Livelihood Resilience Assessment in Porativu Pattu, Sri Lanka

March, 2024 | Porativu Pattu, Batticaloa District

KEY MESSAGES

- As reported by KIs and FGD participants, Porativu Pattu observes **human**elephant conflict (HEC), heavy rains with floods, and droughts as the main hazards impacting the communities.
- Damage to agricultural land and crops, along with the loss of livestock, endangers farming livelihoods, according to KIs and FGD participants. Similarly, reduced fish populations threaten fishing livelihoods. These factors decrease income, triggering food insecurity and poverty.
- According to reports from KIs and FGD participants, poor infrastructure such as damaged roads and the absence of appropriate drainage systems along with deforestation and sand mining contributes to vulnerability. Low education and technical knowledge on Disaster Risk Reduction (DRR) and livelihood resilience measures also aggravate vulnerability.
- The priority mitigation activity by respondents for HEC was constructing elephant fences. For floods, constructing or improving water store facilities. To address droughts, introducing new cultivation methods and technology.

Map 1 - Porativu Pattu division and clusters of Grama Niladhari



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CONTEXT & RATIONALE

Located in the Eastern province, Batticaloa Divisional Secretariat Division (DSD), Porativu Pattu covers 182 km with a population of 46,149, of whom 50,3% are female, living across 43 Grama Nilhadari Divisions (GNDs). Porativu Pattu's terrain is diverse, from coastal lagoon areas to inland flat plains. It is bordered by the lagoon to the east, providing access to water resources and activities such as fishing.

Paddy farming, highland crop cultivation, home gardening, and livestock rearing are the predominant seasonal income generation activities, in addition, people work in foreign employment, the government, and in fishing activities.

During heavy monsoon rains, low-lying areas in Porativu Pattu may be prone to flooding, leading to property damage and disruption of livelihood activities, especially agriculture. Periods of drought can affect water availability for agriculture, impacting crop yields and livestock health. The intense rainfall and numerous water bodies may cause an elevated flood risk, resulting in coastal erosion, infrastructure damage, crop loss and community displacement.

ASSESSMENT OVERVIEW

IMPACT profiled the situation of farmers' and fishers' livelihoods in Porativu Pattu to inform the strategic programming of actors at the local level. The assessment focused on three clusters of Grama Niladhari (GND) (Map 1), chosen based on their level of risk to natural hazards identified in the Area Based Risk Assessment (ABRA) conducted by IMPACT in 2023.

Methodology

A qualitative, semi-structured questionnaire was administered to 24 key informants (KIs) and 12 focus group discussions (FGDs) from January to February 2024 to understand the livelihood resilience context. KI profiles included Government actors, Community-Based Organisations (CBOs), and National and International Non-Governmental Organisations (NGO/INGOs). FGDs were conducted with members from agricultural and fisheries communities, divided by gender and age.

Risk governance and hazard impacts

Disaster Risk Management mechanisms in place

Disaster risk management (DRM) practices in Porativu Pattu are primarily focused on hazard mitigation and response. Rescue and relief missions, such as evacuations to shelters and distribution of dry food are conducted by the disaster management team, supported by the Grama Niladhari, tri-security forces, and divisional secretariat. Risk mitigation through awareness programs is coordinated through the divisional secretaries. Other government departments involved include the Department of Agriculture and the Department of Agrarian Development, which mainly support the DMC or divisional secretariat in awareness programs and the Pradeshiya Sabha, which engages in mitigation activities, such as infrastructure support. The Department of Forestry and the Department of Wildlife are involved in Human-Elephant Conflict (HEC). Government coordination occurs at the divisional level, with the divisional secretariat or the disaster management centre acting as the focal point.

Civil society involved in risk mitigation includes local CBOs NGOs and village members. FGD participants reported the involvement of the Village Committee for Disaster (VCD), Women's Rural Development Society (WRDS), Rural Development Society (RDS), and farming and fishing CBO organizations. Most CBO KIs reported no involvement in DRM coordination with government agencies but implemented mitigation activities based on government instructions and funding support. The Grama Niladhair and the Village Committee for Disaster were the main coordination points with Porativu Pattu's civil society responses to hazards.

A divisional NGO KI reported that the last DRR project involving external humanitarian agencies such as OXFAM, ZOA, CARE, UNDP, and USAID occurred ten years ago, with no other collaborative activities since.

Main hazards in Porativu Pattu

As depicted in the table KIs and FGDs participants identified heavy rains with flooding and human-elephant conflict (HEC) as the most frequently reported hazards in Porativu Pattu, followed by droughts and other animal conflicts. Less frequently reported hazards by KIs include storms and strong winds, cyclones and thunderstorms, and lightning.

KIs and FGDs participants reported the regularity of HEC incidents, occurring year-round, causing damage to crops and fruit trees. Flooding from heavy rains was reported to occur once to five times a year, with increased frequency due to higher rainfall. Participants from a female FGD in cluster 2 reported 18 floods over six months. Droughts were also reported to occur annually, with minor droughts happening at least eight times a year according to participants in a male farming FGD in cluster 2. Participants from farming FGDs reported daily conflict with monkeys, and male fishing FGDs in cluster 3 noted strong winds occurring roughly seven times a year. A KI LA noted the challenging nature of managing recurring hazards in Porativu Pattu.

Table 1: Main hazards in Porativu Pattu as reported by KIs (total no. 24) and FGD participants (total no.12)

Major hazards	No. KI	No. FGD
Human-elephant conflict	23	12
Heavy rain with flooding	23	12
Drought	18	7
Other animal conflict	6	7
Storms and strong winds	3	0
Cyclones	3	0
Thunderstorms and lightning	3	0

Primary impacts of hazards

KIs and FGD participants in Porativu Pattu reported crop damage or loss as the most predominant impact of hazards on agricultural livelihoods and communities. The most affected crops include paddy, maize, groundnuts, Chena crops, cassava, and other vegetables and legumes. Heavy rains and floods reportedly damage paddy and highland crops during germination or harvest periods. Elephants also cause significant crop damage, with a Village Committee for Disaster (VCD) from cluster 3 reporting an incident where 60 acres of crops could not be cultivated due to elephant intrusion. Participants from a male farming FGD in cluster 2 reported nightly damage to coconut, banana, sugarcane trees, and home gardens by elephants.

A VCD KI reported the spread of water weed, impacting crop growth from frequent flooding. Droughts and floods increase susceptibility to crop disease and pests, affecting farmers' yield and incomes. Flood damage reduces crop quality, lowering market prices and further impacting farmers. Some FGD participants also reported crop damage by monkeys and peacocks. Additionally, elephants and floods have reportedly damaged agriculture equipment. Farmers do not have the financial capacity to afford the costs of repairs or to repurchase equipment, resulting in reduced agricultural activities, production, and income.

Most human fatalities were reportedly caused by elephants, with a CBO KI and participants from three FGDs, estimating around ten deaths in recent memory, and a KI LA reported four deaths last year. A CBO KI from cluster 1 also reported three permanent disabilities from elephant attacks. Other reported fatalities in Porativu Pattu were caused by a lightning strike and a snake bite during floods. Participants from a male fishing FGD in cluster 3 reported limb losses due to crocodiles and poisonous insects.

Livestock loss or harm due to heavy rainfall with flooding and crocodile attacks has affected livelihoods by impacting the production of dairy, meat, and eggs. Flood-related diseases impacted livestock, and limited fodder caused by floods and droughts impacted livestock nutrition and produce quantity. Moreover, participants from a farming FGD reported on the deaths of livestock caused by increased heat during periods of droughts.

Damages to houses in the community are caused by floodwaters and elephants. Elephants are especially lured to homes storing harvest grains, damaging structures to consume a meal. FGD participants noted that damage to houses has the largest impact on communities. KIs and FGD participants reported elephants have also damaged local temples. Floods damaged infrastructure such as local roads, canals, and dams, disrupting transportation. Transportation blockages were reported to interfere with farmers'



produce sale or purchase of agricultural necessities such as fertilizers. Fishing equipment like boats and nets are damaged by elephants, floods, and storms. In addition, the reduced fish availability during droughts, floods and the presence of crocodiles were reported to further impact fishing activities and income.

HEC and floods have caused migration and temporary relocations. FGD participants from cluster 2 reported that 25-30 families temporarily stay with relatives due to elephant threats. Communities also reported drinking water scarcity during droughts, triggering migration. Participants from a female farming FGD in cluster 1 reported family displacements due to water scarcity.

Secondary consequences of hazards

Economic

Key findings highlight the most recurring secondary economic impact of hazards as loss of income or investment, caused by crop damage or loss, reduced fish catches, and hindered sales, which exacerbates poverty. Loss of income and rising poverty levels have led to reported cases of an inability to repay loans, sometimes resulting in suicide. KIs and FGD participants reported pawned items, such as jewellery, often cannot be redeemed, causing further loss of household assets and increasing financial incapacity. Fluctuating paddy prices due to the lack of government policies on fixed market prices, middlemen and traders' benefit, resulted in increased vulnerability to poverty and its associated risks for agricultural and fishing communities. Increased poverty from recurring impacts of hazards has led to a few reports of economic migration.

Food access

A secondary impact to hazard was factors associated with food access. Households reportedly had reduced access to food due to lost or damaged harvests from home gardens and small-scale farms. As production decreases and demand for available food increases, market prices increase leading to food shortages for low-income households from farming and fishing communities. With economic losses from failed sales, meeting rising food costs becomes challenging. For example, the price of green chill increased from LKR 300/KG to 1800/KG. Despite this, there were no reports of reduced meal frequency or widespread nutritional deficiency, though some reports suggest poor child nutrition led to family migration.

Social tension

Although a majority of KIs reported no increase in social tensions, others reported an increase in family violence in response to reduced income and debt increases. Participants from a female farming FGD in cluster 3 noted conflicts arising from pawned jewellery were a cause for family disputes. Additionally, community resource conflicts, such as the overuse of drinking water were reported, a CBO KI from C1 added that previously common wells have been privatized by landowners, causing scarcity. Also reported were disputes between landowners and leasers. A KI and participants from an FGD reported child marriages were encouraged as an economic coping strategy.

Education

Key findings from KIs and FGDS indicate increased school dropouts or interruption of schooling due to floods, droughts, and HEC. A CBO KI reported incidents where children were chased by elephants and monkeys, up to three km from home to school and back, leading to dropouts. Flooding has also blocked roads, interrupting school attendance.

KI reports also indicate that poverty causes children to be unable

to afford school supplies and face suspension for this. Participants from female FGDs in cluster 3 report children dropping out to support parents through financial hardships, by participating in labour work or migrating abroad. There have also been conflicting reports on whether school dropouts are due to hazards or other factors like poor parenting practices and child marriages.

Health

The main secondary health impact was reported to be an increase in psychological distress and mental health decline. Economic hardships, poverty, and debt have heightened feelings of depression, anxiety, and mental distress. FGD participants reported four cases of suicide in response to debt repayment difficulties and financial strain. Substance abuse was also reported as a coping strategy. Heavy rains with flooding have led to increased cases of dengue, skin diseases, fever, and rat fever.

Vulnerability to hazards

Groups in vulnerable positions

In Porativu Pattu, the groups in the most vulnerable positions to cope with recurring hazards were identified as farmers, fishers, female-headed households (FHH) and people with a disability/ household with a member with a disability. Many families were reportedly displaced during the war and have been resettled in Porativu Pattu, engaging in agriculture, animal husbandry, and fishing. KIs comment that most families, regardless of their livelihood, are low-income households dependent on Samurdhi support.

Farmers

The data highlights farmers as the group most vulnerable to frequent hazards. Farmers mainly cultivate flood-prone low-lying or highland areas, where regular crop damage results in loss of income. An LA KI highlighted that cultivation of short-duration paddy crops occurs in flood-prone areas due to limited access to affordable farming lands or other alternatives. KIs and some FGD participants noted that the absence of government-fixed prices for paddy and other produce allowed middlemen to buy at low costs and sell high, reaping profits from farmers.

FGD participants' most cited factor of vulnerability for farmers was their low level of education and knowledge on DRR and livelihood resilience. Participants from a male farming FGD in cluster 2 observed that even with awareness programs, some individuals may not be able to grasp DRR concepts due to limited basic knowledge of hazards. Some LA KIs note that although training and awareness programs are available, community members do not participate, while other KIs suggest this might be due to a lack of available programs.

FGD participants also reported insufficient financial support from the government, such as agricultural loans. Participants from a female FGD from cluster 3 highlighted that low income prevents access to bank loans or other financial institutional schemes, hindering the ability to cover rising agricultural production costs (e.g. fertilizers, pesticides, seeds), repair damages, and cope with the loss of income; weakening resilience.

FGD participants from cluster 1 also reported delays in government subsidies for fertilizers and pesticides, which exacerbate issues, leading to poor crop yield and increased crop diseases and pests.

Moreover, cluster 1 FGD participants emphasize that inadequate elephant fences increase the vulnerability to HEC in agricultural fields. FGD participants from cluster 2 add that the lack of adequate paddy storage also aggravates elephant intrusion.

Some CBO KIs suggest that farmers cannot pursue alternative sources of income due to a lack of resources and skills for anything other than farming, leaving farmers vulnerable to poverty and remaining low-income households, dependent on Samurdhi beneficiaries.

Fishers

Although some KIs report that fishers are less vulnerable to recurrent hazards than farmers, they still experience challenges. During floods or droughts, when fishing is not possible, some fishers have no alternative income sources. KI reports indicate a decrease in fish catches due to an increase in crocodile threats and unsustainable fishing practices such as the use of prohibited nets that disrupt fish growth and breeding patterns. A KI LA indicates that certain ponds are legally protected for specific fishers.

Participants from fishing FGD in cluster 3 report the absence of high-quality fishing gear such as boats and nets, increasing vulnerability to floods, storms, and winds. Fishers also experience vulnerability from poor boat landings that are not appropriate during flooding, hindering fishers' ability to sell catch.

Cluster 3 fishing participants also considered the lack of cooperation between fishers and the Fishermen's association as a barrier to resilience. However, reports indicate resilience in people with a disability in fishing communities as they can fish on shores and can manoeuvre their boats.

Female-headed households and people with a disability

FHH and people with a disability/household with people with a disability are described as particularly vulnerable due to limited financial means and employment opportunities, often relying on daily wage labour or remaining unemployed. Most households are low-income and dependent on Samurdhi beneficiaries. They face challenges due to a lack of self-employment resources or training, trapping them in perpetual poverty.

Pre-existing infrastructural conditions

Data from KIs reveals poor road conditions as a major physical pre-condition for vulnerability. Poor road conditions exacerbate flooding, hindering the transportation of goods and halting produce marketing.

A district LA explained that the city lacks a garbage disposal plan, which leads to blocked canals, drains, and other waterways. This blockage prevents floodwater drainage, causing stagnant water and increasing the risk of dengue and other health issues. Reports also indicate wastewater contamination of community drinking water, worsening health concerns. Weak and damaged water sources, such as tanks and ponds, along with poorly maintained waterways, reportedly contributed to increased flooding and poor drainage, impacting farmers' and fishers' market access

Participants from male farming FGDs in cluster 2 reported inadequate irrigation infrastructure, impacting farmers' resilience during periods of drought.

KIs observed environmental degradation through deforestation, urban expansion, and illegal sand mining as pre-conditions to hazard vulnerability. Deforestation for agricultural land increased HEC and flooding while illegal sand mining worsened flooding in agricultural lands according to KIs.

Alternative sources of income

Findings show nearby freshwater rivers and tanks such as the Navagiri tank, as the main sources of fishing. Coastal fishing was less frequently reported. During hazards, fishers identify alternative freshwater sources, but sometimes no other source is found, forcing them to cease activities until hazards have subsided.
 Table 2: Alternative sources of income to farming and fishing

 when livelihood activities are impacted by natural hazards

Alternative sources of income	No. Kl Farr	No. FGD ning	No. Kl Fisł	No. FGD ning
No other source	16	0	5	0
Daily wage labour	2	0	4	0
Llvestock rearing and husbandry	2	0	3	0
Fishing	2	0	0	0
Agriculture	0	0	6	0

Disaster preparedness and risk mitigation measures

Community disaster preparedness and response

In Porativu Pattu, community disaster programs and responses primarily involve participation in training and activities conducted by government agencies and CBOs on DRR, climate change, and livelihood resilience. The village-level emergency preparedness committee, established to address recurrent hazards, supports the Grama Niladhari and CBOs by disseminating emergency warnings, providing evacuation support, conducting search and rescue, and distributing cooked food. Moreover, LA and CBO KIs also reported that the role of the community is to follow government and CBO instructions during emergencies. Community members also help to clean the drains and other waterways as reported by KIs and FGD participants.

The most common community disaster response reported by participants of FGDs included using explosives, loud noises, fire, and collective nighttime guarding to deter and warn against encroachment. Participants from a female farming FGD in cluster 3 reported collaboration with the RDS to relocate elephants from their area.

Government disaster preparedness and response

Mainstreamed DRM activities are coordinated with the Grama Niladari of each cluster, the Divisional Secretariat, the Department of Pradeshiya Sabha, and the village-level preparedness committee. Primary disaster preparedness and responses reported by LA KIs in Porativu Pattu include community awareness campaigns on DRR and livelihood resilience and issuing emergency warnings. These awareness programs are reportedly conducted in collaboration with the Divisional Secretariat, the Department of Agriculture, emergency committees, and the RDS.

The Grama Niladhari reportedly receives disaster notification from the divisional secretariat and shares the warning with CBOs and the broader community. Other KIs suggested that the village disaster preparedness program handles emergency warnings and support. Temple loudspeakers, social media (e.g., WhatsApp), messaging, and calls disseminate warnings to the community of impending floods and elephant attacks. Farmers and fishers receive emergency calls from respective government agencies.

However, many KIs reported the absence of existing government risk mitigation actions such as risk mapping, early warning systems, emergency drills, and evacuation shelters. Some LA KIs

mentioned that the risk maps were available at the Divisional Secretariat but not at their respective departments. Few KIs report that vulnerable-positioned community members, such as people with a disability, are supported to reach pre-planned safe locations during hazards. Cooked food is also distributed under the guidance of the GN, Divisional Secretariat, and Department of Pradeshiya Sabha.

Moreover, a LA KI reported on government infrastructure support, such as repairing ponds, drains, and roads in Porativu Pattu. The VCD in cluster 3 noted the Department of Pradeshiya Sabha's support in digging drains. Divisional-level LA KIs reported the construction of an elephant fence in collaboration with the Department of Wildlife Conservation, Department of Agriculture, and ASMP. KIs also highlighted the Department of Wildlife Conservations' assistance in chasing elephants from the village and has advised farmers to construct a bio-fence using lime and wood apple trees. The VCD in cluster 3 noted that appropriate solutions related to farming livelihood resilience have been provided by the Department of Agrarian Development and the Divisional Secretariat.

Civil Society disaster preparedness and response

Findings from CBOs depict early warning announcements as the most common disaster preparedness and response measures. CBOs do not have access to their warning systems but receive emergency warnings from the GN and use loudspeakers and social media to disseminate warnings. CBOs KIs also report conducting awareness programs on climate change and emergency procedures. An NGO KI reported providing evacuation support through boat services during floods and organizing shelters during disasters. During disasters, they provide affected communities with cooked food and sanitary facilities.

Other preparedness activities include infrastructure support, such as constructing elephant fences, repairing roads, deepening ponds, and cleaning drains, reported mostly by CBO in cluster 2 and district-level NGOs. Moreover, CBO KI reported the planting of palm trees along the elephant corridor to deter elephants and riparian plants along riverbanks to mitigate floods

Livelihood risk mitigation measures

Ongoing activities in Porativu Pattu include community awareness programs and emergency warnings. KI LAs reported that a villagelevel DRM group has been established, spreading awareness on DRR and livelihood resilience awareness to farming and fishing groups through respective government agencies. Health awareness on dengue during monsoon seasons, and resilience training for FHH and people with disability are also conducted. Also ongoing are emergency warning systems using temple loudspeakers and messaging to alert the public.

Previous farming resilience activities include providing agricultural inputs such as seeds, fertilizers and pesticides, and equipment. KIs reported these activities as effective. KIs and FGD participants from clusters 2 and 3 also noted previous community DRR awareness programs. Effective infrastructural work included maintaining and repairing roads and tanks and clearing drainage systems. A district LA KI reported using wood apple and lemon trees to deter elephants. Previous fishing resilience activities included providing fishing equipment and stocking water sources with fish and fingerlings. However, FGD participants reported no effective previous projects.

FGD participants from clusters 1 and 3 and an LA KI reported a previously constructed elephant fence that was significantly inadequate. A KI LA also mentioned an unsuitable project where a government department introduced a fish drying production scheme, which proved ineffective as the people did not consume dry fish as part of their diet.

Traditional Strategies

In Porativu Pattu, the most common traditional strategy is spraying a neem leaf solution, to be used as a natural pesticide for crops and to prevent root rot, as reported by participants from farming FGDs in clusters 2 and 3. Other strategies include short-cropping cultivation practices. Traditional strategies to reduce HEC include planting thorny lemon and lime trees and scattering neem seeds on the ground to deter elephants.

Barriers to risk mitigation

Capacity and governance gaps

Key findings indicate that almost all KIs in Porativu Pattu reported limited community access to knowledge on livelihood resilience, particularly regarding agricultural technology and equipment. A GN from cluster 2 also highlighted challenges in DRR and emergency relief due to a lack of technology. Reports also mention limited access to funds for DRR and livelihood resilience activities. LA KIs are limited by constrained government budgeting to support communities in Porativu Pattu with subsidy support for agricultural inputs or infrastructural maintenance. A divisional-level KI noted that insufficient funds cause delays in delivering seeds, fertilizers, and pesticides for agricultural subsidy programs. LA KIs also struggle to support fishing communities due to limited funds and government technical knowledge.

Additionally, fishers and farmers lack the personal funds to improve livelihood resilience and mitigate risk without financial support from governments or CBOs. Participants from a female FGD in cluster 2 cited challenges in sustaining agriculture livelihood without financial and technical assistance from the government. CBOs are also financially strained, receiving little government funding for livelihood credit assistance, disaster relief, awareness, and capacity building, as reported by CBO from cluster 1. Participants from a female farming FGD in cluster 2 reported the limited government expertise support in agricultural education, such as climate-resilient crop growth.

The most reported governance gap was the limited effective support in risk mitigation, mainly reported by CBOs in clusters 2 and 3 and some LA KIs. They suggest a lack of prioritization regarding mitigation and resilience activities. Participants from a male farming FGD in cluster 2 reported that the Disaster Management Committee is not operating, with only the GN from the cluster active. This group also noted limited coordination between the community and government agencies, regarding timely information sharing. A district-level KI commented that the government imports onions when small-scale farmers in Porativu Pattu cultivate them locally. Female farmers in clusters 2 and 3 reported incidents where the elephant fence was inadequately built due to a lack of funds and technical expertise. An NGO KI and participants from a female FGD in cluster 3 highlighted the slow implementation of policies and activities related to DRR and resilience, such as mitigative infrastructure maintenance and repairs.

Governmental policy impact on hazard mitigation

Almost all KIs cited limited policy impact on hazard mitigation. Only some KIs emphasized government policy as strengthening and empowering mitigation efforts.



Risk financing

The most reported finding from KIs was the limited access to government risk financing and insurance procedures, leaving farmers unable to access modern agricultural technology. However, LA KIs reported existing low-interest loans provided by the district Department of Agriculture and Department of Agrarian Development. Most farmers also have access to state banks that offer agricultural loans for purchasing modern technology. One KI noted instances where special relief plans allowed for waived interest rates and extended repayment periods. There were also reports of disaster compensation for crop damage through banks and insurance facilities. However, recurring disasters make repaying loans challenging, a CBO KI from cluster 1 also reported that short-term loans have higher interest rates, making repayment difficult. Fishers can access loans through the Fishermen's Association.

Limitations of funding or technical capacity

FGD participant's most frequently cited activities are limited by funding and technical support for disaster mitigation and livelihood resilience. Suggested activities include government provisions for new seeds and crops, organic fertilizers, modern farming technologies, and access to financial support through loans. A GN from cluster 3 noted that rising agricultural input costs prevent farmers from maintaining their livelihoods. Participants from a female farming FGD stated that lack of financial and technical support is causing agricultural livelihoods in Porativu Pattu to fail, forcing many to seek alternative options. They emphasized that increasing access to funds and technical support is a priority. Increased relief support for disaster-affected people was also reported.

KIs most frequently cited activities limited by funding and technical support as the inability to engage in capacity building and access to modern agricultural equipment and technology. Additionally, farmers lack adequate irrigation systems, impacting their ability to water crops. The village also lacks proper drainage systems, leaving stagnant water after heavy rains. KI noted the impact of limited funds and technical support for constructing, accessing, and repairing drinking and agricultural water sources like ponds, tanks, and tube wells. KI LAs commented that stabilizing and developing agricultural livelihoods through supportive activities is crucial for farmers. LA KI also suggested that improving emergency relief operations is challenging without the necessary funds.

The data also highlights the communities' inability to repair damaged water stores such as dams. Rivers and ponds have not been deepened or widened due to funding shortages. Lack of maintenance of drains and canals, and the unrepaired sluice gate, also stem from funding issues. Implementing these activities would reduce flooding and drought impacts. Participants from a female FGD suggested that road repair was not being implemented due to a lack of funding and technical support.

Solutions suggested by KIs and FGD participants for disaster resilience building

Recommended DRR activities

Key findings from KIs in Porativu Pattu illustrate several recommendations for DRR awareness programs. A LA KI suggests regular DRR awareness meetings and updated emergency response procedures. Another LA KI recommended providing DRR awareness for fishing communities, as they have not participated in such programs. Some LA KIs reported that some DRR awareness programs are already underway but need scaling with funding and technical support. A CBO KI also recommends increased access to awareness programs related to emergency procedures during hazards. Additionally, CBO KIs mainly recommended improving early warning systems by providing ample warning time and informing temples to use loudspeakers to alert the broader community. Early warnings when sluice gates are opened to prepare for floods were also suggested.

Livelihood solutions for fishing communities

KIs observed that rehabilitating neglected water sources, such as ponds and deepening lakes to reduce fish loss during floods, is the most recommended solution for fishing livelihoods. LA KIs suggested supporting livelihood activities for fishers, promoting aquaculture, and stocking water sources with fish fingerlings. Other suggestions include increasing disaster compensation and equipment subsidies for fishers. The provision of fishing equipment and life jacket subsidies was reported as a priority by a CBO KI in cluster 2. Introducing alternative income sources and self-employment opportunities was also encouraged by a district LA KI. An LA KI suggested enforcing fishing policies such as banning fishing during the breeding season and using nets smaller than 3.5 inches to maintain fish populations. Female fishing FGD participants in cluster 3 recommended installing nets across pond entrances to prevent crocodiles.

Livelihood solutions for farming communities

Data from KIs shows that awareness, training, and capacity building on livelihood resilience and DRR are the most recommended solutions for farming communities. LA KIs suggest increasing access to training on new agricultural methods and modern machinery usage, as well as awareness of optimal planting seasons and crop disease prevention. CBO KIs highlighted the need for DRR awareness, specifically emergency procedures. Male farming FGD participants in cluster 2, along with KIs, recommend establishing financial support through disaster compensation and insurance schemes for farmers affected by drought and floods. LA KIs cited this as a priority and they also suggested providing cost-free or subsidized farming equipment, seeds, and fertilizers. Additionally, FGD participants and KIs recommend improving timely government subsidy funds for fertilizers and crop seeds. A local NGO KI proposed encouraging alternative livelihood and self-employment ventures

Recommended solutions for flood mitigation

As portrayed in the table below, KI's most frequently recommended priority solution was constructing and rehabilitating water sources such as tanks and water reserves. A LA KI suggested deepening and widening the Moongilaru River to reduce crop damage from flooding. Improving and maintaining drain-age systems was also frequently recommended, with a LA KI suggesting repairing and widening drains and constructing channels to divert excess flood water to the sea. Similarly, some reports also recommend prioritizing regular cleaning of drains and other waterways to remove blockages caused by garbage and debris, especially before monsoon seasons. Reducing plastic waste and encouraging proper disposal was recommended as a priority by an NGO KI. A CBO KI from cluster 2 recommended establishing proper sluice gate operations during heavy rain and flooding, while participants from a farming FGD in cluster 3 noted that the existing sluice gate requires repairs.

Additionally, participants from a male farming FGD recommend repairing roads to mitigate floods. The most reported recommendation by farming FGD participants was to establish afforestation activities by planting trees and vegetation along

rivers to reduce water overflow during heavy rain. Lastly, farming FGD participants highlighted the need for frames to introduce new crop varieties, such as flood-resistant paddy varieties

Table 3: Recommended solutions for flood mitigation

Recommended mitigation solutions	No. Kl	No. FGD
Constructing or renovating water store facilities	7	2
Constructing or improving drainages	7	1
Accurate sluice-gate operation	1	1
Afforestation	1	3
Introduce flood-resistant crop	0	3
Repair roads	0	2
Clean water-ways	0	2

Recommended solutions for drought mitigation

As depicted in the table below, KIs prioritized solution was constructing and rehabilitating agricultural water stores such as rivers, ponds, and tube wells by strengthening and deepening them. FGD participants suggested widening tanks and ponds to improve access to water. The most recommended solution for droughts by FGD participants was increasing drinking water facilities. The table also depicts many KIs emphasizing the necessity of new cultivation methods and technologies, including drought-resistant plants such as different paddy varieties and short-duration crops such as cowpie and maze.

Table 4: Recommended solutions for drought mitigation

Recommended mitigation solutions	No. Kl	No. FGD
Introducing new cultivation methods and technology	11	1
Construction or rehabilitation of agricultural water storage facilities	9	1
Drinking water facilities	3	2

Recommended solutions for human-elephant conflict

As shown in the table below, KIs and FGD participants' most recommended HEC solution was to prioritize the construction and maintenance of elephant fences. A female farming FGD in cluster 3 reported that areas located near the Thalawai forest would benefit from a constructed fence. Some KIs mentioned that there is an elephant construction project underway by the Department of Wildlife Conservation, but more support is needed to enclose the entire village with fencing. A bio fence, using thorny plants such as lime, lemon, and wood apple trees was also suggested as a deterrent. An NGO KI added that palmyra trees, planted in a zig-zag pattern, could deter elephants while also providing communities with palm fruit. A divisional LA KI recommended using beehives to deter elephants.

Male FGDs in cluster 2 suggested installing streetlights to prevent nighttime elephant intrusion and monitor their movements. Some FGD participants recommend forest clearance, while others suggested afforestation to provide vegetation as an elephant food source, preventing the destruction of farmers' crops and fruit trees. A female farming FGD in cluster 3 proposed permanently relocating elephants.

Table 5: Recommended solutions for human-elephant conflict

Recommended solutions for HEC	No. Kl	No. FGD
Construction or maintenance of elephant fences	10	5
Bio-fence	2	2
Bee-keeping	1	0
Installation of night lights	1	3
Forest clearance	0	2
Afforestation	0	1



Implementation period

Graph 1: Recommended time of year for the implementation



Methodology Overview

Research Design: The primary research tool for the LRA was a qualitative and semi-structured data collection questionnaire, designed to assess and strengthen sectoral understanding of communities' experiences regarding the primary and secondary consequences of hazards on agricultural and fishing communities. It also explored pre-existing vulnerabilities to hazards, existing governmental, civil society and community disaster preparedness and response capacities, barriers to risk mitigations, and key solutions for disaster resilience building.

Data Collection: The geographic coverage of the LRA included three clusters of GNDs in Porativu Pattu identified by the ABRA. Cluster 1 included Selvapuram, Navahirinagar, and Palayadiveddai. Cluster 2 included Malayarkaddu, Ranamadu, and Sangarpuram. Cluster 3 included Vellavali, Punnakulam, and Kovilporathivu South.

A purposive and snowballing sampling method was employed, with 24 KI profiles and 12 FGDs selected per division. KI profiles included government actors, Community-Based Organizations (CBOs), and National or International Non-Governmental Organizations (NGO/INGOs). FGDs were conducted with members from agricultural and fisheries communities, divided by gender, age and cluster.

Enumerators trained by IMPACT conducted the key informant interviews (KIIs) and FGD in Tamil or Sinhala, with the support of field officers. Detailed notes in the local languages were recorded in IMPACTS debrief forms. These debrief forms were then translated into English by a third-party professionals and then shared with the research analysis team.

Data analysis and outputs: Using a data-saturation and analysis grid (DSAG) in Excel, data from KIs and FGDs were logically coded into categories based on the research purpose, objectives and themes of the research questionnaire. The data was analyzed and compiled into key findings. Each coded topic was organized within the grid and tracked to identify the frequency of points mentioned across the qualitative session per division for KIs and FGDs. Data cleaning and analysis were reviewed by the IMPACT HQ research department.

A more comprehensive overview of the methodology is found in the LRA <u>TOR.</u>

Research limitations

Availability: Instances occurred where KIs or FGD participants, including CBO leaders and LA officials, were unavailable. Issues arose when several interviews, particularly in specific clusters, were not conducted as originally agreed upon, resulting in the prioritization of data collection in other areas or with different groups.

Clarity: While most of the reported information reported during the FGDs and KIIs are included in these final outputs, some interview notes were too brief to be able to interpret respondents' intended comments, for this reason, certain reports have not been included. This led to a loss of specificity in some of the findings. Language and translation: The questionnaires, designed in English and containing academic and technical language, may have posed challenges for third-party translators. Specialized terminology often requires theoretical understanding in addition to strong bi- or trilingual language skills. The use of technical jargon and academic language during interviews might have hindered access to more personal and nuanced responses, which could have been achieved with more accessible language. Furthermore, it is possible that errors in accurate translation, omissions, repetition, or the loss of emotional experiences occurred when responses were translated from Sinhala and Tamil into English. These issues may have resulted in a loss of contextual perspectives, thereby impacting data quality.

Sampling: The LRA was conducted in eight DSDs across four districts in Sri Lanka (Ampara, Batticaloa, Kilinochchi, and Vavuniya). The total amount of interviews conducted was 256 (160 KIIs and 96 FGDs). The large sample generated a large volume of data with varied responses, which proved challenging to streamline data, code, analyse, and report within the expected time frame.

ENDNOTES

1 Jayasinghe, N., Fernando, S., Haigh, R., Amaratunga, D., Fernando, N., Vithanage, C., Ratnayake, J., & Ranawana, C. (2022). Economic resilience in an era of "systemic risk": Insights from four key economic sectors in Sri Lanka. Progress in Disaster Science, 14, 100231.

Disclaimer: The views and opinions expressed in this factsheet are the reflections gathered through a participatory approach from interviewees and do not necessarily reflect the position of IMPACT or Acted.