

SITUATIONAL ANALYSIS REPORT SRI LANKA

Livelihood Insurance from Elephants (LIFE) - 2019



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List of Acronyms

DWC – Department of Wildlife Conservation, Sri Lanka

HEC – Human-Elephant Conflict

NGO – Non-Government Organization

PA – Protected Areas

FD – Forest Department

DSDs - Divisional Secretariat Divisions

DCS - Department of Census and Statistics

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1. Human-elephant conflict in Sri Lanka: Facts

1.1 Elephant population in Sri Lanka

The relationship between humans and elephant in Sri Lankan dates back over millennia being a part of the history, culture, religion, folklore and even politics of the country. Recognizing this fact, the Department of Wildlife Conservation of Sri Lanka (DWC) has the elephant as its logo. In essence, elephants are a living symbol of Sri Lankan culture.

Despite being an island nation with small land area, Sri Lanka has been categorized as one of the global biodiversity hotspots due to its high level of species diversity and the survival threats faced by those species due to the destruction of habitats. The situation of elephants in Sri Lanka, the biggest land animal, is symbolic of the nature of threats faced by the country's biodiversity in many ways. Sri Lanka is home for considerable number of elephants. According to the most recent elephant survey carried out by DWC in 2011, the approximate number is 5879. This includes 1107 calves, 4650 grown up elephants and 122 tuskers. The highest number of elephants are reported from Mahaweli Region (1751) followed by Eastern Region (1573) and North-western Region (1189). The lowest number of elephants was reported from Central region.

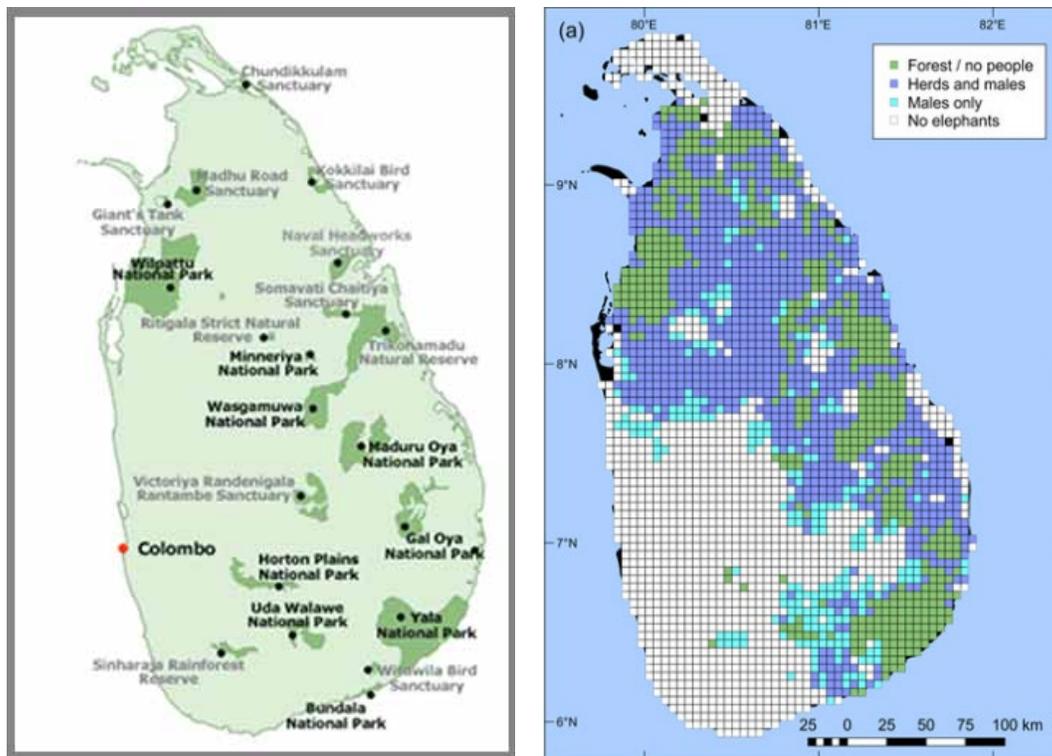


Figure 1: Major protected areas and elephant habitats in the country
Source: DWC, Sri Lanka

Sri Lanka has allocated several protected areas (PAs) that approximately amounts to 13%, of the total land area of the country which provide shelter for wild elephants also among other wild species. These PAs are come under two agencies, namely DWC and Forest Department (FD); the PAs under DWC being the most

important for conservation of wild elephants. In spite of that, considerable number of elephants is ranging outside these protected areas and according to recent estimates the total range area of elephants falls over 70% of the land (Santiapillai *et al*, 2010). Figure 1 illustrates this situation graphically showing that a major part of ranging areas of Sri Lankan elephants falls outside protected areas.

1.2 Human-Elephant Conflict (HEC): Spatial Distribution

Human-elephant conflict (HEC) is one of the widespread environmental issues with severe social and political implications in Sri Lanka. A total number of 142 Divisional Secretariat Divisions (DSDs) in 19 districts of the country are affected by HEC according to DWC data. Data from Department of Census and Statistics (DCS) indicates that 5.7 million people live in these DSDs which is equivalent to 27% of the population. The phenomenon can commonly be seen in North Western, North Central, Southern, Northern, Eastern, Uva and Central Provinces of the island. Out of them, the conflict has been found most intense in Anuradhapura District, Ampara District, northern and northeastern parts of Kurunegala District, northern part of the Puttalam District, Moneragala District and eastern part of the Hambantota District. (Samaraweera *et al*, 2010) However marked increment can be observed in the Northern and Eastern part of the country. Figure 2 shows the distribution of human and elephant deaths reported from these provinces in 2017 (DWC 2017). According to the figure, nearly equally high numbers of human and elephant deaths were reported from North Central and Eastern Provinces while North Western Province comes third.

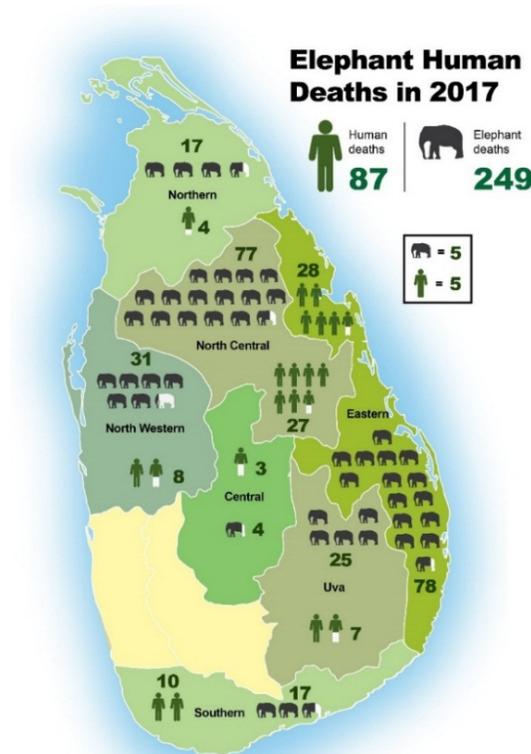


Figure 2: Spatial distribution of human-elephant conflict in Sri Lanka
Source: DWC, 2017

1.3 Elephant Induced Damages on Human: Deaths and Injuries

HEC can be identified as a multidimensional threat. It creates direct and indirect costs to humans in the forms of economic, physical, social and psychological damages while presenting an existential threat for elephants. Loss of human lives and injuries are one of the most serious issues associated with the problem. Sri Lanka has been struggling with this issue for the last several decades. According to the statistics of DWC, between the years 2006 and 2017, a total of 964 human deaths with an average of 80 deaths per year and 906 physical injuries with an average of 76 injuries per year have been reported. It suggests that HEC is a critical issue that escalates over time, placing Sri Lanka among the countries with highest level of HEC in the world (DWC, 2017).

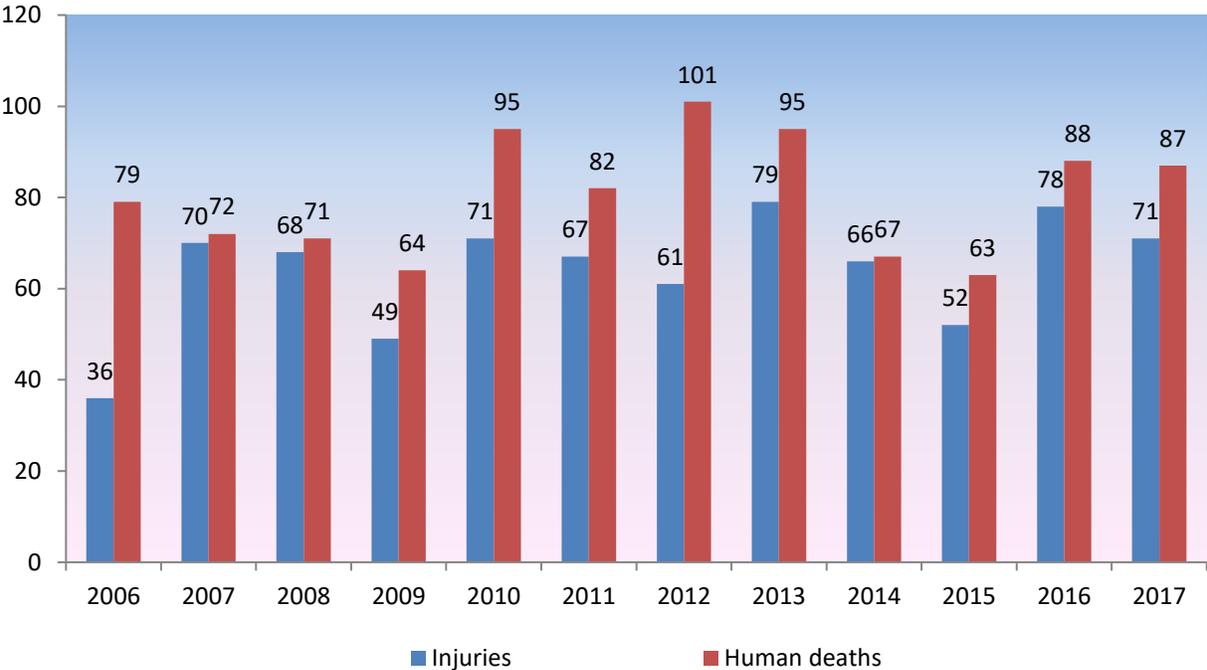


Figure 3: Elephant induced damages on humans – deaths and injuries (number of incidents)
 Source: DWC, 2006-2017

1.4 Elephant Induced Damages on Human: Property Losses

Property losses which arise as a result of the conflict, including both personal and public properties can be identified as another major concern since it remained at a high level in recent years. Statistics of DWC indicate that an average 1350 incidents of property damage per year have taken place during the period from 2006 to 2017 (DWC, 2017). The property damages due to the conflict create extra burden on the population in affected areas, a majority of whom are struggling with poverty on a daily basis.

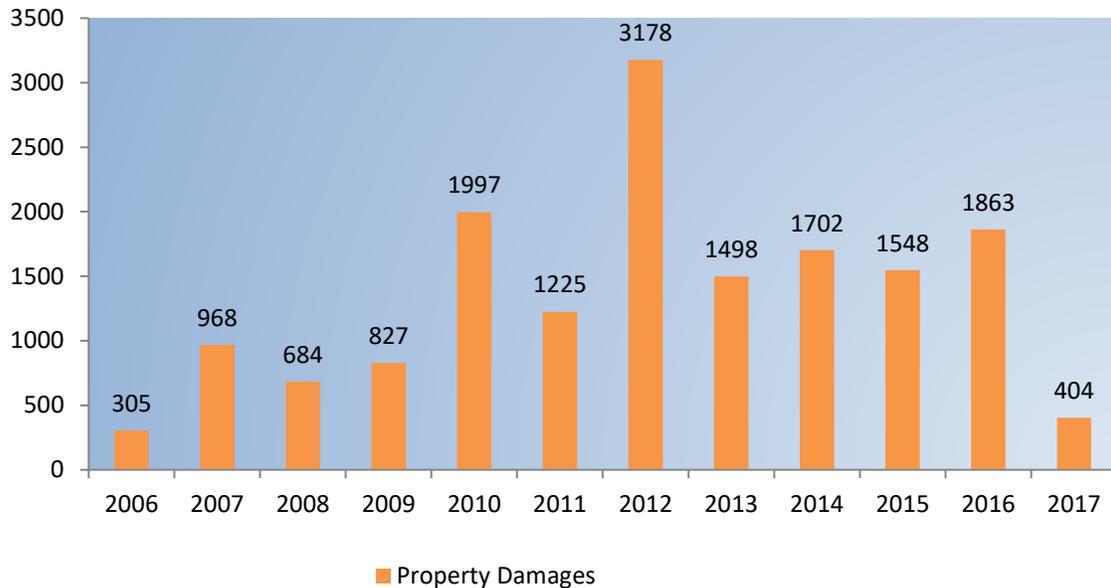


Figure 4: Elephant induced damages on humans – property damages (number of incidents)
Source: DWC, 2006-2017

1.5 Elephant Induced Damages on Human: Crop Losses and Social Losses

Crop losses

Despite the fact that contribution of agriculture has declined to 6.9% of the national GDP, nearly a third of the population in Sri Lanka still depends on agricultural livelihoods (Central Bank, 2017). Rice is the staple food of Sri Lankans thus paddy cultivation receives the highest attention in the agriculture sector. Apart from this, other seasonal crops such as maize, sorghum, pulses, vegetables and perennial crops such as coconut and banana are among the most grown agricultural crops in Sri Lanka. These crops are cultivated in home gardens and other highland plots such as chena cultivations in small scale plots. Almost every one of these crops is subjected to elephant damages while damages to paddy cultivation dominate (Santiapillai *et al*, 2010). The estimation of economic losses that arise due to HEC is complicated because it includes destruction of crops by elephants and other indirect costs like effort of people to chase away animals for which collection of data is quite difficult. In some cases, the crop losses arise as a result of trampling by elephants and in others as they feed on the crops. Also, estimation of crop losses become further complicated when farmers adopt multiple cropping systems. As a result, there are no reliable estimations available (Bandara, 2003). It is also complicated further by other wild animal damages such as parrots, wild boar, monkeys etc. also in the same areas (Santiapillai *et al*, 2010).

The frequency and intensity of crop raiding by the elephants appear to be connected with the crop calendar of farmers, suggesting seasonal patterns of elephant damage. There are two main cultivation seasons in Sri Lanka named *Yala* and *Maha*. The *Maha* season in the Dry zone starts with the north-east monsoon in September and continues up to March. The *Yala* season falls during the south-west monsoon from May to August which gets specific rainfall from first intermonsoon. However, HEC affected dry zone areas do not get rainfall from south-west monsoon. During the *Maha* season, the major cultivation season of the dry zone, the water availability is relatively high whereas in *Yala* farmers have to depend on water

stored in reservoirs. In both seasons, elephant raiding of crops can be observed during near the end of season, just before the harvesting of paddy (Fernando *et al*, 2005; Arceiz *et al*, 2009).

Social Losses

Most of the Sri Lankan farmers that are vulnerable to HEC are small scale farmers. Many of them are debt-ridden and in a continuous struggle to move out of poverty. Their debt burden is escalated due to damages caused by elephants, trapping them further in financial crisis (Ranaweera, 2012). On the other hand, HEC negatively impacts peoples 'regular activities of life. In many areas of HEC, people are unable to engage in late evening activities due to the high risk of encountering elephants in that time. Usually elephant-induced damages occur mostly at night. There is no electricity along the roads in some of these areas. Therefore, evening activities are avoided by people considering the safety of their lives. Moreover, usually in harvesting periods women and children are left alone in houses at the night as farmers have to leave for guarding crops. In some areas School attendance of children is affected, especially during the rice maturing and harvesting time, as children have to help their parents in guarding the crops (Ranaweera, 2012). Constant psychological trauma due to fear of elephant attacks is another issue. In areas with severe HEC, many families are worried and fearful about their children until they return from school in the evening and usually do not allow after-school activities for children.

1.6 Human Induced Damages on Elephants: Elephant Deaths

A total of 3031 elephant deaths were reported between the period of 2006 and 2017 in Sri Lanka which can be considered as significantly a high number (DWC, 2017). These elephant deaths are the cases which were reported and came into the attention of wildlife authorities. The number of such incidents could even be higher given the cases which have not been reported which are difficult to discover. According to wildlife authorities, farmers are sometimes reluctant to report incidents to authorities in order to avoid prosecution.

Figure 6 shows the causes of elephant deaths as reported in 2017 (DWC, 2017). According to that, only 7 % deaths were attributed to natural causes whereas the large majority of elephants have met violent deaths. Gunshots (20%), electrocuting (9%), poisoning (3%), use of explosive devices (22%) and accidents (13%) are among the major causes responsible for deaths of elephants. Moreover, injuries are caused to elephants by gun traps and sharp nail traps set by people. This indicates that people have resorted to violent means to respond damages by elephants even though elephants in the country are protected by the Fauna and Flora Protection Ordinance. The violence towards elephants has increased over time indicating that the level of tolerance of people towards elephant damages has decreased. Therefore, rules and regulations alone could not be relied upon to conserve elephants in the country and the support from local residents is essential.



Figure 5: Human induced damages on elephants – number of deaths
Source: DWC, 2006-2017

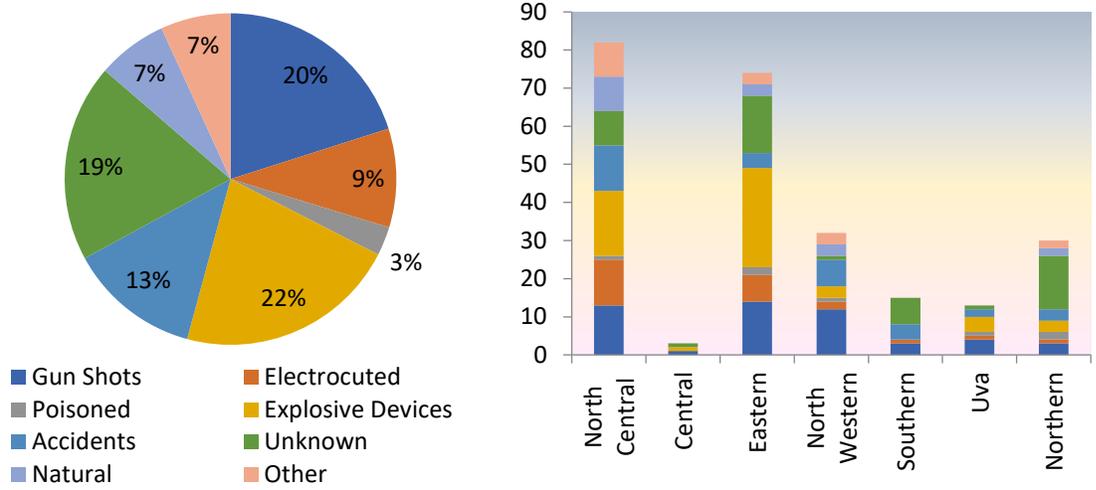


Figure 6: Causes for elephant deaths 2017
Source: DWC, 2017

2. Major Drivers of HEC

The competition for space between humans and elephants can be identified as the main underlying driver for HEC in many areas of Sri Lanka. Unplanned or poorly planned development projects in rural areas aggregate the problem further. The situation remained under control in the past due to low population pressure. With the rapid increase in population, human settlements and agricultural land have extended into hitherto untouched areas of forest both in wet zone and dry zone of the country. The trend appears to have accelerated since the second quarter of the twentieth century. Beginning with dry zone land settlement and irrigation development schemes launched in 1930s, the process has accelerated due to subsequent mega development schemes such as Accelerated Mahaweli Development Program and is getting more intensified by ongoing infrastructure and rural development projects.

This has led to invasion of elephant habitats by humans through clearing of forests and establishing settlements, farm lands and infrastructure facilities. As a result, elephants found their ranging lands getting ever smaller and surrounded by human settlements and agricultural land. Elephants prefer contiguous habitats rather than fragmented forest patches making it more stressful for them. Mega development projects have caused a number of issues relating to loss of habitats due to opening up of forest cover, inundation of habitat areas, fragmentation of habitats, blocking elephant corridors, disturbance to food and water sources (Ahamad and Rifasa, 2016; Santiapillai, 1996; Thenakoon *et al*, 2017; Ayooob, 2009). Two major areas where this process is very intensive are Mahaweli development areas and southern dry zone in Hambantota District where HEC related incidents have gone up rapidly with several development projects undertaken in those areas (Liyanage, 2012).

Unlike other countries with HEC where illegal killing of elephants for commercial gains such as ivory is more prevalent, commercial ivory poaching of wild elephants cannot be considered a serious problem in Sri Lanka. Only a few such incidents have been reported in Sri Lanka despite some cases getting high media publicity. Apparently, a low share of tuskers among elephant population is a major reason for this. Nevertheless, it appears that the growing hostility of people towards elephants is increasing, especially due to life and property damages.

3. Mitigation Measures

There are several measures that have been adopted to protect elephants and mitigate the growing conflict. These programs can be divided into two main categories, voluntary measures by affected farmers and mitigation measures implemented with institutional support. Several voluntary measures are practiced by local residents to deter problems from elephants. They include erecting watch huts, lighting and creating noise (e.g. firing Thunder Flashes, shouting), establishing biological fences, and avoidance of night outings. Watch huts are small huts built on tall trees in the fields to guard crops in the night (Fernando *et al*, 2005). These huts have space for one or two people. Farmers stay awake in these watch huts and shout or make noise by throwing Thunder Flashes whenever elephants try to enter their fields. Lighting fires, kerosene lamps, flares and flashlights are also used to frighten and chase away the elephants. However, these methods have gradually become ineffective as some elephants get used to light and sound in the long run (Fernando *et al*, 2005). In extreme cases, farmers shoot, set traps or electrocute elephants to protect their crops and properties. In some cases, biological fences are also used by farmers. These fences are often called live fences and work as a barrier for elephants from entering the houses. However, there were cases where elephants have destroyed the fences by uprooting them (Samaraweera *et al*, 2010).

As far as institutional support for mitigation is concerned, two government authorities are in charge of matters relevant to HEC in local areas; local officers of DWC and the Divisional Secretariat offices (DS). In addition, some NGOs have offered support to local people in certain areas affected with HEC. A compensation scheme implemented by the DWC in partnership with DS offices for victims of elephant attacks is one major institutional support available for local people (DWC, 2017). The main aim of the compensation scheme is to increase the tolerance of people towards elephants and to reduce elephant killings and injuries. The DWC launched a countrywide program for mitigation of HEC known as 'GajaMithuro' (Friends of Elephants) which has been discontinued recently. The DWC provides thunder flashes for people to chase away problematic elephants and also built electric fences to stop elephants moving into the fields and houses. It seems electric fences are the most popular way of mitigating the issue in the country so far (Santiapillai, 1996). Apart from these, the DWC translocate problematic animals to protected areas and undertake elephant drives as mitigation measures.

None of the mitigation measures has given perfect solution for the problem due to various limitations. Some elephants have got used to the noise of thunder flashes and are not afraid of the sound anymore (Samaraweera *et al*, 2010). In case of electric fences, the location of fences has often become a matter of concern. From villagers' side, electric fences can restrict to access forests to collect firewood, fruits, medicinal plants etc. thereby negatively affecting the lifestyle of people (Santiapillai *et al*, 2010). As a result, people are against the fences in some areas and do not provide strong support for maintenance of fences. Ecologically also location of fences is not optimal. It has been identified that the effectiveness of an electric fence depends on the social acceptance and community support for their maintenance (Santiapillai, 1996). On the other hand, the location of fences in some areas have negatively impacted on elephants as they block elephants' paths to accessing water in tanks and lakes. Electric fences have traditionally been located on the administrative boundaries of DWC protected areas which are often surrounded by Forest Department protected areas. It means that the fence located on administrative boundaries separate contiguous ecosystem and ecological boundaries. Therefore, electric fences should be constructed on ecological boundaries, i.e.; boundary between a village and forest. Such fences have been more effective in mitigating Human Elephant Conflict.

In the case of the compensation, maximum compensation amounts for loss of human life and property/crop damages are since the year 2017 set at 500,000 rupees per death and a maximum of 100,000 rupees per incident of property damage, respectively. The official records of DWC show that a total sum of 104 million rupees have been paid as compensation for human deaths in 20 districts within the period of 2011- 2018. During the same period, a total amount of 232.2 million rupees have been paid by the DWC for property damages in 17 districts. Records also indicate that 8 million rupees have been paid for human injuries in 18 districts in 2017 and 2018. However, local people complain that it takes a long duration of time to process the payments and receive the money. On the other hand, fine for killing an elephant is 100,000 - 500,000 rupees which is more or less in the same level as the compensation for human death. This has created an unfavorable attitude among people.

4. Insurance as a Measure of Mitigation: Experience and Challenges

Wild elephant risks are included in the existing indemnity-based crop insurance schemes offered by both the Agriculture and Agrarian Insurance Board (AAIB) and private insurance companies. Crop insurance schemes are mainly designed to cover climatic risks, i.e. droughts and floods. Wild elephant risk also is covered by those crop insurance schemes, given its significant impact on agriculture. However, such

schemes were not designed to capture the specific risks and vulnerabilities associated with wild elephant damages.

In terms of the scale of coverage, on average, only 2.45 % of total paddy cultivated area is covered by both government and private indemnity-based crop insurance programs together during the period of 1998-2017. The coverage is higher in the Maha season (2.79 %) on average, which is the major rice cultivation season in Sri Lanka. The average insurance coverage in the Yala season is 2.13 %.

The DWC operated an insurance scheme nearly 20 years ago. However, due to dissatisfaction of farmers about the amount of compensation they received and dissatisfaction of insurance companies about the process as well as the level of premiums collected by companies, the DWC lately converted the insurance scheme into a compensation scheme, which is currently operating in the country. In addition, in 2006, DWC made an attempt to introduce an insurance scheme with the cooperation of another private insurance company, based on recommendations from a research study carried out by researchers from University of Colombo (Bandara and Tisdell 2002). The private insurance company appear to have joined the scheme motivated by the idea of cooperate social responsibility. Accordingly, urban dwellers were expected to donate a certain amount of money as indicated by their willingness to pay for conservation of wild elephants in order to establish a trust fund to pay the compensation for losses arise due to elephant attacks. However, the scheme was not successful since the stated amounts of willingness to pay have not converted into actual payments under practical conditions, according to sources from DWC.

In 2013, the government introduced a compulsory crop insurance scheme bundled with the fertilizer subsidy program. Since the paddy cultivation in Sri Lanka is heavily dependent on chemical fertilizers, majority farmers were automatically enrolled in the insurance program as a result. This insurance covered wild elephant damages also. An insurance premium of Rs. 150 was added to the price of one 50 kg subsidized fertilizer bag (Rs. 350), costing Rs. 500 per fertilizer bag.

Insurance schemes that are targeting small farmers have always faced challenges. Based on the past experience on crop insurance, a number of challenges including affordability of premiums, verification of crop losses caused by elephants, claim settlement etc. can be identified as implementing challenges for specific insurance to cover wild elephant risk. Difficulty of monitoring and verification of crop losses can be identified as one major challenge faced at the field level. Monitoring becomes especially difficult in the context where many small farmers adopt multiple cropping systems. If new insurance products are to be developed for the purpose of HEC, they should be combined with carefully managed monitoring/verification systems at the field level. This needs skilled human resources and better logistic facilities. Another major challenge is affordability of premiums. Since many farmers affected by HEC belong to the low-income category, payment of insurance premiums is a significant economic burden for them. Thirdly, experience with past crop insurance schemes has created mistrust and unfavorable attitude among farmers towards insurance schemes in general which could be a major barrier for popularizing insurance products for HEC. Moreover, lack of awareness and education remains a key barrier for upscaling the coverage of crop insurance schemes.

5. Way Forward

Since none of the mitigation measures have provided a reasonable solution for HEC due to various limitations, the problem of HEC in Sri Lanka is ever getting more intensified. Given the complex nature of underlying drivers that give rise to HEC, it is highly unlikely that a solution which eliminate the problem

totally would ever be possible. Disregard of attempts by the government and other responsible parties to mitigate the issue, it is more likely to remain as a persistence risk threatening life, property and livelihoods of people in the affected areas. Therefore, the more realistic expectation is that communities should learn to live with the problem rather than looking for perfect solutions. In essence, it makes the problem a matter of risk management. As the foremost market-based solution for managing various types of risks, insurance has a major role to play here. Success of insurance as a viable risk management tool for HEC would depend on how innovatively insurance products are designed to overcome the key challenges experienced by past efforts on insurance and other mitigation measures.

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