

Villain or Scapegoat

New perspectives towards understanding the current management of the human-elephant conflict in Sri Lanka

Annemarie Russ

Master Thesis Series in Environmental Studies and Sustainability Science,
No 2019:026

A thesis submitted in partial fulfillment of the requirements of Lund University
International Master's Programme in Environmental Studies and Sustainability Science
(30hp/credits)



LUCSUS

Lund University Centre for
Sustainability Studies



LUND
UNIVERSITY

Villain or Scapegoat

New perspectives towards understanding the current management of the
human-elephant conflict in Sri Lanka

Annemarie Ruß

A thesis submitted in partial fulfillment of the requirements of Lund University International
Master's Programme in Environmental Studies and Sustainability Science

Submitted May 14, 2019

Supervisor: Stephen Woroniecki, LUCSUS, Lund University

“But perhaps the most important lesson I learned is that there are no walls between humans and the elephants except those we put up ourselves, and that until we allow not only elephants, but all living creatures their place in the sun, we can never be whole ourselves.”

— Lawrence Anthony, *The Elephant Whisperer: My Life with the Herd in the African Wild*

Abstract:

The conflict between humans and elephants (HEC) in Sri Lanka is severe. Due to habitat fragmentation and resource reduction elephants increasingly roam in areas with human settlements. These human-elephant interactions often lead to losses on both sides, which should be prevented. The Department of Wildlife Conservation (DWC) holds all decision-making powers which enables them to implement solutions to HEC. Their power makes them an easy target for criticism, especially now because HEC is increasing and people want the DWC to be more proactive. Thus, current solution approaches are not as effective as they should be and the DWC is pictured as the ‘villain’. This paper aims to understand the reasons behind the DWC's decision-making because it is crucial to analyze a problem from different perspectives in order to fully understand it. This analysis is theoretically grounded in a combination of a DPSIR-model and Foucault's ideas about discourse. The first part of the analysis is based on a narrative literature review generating scientific knowledge. The second part is grounded in a content analysis using newspaper articles and government documents. This novel approach using different schools of thought enables the creation of new insights. Using this theoretical frame, I argue that the DWC's work is influenced by global structures and discourses, by the diverse history of the country, and by political structures, power distribution and corruption. These influences partially prevent DWC employees from doing their job because of the many hidden pitfalls people usually do not consider. These invisible circumstances reveal that the DWC is more of a scapegoat instead of a villain. Thus, this paper finds that people working with the HEC need a more holistic view of the human-elephant conflict itself to be able to find sustainable solutions that can be implemented in Sri Lanka's specific social and political setting.

Keywords: human-elephant conflict, social-ecological systems, species co-existence, wildlife conservation, land and resource management, sustainability science

Word count: 13,998

Acknowledgments

Thank you, Olivia, for being my first Swedish friend and for making me want to come to Lund for my studies. Thank you for letting me crash on your sofa before I was able to find a place to stay. Without your support, I would not have made it through my first weeks.

A big thank you goes to Paula for inviting us to her cozy home in Denmark for a little writing retreat. I loved it!

Thank you, Sarah, for always making me laugh. I will miss you!

Thank you, Victoria, for always being there for me in this enjoyable rollercoaster ride. I am eternally grateful for having you in my life.

A big thank you to my collective house FIOLEN and all of its people. You became my Swedish family and you are simply amazing.

Thank you, Diana and Lasse, for taking me in and giving me the opportunity to live in this great house. I am unbelievably grateful!

Thank you, Hannah and Martin, for making me watch nearly all the Star Wars movies in this stressful time, for having lovely weekend brunches and "Cards Against Humanity" evenings.

A huge thank you to Katta for keeping up with me and for always being there for me, when I had a question, when I didn't feel so well, or when my bike needed to be fixed.

Thank you LUMES classmates and LUCSUS staff, it's been a blast! This program and its incredibly kind and loving people will always hold a special place in my heart.

Mein größter Dank aber gilt meiner Familie, weil sie einfach immer für mich da sind und mich in jeder Lebenslage unterstützen. Danke, danke, danke. Ich liebe euch.

Thank you!

Preface

My growing passion for wildlife conservation and especially my interest in elephants are the main reason for this research. Elephants are fascinating, smart and social beings. After I finished my bachelor's degree, I went to Namibia for 6 weeks where I worked in a wildlife research project. This is when I first made contact with the topic of human-wildlife conflicts. During this time I learned a lot about the African elephant because the projects veterinarian was an elephant lover herself. She conducted countless researches over the years and was more than willing to pass her knowledge on to me. After I started LUMES I wanted to learn more. That is the reason why I went to Sri Lanka last summer where I worked with the Sri Lanka Wildlife Conservation Society (SLWCS). One of their main objectives is to find sustainable solutions to the human-elephant conflict in the country. These two hands-on experiences provided me with a good knowledge base on this conflict which I now explored further in my Master thesis. I hope this thesis will contribute to better human-elephant mitigation strategies. Its target audience is the scientific community working on the human-elephant conflict on the one hand and decision takers including the Department of Wildlife Conservation and NGO's working on solutions on the other hand.

Another reason I chose this research topic is based on my personal experience as well. During my time with the SLWCS, I got the impression that they and the public in general are not happy with the work of the Department of Wildlife Conservation. I did hear many stories, which declared them to be the villain in the community. Back then, I believed these stories. However, as a researcher, it is essential to stay as objective as possible, which is why this thesis critically investigates the validity of this public opinion.

Table of Contents

1 Introduction.....	1
1.1 Importance of Sri Lankan elephant conservation.....	2
1.2 Research gap and questions.....	3
1.3 Thesis structure.....	4
2 Theory.....	5
2.1 Sustainability Science.....	5
2.1.1 Thinking in Systems.....	6
2.1.2 DPSIR-model.....	7
2.2 Foucault and discourse.....	9
3 Methodology.....	11
3.1 Narrative literature review.....	11
3.2 Content analysis.....	12
4 Findings and Analysis.....	14
4.1 Applied DPSIR-model.....	14
4.1.1 Drivers.....	15
4.1.2 Pressures.....	16
4.1.3 State of the environment.....	19
<i>Species: The Asian elephant.....</i>	19
<i>Area: Sri Lanka.....</i>	20

<i>Historical implications</i>	20
<i>Effects on elephant population</i>	21
4.1.4 Impacts	22
4.1.5 Responses	24
<i>Conflict prevention strategies</i>	24
<i>Conflict mitigation strategies</i>	25
<i>Effectiveness of solution approaches</i>	27
4.2 Villain or Scapegoat: The Department of Wildlife Conservation	27
4.2.1 Global Trends: The global discourse on biodiversity conservation	29
<i>Suggestions for new conservation areas</i>	30
<i>Back to the Barriers movement</i>	32
4.2.2 Local history, political patterns and corruption	33
<i>The DWC and the Forest Department</i>	34
<i>Corruption and the case of Dr. Pilapitiya</i>	34
5 Discussion and Conclusion	37
5.1 Limitations	37
5.2 Conclusion	37
5.3 Further research	39
6 References	40

1 Introduction

Growing evidence shows that the functioning of the earth system is threatened profoundly by anthropogenic pressures (Steffen et al., 2015). According to Steffen et al. (2015) biosphere integrity (biodiversity loss) is one of the two most critical planetary boundaries responsible for keeping the earth's system in balance (Rockström et al., 2009). Genetic diversity already exceeds its safe operating space by far as shown in Figure 1. Consequently, biodiversity loss bears a high risk to negatively affect the whole earth system (Steffen et al., 2015). Currently, scientists argue that the earth is facing its sixth mass extinction, the first one to be caused by human actions. A growing number of scholars argues moreover that increased biodiversity loss has negative impacts on ecosystem functioning and its ability to adapt to changes (Rockström et al., 2009). If biodiversity loss cannot be decreased, the Holocene, which is the era modern humanity has grown to what it is today might destabilize. This development could have significant adverse effects on human life (Steffen et al., 2015).

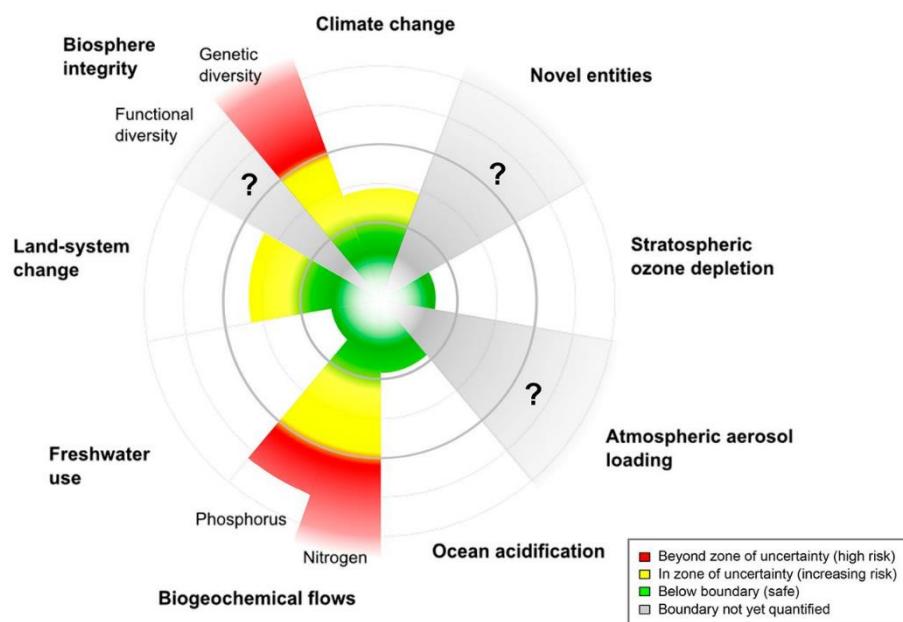


Figure 1. Current status of the control variables for seven of the planetary boundaries (Steffen et al., 2015)

One well-known problem that threatens the survival of many species is the human-wildlife conflict (HWC). According to Nyhus (2016), human-wildlife conflicts are struggles between people and wildlife. These include actions that negatively affect each other. Often this problem formulation also includes the impression that wildlife is threatening people's well-being and economic situation. In this context,

the term wildlife generally refers to non-domesticated plants and animal species, even though sometimes domesticated animals are part of the conflict too (Nyhus, 2016). Many different animal species are part of the HWC dilemma. More than half of the world's largest terrestrial herbivore species are threatened with extinction, the Asian elephant being one of them. HWC's importance is increasing which is why it is in the focus of many conservation biologists' research (Nyhus, 2016).

1.1 Importance of Sri Lankan elephant conservation

Before going into detail, the main goal of this paper is to contribute to elephant conservation in Sri Lanka. To enable better conservation of the species the human-elephant conflict needs to be mitigated. Therefore, it is significant to know why it is crucial to conserve the Asian elephants in Sri Lanka precisely. The HEC is a problem situated in a social-ecological system (SES). This SES is a coupled human-natural system, in which humans are seen as a part of nature instead of separated from it (Ostrom, 2009). Accordingly, two variables are essential: The ecological and social role. The Asian elephant in Sri Lanka is recognized as an ecological as well as cultural keystone species and thus its conservation is vital for the cultural life of local people as well as for other plant and animal species survival.

The discussion around 'keystone species' started in the late 1960s. Since then many ecologists discussed this term repeatedly. The original definition of what a keystone species is changed over time. A keystone species is an animal or plant species, which has a tremendous impact on the ecosystem it lives in one way or another (Garibaldi & Turner, 2004). Elephants have such impacts on the ecosystems they roam in Sri Lanka. Because of this keystone role elephant conservation is important for the maintenance of Sri Lankan ecosystems and consequently for the balance of the global environment and human lives (Schaffer et al., 2019).

Besides the idea about ecological keystone species, there are other reasons why it is crucial to conserve species, one being the concept of cultural keystone species. Culture plays a vital role everywhere and for every human being on earth. However, cultural keystone species vary in different places. A species is culturally highly important if it is part of people's narratives and discourses and therefore visible in their traditions, such as ceremonies, dances and songs. In general, it is easy to identify some of the main cultural keystone species, while for other not so well-known species more in-depth analysis is necessary (Garibaldi & Turner, 2004).

The cultural connection between the Asian elephant and Sri Lanka's people is ancient. Elephants have long been a part of Sri Lanka's history. Until today the elephant is a symbol of the country and one reason for tourists to visit Sri Lanka in the first place (Santiapillai et al., 2010). Many years ago, people started to domesticate elephants and use them for labor, war, religious and cultural activities. They are a significant religious symbol for Buddhists and Hindus and stand for power, intelligence, responsibility, fortuity and wealth. In old cities many drawings of elephants and humans can be found. Up until today some elephants are used for special religious parades. For example, the tooth of Buddha each year gets presented during festivities on an elephant's back (Fernando et al., 2011).

In conclusion, for Sri Lanka the Asian elephant seems to be essential for the people because of its cultural history and for the functioning of the local ecosystems. Both functions are vital for humanity to thrive in the Holocene.

1.2 Research gap and questions

The human-elephant conflict (HEC) seems to be especially severe in Sri Lanka. Statistics show that around 80 people and 200 elephants are killed each year and the numbers are rising ("Performance Report Department of Wildlife Conservation", 2017). The most well-known HEC problems include stories about crop raiding and house destroying, aggressive elephants, train and truck accidents, cruel poaching techniques that slowly kill elephants and lots of anxiety. Most literature seems to focus on analyzing existing and new HEC mitigation strategies while not many scholars seem to focus on who is responsible for combatting the HEC in Sri Lanka. As a scientist from a more social science related field I want to bring new perspectives into the problem discussion.

This paper focuses on political implications: because the Department of Wildlife Conservation (DWC) is the one agency holding all decision power when it comes to implementing solutions to HEC ("Performance Report Department of Wildlife Conservation", 2017). This power makes them a good target for criticism when HEC mitigation does not work. In the last years the number of deaths due to HEC increased and many people, agencies, businesses or NGO's want the DWC to get more proactive (Wijesinghe, 2018).

Current solution approaches might not be as effective as many people want them to be according to the numbers of people and animals dying every year, crop and property damage associated with the conflict, and the emotional cost of fear. I want to understand the reasons why the DWC chooses specific solution approaches over others because I think it is essential to understand the circumstances

they work in before claiming them to be the villain in HEC mitigation. People – researchers and scientists – working with the HEC may benefit from a different view of the problem itself to be able to find indeed solutions that can work or be able to overcome possibly existing hidden barriers so that sustainable solutions can be implemented.

With this as my aim my central research question is the following:

RQ - Why is the Department of Wildlife Conservation (DWC) managing the human-elephant conflict the way it currently is?

To be able to answer this central question two other questions need to be answered first:

RQ 1 – How has the human-elephant conflict in Sri Lanka been managed up to date?

RQ 2 - What are the results of the current human-elephant conflict management efforts in Sri Lanka?

1.3 Thesis structure

In the following chapter I will explain the two different schools of thought I am going to use as lenses for the analysis part of this thesis: systems thinking and Foucault's ideas about discourse. The third chapter will explain my methodology and the fourth chapter is composed of an analysis of my collected data. Research questions RQ1 and RQ2 will be answered by the DPSIR-model and the overarching research question will be answered in the second part using the discourse approach. Lastly, the fifth chapter will be a combined discussion and conclusion section providing general findings, the importance of this study in the broader picture, its limitations and suggestions for further research.

2 Theory

To answer my research questions I chose theories from different schools of thought to generate the most comprehensive answers possible. Research question 1 and 2 will be answered in the first part of the analysis to create fundamental knowledge necessary to answer my overarching research question in the second part of the analysis.

For the first part of the analysis I decided to use a method from sustainability science, my field of study. An approach often used to view problems in sustainability science is the systems thinking lens. I chose the DPSIR-model to create a more holistic model of the HEC than other scientific papers generate. This knowledge will contribute to answer RQ1 and RQ2.

However, using only this approach does not generate an answer to my main research question. That is why I had to find an additional theory. I think one way to investigate reasons for the establishment of certain solution approaches by the DWC is to analyze them using Foucault's ideas about discourse. Using a discourse lens can help to set the HEC into a broader perspective.

I am very aware of the ontological tension the combination of these different lenses brings about, but I have good reasons to combine a structuralist with a post-structuralist approach. I am going to intertwine both approaches. The DPSIR-model will provide the information about all current solution approaches available to HEC mitigation in Sri Lanka. Foucault's ideas about discourse are going to join to analyze why certain solution approaches that are not effectively tackling HEC are still implemented. This novel way of analyzing the problem will create new ways of understanding and thus it will deliver new insights on how to sustainably combat HEC in the future. The following sections will provide a deeper theoretical understanding of the approaches used in this thesis.

2.1 Sustainability Science

The foundation for the first part of the analysis is sustainability science. From the beginning of this century up to now the field of sustainability science emerged from being a new field into an important discipline (Spangenberg, 2011). In 2001, Kates first stated that "a new field of sustainability science is emerging that seeks to understand the fundamental character of interactions between nature and society" (Kates et al., 2001).

For a long time, the scientific community has been separating natural from social science. These fields were perceived as too different from each other to have meaningful interaction. Due to this separation

a holistic problem-solving approach for sustainable problems was missing and the relationship between nature and society was not fully understood. Sustainability science is trying to close this gap (Jerneck et al., 2010). Thus, it investigates the impacts society has on the environment as well as the impacts of the environment on society. Problems analyzed by sustainability scientists are mostly problem-driven, which means that their goal is to find appropriate solutions to sustainability problems and to support decision making actively. To find these solutions, interdisciplinary and collective work across sectors is necessary as well as the collaboration between scientists and people working within the field (Clark & Dickson, 2003).

I want to show these connections in this thesis. The integration of different approaches from different fields is challenging. In choosing the two different lenses I try to contribute to sustainability science actively. Conducting sustainability science research requires fundamental and applied knowledge components and the urge to apply the newly generated knowledge onto societal action (Kates, 2011) as well as to create a bridge between society and science (Jerneck et al., 2010). The systems thinking approach is one way to create a bridge between different fields.

2.1.1 Thinking in systems

Systems thinking is one way to see the world. According to this approach everything can be seen through a systems lens. Smaller systems are embedded in larger systems. There is no limit in numbers and sizes of systems (Arnold & Wade, 2015). Researchers working with this approach need to set boundaries for the system they analyze. Systems are never static, in fact they are even evolutionary, and they can continuously change, adapt and respond to inevitable changes and occurring events (Meadows, 2008). Moreover, systems can organize and repair themselves because they seek to find a balance (Meadows, 2008). Analyzing systems -in this case to find solutions to a problem- can help to manage, adapt and understand the different solution approaches that are available (Arnold & Wade, 2015). The approach enables researchers to find the root causes of a problem rather than only its symptoms and thus can be helpful to perceive new opportunities. Systems thinking is all about the connection between structure and behavior of systems (Meadows, 2008). Once this connection is made it is easier to understand how one system is functioning. Moreover, every analyzed system is different. Changes that happen in one system can create an entirely different outcome if they happen in another system (Meadows, 2008).

It is crucial to think in systems and structure reality because some current solution approaches do not lead to the fancied outcome and sometimes even strengthen a problem (Meadows, 2008). There are different ways to create systems thinking models. I am using an approach that helps structure the different aspects of the HEC. Thus, I chose the DPSIR framework, which will be used in this thesis to structure the human-elephant conflict in Sri Lanka and therefore to understand why the conflict is getting worse.

2.1.2 DPSIR-model

The Driver-Pressure-State-Impact-Response (DPSIR) framework is a useful tool to study and investigate human-environmental systems (Burkhard & Müller, 2008). It can help to identify cause and effect relationships between the environment and human-induced actions in socio-economic settings. Hence, DPSIR-models are multidisciplinary systematic approaches (Song & Frostell, 2012). Figure 2 shows its five different components and the possible relations between them. Its underlying thought is that all actions foster reactions, which means a specific pressure on a system automatically leads to a specific response. Moreover, this framework combines economic, social and natural system information to enable a detailed sustainability analysis of a problem and its current solution approaches (Ness, Anderberg & Olsson, 2010).

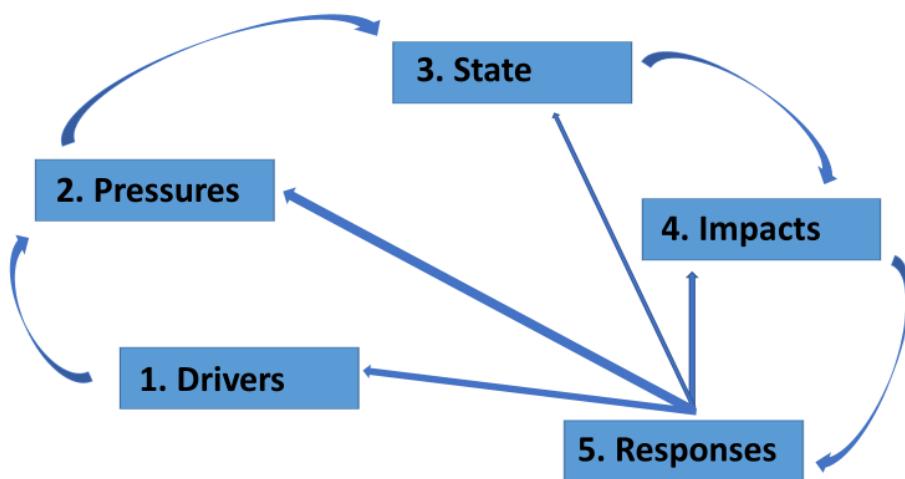


Figure 2. The DPSIR-model showing the possible relations between its five different components. (Own illustration based on Burkhard & Müller, 2008)

Criticism includes that the DPSIR frameworks analysis in some cases can be too broad and in other cases too detailed (Burkhard & Müller, 2008). Moreover, some researchers think it is a very static, linear and mechanic approach (Ness, Anderberg & Olsson, 2010).

Each part of the DPSIR generates essential information. Drivers or driving forces are external forces, which are responsible for a system's behavior (Ness, Anderberg & Olsson, 2010). They can be anthropogenic or natural, even though most of them are human-induced. A distinction between direct and indirect drivers is desirable. Direct ones impact the system itself, while indirect ones can change the settings of one or several drivers of a system. Direct drivers for example are often related to basic human needs like being healthy and having social relationships with others and moreover being free, educated as well as the need for particular goods and services. On the other hand, indirect drivers often are related to developments of different kinds, economic and social settings, the environment and political circumstances (Burkhard & Müller, 2008).

According to the driving forces that underly a system resulting pressures can be identified. These pressures can be good or bad for a system, but usually they have a negative influence on them (Ness, Anderberg & Olsson, 2010). They are the first attempt to understand the results of different, but mostly anthropogenic actions (Burkhard & Müller, 2008).

Described pressures show an impact on the state of the environment in a system. The state variables analyses how the pressures change or impact the environment (Ness, Anderberg & Olsson, 2010). Systems often need time to react to specific changes, which means that visible changes often were caused by previous occurring pressures (Burkhard & Müller, 2008).

The state of the environment influences human life (Ness, Anderberg & Olsson, 2010). A balanced and functioning environment is vital for human well-being, health, as well as for economic conditions. The impact variable is highly essential because it directly shows how human lives are connected to the environment. This connection makes it highly important for environmental management (Burkhard & Müller, 2008).

The last variable of the DPSIR are the responses. These show how humans behave after a problem becomes visible. Responses are therefore implemented solution approaches to counteract the problems of the different phases in the DPSIR (Ness, Anderberg & Olsson, 2010). Responses can be focused on all prior phases and can be adaptive or mitigative. The best responses are the ones tackling drivers and pressures because they can change the state of the environment, which then improves the following stages as well (Burkhard & Müller, 2008).

2.2 Foucault and discourse

For the second section of the analysis, and to answer the main research question, the discourse lens is used. The theories main idea is that language has an active part in creating different realities, which are called 'discourses' (Williams, 2014). Foucault focuses on rules of the production of knowledge through language and how these shape actions and human life. Words, written or spoken have the power to influence the world, especially when they are repeatedly used and when rules and structures help maintain them (Waitt, 2005).

Analyzing discourses using Foucault can be very flexible. Some scholars claim to do a discourse analysis using Foucault's ideas to explain power relations in broad ways, while others base their whole texts on Foucault's words (Graham, 2005). Nothing is absolute (Graham, 2005). The way a discourse gets analyzed always depends on many different factors, such as used theory and ethical standpoints (Wetherall, 2001).

Even though Foucauldian discourse analysis is criticized a lot in the scientific community it also can make the invisible strings that guide humanity visible (Graham, 2005). Discourses are a constructed 'truth' made by people. This truth may differ from place to place or from person to person (Foucault, 1972). Discourses therefore shape definitions and meanings of words, as well as establish right and wrong behavior (Foucault, 1972). According to Foucault (1972), discourses are everywhere and everything that has meaning is embedded in discourse. They have the power to construct what is normal and what is not. However, they are not static but change over time (Waitt, 2005).

Different people perceive different discourses to be true. What discourse is seen to be true can differ from person to person, which always makes one discourse dominating over the others. It is essential to keep in mind that the dominant discourse often changes over time (Waitt, 2005). Moreover, it is especially important to consider the historical and social contexts in which a discourse was able to rise (Foucault, 1980).

I chose to use Foucault's discourse approach in this paper because he was the founder of discursive thinking in science and his ideas are the foundation for all further research in discourse analysis. As I am not exactly doing a discourse analysis itself, I decided to draw from Foucault's original ideas about discourse, instead of using one of the newer very structured approaches. I will include Foucault's discourse approach into the responses section of the DPSIR to show and explain the reasons behind the structure of the current HEC management. These reasons are not visible and most of the public probably does not even know they are existing, which is why the DWC is perceived to be the villain in

HEC mitigation work by the majority of people. I do not conduct a discourse analysis due to two reasons. First, in this part of the analysis I make use of knowledge from already explained discourses such as the global discourse about biodiversity conservation. This discourse explains how the DWC is bound to global structures and why it perceives a special solution approach to be right. Second, I will back up my claim that the DWC is a scapegoat through the telling of specific stories about political patterns and corruption to add validity to my claim. These stories are not discourses themselves but part of the language used to help to establish the idea that the DWC is not the villain here. Thus, I might conclude that the current dominant ‘villain’ discourse is not absolute and that there are other ways to describe and understand the current HEC situation in Sri Lanka.

3 Methodology

To answer the research questions, I used a narrative literature review to collect enough data to create the DPSIR-model, and a content analysis using media and policy documents. These methods are enabling me to answer my overarching research question, by combining the use of different data.

3.1 Narrative literature review

Literature reviews are especially helpful to understand and summarize a specific topic, thus enabling the researcher to find remaining topics or gaps that still need to be explored (Paré, Trudel, Jaana, & Kitsiou, 2015). Narrative reviews are qualitative rather than quantitative. They aim to sum up what has been written about a specific topic and are not supposed to generalize outcomes (Green et al., 2006).

One drawback of this literature review is that researchers can refuse to include specific ideas to make their points more valid, which is relatively unsystematic. However, such an analysis makes it possible to focus on specific topics and synthesize knowledge available (Green et al., 2006). Thus, narrative reviews enable the researcher to create a flow in the narrative that is being told and to focus on the essential data.

The narrative literature review is needed to construct the DPSIR-model for the first part of my analysis. Some generated knowledge like information about the global biodiversity discourse will also be used in the second part of the analysis to create a complete DPSIR scientific knowledge from different topics and themes need to be acquired. The necessity of diverse knowledge was the main reason for me to use this literature review style. First, I searched for specific scientific literature about the human-elephant conflict in Sri Lanka. Secondly, I sketched out a first draft of the DPSIR to know what kind of scientific knowledge is required and still missing.

I conducted small literature searches for each of the five stages of the DPSIR-model. In particular I searched for data about the HEC, the history of Sri Lanka, the Asian elephant and its behavior, global structures related to HEC in Sri Lanka and information about the political system. To collect the data, I used Google Scholar as well as LUBsearch. LUBsearch is a literature searching tool offered by Lund Universities libraries, which allows access to the library catalog, books and scientific articles. All papers that contained information about the above-stated topics are cited in this thesis. In total four papers were used for the drivers section, ten papers for the pressures section, nine papers for the state of the environment section, four papers for the impacts section and three papers for the responses section.

The papers written by Shaffer et al. (2019) and Fernando et al. (2011) were used extensively in the state, impacts and responses sections.

3.2 Content analysis

A literature review alone is not enough to find answers to the central question of this thesis. I decided to additionally use the content analysis method to generate the missing knowledge needed for the second part of my analysis. In this part Foucault's ideas about discourse are used to dismantle the villain discourse in HEC mitigation in Sri Lanka. For this theoretical approach informal and emotionally rich data is needed. This data can be provided by the content analysis approach focusing on the analysis of newspaper and related policy reports.

The content analysis aims to explore "who says what through which channel to whom with what effect", which makes communication its key aspect. (Lasswell, 1948). A content analysis thus intends to understand the meanings behind data of a particular topic (Krippendorf, 1989). The data used can vary a lot, but mostly written documents get analyzed. According to their epistemology and ontology content analysis and discourse analysis are very similar. Even though some scholars do not agree on this point, others argue that content analysis can be an excellent tool for analyzing discourses, which is why I chose it (Green Saraisky, 2015).

I started this analysis by reading an official government document about the National Policy on Conservation and Management of wild elephants in Sri Lanka (2019) and two performance reports of the Department of Wildlife Conservation (2016 & 2017) for a basis of understanding about the work of the DWC. From there I started to search for online, English language, Sri Lankan and international newspaper articles about the DWCS work and opinions about HEC mitigation in general. General opinion pieces could be included about HEC mitigation because the DWC is seen to be mainly responsible for HEC mitigation in Sri Lanka ("Performance Report", 2017) and thus, many negative opinions about HEC work can be related with the DWC's work. I sorted different materials according to the story they told and grouped the themes of the second part of the analysis accordingly. To back up some of the stories I wanted to tell I needed some scientific backed up information as well, as already mentioned in the literature review part.

In conclusion, I am using these two methods because I wanted both, objective knowledge as well as subjective knowledge. The first method to build and back up my case to answer RQ1 and RQ2 in the

DPSIR part and the second to dismantle the villain idea and thus to answer my main question after evaluating the content analysis data using Foucault's discourse ideas.

4 Findings and Analysis

The first part of this section, using the systems thinking lens, will give a detailed answer to RQ1 and RQ2. This answer will be the foundation for finding answers to the overarching RQ in the second part of the analysis.

4.1 Applied DPSIR-model

Here, I apply the information gathered through the narrative literature review to create a holistic DPSIR-model about the HEC in Sri Lanka. The DPSIR-model will show how the HEC has been managed until now as well as the results of this management. Hence, this first part will answer RQ1 and RQ2.

Figure 3 generates an overview of the findings and their relations to each other, which will be explained in the following sections.

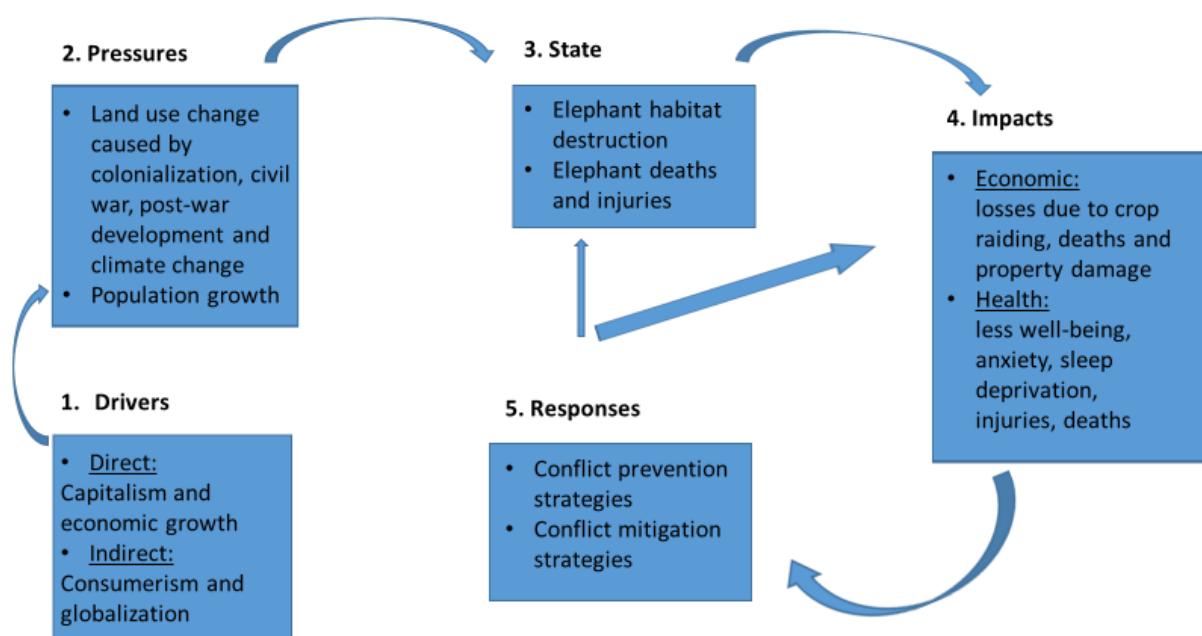


Figure 3. The DPSIR-model showing the human-elephant conflict in Sri Lanka (Own illustration, 2019)

4.1.1 Drivers

I decided to keep this section broad to make people aware that we all are influenced by global structures, even though they are invisible to most of us. This way of understanding a problem will be especially important in the second part of the analysis.

In current days people continuously strive for more: more money, more goods, whatever as long as it becomes more. There seems to be no sense of satisfaction (Migone, 2007). One reason for this development is the human demand for goods and services. However, there is an overshoot of these demands in the predominant global capitalist system. The accumulation of more capital is a vital goal, which made humans become consumers. These consumers are embedded in the market, which brings together people or actors who wish to sell certain goods and those who are interested in buying them (Migone, 2007). Consumerism is the fuel of modern capitalism. To be able to reproduce itself, capitalism relies on a growing large-scale production as well as large-scale consumption. Thus, in the current set up of capitalism it is a system that is dependent on growth (Migone, 2007). This economic growth can be measured through for example GNP per capita and effectiveness of the use of labor forces and thus does not include any social development like the term development does (Sklair, 1994). However, these trends led to too high resource consumption patterns, which creates different problems worldwide.

At some point the development into the capitalist system led to globalization. One reason for the world to grow together was the belief that some new problems are too big to be tackled only on the nation-state level alone (Sklair, 1994). Moreover, globalization happened because transportation costs, as well as costs for communication over long distances, dropped immensely. This drop was possible because the capitalist system enabled a flow of goods, services, capital and knowledge across borders and cultures in the first place. Today, we live in a globalized world and we have to make the best out of this development (Davis, 2018). In Sri Lanka impacts of globalization are particularly visible in the agricultural sector. Before the economy was liberalized in the 1970s small-scale agriculture and cooperation between farmers was typical. However, with globalization the sector commercialized rapidly and marketing became a key component (Woroniecki, 2019).

Specifically, this means that capitalism and economic growth are direct drivers of the HEC in Sri Lanka. These direct drivers are moreover the underlying reason for the establishment of extensive global consumerism as well as the motor for globalization. The influences these developments had on Sri Lanka will become more apparent in the next section.

4.1.2 Pressures

Sri Lanka is a country with a diverse history consisting of colonialization and war. These past events shaped the pressures that led to the conflict between humans and elephants today. One resulting main pressure is the land use change.

In 1815, the British army defeated the Kandyan Kingdom of Sri Lanka and ruled over it until 1948, when it became independent (Hewa, 1994). Sri Lanka has a size of 6,55 million ha land of which only an area of 3 million ha is arable land whereas the rest is unsuitable for agricultural production due to it being protected areas or simply water areas like lakes and rivers. In the year 1870 the population was about 2,7 million people, which means that each person could have had the possibility of using 2,7 ha of land. Sri Lanka's population since then is continually growing, which means that in the 2000s each person, assuming the land would be divided equitably, could use 0,15 ha of land. This number is still decreasing every year (Mapa et al., 2002). This decrease is not the only visible change. At the beginning of the 20th century 90 percent of the island was covered with forests, whereas 100 years later only 20 percent of the forest remained. Sri Lanka's forest cover is below the global average of 30 percent, but still a bit above the average forest cover in South East Asia (Mapa et al., 2002).

The so-called "Crown Lands Encroachment Ordinance" of 1840, which was implemented by Sri Lanka's colonial leader the British government, stated that all land not currently used for agriculture belongs to them from now on. As a result of this ordinance the Brits started to grow coffee, tea, rubber and coconuts (Mapa et al., 2002). Due to the resulting landlessness, the area used for agriculture grew due to encroachment after the ordinance in 1840 and due to illegal encroaching activities until today. This ordinance was important because until today over 80 percent of the land belongs to the Sri Lankan government (Mapa et al., 2002). This development gives much power, but also responsibility, to the government. In countries that were not colonized it is usually the other way around. In Thailand for example, 80 percent of the land is privately owned and the government manages only 20 percent (Mapa et al., 2002).

These land use changes resulting from colonial times have significant impacts on conservation decision making in general and influence elephants directly. Much land they roamed on in the past was taken away from them. Thus, the elephants were forced to adapt to the new situation.

Agriculture plays an important role in the country, but the Sri Lankan civil war considerably changed the landscape again. The Sri Lankan civil war started because of ethnic conflicts between the government and the Liberation of Tigers of Tamil Eelam (LTTE) rooting back to the '70s but became a

real military war in 1983. The conflicts are often depicted as a crisis about the identity and legitimacy of the state. Thus, ethnic conflicts and the weak state are connected (Walton, 2008).

During the civil war approximately 70.000 people lost their lives and the loss of billions of dollars destroyed Sri Lanka's economy. The huge mistrust between ethnic groups from the civil war can be seen as one of the main reasons why it was such a long war. Before the civil war Sri Lanka seemingly had high chances to become a liberal democracy like many other modern states, but instead it became an ethnocracy (Devotta, 2005). Sri Lanka is a post-war country, where every citizen knows how war feels like and what it means. To achieve normalcy the government created a post-conflict strategy where normalcy in conflict areas could be brought back by building new infrastructures to fix those that were broken over the last decades and the war. Many new roads, electricity, but also hospitals and school were built. As a result, post-war investments and new arising local and international tourism started to grow. Demilitarization was of course another big goal. After the war around 100.000 people worked for the military, but just three years later in 2012 the number was reduced to 15.000. It is evident that the government's main post-war goal was development ("People's Report", 2012). It takes time for a country to evolve from a fractured civil society to a vibrant united one, but without a solid foundation transparency and democracy are not possible. Before the war ended the government appeared to only care for upholding their power. On the contrary, associations formed by the civil society sought to enhance engagement and collaboration (Devotta, 2005). However, all these new developments led to even higher pressure on the elephants, because their home ranges became and are still getting more and more fragmented.

One consequence of global development that puts a lot of pressure on elephant habitats in Sri Lanka is climate change (Woroniecki, 2019). In Sri Lanka climate change contributes to the degradation of forested catchments which in turn drives elephants towards villages and their surrounding farmlands (Woroniecki, 2019).

As already mentioned, another significant influencing factor for the extension of agricultural use and development is the growing population of the country which fosters the need for urban development, more housing and infrastructure for people in general (Mapa et al., 2002). At the beginning of the 21st century this change led to the use of one-third of land for agriculture, one-third for conservation in the form of protected areas and the last third consists of urban areas, infrastructure and related businesses (Mapa et al., 2002). Fifty years ago, Sri Lanka had a total population of approximately 12 million people, whereas today over 21 million people inhabit the country. This population growth means that in over 50 years its population doubled. This is putting immense pressure on land use in general (Ambirajan, 1976).

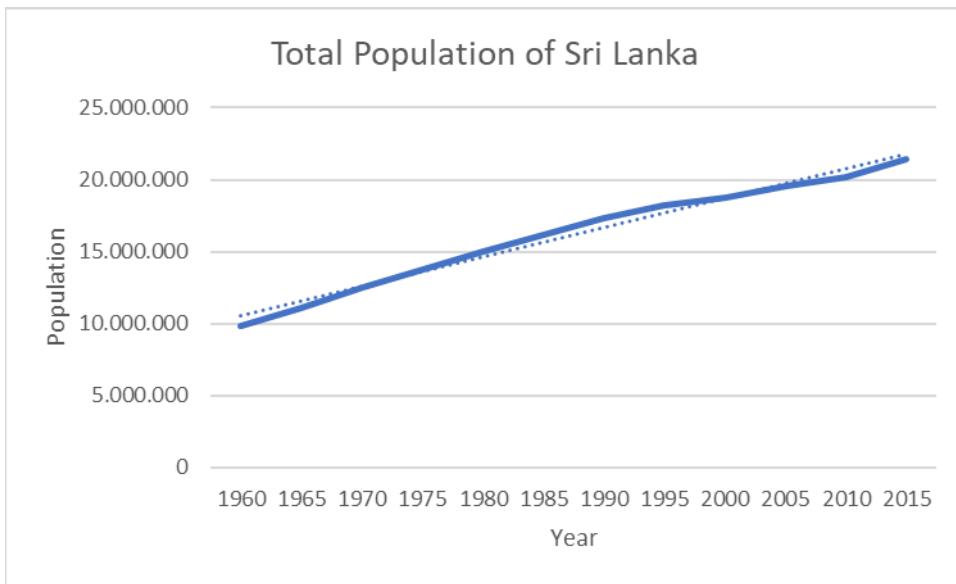


Figure 4. Total population of Sri Lanka from 1969 to 2015 (Own illustration based on the World Bank, 2019)

This development is visible in Figure 4 (The World Bank, 2019). This change is enormous, even though the population growth rate of the country was going down over the same period. In 1968 the rate was around 2,4% and went down to approximately 1,1 in 2017. The total population would only grow slowly in the coming years, but it is still growing as shown in Figure 5 (Knoema, 2019). Another factor why the population is growing is a demographic change. In 1960 the life expectancy was around 60 years. Today people approximately live 15 years longer. This longevity is one reason why the total population still grows today (The World Bank, 2019).

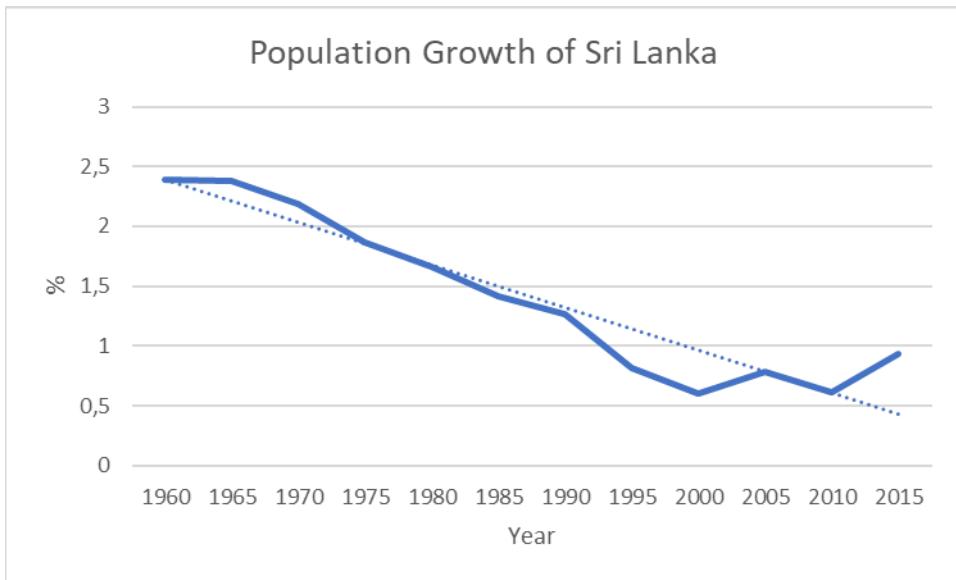


Figure 5. Population growth of Sri Lanka in % from 1960 to 2015 (Own illustration based on Knoema, 2019)

Due to the long-lasting conflict, elephants get used to humans and their behavior and become less afraid and often more violent when raiding crops. HEC will intensify in the coming years due to the immense post-war development, which makes it highly important to find sustainable solutions. New infrastructure, as well as an increase in new farmland used by international organizations for agriculture, are highly problematic (Fernando et al., 2011).

4.1.3 State of the environment

The drivers and pressures cause severe elephant habitat fragmentation in Sri Lanka. This fragmentation fosters HEC and negatively influences the elephant population (Fernando et al., 2011).

Species: The Asian Elephant

The Asian elephant called 'Elephas Maximus' was originally found not only on the Asian and African continents but on the European and American ones as well (Schaffer et al., 2019). However, since 2008 the species is listed by the International Union for Conservation of Nature (IUCN) as endangered with numbers decreasing (Choudhury et al., 2008). Thus, today Asian elephants only inhabit 20% of their original range in 13 countries (Fernando, 2015). Their population ranges approximately around 41.000 to 52.000 individuals in 13 Asian countries (Schaffer et al., 2019).

Elephants are mega-herbivores and need to eat approximately 10% of their body weight every day, which is substantial when keeping in mind that one adult elephant weights between 1000 and 5000kg (Fernando, 2015). Because of the immense amount of foliage they have to consume to survive they consume around 60 plant species that grow in Sri Lanka (Santiapillai et al., 2010). Consequently, they require around 150kg of food and 190l of water each day. Elephants usually are found in family herds consisting of about 5 to 20 individuals (Schaffer et al., 2019). These herds consist of adult females and young elephants. When males are old enough they have to leave the herd. The research focused on Sri Lanka found out that Asian elephants on the island usually have home ranges of 50 to 400km² (Fernando, 2015). They usually prefer to roam in grassy habitats but are a so-called edge species, which means that they mostly range close to forests (Fernando, 2015). Thus, elephants are browsers, as well as grazers, which enables them to alternate between feeding on trees and grasses.

Sri Lanka covers about 1-2% of the overall Asian elephant range area, which is not a lot. However, this small island inhabits 10-20% of the total Asian elephant population. Ecologically speaking Sri Lanka is

an important place also due to the genetic variation of elephants. According to the Department of Wildlife Conservation (DWC), in 2001 5,879 elephants inhabited the island (Fernando et al., 2011). A total of 70 % of them are living outside protected areas (Santiapillai et al., 2010).

Area: Sri Lanka

Being a tropical island Sri Lanka has been rewarded by nature with rich biodiversity. This diversity is understood globally. Various types of ecosystems harbor a large number of species across various categories. When it comes to biodiversity Sri Lanka is considered to be the richest per unit area in the Asian region concerning mammals, reptiles, amphibians, fish and flowering plants ("People's Report", 2012). It has many different ecosystems due to the geo-climatic variation and anthropogenic features of the country. These include forests and related systems, inland wetlands, coastal and marine ecosystems and agricultural ecosystems ("People's Report", 2012).

Geographically the 65.000km² country can be separated into different zones: a wet zone and a dry zone. Precipitation is high all year in the wet zone, whereas it only periodically rains in the dry zone (Fernando et al., 2011). In the center of Sri Lanka mountains up to 2,500m can be found. Its vegetation is as diverse as its elevation. The dry zone is full of evergreen forest, while the wet zone consists of rainforest and the mountain areas contain montane forests. Before humans entered the island, elephants inhabited every corner of it. Due to humans the environment changed and elephants have been impacted by human activities ever since.

Historical implications

The historical elephant population was estimated to be around 12.000 to 20.000 individuals inhabiting 90% of the island (Fernando, 1999). With the rise and fall of kingdoms in Sri Lanka the elephant population decreased (Fernando, 2011). The most noticeable change occurred with colonialization (1505 to 1948). During this time many elephants mainly in the wet zone were shot to protect new developments, especially those of tea, coconut or coffee farms (Fernando et al., 2011). Historical data shows that the population decreased to approximately 8000 individuals roaming in only 2/3 of the island during these times (Fernando, 1999). Up until today Sri Lanka is a country with many agricultural areas and 75% of the countries working population is dependent on the agricultural sector. Fields currently cover 250.300ha and growing. However, because of the growing population the field sizes per person declined (Santiapillai et al., 2010).

Sri Lanka is a post-war country. Changing the landscape from conflict-rich to normalcy takes time and many changes. In situations under pressure people's ability to engage in livelihoods becomes reduced, which then results in a breakdown of law and governance structures within a country and creates a violent atmosphere among the population ("People's Report", 2012). The government created a post-conflict strategy where normalcy in conflict areas could be returned through the building of new infrastructure that was broken during the last decades and the war ("Peoples Report", 2012). Many new roads, electricity, but also hospitals and schools have been built. Also, post-war investments and new arising local and international tourism started to grow. Not only humans but also the environment suffered during these years and the next development boom did not make it easier for it (People's Report, 2012). Re-democratizing a post-war country is not an easy task. Changing legislative procedures and policies are steps that can be taken. What is hindering a great working democracy is the old 'war' mindset of people who hold power working for the government, which is why the country is currently trying to move to a 'clean development mindset' ("Peoples Report", 2012).

Effects on elephant population

The effects of the HEC on the elephant population are severe. Statistics from the post-independence period in the 1960s and 1970s show that during these years an average of 60 elephants died. More explicit, between 1951 and 1969 1,163 elephants died (Santiapillai, 1994). Since then HEC has intensified due to the pressures stated before. To compare numbers, in only 1/3 of the time between 2012 and 2017 1,377 elephants died, which means that death numbers tripled. Thus, currently an average of 230 elephants die each year ("Performance Report Department of Wildlife Conservation", 2016 &2017).

Table 1. Causes and numbers of elephant deaths in Sri Lanka in 2017 (Own illustration based on Performance Report Department of Wildlife Conservation, 2017)

Causes of deaths	Number of deaths
Hakka Patas	54
Gunshots	50
Electrocution	24
Poison	7
Train accidents	7
Accidents	25
Unknown	50
Natural	22
Other causes	17

Table 1 shows the different causes of death elephants have to face in Sri Lanka. In 2017 most died because of 'Hakka Patas' (Performance Report Department of Wildlife Conservation, 2017). Hakka Patas are small explosive items made with gun powder, lead and iron. Farmers often hide them in vegetables elephants love. When they eat these, the Hakka Patas explode, resulting in severe mouth damage and infections. These injuries are a death sentence because of infections or because elephants lose their ability to eat and drink properly and therefore starve to death (Gunawardana, 2016).

Moreover, farmers sometimes also insert poison in palatable crops to kill them. However, 50 elephants died because of gunshot wounds in 2017 ("Performance Report Department of Wildlife Conservation", 2017). Other known causes of death are electrocution, collisions with trucks and trains, or natural reasons (Santiapillai et al., 2010).

4.1.4 Impacts

Consequences of the HEC on human lives are not to be underestimated. In fact, between 2009 and 2017 yearly approximately 60 men, 10 women and 1 child were killed by elephants ("Performance Report Department of Wildlife Conservation", 2017). Peoples fear these encounters, and their

consequences are the main reasons they attack elephants in the first place (Fernando et al., 2011). They suffer from direct, as well as indirect costs. Direct costs are damages, like crop and property damage in many cases, as well as death or injury. Thus, crop raiding is still referred to as the main HEC reason (Fernando et al., 2011). Estimations have shown that farmers in HEC areas in Sri Lanka lose about 200 USD per year because of crop raiding elephants (Fernando et al., 2011), which is why elephants are called 'agricultural pests' (Bandara & Tisdell, 2002). Farmers are afraid to lose their livelihoods. According to Bandara & Tisdell (2002) farmers in elephant prone areas would be happy to remove elephants from their environment if they could. As the high number of deaths show, mostly men happen to be part of encounters, because they are taking care of the crops. Encounters in rural areas often happen at night and farmers are at risk when they walk, ride bikes or motorbikes in elephant prone areas. Especially drunk people are at risk because studies have shown that drunk men are less careful when they come across elephants (Fernando et al., 2011). On another note the impacts of road and train accidents caused by elephants can also lead to severe human injuries or deaths ("Performance Report Department of Wildlife Conservation", 2017).

Next to these obvious costs people suffer from indirect ones, too. They are afraid to find themselves in a situation where they might meet elephants. Instead families might stay at home and forbid their children to go to school (Fernando et al., 2011). Sometimes even their homes are not safe, because people's health is at risk when elephants attack houses. Moreover, sleep deprivation is common because farmers often feel the need to protect their crops during the night and do not sleep as a consequence. Also, being outside all day and night and not having access to clean sanitation facilities exposes them to infectious diseases. According to Sri Lankan law the killing of elephants is illegal and fees must be paid if people do not obey. (Fernando et al., 2011). This law creates a conflict for rural farmers because to maintain their economic status they need to protect their fields, but on the other hand they do not have the money they would need in case they killed an elephant in an encounter. These different factors show that people constantly are exposed to threats and therefore feel anxious and stressed. Thus, they also have to pay psychological costs in the form of their wellbeing (Shaffer et al., 2019).

4.1.5 Responses

The impacts of the human-elephant conflict are pressing on both sides. Implementing reasonable working solutions to such a problem is key to combating it. Table 2 shows that current responses can be categorized in conflict prevention strategies and conflict mitigation strategies.

Table 2. Responses to HEC in Sri Lanka (Own illustration based on Shaffer et al., 2019 & Fernando et al., 2011)

Conflict Prevention Strategies	Conflict Mitigation Strategies
<ul style="list-style-type: none">• Protected areas and ecological corridors, electric fences and trenches• Acoustic deterrents• Light-based deterrents• Agriculture based deterrents• Early detection and warning• Education	<ul style="list-style-type: none">• Domestication• Culling• Translocation• Compensation

Conflict prevention strategies

Current HEC solution strategies are plenty and diverse. The primary conflict prevention strategy is an exclusion. This solution approach has been used for many years and is still used today. Its goal is to create protected areas so that elephants can roam in these and not come into contact with people (Fernando et al. 2011). Today many scientists argue that fencing along ecological corridors is a better solution to prevent conflict situations. However, the remaining problem is development. New development projects are often not in line with conservation efforts which make it harder to implement fences around ecological boundaries.

Moreover, electric fences are costly and not easy to maintain. Often elephants break through them to enter the habitats they are used to roam in. Fences also prevent animals from having access to food sources and are additionally decreasing gene availability (Fernando et al., 2011).

In conflict situations farmers usually use their voices, firecrackers or making noises with, e.g. metal objects to scare elephants away from their crops. Furthermore, firecrackers are handed out for free by the DWC (Fernando et al., 2011). The implementation of better electric warning systems is costly (Fernando et al., 2011).

Another technique is to build tree huts. When sitting in these huts farmers can see when elephants are approaching and therefore can prepare to chase them away (Shaffer et al., 2019). Additionally, there are light-based deterrents, which are similar to the described acoustic methods. However, buying spotlights or flashlights costs money and farmers often cannot afford it. Thus, they light a fire to keep elephants away (Shaffer et al., 2019). However, research has shown that after elephants get used to it this method often loses its effectiveness. The most straightforward warning detection are farmers themselves. In neighboring areas, they inform each other in person or over the phone about approaching elephants (Shaffer et al., 2019).

Different agriculture-based deterrents are currently under research in the scientific community. The idea is to change the farmers' crops to non-palatable ones like chili, lemon trees, mint, ginger and others or to use these plants to create biological fences around their actual farmland (Shaffer et al., 2019). The effectiveness of most of these has not been tested extensively and is questionable because of its novelty (Shaffer et al., 2019). For example, in a project of the Sri Lanka Wildlife Conservation Society they use orange trees as elephant deterrents, but the results will only be available in a few years when the trees are big enough (SLWCS, 2019). Planting new crops or trees can be very costly for the farmers, but after some time these could be economically beneficial (Shaffer et al., 2019).

Most of all, HEC education and raising awareness is crucial in combating the conflict. NGO's and the DWC have awareness programs in schools or villages that are situated in HEC areas and already the National Policy from 2006 included the importance of a paradigm shift in people's minds (Fernando et al., 2011).

Conflict mitigation strategies

After an encounter between elephants and humans happens and crops are raided or houses destroyed, people want the government to act. In this situation other approaches are necessary. These mitigation strategies are especially important for people (Shaffer et al., 2019).

Even though critiqued heavily by animal rights activists, elephant domestication is one of the oldest mitigation strategies in Sri Lanka. More domesticated elephants mean less wild elephants and

therefore decrease the HEC. In Asia domesticated elephants are used to serve in temples, for festivities or to transport people (Shaffer et al., 2019). Captive elephants have a long tradition in Sri Lanka. Today it is forbidden to take elephants out of the wild without permission (Fernando et al., 2011). In 2011 about 112 elephants lived in captivity mainly in temples, zoos or one of the DWC's rehabilitation centers like the Pinnawela Elephant Orphanage or the Elephant Transit Home at Udawalawe (Fernando et al., 2011). However, this number is declining. It is questionable if these centers are good for elephant welfare, but some people still argue that it should be legal to catch wild elephants because the numbers are shrinking and they do not want to lose their cultural heritage. (Fernando et al., 2011).

In addition, culling elephants in Sri Lanka is illegal by law and therefore not seen to be a suitable solution (Fernando et al., 2011). However, sometimes especially aggressive bull elephants with extensive home ranges and crop raiding behavior are shot illegally (Fernando et al., 2011).

Another strategy that is used a lot is elephant drives. Problematic elephants are shooed to protected areas and national parks where they are supposed to stay (Shaffer et al., 2019). These drives can be very costly, can take much time and are inefficient. HEC could even get worse and fenced in elephants sometimes suffer higher mortality rates (Fernando, 2011). Another strategy where males in particular are captured is elephant translocations. During translocation, the elephant is narcotized and driven to a national park on big trucks. To translocate one elephant costs about 2500 USD. Depending on the number of animals this strategy can get quite expensive as well. Around 6% of the animals die during the translocation and in general this strategy has proven to have the ability to reinforce HEC as well (Fernando, 2011). Studies have shown that often elephant bulls break out of protected areas and therefore increase HEC even more (Shaffer et al., 2019).

The last strategy, one that is immensely important for affected people, is compensation. Compensation as a market-based strategy is vital to increase people's acceptance of wild elephants. As long as they get compensated for their losses it is easier to accept to have these animals around (Shaffer et al., 2019). The government offers compensation for different damages. For example, when a family member dies in an elephant encounter the DWC pays them approximately 900 USD. Compensation or insurances in general for crop losses are not highly effective so far (Fernando et al., 2019). It is not easy to apply and get the money from the government and even if it worked well this strategy only deals with the symptoms instead of the actual problem (Shaffer et al., 2019). This phenomenon will be further discussed in the next evaluation section.

Effectiveness of solution approaches

All these solution approaches are essential, but it is significant to point out that in general they are short term ones that sometimes only move the conflict from one to the next area. Such solutions are not sufficient for elephant conservation and HEC mitigation. The HEC is a complex problem which is why it need complex and diverse solution approaches. Natural and social science should both be included in an interdisciplinary approach to find the best solutions for both: elephants and people. (Shaffer et al., 2019)

One crucial step of the DPSIR-model, which enables to find out the quality of the responses, is to link them back to the part of the DPSIR they tackle. Most useful are responses that tackle the drivers or pressures, because they can challenge the root cause of a problem and thus eliminate it (Burkhard & Müller, 2008). Such links cannot be made in this model. Even though it is unrealistic to change drivers, because they are mostly very broad, it could be possible to find approaches to tackle the pressures.

In this case all responses tackle the impacts. Such responses can diminish the results of the much bigger HEC problem, but its root cause stays intact. This remaining root cause is one reason why HEC mitigation is not decreasing the yearly death rates of elephants and humans in Sri Lanka. Only one solution approach might be able to change the state of the environment: fences along ecological boundaries. These fences maintain the elephant's natural habitat in which they roam and thus help them live away from humans. On the other hand, any other way of implementing fences is not improving the state of the environment, because they usually increase habitat fragmentation (Fernando et al., 2011).

The result of the DPSIR is evident: The solution approaches currently in use are not the most effective ones to combat HEC. This information provided by the DPSIR-model leads to the point where I want to answer my central research question (RQ). To do so another approach is needed that builds on the information generated by the DPSIR. The next section will use the discourse lens to find out *why the human-elephant conflict in Sri-Lanka is currently managed the way it is?*

4.2 Villain or Scapegoat: The Department of Wildlife Conservation

In the previous sections I focused on the implications and results of the human-elephant conflict to generate a mutual understanding of the conflict. The drivers and pressures analyzed in the DPSIR have shown how unexpected and broad reasons for the development of HEC are. However, in this part of

the analysis I will dive deeper into the response section of the DPSIR and analyze it from a different view. Here, the DPSIR approach does not give a deep enough understanding of why these mitigation and prevention responses are the ones implemented. Thus, it requires a different lens to find out.

In Sri Lanka over ¾ of land belongs to and is managed by the government (Mapa et al., 2002). The Department of Wildlife Conservation (DWC) is the one central government authority working for the protection of Sri Lanka's flora and fauna over all land and sea areas. Moreover, the DWC holds all the power to manage the existing protected areas and national parks as well as to establish new ones ("Performance Report Department of Wildlife Conservation", 2017). The DWC thus holds all the legal power in dealing with Sri Lankan wildlife as well. When it comes to HEC mitigation it can take all decisions alone and use its resources the way it wants to (Wijesinghe, 2018). This power makes it responsible for the implemented strategies shown in the response section of the DPSIR. The DPSIR shows that the implemented responses are not tackling the root causes of HEC and are not reducing it in general. As a result, the public opinion about the DWC in Sri Lanka got worse over the last years, as stated in the Performance report of the Auditor General. People claim the DWC is not doing its job well enough because otherwise the number of deaths related to the HEC would decrease, but instead they are increasing (Wijesinghe, 2018). In the dominant discourse people perceive the DWC to be a villain. I question if this is true or if the agency is being treated as a scapegoat.

In literature scapegoating is described as the "act of blaming and often punishing a person or group for a negative outcome that is due, at least in large part, to other causes" (Rothschild, Landau, Sullivan & Keefer, 2012). Politicians are an easy target because they work in public and are therefore easy to criticize.

Schmitt (2019) created the concept of "scapegoat ecology" or more precisely "scapegoating tactics" in environmental and ecologically-motivated discourse. In her paper she focuses on individual scapegoats, but her ideas can easily be transferred to a scapegoat agency like the DWC is in this particular case. Accordingly, scapegoat ecology refers to a group of people interested in the environment who focus their attention on one agency, which they solely make responsible for harming the environment. Hence, the public goes against a common villain, which can be risky because it focuses on a smaller problem rather than on the big picture and better HEC solution strategies. Scapegoating is very common in the environmental and ecological discourse because it makes individuals deal with their concerns about the environment (Schmitt, 2019). However, it is not fair to put all the pressure on only one agency if it is not entirely responsible for the adverse outcomes.

Of course it is easy for the public to put the burden of failure only on the DWC, as they are the ones officially responsible for solving the HEC in Sri Lanka. However, I think it is important to look behind the curtain and try to understand why the DWC is implementing particular solutions and why they act the way they do in general. This understanding is especially important when trying to generate a complete picture of the problem and to look at the problem from different perspectives. Therefore, I will give some examples in the next sections showing that the DWC in reality should not be made the scapegoat for HEC failure.

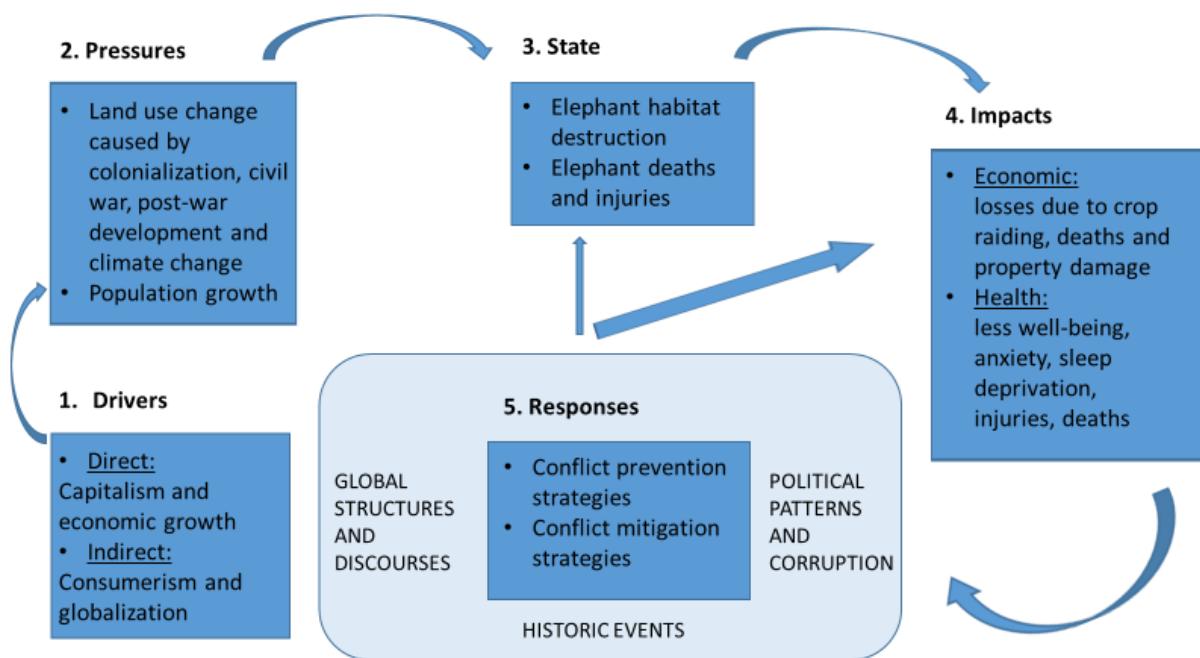


Figure 6. The DPSIR-model showing the human-elephant conflict in Sri Lanka with the incorporated underlying discourses in the responses section (Own illustration, 2019)

Before moving on to the next sections I want to introduce my expanded DPSIR-model, which now includes the underlying reasons for the implementation of the responses explained before. Each of these findings will be explained in detail following the last part of this analysis. Figure 6 shows a complete model of the research conducted for this thesis and includes all my main findings.

4.2.1 Global Trends: The global discourse on biodiversity conservation

Underlying reasons for the current response strategies as shown in Figure 4 are global structures and discourses. The following section will focus on a particular global trend seen in biodiversity conservation.

Suggestions for new conservation areas

The first national policy on conservation and management of wild elephants in Sri Lanka was created in 2006. The minister of Wildlife and Sustainable Development created a committee to work on a new and upgraded elephant management policy, after the original one has not been implemented yet, apart from a few actions. The numbers of deaths show that HEC is getting worse instead of better, which is why the old policy got revised. After some month of work, by the middle of 2016 the committee created a new draft National Policy on Elephant Conservation and Management, which is based on the following premises (Sriyananda, 2017):

"The occurrence of people and elephants in the same landscape, sharing resources through temporal partition or physical separation at a fine geographic scale. It requires managing elephants through understanding their needs, increasing the tolerance of people, adopting non-confrontational methods of crop protection and providing economic benefits from elephant conservation to communities that co-exist with elephants."

According to this definition they created action plans for each of the areas identified above. Currently the public is allowed to comment on the new draft. This draft includes five policy statements made by the DWC explaining how the HEC should be managed in the future ("National Policy on conservation and management of wild elephants in Sri Lanka", 2019).

The fifth statement aims to promote scientific research as a basis for conservation management and decision making. The DWC wants to set research priorities and try to assist researchers. Thus, they want to take their management decisions according to the outcomes of scientific studies and research.

One positive example shows the first policy statement, which generally aims to assure the food supply (sustenance) of elephants in the wild. According to this goal one strategy would be to establish new elephant conservation areas and managed elephant reserves along ecological boundaries. Here, they acknowledge the importance of scientific knowledge in this case, because attention is paid to elephants biological migratory areas and corridors. Moreover, the realization that these new conservation areas need to be at least 50 square meters is also important because the average Asian wild elephant ranges around 50km a day ("National Policy on conservation and management of wild elephants in Sri Lanka", 2019).

However, some critical changes are missing and suggestions are not aligning with research. Fencing is a highly discussed topic within the country. An approved cabinet paper from July 2018 enables the government to build an additionally 2651km of electric fencing, which will create a total amount of

7000km of electric fencing within the country (The Island, 2018). According to Wildlife and Nature Protection Society of Sri Lanka (WNPS), the existing fences have been placed in a way local politicians wanted them to be placed, no science included, which is one reason why HEC is not declining. The new proposed protected areas along ecological boundaries are needed to combat HEC. However, the old fences will not be changed accordingly (The Island, 2018). Ravi Corea, the president of the Sri Lanka Wildlife Conservation Society (SLWCS), joins their opinion and states that the current fence systems does not make sense because it is built along the borders of the lands of the DWC and the Forest Department and thus, elephants are found on both sides. Devaka Weerakoon, a zoology professor at the University of Colombo stated that "We are only scientists. We can only do research and come up with recommendations, but the right to implement them lies with government agencies." (DW, 2012).

After the establishment of these new conservation areas that are supposed to be built around where the elephants naturally are and where they wander, all other areas should be cleared from elephants ("National Policy on conservation and management of wild elephants in Sri Lanka", 2019). Fencing them in is expensive and as research has shown elephants still do escape from currently fenced in national parks and therefore contribute to the HEC (Fernando et al., 2011). It sounds like this works very well on paper and would be an easy solution, but the reality already proved that this issue is highly complex and that it cannot be solved by one easy measure.

In the second policy statement, they additionally argue that "Translocation is the possible answer" when it comes to aggressive and crop-raiding elephants. As proven by scientists translocating elephants is not a sustainable solution, because they often break free from protected areas and become even more aggressive (Fernando et al., 2011). The WNPS argues that elephant drives have been a failure for over 75 years, but the DWC is not convinced by this long-time failure (WNPS, 2018).

In conclusion the new management policy includes some essential ideas. Promoting science and helping people to accept and adapt to elephant prone areas is very important and education is key as in many other things. However, on the one hand they are talking about new conservation areas along with natural migratory patterns of elephant-rich areas and on the other hand they still favor translocating elephants that are not able to adapt to these new conservation areas, even though science proved this strategy to be ineffective. Fenced in areas will probably remain the number one solution to combat HEC in the future, even though different research showed how this is not the ultimate and perfect sustainable solution to mitigate HEC. I argue that it is vital to understand the underlying discourse that makes the DWC choose fences as one primary strategy. The movement behind this is called Back to the Barriers.

Back to the Barriers movement

Back in the 20th century one mode of conservation was especially present globally: The national park/protected areas discourse (Sullivan, 2006). The idea originated in the US, which was the first country to create protected and managed nature reserves. Besides them, the Brits also started to establish completely managed nature areas (Hutton, Adams & Murombedzi, 2005). The success story of protected areas being able to protect the environment spread around and a new narrative was created. This narrative is often mentioned to be a 'fortress conservation' or 'fences and fines' approach. This approach excludes all human activities from national parks so that biodiversity can truly be conserved (Hutton, Adams & Murombedzi, 2005).

However, in the last years of the 20th century the idea got challenged by a new evolving community conservation narrative, which includes people into conservation efforts (Sullivan, 2006). Local people had suffered due to the exclusion from certain areas, but the main reason for the new arising prominence of this approach was the importance of people's opinions when it comes to politics (Hutton, Adams & Murombedzi, 2005). Agencies thus wanted people to be on their sides. Besides, scientists published research during these years which showed that conservation limited to protected areas is not doing enough. The conservation landscape therefore changed from being against people towards working with and for people (Hutton, Adams & Murombedzi, 2005).

Before the new millennium, the situation did change again due to new scientific publications arguing for the importance of protected areas and national parks published by influential environmental researchers. Again, mostly researchers from the US advocated for going back to the fortress conservation approach (Hutton, Adams & Murombedzi, 2005). This new arising narrative changed the way conservation work was supposed to be done all over again. This global discourse is often referred to as the 'back to the barriers' movement. In most areas national parks belong to the state or some other kind of authority. These authorities are the ones who take decisions and manage conservation work (Hutton, Adams & Murombedzi, 2005).

The original idea behind the back to the barriers approach partly can be traced back to the economic growth paradigm that is part of the drivers shown in the DPSIR-model: 'The environment' moves from a local issue into the global scale of modernization, governmentality, decision making and desire (Sullivan, 2006). In a world where money accumulation is fundamental nature is seen as an object and used to earn more money. The term neoliberal nature stands for the politics of changing and governing nature under the neoliberal paradigm. The idea behind it is to sell nature in order to save it (Büscher et al., 2012). Earth's biodiversity is transforming into a business. Nature is often seen as an object

instead of a vast number of different living beings and plants, which makes it easy to commodify. Wildlife conservation is especially important because it is easily commodified. Safari tours and eco-tourism in general generate much money for national parks with lots of animals, e.g. elephants. Seeing these animals is one goal many western people have, as they do not exist in their home countries (Sullivan, 2006). Biodiversity hotspots are often found in low-income countries, but the biodiversity including wildlife is mostly wanted by people from high-income countries like researchers, conservation specialists and tourism (Sullivan, 2006). Even though the government owns the national parks in Sri Lanka, the drive of earning money for the country and further development through tourism is one that should not be underestimated in this case.

It is important to highlight that biodiversity conservation is not an easy task. The current 'back to the barriers' discourse is supported by a wide range of conservation scientists as well as prestigious international NGO's, which can be seen as one compelling reason for the DWC to act accordingly (Sullivan, 2006). Moreover, this discourse enables Sri Lanka to increase its development, with the money earned in national parks. New developments might disrupt more elephant habitats and thus might increase HEC in the end. However, the number of protected areas is currently growing worldwide every year. As long as the global conservation community sees protected areas as one of the best solutions and as long as these areas generate much-wanted money the DWC will probably be in favor of fencing in areas to solve HEC and protect the elephant population. Even in case the DWC would want to change its main conservation strategy it might not be able to. Some reasons for this are rooted in political patterns and political pressure. These patterns and pressures will be analyzed in the following sections.

4.2.2 Local history, political patterns and corruption

Local history already played a vital role in pressures section of the DPSIR-model. History is also essential for the establishment of political patterns in the country. After hundreds of years of oppression by colonial rulers, the country became independent in 1948 (Hewa, 1994). A few decades later a long civil war started that only ended ten years ago (Walton, 2008). These historical events had huge impacts on the nation. For a long time, people were not able to develop together as a nation and into a brighter future. These events all have an impact on people as well as the government. The government on the one hand needs time to develop into one that is transparent and 100% democratic ("People's Report", 2012). Currently the work of some government agencies is still very independent from each other,

which partly led to the increase of the HEC. The following example will demonstrate this by returning to the fence system problem (Perera-Mubarak, 2012).

The DWC and the Forest Department

The current global biodiversity conservation discourse is not the only way to explain the current fencing situation. Old political structures are just as important. Before establishing the DWC in 1950, its tasks originally were part of the work of the Forest Department. The Forest Department until today is a very influential agency because they manage nearly all forest covered areas in the country (Fernando, 2015). Both agencies together manage circa 40% of natural habitat and 55% of forest areas. Since the separation of tasks wildlife conservation became a harder mission because the DWC only has decision power over its own managed areas, which are mostly natural habitat (Fernando, 2015). According to Fernando (2015), these two agencies operate very independently and much more dialogue and collaboration is needed to improve HEC mitigation. This relationship can at least partly explain why the already existing fences are placed in not the most effective way and thus why elephants can be found on both sides of them. The DWC is only allowed to build fences on the natural habitats that they manage and therefore cannot build fences in forest areas, where elephants as an edge species partially roam as well (Fernando, 2015). Hence, this situation reflects the poor administration within the government. It might change if the new national policy on conservation and management of wild elephants in Sri Lanka gets adapted and fences along ecological boundaries get implemented. However, according to WNPS the policy "has been on a shelf in the relevant ministry" for a long time already (WNPS, 2018).

I think I can argue here that the DWC was not able to do their job correctly from the beginning and therefore they are not solely responsible for the placement of already existing fences. Nevertheless, this is not the only example to show the struggles of the DWC. The following DWC related example shows a particular case of corruption in Sri Lanka.

Corruption and the case of Dr. Pilapitiya

Up until today the post-war development and development of infrastructure and businesses are very high on Sri Lanka's governments' priority list. The result is conflict within the government. Many agencies and powerful people care about economic growth, while others like the DWC want to focus on solving the HEC (Perera-Mubarak, 2012). Thus, much pressure from other government agencies

constantly lies on the DWC which makes it harder for them to do the job they are enacted to do. This example shows that even today corruption is a big problem in the political system in Sri Lanka locally and nationwide (Perera-Mubarak, 2012). It is vital to make sure that people who benefited from the conflict want to be part of peacebuilding the future. Due to corruptive patterns in Sri Lankan politics, the topic moreover became a big issue in academic research lately as well. To build a stable and democratic government corruption must end (Lindberg & Orjuela, 2011). In the next section one example is highlighted, which shows how the DWC is affected by corruption.

In 2016 Dr. Pilapitiya became the Director General of the DWC. According to many voices from local Newspapers and NGO's such as the SLWCS he was best suited for this job, primarily because of his academic background (Kadirkamar, 2016). Before he took the job was working as the Lead Environmental Specialist for the World Bank for 23 years (Hettiarachchi, 2016). In an interview with the Sunday Times he said that he "will ensure the protection and conservation of wildlife resources, so that Sri Lanka's natural heritage will be a lasting legacy for future generations" and that he "would rather resign than be instrumental in causing a negative impact on wildlife conservation." (Hettiarachchi, 2016).

As a result he resigned soon after he started working for the DWC. He knew that it would not be easy because the DWC has to deal with high political pressure and accusations of not doing their job right. He resigned a few months after he started the job because he was unable to fulfill his duty due to political pressure (British Asia News, 2018). According to a DWC official who wanted to remain unknown, the Daily Mirror reported that Dr. Pilapitiya was branded as stubborn, as he was not willing to be part of any illegal actions taken by politicians or higher authorities (Fonseka, 2016b). The public did hope for more. In Kardigarmars (2016) article she states that if people with this amount of knowledge get enacted, they should have the ability to do their job right, which he was not able to do. A change is necessary. It is essential to act according to the laws and let people do their jobs.

This attitude shows that the DWC's employees in general want to do the jobs they got appointed. Another sign for this is the fact that the employees officially protested outside of the Departments office against the resignation of Dr. Sumith Pilapitiya and asking to stop the substantial political interference within the department (Fonseka, 2016b). As Director General he wanted to address the HEC from a scientific way, which did not work because many technical decisions are made by politicians in Sri Lanka which he thinks is wrong (Fonseka, 2016a).

After his resignation he openly asked stakeholders in an article published by the Sunday Times to have the DWC's back, when it comes to implementing the new elephant management policy, instead of

pointing their fingers at them and telling them how to do their jobs (Sunday Times, 2017). This policy would change many things for politicians and people from different fields, which is why they face immense political pressure. He also pointed out that even though the DWC is supposed to take care of the elephants, they are expected to look after human interests mainly. However, human interests are supposed to be covered by one of the many other government agencies. It is therefore problematic that the conflict is looked at from mainly one side only, which leaves the critical part of the actual elephant conservation behind (Sunday Times, 2017). According to Pilapitiya the DWC employees are able and willing to do great things for the environment, but due to politicization the DWC, as well as many other government agencies, are not able to perform their duties (Fonseka, 2016a).

Thus, the narrative that the HEC is getting worse because of the failure of the DWC is not 100 percent true. They are not the villain like the current prominent discourse in Sri Lanka suggest, rather they are made the scapegoat of this utter misery. Of course they are the agency who officially is responsible for HEC mitigation, but behind the scenes they have to fight political pressure, corruption resulting from the country's history and global discourses and trends, as well as many other drawbacks that hinder them from doing their job. It is important to understand and be open to these different perspectives to know where to start looking for solutions. Accordingly, the political system needs to be looked at when it comes to successfully combating HEC in Sri Lanka. I argue that the tense political situation needs to be tackled and improved first to enable the establishment of sustainable HEC mitigation solutions in the first place.

5 Discussion & Conclusion

The last part will give an overview of the limitations of this paper, the important conclusions that can be made and some suggestions for further research.

5.1 Limitations

The main limitation is the language barrier. I was only able to take literature, government documents and newspaper articles written in English into consideration. Moreover, I tried to organize some interviews with people from the DWC and an NGO, but I did not get any answers to my requests. Maybe these interviews could have strengthened the outcome of this thesis. One reason why I did not get answers might be because I am a foreigner working on a sensitive Sri Lankan topic.

Furthermore, the different schools of thought I based my theory on might not be favored by everyone. Different researchers may have different opinions about it. While some might think it is an innovative combination, others might argue that this approach does not work.

5.2 Conclusion

In this thesis, I tried to show a different way to approach the human-elephant conflict management in Sri Lanka. Not everything in this world is like an open book. Sometimes we have to dig deeper to understand what is going on from different perspectives. Nothing is only black and white. Everything is colorful with different shades. This visualization is something this paper brings to the surface.

The HEC in Sri Lanka goes a long way back and many motivated scientists and researchers are currently working on finding possible solutions. To solve it, it is essential to perceive the system as a whole and to pay attention to different aspects that might play a role in finding and implementing good mitigation practices. I focused on one aspect of the system that otherwise is often overlooked: decision making in the political setting surrounding HEC.

Of course, it is vital to work on finding better HEC mitigation or prevention strategies that could work well for elephants and humans, but as long as they are not being implemented, they are just theoretical. Worldwide many different solution approaches are existing and studied well, but in Sri Lanka it seems like the large scale HEC work, managed by the Department of Wildlife Conservation, is stagnating.

All the decision power belongs to the DWC. That is why so many people see them as a villain who is unwilling to do proper work. However, this thesis shows that this might not be the case exactly. In this whole scenario the DWC is more of a scapegoat. The DPSIR-model shows the underlying reasons of how the HEC started to evolve into the problem it is today. This new understanding is the basis for the second part. In this second part Foucault's discourse ideas helped me discover three different reasons why the DWC acts the way it does:

- 1) The DWC's work is influenced by global structures and discourses, which make them act accordingly.
- 2) The DWC's work is influenced by the diverse history of the country, which is still present today.
- 3) The DWC's work is influenced by the political structures and power distribution in general and by the corruptive patterns of the political system of the country.

Without addressing these problems first, HEC mitigation strategies will probably never live up to their full potential. Some strategies might have the ability to combat HEC, but if they are not implemented, they are not useful. A change is necessary. Instead of making the DWC the scapegoat, solutions need to be found that enable the DWC to do their work. Focusing on changing this political situation can lead to much better and more sustainable HEC mitigation in the long term. A stable democratic and transparent government with more democracy and less corruption is needed. Moreover, the different political agencies should work together more closely and improve their collaboration and communication.

Thus, I argue that the perspectives this paper generates are highly crucial for all people involved in HEC mitigation in the country and elsewhere because a general lesson can be learned here. In every HEC country the surrounding circumstances differ. However, this thesis shows the importance of looking for reasons in areas that might not directly seem HEC related in the first place. If HEC mitigation fails it is reasonable to look for a villain, but usually there is not only one agency responsible for the failure but somewhat rather different underlying reasons. I argue it is important to be open and think outside the box. If the insights of this thesis change the way the public and practitioners view the conflict in Sri Lanka, with this additional support it might get more manageable for the DWC to be heard and therefore to enact more effective policies in the future.

This paper moreover shows the importance of sustainability science in human-wildlife conflicts and related conservation work. Often researchers focus on their field solely, but for the best possible outcome interdisciplinary work often is needed. As a sustainability scientist I can create bridges

between different fields and opinions and show the importance of communication and dialogue as shown in this thesis.

5.3 Further research

This paper opens up the field of human-wildlife conflicts for sustainability science. In the case of HEC mitigation in Sri Lanka further research is needed for each of the three main conclusions from the previous section. New research should especially focus on helping the DWC do the job they are hired to do and to enable better HEC mitigation in the future. Maybe this paper can be an incentive for researchers from different backgrounds like social science and ecology to work together more closely and create new research together. As long as the HEC mitigation in Sri Lanka does not become more successful further research is needed. Even though right now the HEC is getting worse, after all the research I have done for this thesis and after seeing the engagement of many people and agencies, I am positive that the human-elephant conflict in Sri Lanka will get better soon.

On another note, the combination of the DPSIR approach with Foucault's ideas about discourse is new and might be beneficial for other sustainability science research. Therefore, further investigation about how to more effectively combine these approaches is needed. This thesis was the first try to combine these two, but more work is necessary to validate this theoretical approach.

6 References

- Ambirajan, S. (1976). Malthusian Population Theory and Indian Famine Policy in the Nineteenth Century. *Population Studies*, 30(1), 5. doi: 10.2307/2173660
- Arnold, R. & Wade, J. (2015). A Definition of Systems Thinking: A Systems Approach. *Procedia Computer Science*, 44, 669-678. doi: 10.1016/j.procs.2015.03.050
- Bandara, R. & Tisdell,C. (2002). Asian Elephants as Agricultural Pests: Economics of Control and Compensation in Sri Lanka, 42 Nat. Resources J. 491
- British Asia News (2018). Death by elephants because of Human negligence. Retrieved from <https://www.britishasianews.com/printArticles.aspx?newsID=4736>
- Burkhard B. & Müller F. (2008). Driver– Pressure–State–Impact–Response. *Encyclopedia of Ecology* *Ecological Indicators*. Elsevier. 2: 967-970
- Büscher, B., Sullivan, S., Neves, K., Igoe, J. & Brockington, D. (2012). Towards a Synthesized Critique of Neoliberal Biodiversity Conservation, *Capitalism Nature Socialism*, 23:2, 4-30
- Choudhury, A., Lahiri Choudhury, D.K., Desai, A., Duckworth, J.W., Easa, P.S., Johnsingh, A.J.T., Fernando, P., Hedges, S., Gunawardena, M., Kurt, F., Karanth, U., Lister, A., Menon, V., Riddle, H., Rübel, A. & Wikramanayake, E. (2008). *Elephas maximus*. *The IUCN Red List of Threatened Species* 2008: e.T7140A12828813. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T7140A12828813.en>
- Clark, W. & Dickson, N. (2003). Sustainability science: The emerging research program. *Proceedings Of The National Academy Of Sciences*, 100(14), 8059-8061. doi: 10.1073/pnas.1231333100
- Davis, B. (2018). Globalization/Coloniality: A Decolonial Definition and Diagnosis. *TRANSMODERNITY: Journal of Peripheral Cultural Production of the Luso-Hispanic World*, 8(4). Retrieved from <https://escholarship.org/uc/item/3xt7p9n6>
- Devotta, N. (2005). Civil Society and Non-Governmental Organizations in Sri Lanka: Peacemakers or Parasites?. *Civil Wars*, 7(2), 171-182. doi: 10.1080/13698280500422926
- Dharmaratne, M. P. J., Magedaragamage P. C. (2014). Human-elephant conflict and solutions to it in Sri-Lanka. *Sciscitator*. 2014/ Vol 01.

Dickman, A. (2010). Complexities of conflict: the importance of considering social factors for effectively resolving human-wildlife conflict. *Animal Conservation*, 13(5), 458-466. doi: 10.1111/j.1469-1795.2010.00368.x

DW (2012). Sri Lanka fences in humans to protect its elephants. Retrieved from
<https://www.dw.com/en/sri-lanka-fences-in-humans-to-protect-its-elephants/a-15664908>

Fernando, P. (2015). Managing elephants in Sri Lanka: where we are and where we need to be. *Ceylon Journal Of Science (Biological Sciences)*, 44(1), 1. doi: 10.4038/cjsbs.v44i1.7336

Fernando, P. (1999). Elephants in Sri Lanka: past present and future. *Loris*, 22(2). Retrieved from
http://www.ccrsl.org/userobjects/2602_683_Fernando-00-ElephantsSriLanka.pdf

Fernando, P., Jayewardene, J., Prasad, T., Hendavitharana, W. & Pastorini, J. (2011). Current Status of Asian Elephants in Sri Lanka. *Gajah*, 35 (2011) 93-103.

Fonseka, P. (2016a). I won't work for a government again Dr. Sumith Pilapitiya. Retrieved from
<http://www.dailymirror.lk/113295/I-won-t-work-for-a-government-again-Dr-Sumith-Pilapitiya>

Fonseka, P. (2016b). Why did Wild Life Department chief resign?. Retrieved from
<http://www.dailymirror.lk/110716/Why-did-Wild-Life-Department-chief-resign->

Foucault, M. (1980). *Power/knowledge. a selected interviews and other writings 1972-77*. New York: Pantheon Books.

Foucault, M.& Sheridan, A. (1972). *The archaeology of knowledge*. New York: Pantheon Books.

Garibaldi, A. & Turner, N. (2004). Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology And Society*, 9(3). doi: 10.5751/es-00669-090301

Graham, L. (2005). Discourse analysis and the critical use of Foucault. Sydney: Paper presented at Australian Association for Research in Education.

Green B. N., Johnson C. D., Adams A. (2006). Writing narrative literature reviews for peer-reviewed journals: secrets of the trade. *Journal of Chiropractic Medicine*. 5(3):101–117.

Green Saraisky, N. (2015). Analyzing Public Discourse: Using Media Content Analysis to Understand the Policy Process. *Current Issues in Comparative Education* 18(1), 26-41. Teachers College, Columbia University.

Gunawardana, H. (2016). 'Hakka Patas': The killer trap. Retrieved from
<http://www.dailymirror.lk/114549/-Hakka-Patas-The-killer-trap>

Hettiarachchi, K. (2016). A man of the wilds takes over the reins. Retrieved from
http://www.sundaytimes.lk/160403/plus/a-man-of-the-wilds-takes-over-the-reins-188441.html?fbclid=IwAR3_8wvVMIU4Bhzfc6xhf2-anQWEYTQ6SeMslh7Mtz-FkzHuIKw0JnpdogQ

Hewa, S. (1994). The hookworm epidemic on the plantations in colonial Sri Lanka. *Medical History*, 38(01), 73-90. doi: 10.1017/s0025727300056052

Hutton, J., Adams, W. & Murombedzi, C. (2005). Back to the Barriers? Changing Narratives in Biodiversity Conservation, *Forum for Development Studies*, 32:2, 341-370, DOI: 10.1080/08039410.2005.9666319

Jerneck, A., Olsson, L., Ness, B., Anderberg, S., Baier, M. & Clark, E. et al. (2010). Structuring sustainability science. *Sustainability Science*, 6(1), 69-82. doi: 10.1007/s11625-010-0117-x

Kadrigamar, A. (2016). When The Best Man For The Job Is Not Allowed To Do His Job. Retrieved from <https://www.colombotelegraph.com/index.php/when-the-best-man-for-the-job-is-not-allowed-to-do-his-job/>

Kates, R. (2011). What kind of a science is sustainability science?. *Proceedings Of The National Academy Of Sciences*, 108(49), 19449-19450. doi: 10.1073/pnas.1116097108

Kates, R. (2001). ENVIRONMENT AND DEVELOPMENT: Sustainability Science. *Science*, 292(5517), 641-642. doi: 10.1126/science.1059386

Knoema (2019). The population of Sri Lanka. Retrieved from
<https://knoema.com/search?query=Sri%20lanka%20population%20growth>

Krippendorff, K. (1989). Content analysis. In Barnouw, E., Gerbner, G., Schramm, W., Worth, T.L., & Gross, L. (eds). International encyclopedia of communication, 1, 403407. New York: Oxford University Press. Retrieved from http://repository.upenn.edu/asc_papers/226

- Lasswell, H. (1948). The structure of and function of communication in society. In Bryson, L., (ed.) *The Communication of Ideas*. New York: Institute for Religious and Social Studies.
- Lindberg, L. & Orjuela, C. (2011). Corruption and conflict: connections and consequences in war-torn Sri Lanka. *Conflict, Security & Development*. 11:02, 205-233, DOI: 10.1080/14678802.2011.572455
- Mapa, R., Kumaragamagme, D. & Dassanayake, A. (2002). Land use in Sri Lanka: past, present and the future. Retrieved from https://www.researchgate.net/publication/309803692_Land_use_in_Sri_Lanka_past_present_and_the_future
- McShea, W., Davies, S. & Bhumpakphan, N. (2011). The Ecology and Conservation of Seasonally Dry Forests in Asia (pp. 151-163). Smithsonian Institution Scholarly Press.
- Meadows, D. (2008). *Thinking in Systems: A Primer*. White River Junction, Chelsea Green.
- Migone, A. (2007). Hedonistic Consumerism: Patterns of Consumption in Contemporary Capitalism. *Review Of Radical Political Economics*, 39(2), 173-200. doi: 10.1177/0486613407302482
- National Policy on conservation and management of wild elephants in Sri Lanka (2019). Retrieved from http://www.dwc.gov.lk/?page_id=174
- Ness, B., Anderberg, S. & Olsson, L. (2010). Structuring problems in sustainability science: The multi-level DPSIR framework. *Geoforum*, 41(3), 479-488. doi: 10.1016/j.geoforum.2009.12.005
- Newbold, T., Hudson, L., Arnell, A., Contu, S., De Palma, A. & Ferrier, S. et al. (2016). Has land use pushed terrestrial biodiversity beyond the planetary boundary? A global assessment. *Science*, 353(6296), 288-291. doi: 10.1126/science.aaf2201
- Nyhus, P. (2016). Human–Wildlife Conflict and Coexistence. *Annual Review Of Environment And Resources*, 41(1), 143-171. doi: 10.1146/annurev-environ-110615-085634
- Ostrom, E. (2009). A General Framework for Analyzing Sustainability of Social-Ecological Systems. *Science*, 325(5939), 419-422. doi: 10.1126/science.1172133
- Paré G., Trudel M.-C., Jaana M. & Kitsiou S. (2015). Synthesizing information systems knowledge: A typology of literature reviews. *Information & Management*. 52(2):183–199.

People's Report (2012). Sustainable Development in Sri Lanka: Empowered Communities Make Greener Tomorrows, RIO+20, Sri Lankan Working Group on Rip+20.

Perera-Mubarak, K. (2012). Reading 'stories' of corruption: Practices and perceptions of everyday corruption in post-tsunami Sri Lanka. *Political Geography*, 31(6), 368-378. doi: 10.1016/j.polgeo.2012.05.007

Performance Report Department of Wildlife Conservation (2017). Retrieved from <https://www.parliament.lk/uploads/documents/paperspresented/performance-report-department-of-wildlife-conservation-2017.pdf>

Performance Report of Department of Wildlife Conservation (2016). Retrieved from <https://www.parliament.lk/uploads/documents/paperspresented/performance-report-department-of-wildlife-conservation-2016.pdf>

Richardson, T. (1996). Foucauldian discourse: Power and truth in Urban and regional policy making. *European Planning Studies*, 4(3), 279-292. doi: 10.1080/09654319608720346

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. & Lambin, E. et al. (2009). Planetary Boundaries: Exploring the Safe Operating Space for Humanity. *Ecology And Society*, 14(2). doi: 10.5751/es-03180-140232

Rothschild, Z., Landau, M., Sullivan, D. & Keefer, L. (2012). A dual-motive model of scapegoating: Displacing blame to reduce guilt or increase control. *Journal Of Personality And Social Psychology*, 102(6), 1148-1163. doi: 10.1037/a0027413

Santiapillai, C. (1994). Elephant mortality in Sri Lanka. GAJAH No. 12. Retrieved from <https://www.asesg.org/PDFfiles/Gajah%20scanned%20BW/Gajah%2012%20%20June%201994.pdf>

Santiapillai, C., Wijeyamohan, S., Bandara, G., Athurupana, R., Dissanayake, N. & Read, B. (2010). An assessment of the human-elephant conflict in Sri Lanka. *Ceylon Journal Of Science (Biological Sciences)*, 39(1), 21. doi: 10.4038/cjsbs.v39i1.2350

Sarmin, N., Mohd Hasmadi, I., Pakhriazad, H. & Khairil, W. (2016). The DPSIR framework for causes analysis of mangrove deforestation in Johor, Malaysia. *Environmental Nanotechnology, Monitoring & Management*, 6, 214-218. doi: 10.1016/j.enmm.2016.11.002

Schmitt, C. (2019). Scapegoat Ecology: Blame, Exoneration, and an Emergent Genre in Environmentalist Discourse, *Environmental Communication*, 13:2, 152-164, DOI: 10.1080/17524032.2018.1500386

Shaffer LJ, Khadka KK, Van Den Hoek J and Naithani KJ (2019) Human-Elephant Conflict: A Review of Current Management Strategies and Future Directions. *Front. Ecol. Evol.* 6:235. doi: 10.3389/fevo.2018.00235

Sklair, L. (1994). *Capitalism and Development*. Routledge.

SLWCS (2019). Project Orange Elephant. Retrieved from <https://www.slwcs.org/project-orange-elephant>

Song, X., & Frostell, B. (2012). The DPSIR Framework and a Pressure-Oriented Water Quality Monitoring Approach to Ecological River Restoration. *Water*, 4(3), 670-682. doi: 10.3390/w4030670

Spangenberg, J. (2011). Sustainability science: a review, an analysis and some empirical lessons. *Environmental Conservation*, 38(03), 275-287. doi: 10.1017/s0376892911000270

Sriyananda, S. (2017). Retrieved from <http://www.ft.lk/opinion/Without-a-policy--conservation-is-blind/14-645061>

Steffen, W., Richardson, K., Rockstrom, J., Cornell, S., Fetzer, I. & Bennett, E. et al. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1259855-1259855. doi: 10.1126/science.1259855

Sullivan, S. (2006). Elephant in the Room? Problematising 'New' (Neoliberal) Biodiversity Conservation, *Forum for Development Studies*, 33:1, 105-135, DOI: 10.1080/08039410.2006.9666337

Sunday Times (2017). Support DWC to withstand political pressure. Retrieved from <http://www.sundaytimes.lk/170129/news/support-dwc-to-withstand-political-pressure-dr-pilapitiya-226527.html>

The Island (2018). Conservation or Murder – Cabinet approves the purchase of 2,567 AK47s for Wildlife Dept. Retrieved from http://www.island.lk/index.php?page_cat=article-details&page=article-details&code_title=190578

- The World Bank (2019). Life expectancy at birth. Retrieved from
<https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=LK>
- Waitt, G. R. (2005). Doing Discourse Analysis. In I. Hay (Eds.), *Qualitative Research Methods in Human Geography* (pp. 163-191). U.K.: Oxford University Press.
- Walton, O. (2008). Conflict, peacebuilding and NGO legitimacy: National NGOs in Sri Lanka , Conflict, Security & Development, 8:1, 133-167, DOI: 10.1080/14678800801977146
- Wetherall, M. (2001). Debates in Discourse Research. In M. Wetherall, S. Taylor & S. J. Yates (Eds.), *Discourse Theory and Practice: A Reader* (pp. 380-399). London: Sage Publications.
- Wijesinghe, G. (2018). Performance Report of the Department of Wildlife Conservation. Retrieved from http://www.auditorgeneral.gov.lk/web/images/special_report/wildlife/Wildlife-Dep.full-reportperformance-E.pdf
- Williams, J. (2014). *Understanding poststructuralism*. Abingdon, Oxon: Routledge.
- WNPS (2018). This land belongs to both people and elephants. Retrieved from
<https://wpssl.org/activities/wnps-news/item/135-this-land-belongs-to-both-people-and-elephants>
- Woroniecki, S. (2019). Enabling Environments? Examining Social Co-Benefits of Ecosystem-Based Adaptation to Climate Change in Sri Lanka. *Sustainability*, 11(3), 772. doi: 10.3390/su11030772