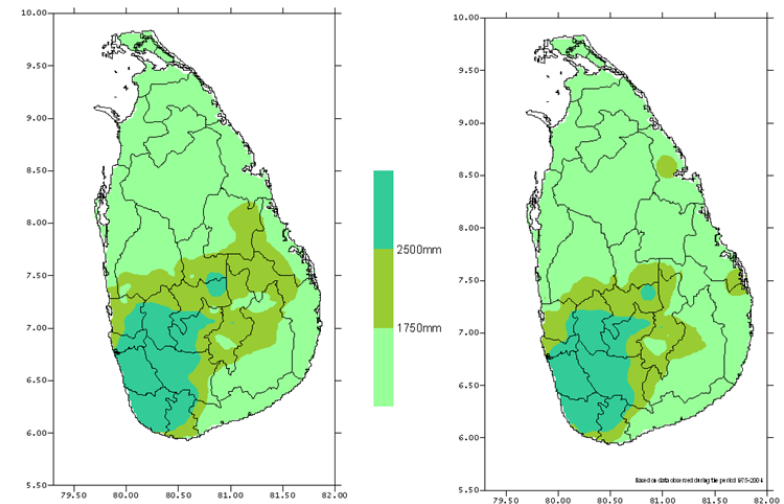
The decrease in has been most significant in the intermediate climatic zone, where rainfall supports rain-fed paddy farming. Combined with observed increases in temperature, this trend can significantly reduce water availability for agriculture and therefore reduce the suitability of certain areas for crop production.

Reduction in rainfall in this zone is significant as it can also intensify drought impact in the Dry Zone, particularly in the north-central and eastern parts of the country where agriculture depends on a complex network of irrigation canals.

As the majority of paddy—the key staple in Sri Lanka—is grown in the north-central and eastern parts of the country, significant alterations to rainfall can affect availability of essential food items.

There is also evidence of increasingly frequent abnormal weather in small pockets of the country. For example, traditionally dry areas are receiving larger amounts of rainfall. This is particularly noticeable in the eastern coast, near the lagoons of Trincomalee and Batticaloa.

Figure 6. Annual rainfall mean between 1961-1990 (left) and 1975-2004 (right) shows a gradual westward reduction of rainfall, particularly in the intermediate climatic zone. This trend can have an especially adverse effect on rainfed paddy farmers in the south-west of the country.



Source: Premalal 2013

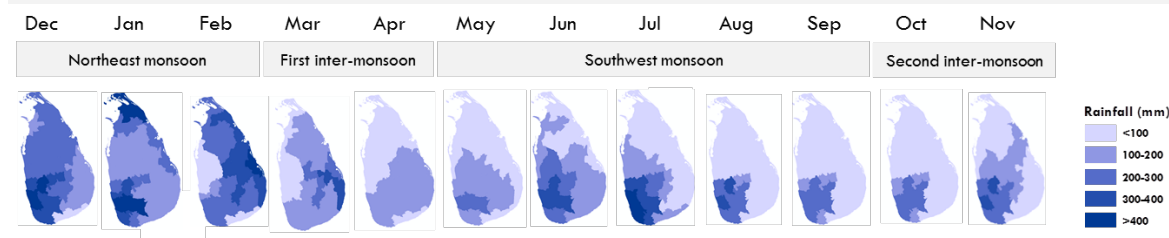
Seasonal variability

There are four key rainfall periods in Sri Lanka. The **first inter-monsoon** occurs between March and April, immediately followed by the **southwest monsoon** (May-September). The southwest monsoon accounts for 55% of the annual rainfall in the country, and can exceed 3,000 mm in some parts of the country. The **second inter-monsoon** occurs after the southwest monsoon between October and November, with rainfall rarely exceeding 750 mm. The **northeast monsoon** (December-February) brings rain to the easternmost parts of the island. This season coincides with the end of the North Indian Ocean tropical season and this is also the period during which the country gets hit by cyclones.

The southwest monsoon rains have remained relatively stable over the past century, providing a reliable source of rainwater for agriculture and other livelihood activities.

The northwest monsoon rains, by contrast, have decreased and have become increasingly erratic. As livelihoods in the Dry Zone depend on rains from the northeast monsoon, erratic rainfall seriously threatens certain activities, such as cultivation of other field crops (OFCs) and livestock rearing.

Figure 7. Monthly rainfall (average by district)



Source: WorldClim

Experiential knowledge collected by ICRISAT (2013) from farmers corroborates these trends. Farmers report significant declines in rainfall, particularly in recent years, and that the onset of the northeast rains (*yala*) has become increasingly unpredictable. Delay in the onset of the monsoon rains and erratic rainfall patterns have been highlighted as key concerns by different farmers as this has an effect on the livelihood activities that they can engage in. Unreliable rainfall patterns affect availability of agricultural labour as well as production in home gardens where an irrigation system is not feasible.

Changes in climatic patterns, both long-term and seasonal, have a detrimental effect on livelihoods that depend on climate-sensitive income, such as seasonal or daily agricultural labour, sale of rainfed crops, and fishing.

Incomes for the poorest households are particularly climate-sensitive in most of the Dry Zone, as well as in the coast. In the northernmost parts of the country, agricultural activities are possible due to the availability of groundwater which is replenished annually following the northeast monsoon rains. Increasingly erratic northeast monsoons therefore increase the sensitivity of livelihoods in this region. Microtanks exist in these zones, but require upgrading in order to provide more reliable water supply. In addition to poor maintenance, many of the tanks are shallow and wide resulting in high evaporation rates, likely to be an increasing problem as temperatures continue to rise, rainfall decreases and the area becomes drier overall.

Fishermen in the northern coast of Sri Lanka are also highly vulnerable to climate risk—during the northeastern monsoon, fishing is not always possible and therefore households have to engage in unskilled labour. The availability of labour in this period is not always predictable.

Paddy in the southeastern region of the country is usually cultivated in small holdings, and the poorest households depend almost exclusively on rainfall. Here, two important climate trends could affect livelihoods. First, rainfall is decreasing rather rapidly compared to climatology. Second, this region depends on rains from the northeastern monsoon which are becoming increasingly unpredictable. These two trends exacerbate the vulnerability of poor households.

Sensitivity of farm-based income in the Mahaweli mixed farming zone and eastern farming zone was traditionally mitigated by the historic capacity of the microtank system to weather short and less frequent dry spells, a reality that is increasingly challenged as droughts increase in duration and frequency and tanks are left un-improved. However, while farm-based income is highly sensitive, the diversification of income sources to non-climate sensitive activities can help to reduce the overall sensitivity in these zones.

Most households in the intermediate and wet zones have low sensitivity of income. As there is sufficient and reliable rainfall from the southwest monsoon in these zones, households have diversified into a variety of agricultural activities that are not affected by seasonal fluctuations. Such activities include cultivation of tea, rubber, cinnamon, and other field crops for export. This diversification into non-sensitive activities allows households to be more resilient to the impacts of climate change.

Climate-related disasters

Sri Lanka is exposed to a diversity of climate-related hazards, including floods, droughts, landslides, and storms. Extreme climate events can have detrimental effects on livelihoods, for example through destruction of livelihood assets (farming tools, fishing boats, water tanks for irrigation), and destruction of agricultural land which may take several months or years to recover.

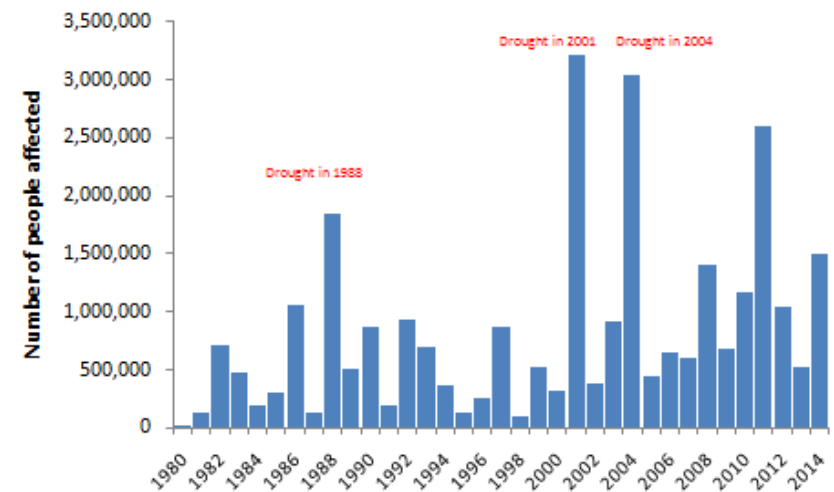
Historical trends suggest that the number of people being affected by climate-related hazards is increasing, from an average of approximately 400,000 people affected every year between 1980 and 1990 to an average of 750,000 affected annually between 2000 and 2013. The majority of the affected population is exposed to drought or flood—both of which are linked to failure or high intensity of the monsoon rains respectively.

The increase in exposure is largely due to erratic monsoon patterns resulting in more frequent and intense floods and droughts. In addition to the increasing magnitude of floods and drought, recent evidence suggests that both floods and droughts are occurring where they typically do not.

Over the past two decades, the severity of landslides has increased in the highland regions through a combination of heavy rains, geological changes in the hill country, and deforestation.

Cyclones often affect the northern region of the country, especially in the months of November and December. There is no evidence to highlight whether cyclones are becoming more intense or frequent, and though historically their severity has been moder-

Figure 8. Historical trend in number of people affected by climate related disasters, 1980-2013



Source: DesInventar Sri Lanka

ate, projected changes in sea-level could result in higher cyclone impact in coastal areas with significant impacts on fisherfolk.

To cope with climate risk, households may diversify their livelihoods. The most diversified livelihoods are located in the Dry Zone, where dry spells can occur more frequently. Here, the poorest households engage in different on-farm and off-farm activities. The least diversified livelihoods are in the coastal areas where households may depend exclusively on their catch, in the up-country tea estates where the poorest live off wage labour, and in the small-scale tea plantation zone, where households almost exclusively dedicate their time to the cultivation of tea. Households in the south-eastern paddy zone also have relatively low levels of diversification, largely because the region is remote and alternative livelihood activities are not feasible.

Future climate

Projections of future climate change in Sri Lanka are associated with high uncertainty due to the coarse resolution of global circulation models which do not provide accurate information for island nations. However, there is general agreement in models that two key trends will continue, and that they will exacerbate current vulnerabilities.

First, **sea levels will rise**, affecting all coastal areas of Sri Lanka.

Sea-level rise would:

- increase the magnitude of coastal flooding,
- exacerbate coastal erosion,
- increase salinization of estuaries and freshwater aquifers, and
- exacerbate storm surges.

Sea level rise is expected to be more significant in the west, southwest, and southern coastal belt where about half of the island's population lives.

The most direct effect of sea-level rise would there be on fisherfolk who live in highly degraded coastal areas along the west, southwest, and south. For these livelihoods, sea-level rise associated with climate change would result in unavoidable impacts, as well as potential displacement to areas further inland.

Coastal areas along the northeastern coast would also likely experience higher storm surges in the cyclone season due to rising sea levels.

An extensive network of microtanks has been developed in Sri Lanka to facilitate agricultural production—even of water-intensive crops such as paddy—in the Dry Zone. These are replenished during the rainy seasons; however, a failure of the monsoon could result in longer dry spells and consecutive droughts which would limit the availability of water for farming.



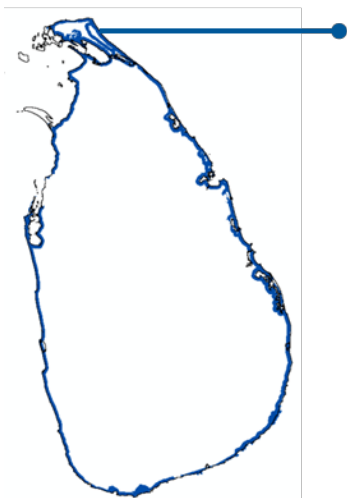
Communities further inland who depend on freshwater aquifers for aquaculture and farming would also be affected.

Second, **rainfall is already highly erratic and likely to become more so in the future**, particularly during the northeastern monsoon. At present, erratic rainfall patterns have a more direct effect on livelihoods along the intermediate climatic zone—particularly rain-fed paddy farmers in the southeast. A continuation of this trend in the next few decades would render rain-fed agriculture unsustainable.

Long-term changes in rainfall could also have an indirect effect on the irrigation potential in the Dry Zone. A reduction in rainfall in combination with increasing temperatures could result in more intense or longer dry spells, as well as consecutive droughts, thereby drying up wells and microtanks used to store water during the dry season. The impact on food security would be significant, as a large proportion of the rice produced and consumed in-country originates from this zone and production may be limited if there is insufficient water.

Finally, long-term climatic shifts in the intermediate climatic zone could have an impact on the suitability of agricultural production in those areas. Of significant concern is the westward movement of rainfall which is resulting in a shrinking of the intermediate and wet climatic zones. A continuation of this trend would especially affect households in the southeast rainfed paddy zone as well as in the tea plantation zones: reliance on rainfed agriculture may no longer be feasible under erratic rainfall patterns, and several studies have suggested that tea production could be reduced if monthly rainfall reduces by more than 100mm and temperatures continue to rise.

The negative consequences on food security and livelihoods of these long-term climate projections are summarized in the next pages.



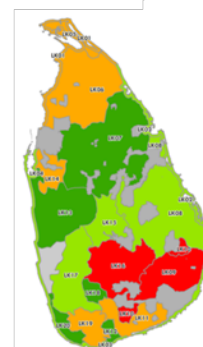
Sea-level rise

Sea levels are expected to rise by up to 50 cm over the next 30 years, submerging some low-elevation coastal areas and accelerating saltwater intrusion into productive lands. The extent of loss and damage is difficult to quantify as there would be losses to settlements as well as livelihoods in areas affected by saltwater intrusion.

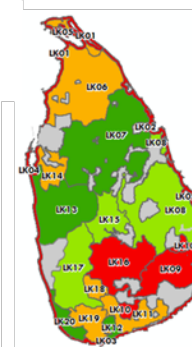
The most direct effect of sea-level rise would be on fisherfolk who would lose their houses as well as some of their key assets. Some agricultural livelihoods in the Jaffna peninsula would also be rapidly affected due to saltwater intrusion.

Sea-level rise would also exacerbate loss and damage resulting from storm surges and typhoon risk – particularly in the northeastern parts of the country.

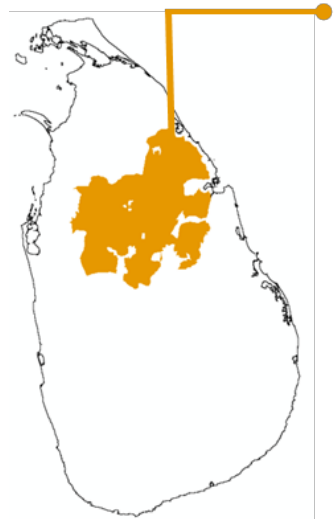
Current food security status



Food security L&D scenario



Food security implication:
deterioration of food security in coastal areas



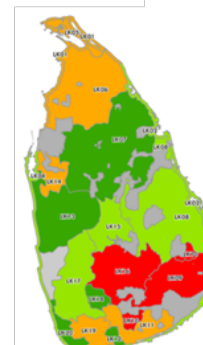
Monsoon collapse

Agriculture in the Mahaweli mixed farming & livestock zone is possible due to an extensive network of micro-tanks which allow for irrigation even during the dry months.

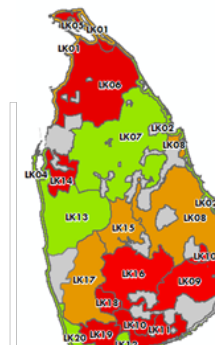
However, recent erratic weather patterns have highlighted that this type of irrigation practices may not be feasible if rainfall in the highlands does not replenish the water tanks. Climate trends suggest that the northeast monsoon is becoming increasingly erratic, resulting in crop and income losses for the poorest farmers. Future projections of climate suggest that consecutive drought seasons may occur if both monsoon seasons collapse.

This is of particular concern given that a large proportion of the rice produced in the country originates from this zone. Significant losses in production could have devastating effects on the food security of the entire population.

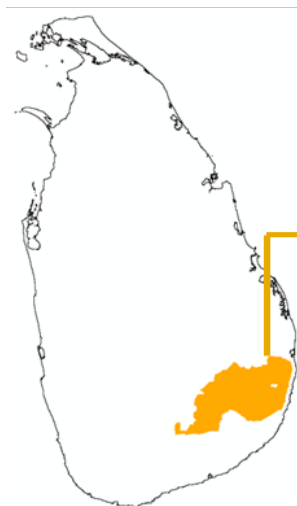
Current food security status



Food security L&D scenario



Food security implication:
deterioration of food security across the entire country

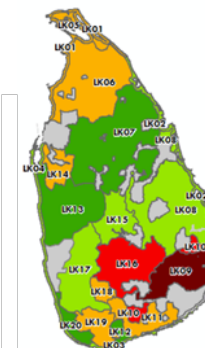
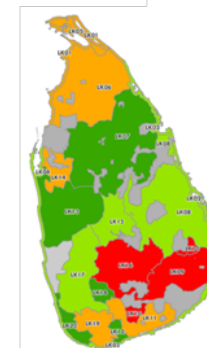


Climatic shift

Households in the southeastern rainfed paddy & OFC zone depend primarily on rainfall for their agricultural production. This livelihood zone is located across the dry, intermediate, and wet climatic zones. According to recent climate trends, the intermediate and wet climatic zones are shifting westward, resulting in an expansion of the dry zone. A continuation of this trend would render rainfed agriculture unfeasible in the future, and households would lose their primary livelihood option.

Current food
security status

Food security
L&D scenario



Food security implication:
deterioration of food security across
an already highly vulnerable zone

PROFILES

Patterns of livelihood vary from one area to another, which is why the preparation of a livelihood zone map can be a useful first step for understanding generalizable geographical patterns of livelihoods.

However, livelihood zones are highly diverse, and households within a zone may engage in a variety of activities depending on their access to resources. This diversity is captured in the livelihood profiles which describe the major climatic, agroecological, demographic, market, and physical features of each zone, including a brief differentiation of wealth groups.

Understanding the different livelihood characteristics provides useful information to better identify food security and resilience patterns and inform programmes to support the most vulnerable populations.

LK01: NORTHERN SHORE FISHING



OVERVIEW

Food security level

Seasonal

Climate-sensitivity of income

High

Livelihood diversity

Low

RESILIENCE PROFILE

This livelihood zone is considered to have very low resilience. Fishing households experience seasonal food security during the northeast monsoon when fishing activities are limited by heavy rainfall, high winds and storms. Income is highly climate-sensitive for the same reasons, with many poorer households unable to secure steady income during the monsoonal season. Livelihoods in this fishing zone lack diversity, generally characterized by off-shore fishing in smaller boats.

SHOCKS

Price volatility \$

Tropical cyclones

Heavy rainfall

► PROFILE

This fisheries zone is located along the northern coast of Sri Lanka, covering the coastal areas of northern Puttalam, Kilinochchi, Jaffna, and Mullaitivu. This zone is more densely populated than areas further inland. Households in this zone are primarily involved in activities related to small-scale off-shore fishing, including catching fish, transporting, drying, processing and selling of fish products. Some households may engage in seasonal agricultural activities where possible, such as casual labour, seaweed collection and shrimp culture when the water in lagoons is high. There is less engagement in deep sea fishing or multi-day boat fishing as compared to other fisheries zones in the country. While the fish yield potential is high in this area, catch is more seasonal compared to eastern and western given the limitations of deep-sea fishing and multi-day fishing. Competition between Indian and Sri Lankan fishermen increases the risk in this zone and restricts the extent of fishing area and fish catch.

► MARKETS & ECONOMIC CENTRES

Fishing households in the northern part of Sri Lanka have difficulty accessing markets for two key reasons: first, marketing centres are not yet focused on trade of fish and fish products; and second, there is a significant gap in price between the producer and the market due to involvement of middle-men. There is also high percentage of post-catch losses due to lack of refrigeration and other techniques for conservation of fish.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households in this livelihood zone are mainly engaged as daily labourers , catching fish, processing and drying, and selling small quantities of dry fish.	The main income sources for the poorest people in this zone include daily labour, small-scale fish sale, and small-scale trade .	Almost all households buy their food from markets, with the exception of fish. Poorer households have less diversified diets , with heavier reliance on staples and fish.
Better-off households	The better-off households are often boat or equipment owners who rent their boats to poorer households and sell larger amounts of fish. Better-off households often have small businesses.	The main income sources for the wealthier households include large-scale sale of fish, retail trade and marketing, and income from non-fishing based services .	Food, excluding fish, is largely obtained from markets . Almost all households buy their food. Better-off households have more diversified diets than poorer households.

LK02: EASTERN FISHING



OVERVIEW

Food security level

■ In a bad year

Climate-sensitivity of income

■ Moderate

Livelihood diversity

■ Low

RESILIENCE PROFILE

This livelihood zone is considered to have low resilience. Poorer fishing households have un-diversified livelihoods focused on wage labour in fishing industry. During the NEM period, fishing activities are limited by heavy rainfall, high winds and storms and income generation for these poor households is constrained.

SHOCKS

Price volatility  Tropical cyclones 

Heavy rainfall  Tsunami 

► PROFILE

This fishing zone covers the coastal area from the northern district of Mullaitivu around the south-eastern tip of Sri Lanka through Hambantota coast. Where no people live along the coastal areas of the Yala and Bundata National Parks, migratory fishing does occur off-shore. Coastal, off-shore and deep sea fishing and related activities (transporting, distribution) are primary livelihoods in this area. Processing and drying of fish particularly concentrated along the coastal areas in close proximity to urban areas are important secondary activities for approximately one-third of the fishermen. Many fishing families also maintain homesteads of paddy and vegetables. During the NEM (December to February), fishing is constrained in this region due to rough seas, heavy rainfall and high winds. With little alternative livelihood activities available, many fishermen migrate at this time to the other coast (western fishing zone).

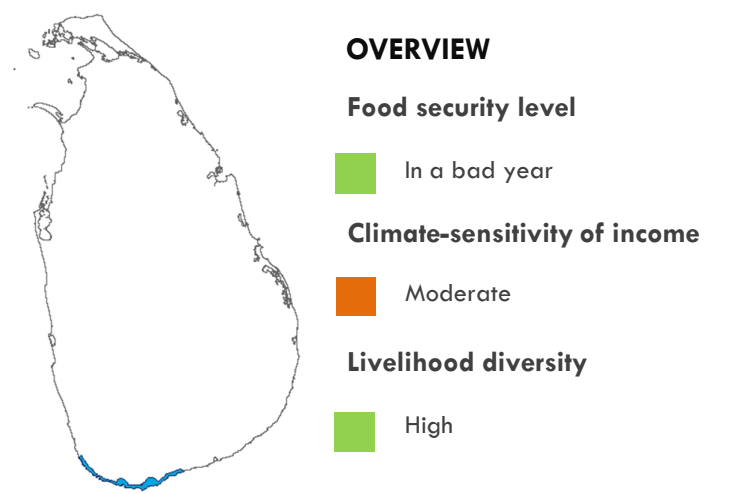
► MARKETS & ECONOMIC CENTRES

The coastal ports of primary importance in this south-eastern fishing zone are Trincomalee, Batticaloa and Ampara. A key challenge for the marketing system of fish is the influence of middle man and large gaps between price to producers and price to consumer. High percentage of post-harvest losses, lack of technology and low capacity in the sector are also key challenges. In general the resources are considered to be under-utilized in the fishing industry.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorer households are typically the wage labourers working on the boats catching and processing fish. They are also small-scale fishermen that engage in limited coastal fishing with small catches.	The primary income sources for the poorer households include daily wage and income from the sale of their coastal catch.	Many of the poorer fishing households maintain small homesteads with paddy and vegetables that provide food for the household. However, rice from own production does not suffice and nearly 3/4rds is purchased.
Better-off households	The better-off households own boats including multi-day boats that allow them to go further afield and follow the fish migratory patterns. They are also highly involved in the sale and trade of fish and fish products.	The better-off households reap profits from larger off-shore and deep-sea fish catches. Secondary income also come from the marketing and trade of fish and fish products. Many have diversified income sources to non-fishing activities.	The better-off households obtain about half of their food (rice, vegetables and fruit) from own production, purchasing the rest.

LK03: SOUTHERN COASTAL TOURISM & FISHING



► PROFILE

This coastal livelihood zone is located near the coast of Galle and along the coast in Matara. In addition to beaches and fishing potential, the landscape is dominated by coconut plantations which provide an important source of income to the population. As a coastal zone, rural households are primarily dependent on fisheries. In addition to fishing, households engage in coconut harvesting, processing, and selling. This zone is also a key tourist location particularly around the Galle coast and many households are engaged in the industry to varying extents (driving, working in the hotels/resorts, selling fish to hotels, sale of handicrafts). As a result, income may improve for many households during the peak tourism season (November to February). However, commodity prices also increase during the high tourism season affecting the poorest households' capacity to purchase sufficient food from the markets. Overall, there is a lack of regular income for many poorer households and affordability of food can be a challenge throughout the year. School attendance amongst children and young adults of fishing families is low as many leave early to help with the fishing and engage in tourism-related activities.

► MARKETS & ECONOMIC CENTRES

Galle, Matara and Hambantota are key marketing centres in this area, important for sale, processing and transport of fish, as well as for dry fishing (particularly around Hambantota). Road access in the area is very good, particularly given the large highway connecting the zone to Colombo. Households obtain most of their food from weekly markets. During the peak tourism season (November to February), food commodity prices tend to increase.

► WEALTH GROUP DESCRIPTIONS

RESILIENCE PROFILE

This livelihood zone is considered to have moderate resilience. Fishing households have moderately diverse livelihood profiles, taking advantage of increasing tourism opportunities to supplement fishing livelihoods. Nonetheless, the income is fairly climate sensitive, limited during the SWM period. With the tourism opportunities and good accessibility to urban centres, food security is considered to be fairly good, only experienced by the poorer households during a bad year.

SHOCKS

Tsunami 

Price volatility \$

Tropical cyclones 

	Livelihood activities	Income sources	Food sources
Poorer households	Poor households are daily wage labourers , who catch, dry and sell fish in small quantities. Some may own small boats for minor off-shore fishing. Many harvest and sell coconuts. During the tourist season (Nov-Feb), most households are involved in tourism-related activities.	Poor households depend primarily on daily wage from fishing and tourism-related activities (driving, waiting tables, working in hotels). Key secondary income sources include sale of fish products, handicrafts and other local products.	Given that the soil in this zone is not suitable for paddy and homestead cultivation, households depend almost exclusively on markets for their rice consumption. Fish consumption is higher among the poorer households.
Better-off households	The better-off households own larger boats (multi-day boats) which allow them to migrate around the coast according to seasons. These households also own larger plots of land where they cultivate coconut. They also more heavily engaged in the tourism sector.	The main income sources include activities related to tourism, such as renting rooms and tour guiding services. An estimated one third of the income comes from sale of fish and fish products.	Wealthier households depend heavily on markets for their food. Almost all products consumed, including rice, wheat, vegetables, and fruit come from the market.

LK04: WESTERN FISHING



OVERVIEW

Food security level

■ In a bad year

Climate-sensitivity of income

■ Moderate

Livelihood diversity


■ Low

RESILIENCE PROFILE

This livelihood zone is considered to have low resilience. Poorer fishing households have un-diversified livelihoods focused on wage labour in fishing industry. During the SWM period, fishing activities are limited by heavy rainfall, high winds and storms and income generation for these poor households is constrained.

SHOCKS

Price volatility \$

Tropical cyclones 

Heavy rainfall 

Tsunami 

► PROFILE

This fishing zone covers the coastal area from the northern district of Mullaitivu around the south-eastern tip of Sri Lanka through Hambantota coast. Where Yala and Bundala National Parks are located, no people live in the area, but migratory off-shore fishing still occurs. Coastal, off-shore and deep sea fishing and related activities (transporting, distribution) are primary livelihoods in this area. Processing and drying of fish are particularly concentrated in coastal areas that are in close proximity to urban areas (Trincomalee, Batticaloa and Hambantota). Dry fish processing is an important secondary activity for approximately one-third of the fishermen. Many fishing families in this zone also maintain homesteads of paddy and vegetables. During the SWM (May to September), fishing is constrained in this region due to rough seas, heavy rainfall and high winds. With little alternative livelihood activities available, many fishermen migrate at this time to the other coast (southern and eastern fishing zone). School attendance amongst children of fishing families is low as many leave early to help with the fishing.

► MARKETS & ECONOMIC CENTRES

Access to markets and roads is very high in this zone and most of the catch ends up in Colombo. However, key challenges for the fishermen are the role of middle men, the limited technology for processing and preserving and high post-harvest losses that affect the price gained by the fishermen. Overall, the fisheries sector is under-utilizing existing resources.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorer households are typically the wage labourers working on the boats catching and processing fish. They are also small-scale fishermen that engage in limited off shore fishing with small catches. Some raise a small number of chickens in their homes.	The primary income sources for the poorer households include daily wage and income from the sale of their fish catch.	Most of the poorer fishing households rely heavily on the market for purchase of staples and vegetables. Fish consumption is high.
Better-off households	These households own boats including multi-day boats that allow them to go further afield and follow fish migratory patterns. They are also involved in the sale and trade of fish and fish products. They often own additional assets such as land for paddy and vegetables.	The better-off households reap profits from larger off-shore and deep-sea fish catches. Secondary income also come from the marketing and trade of fish and fish products. Many have diversified income sources to non-fishing activities.	The better-off households obtain more than half of their food (rice, vegetables and fruit) from their own lands and purchase the rest.

LK05: JAFFNA MIXED AGRICULTURE



OVERVIEW

Food security level

Seasonal

Climate-sensitivity of income

Moderate to High

Livelihood diversity

High

PROFILE

This livelihood zone is located in the northernmost part of the country, in the highly densely populated peninsula of Jaffna. Jaffna Peninsula is a low elevation coastal zone with red, yellow latsols (calcic sub-group) soil. Households own small plots where they typically grow high-value cash crops (tobacco), potato, vegetables (eggplant, chilli, red onion) and fruits (mango, banana, grapes) mostly reliant on the shallow ground water aquifers. Dairy production mostly on the scale for household consumption with some production for sale is common in this zone. This zone has traditionally been poor as a result of the protracted crisis. The Jaffna Islands and western coastal areas of the peninsula have been typically isolated and have lower access to roads and markets. With the end of the war, the situation is changing rapidly and the majority of people have returned back to this area. It is likely that the current vulnerability and livelihood profile will change rapidly as the situation improves. Tourism to the area is also steadily increasing which may help households to diversify livelihoods. After thirty years of war, this area is still in the process of recovering and as such is undergoing rapid change. However, the higher population density and availability of services (education, health) is higher in this zone than the neighbouring northern zone.

MARKETS & ECONOMIC CENTRES

Households in this zone have mixed access to markets. Those near the cities are usually able to access markets more easily, while those in the western coast of the peninsula and in islands are more isolated and accessing the market incurs higher transport costs.

WEALTH GROUP DESCRIPTIONS

RESILIENCE PROFILE

This area is considered to have low levels of resilience. Despite having access to diverse livelihood activities, the poorest farmers depend to a large extent on climate-sensitive activities and experience seasonal food insecurity particularly during the dry season.

SHOCKS

Drought

Flash floods

Tropical cyclones

	Livelihood activities	Income sources	Food sources
Poorer households	Poorer households tend to be wage labourers . Most of the poorest households also have small backyard livestock and homesteads but production is low.	The poorest households in this zone depend primarily on daily agricultural labour . They sell products from homesteads and livestock at the village level to supplement income	Wheat flour is almost exclusively purchased. Rice is generally obtained through in-kind earnings (i.e. payment for cultivating on other land). Vegetables and fruits are mostly supplied from the homestead
Better-off households	Better-off households tend to be landowners and farming households with foreign remittances . They are also more involved in the service industry , including public services, agri-businesses, and other activities.	The main income sources for the wealthier households include sale of high-value cash crops and engagement in the service sector .	These households purchase most of the staples they obtain (rice and wheat flour). Vegetables and fruits are obtained from own production. Other more expensive and less common fruits may also be obtained from markets.

LK06: NORTHERN MIXED AGRICULTURE & PALMYRA PLANTATION



OVERVIEW

Food security level

Seasonal

Climate-sensitivity of income

High

Livelihood diversity

High

RESILIENCE PROFILE

This livelihood zone has low levels of resilience – the poorest people are exposed to seasonal shocks (particularly during the dry season) which affect their food security patterns. Although households are generally able to engage in diverse agricultural activities, many of these are highly sensitive to rainfall variability given less density and poor conditions of irrigation facilities.

SHOCKS

Drought



Floods



Tropical cyclones



Price volatility



► PROFILE

Covering much of the northern districts (Mullaitivu, Mannar, Vavuniya, and parts of Killinochchi), this zone is dominated by paddy farming, perennial crops such as Palmyra trees and scrub land/open forested areas. Small scale vegetable farming is also practiced. Small-holder paddy production is returning in this area (up to 90 percent of Killinochchi and Mullaitiva populations and 60 percent of Vavuniya population are paddy farmers) with OFC production in the off-season. Irrigation tanks in the area are minor with only two large tanks, and almost all require rehabilitation. Livestock production is increasing in this area, with most large-scale production done by wealthier households. Palmyra cultivation and production of by-products is common, but there a lot of room for development. While restoration of livelihoods is on-going throughout the region, there are still pockets of highly vulnerable people particularly in Welioya, Manthai East, PTK and Poonakary that still experience chronic food insecurity. After thirty years of war, this area is still in the process of recovering and as such is undergoing rapid change. However education and health facilities are less available and while the process of rehabilitation has been ongoing, the facilities require further improvements

► MARKETS & ECONOMIC CENTRES

While Kilinochchi economic centre is being developing, there are currently no fully functioning economic centres in the zone. Most towns have weekly fair markets for food and other household goods. The area has low road density thus limiting access to markets.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorer households are mostly the unskilled agricultural labourers. Many are returnees who have re-acquired paddy land, although the land is small and of poor quality. Many household raise backyard livestock.	The primary source of income for poorer households is wage labour. Additional income comes from Palmyra products and sale of other field crops	While they produce rice, it is usually not enough to meet needs and much is purchased. Most vegetables are purchased with an estimated ~10 percent from own production. Fruits are consumed from own gardens if available.
Better-off households	The better-off households are land owners of larger paddy fields and often own livestock operations. Many are engaged in marketing and trade of paddy and other agricultural products as intermediaries and traders.	The primary source of income for better-off households is from the sale of paddy with additional income from trade and livestock products	Most of rice consumed is from own production (~80%). Most vegetables and fruit are purchased.

LK07: MAHAWELI MIXED FARMING & LIVESTOCK

► PROFILE

This predominantly agricultural area is located in the Dry Zone and the entire area has been irrigated through Mahaweli irrigation systems. The terrain is rather flat, allowing for large-scale paddy farming, and is considered to be one of the primary producers of paddy for the entire country. Agriculture in the dry zone is possible due to an extensive network of human-made tanks constructed approximately 2,500 years ago. The tanks collect water during the main rainy season (*maha*) between December and February, and provide water to paddy fields throughout the year through a complex irrigation canal system. In the yala season, paddy cultivated area is considerably small and other field crops are grown. Livestock rearing (cattle and poultry) are also common in this zone. The population in this livelihood zone has been increasing (medium population density), which has resulted in smaller landholdings over the generations and increasing land degradation and deforestation. In recent years, the use of pesticides and chemical fertilisers has increased dramatically in response to declining soil fertility. The over use of agro-chemicals is thought to be influencing an increase in chronic kidney failure disease.

► MARKETS & ECONOMIC CENTRES

With medium population density, the road infrastructure in the zone is quite good and access to markets and economic centres is strong. Rice is mainly channelled through collectors and middleman before reaching the milling services in Anuradhapura and Polonnaruwa. For other field crops, 80-90 percent goes to Dambulla and Tambutegama before being redistributed. Households purchase most of their vegetables and rice from weekly fairs in small towns and are easily accessible.

► WEALTH GROUP DESCRIPTIONS



OVERVIEW

Food security level

Mostly Secure

Climate-sensitivity of income

Moderate to low

Livelihood diversity

High to very high

RESILIENCE PROFILE

This zone is considered as moderately resilient. The poorest households are generally food secure given year-round cropping potential under the Mahaweli irrigation system, and households engage in a diversity of livelihood activities. Income is considered to be moderately sensitive allowing for droughts and rainfall variability that affects the availability of water in the tanks over the dry season. The North East Monsoon is predicted to become increasingly variable in the long term which will affect the climate sensitivity ranking of this zone.

SHOCKS

Drought 

Floods 

Poorer households

Livelihood activities

The poorest households are **landless labourers** or **small-scale cultivators** with limited access to livelihood assets. Households in this zone also own livestock: the poorest own very small numbers of cattle and/or chicken.

Income sources

The poorest households in this zone depend primarily on **daily agricultural labour**. Some households also obtain income by selling products from rented land, or livestock products.

Food sources

As poorer households may not own land (or own very small quantities of land), they depend on a combination of in-kind payments (rice) for labour and markets, particularly during the lean season. Other commodities they purchase or receive in-kind from labour.

Better-off households

The better-off households own **larger amounts of land and livestock**, and may be involved in commercial operations of poultry and swine. Households may be middlemen who buy paddy from poorer farmers and mill it in order to sell and trade in economic centres.

The main income sources include sale of paddy and OFCs. Households also obtain revenue from renting land, machinery, and lorries to poorer households. A small amount of income also comes from sale of livestock and animal products (meat, milk, eggs).

Wealthier households depend on both markets and their own production. Most of the staples are obtained from own production, whereas approximately 60% of vegetables and 90% of fruits are purchased.

LK08: EASTERN IRRIGATED FARMING & LIVESTOCK ► PROFILE



OVERVIEW

Food security level

In a bad year

Climate-sensitivity of income

Moderate

Livelihood diversity

High to very high

RESILIENCE PROFILE

This zone is considered as moderately resilient. The poor households are usually quite food secure, facing challenges to accessing sufficient mainly in a bad year. While paddy production is high and there are moderately diverse livelihoods with cash cropping and livestock, year-round cropping potential is lower and the income sources are sensitive to climate-related shocks.

SHOCKS

Drought



Price volatility \$

This zone, covering much of Batticaloa, northern parts of Ampara, and eastern regions of Polonnaruwa, is one of the highest paddy producing areas. The land is flat allowing for large scale production and, while located in the dry zone, production is sustained beyond the NEM rainy season as a result of the extensive and densely organized Gal-Oya reservoir and parts of Mahaweli irrigation system. Given good soil and water conditions, high yields are reported in these areas. Backyard livestock production is also a common livelihood activity. Closer to the coast, dense settlement has resulted in smaller landholdings, while the inner areas have much lower population density. In recent years, the use of pesticides and chemical fertilisers has increased dramatically in response to declining soil fertility. The over use of agro-chemicals is thought to be influencing an increase in chronic kidney failure disease. In the western parts of this zone (Mahiyanganaya and Rideemaliyadda), there are sizable populations of indigenous peoples. These populations depend on anicut systems for irrigation of paddy and tend to be poorer. There is less access to microfinance for the poor so they depend on village merchants and informal sectors with high interest rates. Compared to the north central paddy area, there are more chronically poor pockets and access to education is worse.

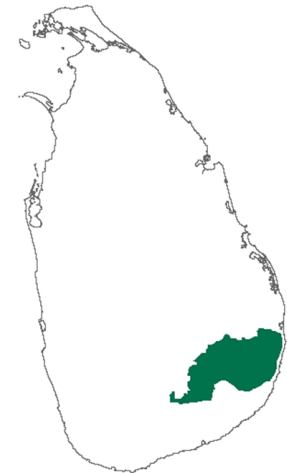
► MARKETS & ECONOMIC CENTRES

Population density is lower in this zone and road infrastructure is much less dense than in the western and north central areas of the country resulting in higher transportation costs. This affects prices of products both at the farm gate and at the market. The paddy production in this area is collected by mobile traders and distributed to the major millers in Polonnaruwa, Anuradhapura and down to Hambantota. OFC production flows mostly to Dambulla and Embilipitiya. Village boutiques and weekly fairs provide for most of the household needs. When prices fluctuate, main challenge for the poorer households that have limited purchasing power.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	Poorer households are wage labourers working on other land; they are also those that own smaller plots of land and rely heavily on their own labour for cultivation. They typically are unable to purchase inputs and have to rent machinery resulting in lower productivity.	Paddy production is the primary source of income for the poor households, although production is low given small plots and low use of inputs. Wage labour provides additional income during the off-season.	While poorer household produce some rice for own consumption, their production is usually not sufficient for household needs after loans are repaid and sales made. Banana and mangoes are commonly grown at the homestead and are the primary fruits consumed.
Better-off households	Better-off households own multiple plots of land and hire labour to cultivate land. They are often the suppliers of machinery and have greater access to improved inputs and technology resulting in higher productivity. They are often involved in agribusiness and trade.	The primary source of income for the better-off households is from paddy, both the sale of paddy and leasing of land. Renting equipment and engaging in trade of paddy are additional sources of income.	Most of the wealthy consume rice from own production. Vegetables and fruit on the other hand are mostly purchased.

LK09: SOUTHEASTERN RAINFED PADDY FARMING & OFC



OVERVIEW

Food security level

■ Chronic

Climate-sensitivity of income

■ High

Livelihood diversity

■ Moderate

► PROFILE

This livelihood zone is in the southeastern part of the country, including the southern parts of Uva. Unlike paddy production in other parts of the country, households depend more on rainfall. If rainfall is not sufficient, the water tables in this area are particularly deep making it very difficult to engage in irrigation. This zone is located at the intersection of the dry and the intermediate climatic zones making it highly vulnerable to climate variability. The zone has low road access and much of the population lives in more remote areas. Chronic poverty is considered to be quite high amongst the population. There is on-going conflict between humans and wild elephants in this zone.

► MARKETS & ECONOMIC CENTRES


This zone is not served by a particular economic centre. Weekly village markets are the key source of exchange of items. Mobile marketers also procure food from other parts of the country and sell it in these markets. Recognising the challenge of accessing markets from this zone, the Paddy Marketing Board from the Government of Sri Lanka has increasingly played a role in buying rice from the poorest households in these areas to support their livelihood.

► WEALTH GROUP DESCRIPTIONS

RESILIENCE PROFILE

This livelihood zone is considered to have low resilience. The zone is characterized by small holder tea plantations with little diversification into other livelihood activities. While income is not particularly climate-sensitive, it is not as high as in neighbouring zones where households also produce rubber. As such, the poorer households face seasonal food insecurity in this zone.

SHOCKS

Drought


Price volatility
\$

	Livelihood activities	Income sources	Food sources
Poorer households	Poorer households are landless labourers or small-scale cultivators with limited access to land or livelihood assets. Some households also collect wild foods from the forest areas nearby.	The poorest households in this zone depend primarily on daily agricultural labour (80-90% of the income is derived in this way).	Rice and vegetables are mostly consumed from own production.
Better-off households	The better-off households own larger amounts of land and rent it to poorer households. These households also engage in marketing activities , buying paddy from poorer households and milling and selling it in markets. These households are also traders of agricultural products.	The main income sources for the wealthier households include sale of paddy, milled rice, and trade of agricultural products .	Wealthier households purchase most of the food they obtain. Approximately 80-90% of the rice and vegetables they obtain are from markets.

LK10: SUGARCANE




OVERVIEW

Food security level

 Chronic or seasonal

Climate-sensitivity of income

 Moderate to low

Livelihood diversity

 Low to moderate

RESILIENCE PROFILE

This zone has generally low resilience. Food insecurity borders between chronic and seasonal as many poor households are dependent on wage labour that is low paying. Livelihood profiles are not diverse and income is mildly climate sensitive in this zone.

SHOCKS

Drought



Tropical cyclones



Pests



► PROFILE

This zone, found in two separate locations largely within Moneragala district, is uniquely characterized by the large-scale irrigated production of sugarcane. One location encompasses almost 90 percent of Sewanagala DS in Moneragala with extension into neighboring Hambantota and is fed by the Uda Walawe reservoir. The other location is in the north-central region of Moneragala extending slightly into Ampara and is fed by the Senanayake Samudra reservoir. As a result, the main livelihood activities in these zones are closely tied to the production, processing and selling of sugarcane. Two main production systems dominate the sugarcane industry: factories that own roughly 4,000 acres of land and hire wage labourers to work in the fields and in the factories, and out-growers and small scale cultivators that sell sugarcane to the factories. In addition to sugarcane, there is a small amount of slash-and-burn agriculture still occurring in the area. The resulting cultivation is usually small amounts of vegetables and limited paddy. Labour shortages during harvesting period; Moneragala district has some of the highest poverty rates

► MARKETS & ECONOMIC CENTRES

Most of the sugarcane trade takes place between out-growers, factories, and some independent sugar cane mills. With the low density of people and of roads in this area and no major economic centres, accessibility to food and other goods is low, although weekly fairs at village level provide opportunities to purchase food for household consumption.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	Poorer households are mainly labourers that harvest and work in the factories processing the cane. Most labourers are from the region but some migrate on a seasonal basis. Many have small homesteads and produce small amounts of rice and vegetables	Most of the income for the poorest households comes from wage labour, while sale of paddy and vegetables may contribute marginally to income.	The poorest household (wage labourers) purchase most of their food items, although homestead production may contribute to limited extents when purchasing power is low.
Better-off households	The better-off households are factor owners and land owners, although many factory owners live outside of the zone.	The primary source of income for better-off households is from sale of sugarcane and the by-products. Profit is invested in other ventures (machinery purchase, processing mills, etc) and profits provide additional revenue.	In better-off households, almost all of the vegetables and fruit consumed in the household are purchased. However, rice from own production provides an estimated half of staple needs.

LK11: COCONUT & AGRICULTURE TRIANGLE



OVERVIEW

Food insecurity level

Seasonal

Climate-sensitivity of income

Moderate

Livelihood diversity

Moderate

RESILIENCE PROFILE

This zone has relatively low resilience. The poorest households typically experience food insecurity seasonally, occurring during the dry season as this zone falls within the dry zone. Income is moderately sensitive to climate with much of the agricultural production reliant on rainfall. Livelihoods are becoming more diverse.

SHOCKS

Price volatility \$

Drought



► PROFILE

This agricultural area, located in the intermediate and dry climatic zones, is dominated by mixed paddy and fruit farms. This area has seen significant changes in crop cultivation: whereas historically this area has been characterised by slash-and-burn cultivation of paddy, it has recently diversified to production of fruits. Given the relatively predictable quantity of water through rainfall and irrigation, households are able to diversify their productive systems to include bananas and other fruits depending on personal preferences and access to markets. The most common mixed farming system is paddy and banana, although some households also grow papaya. Most households have plots of approximately 0.5-1 ha, but with different combinations of paddy and fruit. Fruit sales contribute to a significant proportion of income in this zone. This area is experiencing rapid population growth which may likely

► MARKETS & ECONOMIC CENTRES

The main economic centre serving this livelihood zone is Embilipitya. Households also attend weekly fair to purchase their food. The key challenge in this area is related to post-harvest losses of key products.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households depend mainly on small-scale paddy cultivation . Poor and better-off households have land holdings of similar size. The main difference in land use is related to the proportion of paddy and fruits grown: poorer households produce more paddy.	The main income sources for the poorest people in this zone include: sale of paddy and sale of fruits as well as other activities.	Households obtain their food through own production. The typical diet of a poor household consists of rice (¾ of the household's diet), vegetables in the form of curries (10-15% of the household's diet), and some fruits (5% of their diet).
Better-off	The better-off households have a higher proportion of banana and fruit compared to paddy in their plots. Some households also grow horticultural crops.	The main income sources for the wealthier households include: sale of fruits, mainly banana, and sale of paddy . Wealthier households may engage in industrial activities to add value to their fruits, for example, by producing and selling banana chips and flour.	Wealthier households depend on both markets and their own production to meet their food requirements. Staples (60-70% of their diet) are obtained in from both markets and own production. Vegetables (20% of the diet) are bought. Fruits are obtained from own production.

LK12: SOUTHERN COCONUT & MIXED



OVERVIEW

Food insecurity level

Mostly food secure

Climate-sensitivity of income

Low

Livelihood diversity

High

RESILIENCE PROFILE

This zone is generally quite resilient. Food insecurity is rare here as households have diverse livelihoods and opportunities in neighbouring areas due to increasing tourism. With coconut plantations providing steady income, the income is considered to be of low climate sensitivity.

SHOCKS

Drought



Pests



► PROFILE

This livelihood zone, located in the southern part of the country, is densely populated. Households in this area depend largely on paddy (for own consumption) and coconuts (for cash). Coconut production in this zone differs from that in the so-called 'Coconut Triangle' in that production is much smaller. In addition, as population density is high, households tend to own very small plots. This zone is not traditionally considered to be poor. It is in close proximity to Galle and other major coastal towns. As such, some households are beginning to diversify their livelihood and are increasingly looking for alternative livelihoods in nearby towns. With tourism growing in near-by areas, households are increasingly engaged in related-activities, including handicrafts for sale and working in service sector (driving, waiting in hotels and restaurants, etc).

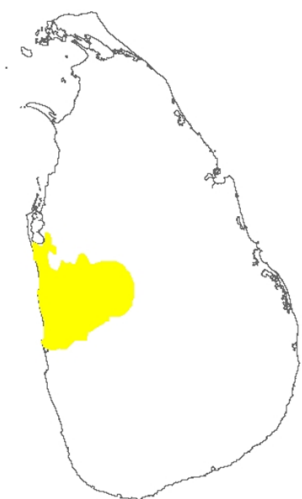
► MARKETS & ECONOMIC CENTRES

Households in this zone sell their products in local markets and to mobile traders who transport coconuts in larger economic centres.

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	Poorer households comprise almost 1/3 of the total population in this area. These households tend to be wage labourers who help in the collection of coconuts as well as in the processing of coconut oil. Households normally own small plots of land where they grow paddy.	The poorest households in this zone depend primarily on daily agricultural labour , operating machinery, and domestic help.	Rice is almost exclusively obtained from own production. Vegetables are purchased.
Better-off	Better-off households tend to be landowners . Their land is almost entirely used for coconut trees and paddy. Wealthier households also have better access to agricultural inputs such as fertilisers and pesticides to enhance their output.	The main income sources for the wealthier households include sale of raw coconuts, coconut products (mainly oil and coconut husk) .	Wealthier households purchase most of the food they obtain. Wealthier households also purchase additional food items from markets, including fruits and meat.

LK13: COCONUT & AGRICULTURE TRIANGLE



OVERVIEW

Food insecurity level

Mostly food secure

Climate-sensitivity of income

Mild-low

Livelihood diversity

High

RESILIENCE PROFILE

This zone is one of the most resilient in the country. It has overall good food security given strong accessibility and diversity of livelihood activities. In addition, income is not very sensitive to climate variability given good access to irrigation as well as resilience of the coconut tree, as a perennial, to dry spells and moderate droughts.

SHOCKS

Price volatility \$

Drought



► PROFILE

This livelihood zone is in the area traditionally known as the 'Coconut Triangle', located in the western part of the country and covering much of Puttalam, Kurenagala and Gampaha. The zone is largely flat with some sloping lands and is dominated by coconut trees as well as fruit crops (pineapple, banana, papaya). The lowlands consist mainly of paddy, which is largely cultivated during the Maha season supported by small-scale tank irrigation systems. In the Yala season when irrigation systems in the area lack sufficient water for paddy, widespread vegetable cultivation is undertaken by using the available water sources and ground water. Most households raise some livestock (cattle, poultry and some swine), with larger operations run by wealthier households. Increasingly, minor export cropping is done in this area. As the region is becoming increasingly urbanised and people are out-migrating in

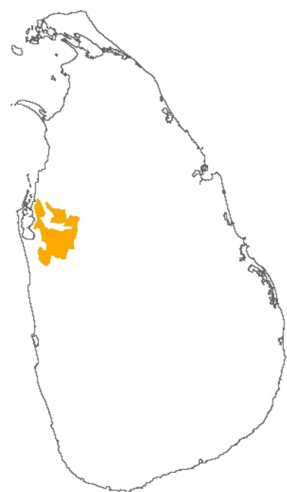
► MARKETS & ECONOMIC CENTRES

This livelihood zone is densely populated and has relatively good access to roads linking it to both Colombo and large towns in Anuradhapura and Polonnaruwa. The majority of rice produced in this zone is transported to the major millers in the country, located in Polonnaruwa and Anuradhapura and goes to market as branded rice. Many intermediaries exist between the paddy producer and the millers which reduces the farmgate price for the farmer. Households buy their food from weekly fairs and local markets, which are fairly easily accessible

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households are landless labourers or small-scale cultivators with limited access to livelihood assets. Some poor households in this zone also keep backyard chicken and cattle.	The poorest households in this zone depend on daily agricultural labour for 80-90% of their income. Recently, the poorest households are migrating on a seasonal basis to urban centres in order to find alternative sources of income, mainly casual unskilled labour.	Rice is mostly consumed from own production. As poorer households may have less area for cultivation, almost one third of the rice they consume is purchased. Fruits and vegetable consumption is limited and completely dependent on production in homesteads.
Better-off	The better-off households own larger amounts of land and own chicken and/or livestock . They also own the agro-processing industries related to coconut. Some households may also rent land to poorer households while they engage in more profitable activities.	The main income sources for the wealthier households include sale of paddy, milled rice, and coconut/ coconut products . Some revenue is obtained by selling eggs and livestock products. The wealthiest households obtain income through salaried employment in the public sector.	Wealthier households produce a large proportion of the rice they consume. Wealthier households purchase more expensive (and more preferred) varieties of rice from markets. All vegetables and fruits obtained by the wealthy households are purchased.

LK14: NORTHWESTERN LIVESTOCK & PADDY



OVERVIEW

Food insecurity level

Seasonal

Climate-sensitivity of income

Mild-moderate

Livelihood diversity

High

RESILIENCE PROFILE

This zone is one of the least resilient zones. Most of the poor households are wage labourers on tea estates with narrow livelihood profiles (low diversity). While this income source (wage labour) is not particularly climate-sensitive, the overall poverty and lack of diversity contributes directly to chronic food insecurity.

SHOCKS

Heavy rainfall  Price volatility \$

Drought 

► PROFILE

This zone is found in the northern areas of Puttalam and Kurunegala and is mostly flat land with high agriculture potential and diversity. The livelihoods here are focused around paddy production with homestead gardens producing vegetables and fruit crops and livestock rearing, particularly of poultry and cattle. The paddy in this area is fed mainly by small and medium scale irrigation tanks and parts of the Mahaweli irrigation network, however limited water availability in the tanks during the Yala season means the area under paddy cultivation is lower and households engage more in vegetable production during this season. Both vegetable and cash crop production rely on ground water aquifers (agro-wells) for irrigation. Poultry farms on the industrial scale are growing at a rapid pace. Flooding has been a key problem in this area.

► MARKETS & ECONOMIC CENTRES

The road infrastructure in the zone is quite good and access to markets and economic centres is strong. Rice is mainly channelled through collectors and middleman before reaching the milling services in Anuradhapura and Polonnaruwa. For other field crops, 80-90 percent goes to Dambulla and Tambuttegama before being redistributed. For livestock products (mostly broilers and eggs), backyard poultry is usually sold in live bird markets while large scale poultry production goes through more organized meat processing and packaging systems. House-

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households are small-scale cultivators with small livestock holdings of poultry and cattle. They have limited access to livelihood assets and may work as casual labourers , migrating into city centres.	Sale of paddy is a primary income source as well as the sale of backyard poultry and other livestock products (milk, eggs).	Much of the rice is obtained through In-kind payment as part of contract farming. When own production and in-kind payment is not sufficient, rice is purchased from the market. Vegetables are mostly purchased while fruit is rarely consumed.
Better-off	The better-off households own larger plots of land and own or manage the commercial poultry production facilities for broilers and layers. They may be engaged as middlemen in the paddy marketing system, purchasing paddy from smaller farmers and selling to millers.	The main income sources for the wealthier households include sale of poultry and eggs, as well as paddy. Wealthier households are also the rice traders and middlemen.	Most of the rice for wealthier households comes from own cultivation with some purchasing. Vegetables and fruit are mostly purchased.

LK15: SMALLHOLDER TEA & MINOR EXPORT



OVERVIEW CROPPING

Food insecurity level

In a bad year

Climate-sensitivity of income

Mild-moderate

Livelihood diversity

Moderate

PROFILE

This zone spreads across much of Matale and Kandy districts as the mid- and up-country hills provide ideal agro-climatic conditions for production of spice, tea and vegetables. Uncultivated area is covered with mid-country forests. Much of the rural population engages in smallholder spice and tea production as well as some small-scale vegetable production. As export crops are mostly rainfed, the increasingly frequency of drought poses a risk for farmers in this area. In addition to the main livelihood activities of export cropping and small holder tea production, some households engage in ad-hoc mining as there are deposits of valuable gems in the area.

MARKETS & ECONOMIC CENTRES

The population is growing in this area, building on already fairly dense areas. Road density is also quite high as a result of the large urban area around Kandy and facilitates easier flow of products out of the region. Prices for MECs depend heavily on foreign markets, but have been largely stable in recent years. Weekly fairs provide food and other goods for household purchase.

WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households include the landless and those that own very small plots of land and produce small quantities of minor export crops. They engage in wage labour for harvesting, processing and packaging of spices.	The primary source of income is from wage labour (unskilled agriculture labour during harvest). They also derive income from the sale of their own production of MEC, which can be highly seasonal. Ad hoc gem mining can provide further source of income.	The poorest households are reliant on purchases for most of their staple needs. However, vegetable production from their small homesteads provides 80% of their vegetable needs. Households engage in growing and selling of small quantities of avocado.
Better-off	The better-off households own larger spice gardens and own the processing and packaging businesses for spices. Tourism to spice gardens is increasing and the better-off households are better positioned to take advantage of this.	The primary source of income for the better-off households is from the sale of processed and packaged minor export crops. Households also invest money in ventures such as tea plantations and gem mining in the area.	Most food is purchased by better-off households as they are engaged in very little own production.

RESILIENCE PROFILE

This zone is considered as moderately resilient. The poorest households are generally food secure, facing food insecurity during bad years such as a climate-related shock or pest affecting production of cash crops. While households have moderately diverse livelihoods, much of the agricultural activities are sensitive to rainfall variability as there is little irrigation here.

SHOCKS

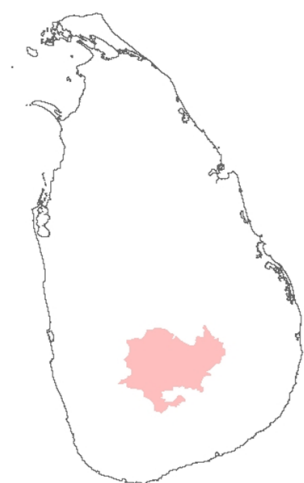
Heavy rainfall

Drought

Price volatility \$

Landslides

LK16: UP-COUNTRY TEA ESTATES



OVERVIEW

Food insecurity level

■ Chronic

Climate-sensitivity of income

■ Mild-moderate

Livelihood diversity

■ Mild

RESILIENCE PROFILE

This zone is one of the least resilient zones. Most of the poor households are wage labourers on tea estates with narrow livelihood profiles (low diversity). While this income source (wage labour) is not particularly climate-sensitive, the overall poverty and lack of diversity contributes directly to chronic food insecurity.

SHOCKS

Price volatility \$

Landslides



► PROFILE

This relatively densely populated area, located in the up-country areas of Nuwara Eliya and Badulla, consists of tea estates as well as small-scale cultivation of vegetables and other field crops throughout the year. The landscape is highly mountainous, and land use follows a clear pattern according to the slope: the steepest areas generally consist of forest cover. Immediately below, land is predominantly used for tea cultivation. In flat lands, households grow vegetables and other field crops, with wealthier households in particular increasingly engaging in floriculture. Given the attractive landscape, tourism is also increasing in this area, mainly benefiting wealthier households who are positioned to take advantage of it. This zone is characterised by environmental change, primarily as a result of deforestation to increase the proportion of land being used for tea estates. Rapid deforestation in recent years has also in-

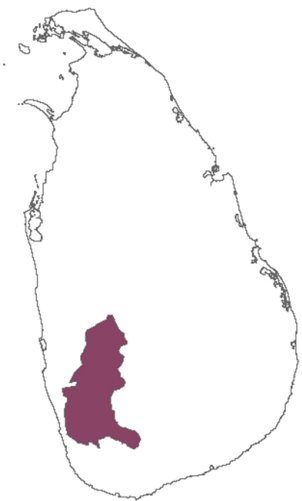
► MARKETS & ECONOMIC CENTRES

Road density is low in this zone. The main economic centres serving this livelihood zone are Nuwara Eliya, Keppetipola, and Bandarawela. This region consumes a high amount of wheat flour, in the form of *roti*, compared to most other zones in the country. Wheat is imported from outside of the country and therefore more vulnerable to global price shocks. Vegetables are commonly transport quickly out

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households in this area are daily agricultural labourers , cultivating and plucking tea leaves for sale. It is generally women who pluck tea leaves. Their livelihood revolves around the availability of labour with few alternative employment opportunities.	Tea estate workers in this region depend mostly on wages from daily labour but get supplemental income from selling vegetables . Profits from vegetables are often low because of high input costs.	Poor households are highly dependent on markets for their staples: over 80% of the rice and wheat consumed by the poorest households is bought. Diet quality poor in these households with low consumption of vegetables and fruit.
Better-off	The better-off households are tea estate owners . Wealthier households also own farming machinery such as tractors which they may rent to poorer households for use in other field crop plots. Some households are engaged in the tourism and related service industries.	Wealthier tea estate owners earn their income by selling tea , by engaging as middlemen for vegetable sales, and through wholesale businesses.	Wealthier households depend largely on markets for their food. Approximately ½ of all rice and wheat consumed in these zones is obtained from markets. Vegetables are obtained from own production in non-estate lands. Several wealthier households consume purchased fruits.

LK17: MIXED PERENNIAL PLANTATION



OVERVIEW

Food insecurity level

In a bad year

Climate-sensitivity of income

Mild-moderate

Livelihood diversity

Moderate

PROFILE

This zone, located in the southwestern part of the country, is dominated by rugged hills and mountainous landscape. Given the rugged terrain and agro-climatic patterns, larger scale rice and vegetable agriculture are not feasible. The majority of this zone consists of tea and rubber plantations. Some small rain-fed agriculture is also practiced. Increasingly, however, rubber plantations are replacing tea. This may result in increasingly climate sensitive income as households cannot tap rubber during the rainy season. While the majority of people remain comparatively poor, this zone produces high revenues from rubber export. As such, this region is characterised by high income inequality. With relatively high population density and close proximity to Colombo (to the west) and Galle (to the south), access to roads and urban centres is good. However, outside of the bigger towns, road access deteriorates quickly, espe-

MARKETS & ECONOMIC CENTRES

Households depend on a number of economic centres located in the vicinity of the area, including Colombo, Avis-sawella, Kegalle, and Rathnapura. Rubber produced in this zone is often exported. Road access is fairly good in this area and most households access weekly town fairs for their food and household needs. As in the tea estate, this zone also consumes a high amount of wheat products, in the form of *roti*, compared to most other zones. Wheat is imported from outside of the country and therefore more vulnerable to global price shocks.

WEALTH GROUP DESCRIPTIONS

RESILIENCE PROFILE

This zone is moderately resilient. The poorest households are generally food secure, mostly at risk of food insecurity in a bad year. Income is somewhat sensitive to climate, as rubber cannot be harvested in heavy rains. However, rubber is a better source of income than small holder tea and, together with greater accessibility to urban centres, contributes to moderate livelihood diversity.

SHOCKS

Heavy rainfall

Price volatility \$

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households generally consist of landless daily labourers in tea and rubber estates. As these households do not own land, they typically rent from wealthier households and produce small amounts of up-country vegetables, both for own consumption and sale.	The poorest households in this zone depend primarily on daily wage from tea and rubber estates . Less than one quarter of income is also derived from sale of products from rain-fed agriculture.	Given the lack of land available for paddy production, the poorest households depend almost exclusively on markets for their rice consumption. Households also buy wheat flour for <i>roti</i> . Over ¾ of vegetables consumed are obtained from their own production.
Better-off	The better-off households are estate owners and managers. They may also own some land to rent to poorer households for small-scale rainfed vegetable production during the south-western monsoon rains.	The main income sources for the wealthier households are related sale of tea and rubber . Some income is derived by renting land, and a very small proportion of income is obtained by selling agricultural products.	Wealthier households depend heavily on markets for their food. Over ¾ of all products consumed, including rice, wheat, vegetables, and fruit come from the market. While their diets primarily consist of rice and wheat, they also consume vegetables and fruits.

LK18: GEM MINING



OVERVIEW

Food insecurity level

Mostly food secure

Climate-sensitivity of income

Moderate

Livelihood diversity

Mild

RESILIENCE PROFILE

This zone is moderately resilient. Food security among the poorest communities fluctuates seasonally, worse during the dry season, and income sources are moderately sensitive to climate-related shocks. However, households have access to a diverse range of livelihoods including paddy, livestock and cash crop production.

SHOCKS

Heavy rainfall



Drought



Price volatility



Landslides



► PROFILE

This zone is largely found within Ratnapura district and is characterized by mountains in the northern areas sloping into plains and lowlands in the southern areas. Tea and rubber plantations can be found in the mid and low-country hills along with tropical forested areas. The area experiences a bi-modal rainfall pattern, with most of the rainfall occurring between May and September as a result of the southwest monsoon. The rainfall facilitates limited small-scale rain-fed paddy cultivation. Gem mining is a major activity that contributes significantly to household incomes as well as to the zone's environmental characteristics: mining methods include deep pits often with tunnels extending under cultivated land, shallow open pits and in riverbeds. However, key concerns with mining include damage to agriculture lands and to riverbanks. Commercial production of tea and rubber and limited paddy cultivation are also

► MARKETS & ECONOMIC CENTRES

The density of the population in this area is moderate and while there are several primary roads that pass through the district, the density of roads outside of these main roads is low. Access to markets may therefore be limited during certain seasons as a result of higher rainfall. The main markets and/or economic centers for the zone are Ratnapura, Kahavatta, Nivitigala, Ehaliyagoda. Households obtain food from town markets, but as a

► WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households are typically the mine labourers (mining, collecting, polishing), many of whom are landless or have small holdings of tea, rubber and/or paddy (homesteads)	Labour in the mines provides a large proportion of the income (~75%) for the poorest households, with potentially some limited income earnings from small tea/rubber plots	The poorest households source some of their staple foods (rice) from their own paddy fields, but are heavily dependent on market purchases to satisfy all staple needs. Vegetables are also largely purchased, while fruit may come from own production.
Better-off	The better-off households are generally the mine owners . Using profits from the sale and trade of mining outputs, these households have invested money into large-scale tea and rubber plantations in the zone.	Most of the income in better-off households is derived from the gem business supplemented by profits incurred from tea and rubber production	The better-off households rely more on purchases for all food groups, although own production of rice provides much of the staple.

LK19: SMALLHOLDER TEA PLANTATION



OVERVIEW

Food insecurity level

Seasonal

Climate-sensitivity of income

Mild-moderate

Livelihood diversity

Low

PROFILE

This relatively densely populated area, located in the mid-country areas of Galle and Matara, consists of small-scale tea plantations. The landscape is hilly allowing for some tea production. The quality of the tea produced in these areas is lower, and therefore generates lower income for landowners than the tea in up-country areas. The zone consists almost entirely of small-scale tea plantations (between 0.25 and 1.5 ha). Given the high population density of the area, recent years have seen increasing land fragmentation leading to high rates of soil degradation. As a result, in recent years, heavy rainfall has been linked to landslides. This region is known for having greater disparity in poverty with southern part of the region doing better than the northern area within the zone. While the zone is close to Galle providing good access for many, there are large areas that have poor access.

MARKETS & ECONOMIC CENTRES

There are no specific economic centres serving this livelihood zone. Households purchase most of their food from small town centres. These centres are highly vulnerable to international food price shocks.

WEALTH GROUP DESCRIPTIONS

RESILIENCE PROFILE

This livelihood zone is considered to have very low resilience. Fishing households experience seasonal food security during the northeast monsoon when fishing activities are limited by heavy rainfall, high winds and storms. Income is highly climate-sensitive for the same reasons, with many poorer households unable to secure steady income during the monsoonal season. Livelihoods in this fishing zone lack diversity, generally characterized by off-shore fishing in

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households in this area are generally estate workers who work as daily agricultural labourers who cultivate and pluck tea leaves for sale. Poorer households tend to own very small plots of approximately 0.25 ha.	Poorer households have undiversified income sources, depending mainly on daily wage (80%) and some small-scale sale of tea leave (20%).	As production of food items is low in this zone, households depend primarily on markets to obtain rice and vegetables. Poorer households buy over 80% of both rice and vegetables. The remaining 20% is obtained from production in small home gardens.
Better-off	The better-off households own larger plots of approximately 1.5 ha and are more directly involved in marketing activities such as processing of tea leaves.	Wealthier households who own larger amounts of land earn their income mainly by selling and processing tea leaves (over half of their income), transporting tea to economic centres as middlemen (20% of their income), and sale of agri-	Wealthier households also obtain over 80% of their rice and vegetables from markets as landholdings are small and the hilly conditions are not suitable for rice or vegetable production. Better-off households also consume fruits

SHOCKS

- Heavy rainfall
- Drought
- Price volatility \$

LK20: MIXED FARMING & CINNAMON



OVERVIEW

Food insecurity level

Mostly food secure

Climate-sensitivity of income

Moderate

Livelihood diversity

Low-mild

RESILIENCE PROFILE

This zone is considered moderately resilient. Livelihoods are largely undiversified, focused mostly on cinnamon production. However, the crop is not very sensitive to climate-related shocks and generally secures a good income. Combined with good access to roads and markets, the zone is generally quite food secure.

SHOCKS

Heavy rainfall



Drought



Price volatility \$

►PROFILE

Located along a stretch from Kaluthara to Matara, the cinnamon belt is defined mostly by smallholder cinnamon production with less than 10 percent of total cinnamon production in larger holdings of 8 to 10 hectares. Smallholder plots of low-country tea, rubber and paddy are also found in this area, with some coconut closer to the coast. The cinnamon industry (growing, peeling, processing, trading) provides a livelihood for an estimated 350,000 families in this belt. Small homestead production (paddy, coconut, tea) is an important secondary livelihood activity for many in the area. However, reliance on income from cinnamon is high and as demonstrated in the wake of the 2004 tsunami, the loss of cinnamon crop can be devastating to these farmers as it can take up to 2 years to replant and regrow the cinnamon. Stigma of peelers results in shortage of labour and impacts on quality. High cost of production limits

►MARKETS & ECONOMIC CENTRES

Ambalangoda, Elpitiya, Kamburupitiya are important small towns while major cities such as Galle and Matara are larger economic centres. Accessibility (road density) is very good in the zone.

►WEALTH GROUP DESCRIPTIONS

	Livelihood activities	Income sources	Food sources
Poorer households	The poorest households are wage labourers engaged in the cinnamon industry, either as peelers or processors of the cinnamon. Many are landless although some households may own small homesteads where they grow paddy, tea, and/or coconut.	Wage labour is the primary income source for the poorest households, while tea and coconut sales provide additional income. Homestead outputs (paddy, fruit) are typically not sold.	Rice is mostly purchased while the majority of vegetables consumed come mostly from homestead production. Fruits are largely purchased when consumed with a small amount coming from homestead production
Better-off	The better off households are typically the land owners who are also involved in export and trade of cinnamon.	Export and trade of cinnamon and related products constitutes the majority of income for the better-off households. Profits from other crops grown (investments of cinnamon profits) provide supplementary income.	Most of rice consumed is purchased among these wealthier households, although some (~20%) comes from own production. Vegetables and fruit are purchased.

LIST OF PARTICIPANTS

NAME	ORGANISATION
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K P S Perera	Ministry of Wildlife
Saman Jayasekara	Ministry of Agriculture
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NPC De Silva	Department of Agriculture
C Jayawickrama	Department of Census & Statistics
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K Prasana Chandith	Ministry of Disaster Management
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