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Failure of the Ban on Plastic Shopping Bags: Finding Supportive Policy Measures to Address Excessive Plastic Shopping Bag Consumption

A case of Thimphu, Bhutan

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Abstract

Having implemented a ban on plastic shopping bag with three other reinforcements of the ban over the span of two decades, Bhutan still faces the issue of plastic shopping bag overconsumption and waste, where the ban policy has been proven ineffective. Issues of plastic shopping bag consumption in Bhutan is discussed to understand the plastic shopping waste situation in the country, and different views and perceptions are explored and examined to understand how the nation-wide ban was implemented and what went wrong with the policy to comprehend its inefficiencies. The issue of plastic shopping bag waste is an urgent one in the country where plastic shopping bag waste causes urban floods every year, and discarded plastic shopping bags get piled up in a lone landfill which is running over capacity. The research questions addressed are 1) How effective are other policy measures that address plastic shopping bag consumption, besides a ban? 2) What is the current development, and status and management of plastic shopping bag in Thimphu, Bhutan? 3) What are the main characteristics of the plastic shopping bag ban notification issued in the country? and 4) What policy instrument or its package could be adopted to resolve the growing plastic shopping bag issue in Thimphu, Bhutan? Different policy instruments that address plastic shopping bag waste are identified and explored using practical examples of global cases to understand the effectiveness of relevant policies. An in-depth contextual analysis of the case in Thimphu, Bhutan is carried out to comprehend the issue of plastic shopping bag waste, causes and attitudes and perceptions on the ban policy. Using the findings from different policy typologies, global cases studies and contextual assessment of Thimphu, Bhutan, a policy mix, other than a ban, that could tackle the plastic shopping bag issue is suggested. The compiled suggestions and information in this thesis can be useful for the wider audience that aims to deal with the issue of plastic shopping bag waste.

Keywords: Plastic Shopping Bags, Sustainability, Environmental Policy, Waste, Consumerism.

Executive Summary

Bhutan has been one of the first countries in the world when in 1999 introduced a nationwide ban on plastic shopping bags. The Government of Bhutan, feeling the impacts of increased plastic waste in the country exacerbated by inefficient waste management infrastructure, felt the need to address the issue with a regulatory ban. Although a great initiative, owing to several factors such as weak enforcement and lack of alternatives, the ban was found to be ineffective. The Government reinforced the ban in 2005, 2009, and 2019, only to experience the same fate of ineffectiveness. With mounting plastic shopping bag waste and the ineffectiveness of the ban policy, different policy options other than a ban that would work in the case of Thimphu, Bhutan needs to be explored.

Research Design and Methods

The research process for this study included two main processes; desktop research and collection of empirical data.

Both primary data and secondary data have been utilized in this study. Primary data is collected through the semistructured interviews conducted with relevant stakeholders in Bhutan such as government organization, non-governmental organization, consumers, retailers, and waste management groups. Secondary data was collected by examining different peer-reviewed literature on the topic, new articles, previous researches, grey literature and books.

The thesis findings are divided into different components: **Component 1** gathers literature on different policy typologies that address the plastic shopping bag waste issue; **Component 2** explores different cases around the globe that have utilized policy instruments for addressing the PSB issue; **Component 3**, builds on the contextual assessment of the case of PSB issue in Thimphu, Bhutan; and **Component 4**, assesses relevant policy measures that could be used in Thimphu, Bhutan using three identified environmental policy criteria – environmental effectiveness, acceptability, and enforceability.

Aim, Research Question and Main Findings

Considering the unsuccessful implementation of the ban on plastic shopping bags in Bhutan introduced in 1999, and the reinforcement of the same ban in 2005, 2009, and 2019, this study is aimed at accumulating different effective policy interventions that have been carried out throughout the world and from which, design a policy instrument or a mix of policy instruments that can be utilized in Thimphu, Bhutan to sustainably address the issue of excessive plastic shopping bag consumption.

How effective are alternative policy measures that address plastic shopping bag consumption, besides a ban?

Through the exploration and examination of different policy typologies and case studies from around the globe, several policy instruments that could address the issue of plastic shopping bags were identified and assessed. Policy instruments such as a complete ban, a partial ban, a tax or levy, a compulsory fee, Voluntary Agreements, and informative and educational approaches were discussed and assessed in the context of Thimphu, Bhutan. Informative policies such as Voluntary Agreements and educational campaigns were rated very low in terms of environmental effectiveness. Such policies have been disregarded either due to the lack of commitment during enforcement from the actors' side or the inability to be used as a standalone policy instrument owing to negligible environmental effectiveness.

A partial ban on plastic shopping bags that was considered for suggestion, rated moderate in terms of its environmental effectiveness, acceptability by different actors in the community and enforceability. Although such policy ranks high in environmental effectiveness, studies and experiences from international cases have shown that they are harder to implement and enforce. However, with the right tools and proper support and coordination from the government during the implementation and monitoring stages, such policy has been known to show effective outcomes.

Economic instruments namely, a tax or levy and a compulsory fee system were also examined. A tax on plastic shopping bags at the point of sale, where the tax is collected by the government as revenue, and a compulsory fee charged at the point of sale, where the charge is retained by the retailers have been considered as relevant policy tools to address the issue in Thimphu, Bhutan. Both the policy tools rated high in terms of environmental effectiveness but owing to the current institutional arrangement of Bhutan, a tax or levy as a policy could not be transferred to the context of Thimphu, Bhutan. A compulsory fee, which requires less enforcement and monitoring than a tax, is considered as a policy option to address the issue of excessive plastic shopping bag consumption in Thimphu, Bhutan.

What is the current development, and status and management of plastic shopping bag waste in Thimphu, Bhutan?

The current state of plastic shopping bag waste in Thimphu, Bhutan is alarming. Various issues related to excessive plastic shopping bag consumption have resulted in several issues – plastic shopping bag is the number one cause of urban flooding in the city, that occurs several times during the monsoon season every year, discarded plastic shopping bags mostly end up in the city's only semi-managed landfill that is running over capacity, and other PSB waste that do not sent to the landfill have been littered in the environment for everyone to see. The issue of PSB, even if they only consist a small portion of the overall waste, should be treated with urgency when the effects of such wastes are long-term and observable by the society. In response to the increase in the volume of waste generated due to plastic wastes, the Department of Trade and Industry introduced a blanket ban on all plastic shopping bags in the country in 1999. Owing to several factors that led to the ineffectiveness of the blanket ban, the Government via the National Environment Commission of Bhutan reinforced the ban in 2005, 2009, and 2019 to address the excessive plastic shopping bag consumption issue in the country.

What are the main characteristics of the plastic shopping bag ban notification issued in the country?

The introduction of the blanket ban on all plastic shopping bags in 1999 and the reinforcement of the ban in 2005, 2009, and 2019 were all found to be ineffective owing to several factors: the ban was considered a blanket ban where all plastic shopping bags were banned nationwide leaving no room for exemptions thereby actors being forced to use plastic shopping bags illegally; the ban considered to enforce the policy only on the retail sector, consumer demand for PSBs were still high since consumers are not penalized for using PSBs; there was a lack of viable alternatives provided in the market, with no alternative industry in the country and alternatives being expensive, people are forced to use PSBs; no grace periods and transition periods allotted, when the ban was introduced it was effective immediately, no grace periods were given to the actors to transition properly to the new change; weak enforcement, with shortages in staff and manpower, enforcements were carried out sporadically hindering implementation and monitoring process; reduced sanctions, the penalty for non-compliance was set arbitrarily and was found to be too low to be seen as a threat or a deterrent effect to not distribute PSBs; and with porous borders with India, smuggling of plastic shopping bags from the bordering towns of India is rampant.

With no plastic manufacturing industry present in the country, opposition from such industry was non-existent during the introduction of the ban. The ban was seen favorably by many stakeholders pointing out the issue of plastic shopping bag waste in the country, however there were some stakeholders who viewed the ban a draconian policy where actors in the community were not consulted.

What policy instrument or its package could be adopted to resolve the growing plastic shopping bag issue in Thimphu, Bhutan?

Through the lessons and insights derived from the different case studies that utilized different policy instruments to address the issue of plastic bag waste and assessing relevant policies with three environmental policy criteria – environment effectiveness, acceptability and enforceability, a policy mix to address Thimphu's problem of PSB waste was suggested. Standalone policies were found to be ineffective or hard to enforce on their own, hence with growing evidence showing policy mix exhibiting successful outcomes in the case studies and throughout literature, a policy mix for Thimphu, Bhutan was considered and suggested. A hybrid policy of a partial ban on single-use plastic shopping bags (<50-micron wall thickness) and mandating a compulsory fee on other types of plastic shopping bags is found be to feasible for a case like Thimphu, Bhutan. A partial ban on single-use plastic shopping bag on its own will aid in the reduction of the targeted type of PSBs but there are chances of people resorting to using other types of PSBs that is not included in the ban. This will not change the consumers' dependence on plastic shopping bags and will only increase in the waste volume of thicker PSBs. In order to solve this issue, a supplementary policy of mandating a compulsory fee on thicker PSBs that are distributed by the retailers is suggested. When PSBs are not distributed freely and an extra cost is charged on it, it might make the consumers change their behavior since the fee will act as a deterrent to consuming PSBs.

Various considerations and recommendations have been proposed in order for the new suggested policy to work. A task force needs to be set up which will formulate a directive or a regulation specifically on plastic shopping bags. The current regulation does not specify plastic shopping bags and treats all the waste under one category - solid waste. Plastic bag waste requires specific actions and solutions to properly manage them. The task force needs to designate responsibilities to various organizations to implement the suggested policy with ease and not make the mistake of awarding all the responsibilities to one implementing agency as seen in the past which hindered the implementation and enforcement processes. The task force is also tasked with examining the factors that made the previous bans ineffective and apply the solutions to the proposed partial ban to make it feasible. The task force should also look into setting the right amount of fee to be charged for other types of plastic shopping bags distributed at a point of sale.

Future Research

The area of this thesis was focused on the pre-consumer aspect of plastic shopping bags that looked at different policies that address them in the market. An important area that this thesis lacked was looking into the post-consumer aspect of plastic shopping bags – management of plastic shopping bag after it has been consumed and littered or discarded – which is equally important. There are several interesting policies that looks into the management of discarded or littered plastic shopping bags that should be carried out for Thimphu, Bhutan as well since, managing the issue on the pre-consumer aspect is not enough.

Another interesting area to focus future research would be on analyzing the tax or levy and fee system quantitatively. In this research, with a small sample size, willingness to pay for a single

plastic shopping bag was acquired to understand how much people are willing to pay. This data was used qualitatively to understand how much plastic shopping bags are needed to charge. Future research based on quantitative models on the tax or fee could paint a better picture of how such a system would work and predict outcomes in a quantitative manner.

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1 Introduction

If one wants to find out the amount of plastics produced globally, it can be estimated by observing the amount of plastic related waste that is generated every day that surrounds us – plastics are ubiquitous and the unsustainable wastes associated with it can be found everywhere. Since its inception, it is known that the growth in the production of plastics have far outpaced the growth in any other man-made material – now with an alarming shift, they have moved from durable ones to single-use plastics (Tudor *et. al.* 2018).

One of the infamous products of plastic that is prevalent everywhere are plastic bags. Plastic bags have become an integral part in the daily lives of the people. Since their initial use in the 1950's, plastic bags are ever-present and can be seen used by practically everyone in the world. It is hard to find an establishment or a business that does not offer plastic bags while shopping – farmer's markets, grocery stores, food stalls, convenience stores, restaurants, and other businesses. Currently, it has been estimated that globally each year, over 500 billion plastic bags are used with over one million of them being handled or used every minute (Filatov *et. al.,* 2018). At the outset, the arrival of plastic bags was commended due to their being produced from little resources and giving a product that is of a versatile functionality -this gave people a notion that there is an efficient utilization of resources, but moving ahead in the future, the products are known for being notorious for polluting the environment and extremely difficult to manage. Plastic bags, today, have surfaced all around the world as one of the most commonly found and successful products. Their attractive design and versatile functionality – lightweight, durable, and inexpensive – have amassed popularity amongst its users. And because of its widespread use, the plastic industry is further encouraged to increase its production and thereby increase the global consumption every year. In a business-to-consumer scenario, plastic bags today are mostly single-use bags.

According to the **European Union directive 2015/720 on reducing the consumption of lightweight plastic carrier bags**, a plastic shopping bag (PSB) can be defined as a carrier bag made out of plastic derivatives, with or without handles, which are provided at the point of sale of goods to the consumers (2015). And according to Grisson (2017), a single-use PSB can be defined as a plastic shopping carry bag which is provided and utilized at the business point of sale for sole purpose of carrying and transporting products sold at the business establishment but can exclude bags which are primarily used for the sole purpose of packaging and not carrying. The single-use PSBs are further categorized into lightweight plastic shopping bags and very lightweight plastic shopping bags - lightweight PSBs are plastic carrier bags with a wall thickness of below 50 microns, and very lightweight PSBs are those with wall thickness below 15 microns. Single-use shopping bags are aptly termed so due to its nature of being usable only once which after its use ends up in the garbage.

Plastic bags are manufactured using raw materials such as crude oil and natural gas which are both non-renewable resources – byproducts of the gas and oil are processed and converted into ethylene and propylene which are then polymerized into plastic sheets by adding various additives which protects the finished product from the negative effects of light and heat (Alam *et. al.,* 2018). Plastics are derived from non-renewable fossil hydrocarbons and if the production of it continues at the current pace, it is estimated that the plastic industry would account for 20% of the world's total oil consumption in the near future; in other terms, the demand for petrochemical for the production of plastics in 2017 was 12 million barrels per day and this figure is forecast to rise up to 18 million barrels per day by 2050 (Geyer, 2020). Each plastic bag ever produced contains twice its weight in oil products (Nilsen, 2010, p.13). To put that into perspective, the Environment Protection and Heritage Council (EPHC) (2008, p.21), estimates

that a plastic bag found at a grocery store today contains energy which is equivalent to 13.8 ml of crude oil – enough petroleum to drive a modern car one kilometer.

On the whole, there are two types of plastic bags: High Density Polyethylene (HDPE) bags and Low-Density Polyethylene (LDPE) bags. HDPE bags are thin and lightweight which therefore offers convenience while carrying purchased goods. HDPE bags are mostly single-use PSBs whose properties include being thin, lightweight, dense, opaque and stronger, and are mainly used in supermarkets, grocery stores, and take-away food stalls as carry bags. HDPE bags owing to its durability (can withstand up to 82° C), strength and stiffness, the U.S. Food and Drug Administration (FDA) has approved them for food processing and handling. On the other hand, LDPE bags apart from sharing similar properties as HDPE bags are less dense and thicker in wall size. LDPE bags are generally termed 'boutique' bags that are provided at departmental and clothing stores. These bags are also tough and can withstand a wide range of temperatures (Alam *et. al.,* 2018). Throughout the years, the design for these two types of bags have remained unchanged – both the bags are made by polymerizing ethylene where a continuous film is blown and then cut into 'singlet' bags. These singlets sheets are then joined together to form a bag which are then reinforced with handles. A study carried out in 2006 characterized different types of HDPE and LDPE plastic shopping bags – it was found that the bags had a mass from 2.5 grams to 39 grams, with a thickness varying from 7 microns to 97 microns and usually carried a volume that ranged between 3.5 liters to 29.5 liters (Verghese *et. al.,* 2006; Miller, 2012).

There are various negative effects of plastic bag production and consumption on our environment and human health alike. The production and consumption of plastic shopping bags not only consumes energy but also uses non-renewable resources of the earth and generates emissions that contribute to global warming which only exacerbates the effects of climate change. Production of PSBs emits toxic chemicals and fumes such as methane, ethane, and ketones. An Australian-based environmental consultancy, Nolan-ITU (2002, p.36) in their study assessed the impacts of producing PSBs: they calculated that for every 500 single-use High Density Polyethylene bags produced, it consumed approximately 3.12 kg of raw materials, 210 megajoules of energy and produced an equivalent of 6.08 kg of Carbon dioxide gas. Similarly, to produce 500 single-use Low Density Polyethylene bags, it took in 11.77 kg of crude oil, 957 megajoules of energy while emitting 29.8 kg of Carbon dioxide gas.

A common form of managing plastic shopping bag wastes is landfilling them. While a certain part of the PSB wastes end up in landfills, there are many that are littered through deliberate and unintentional behavior of people. According to Narayan (2020), a whopping 91% of plastic waste including plastic shopping bags are not recycled which just end up in the landfills or are littered around. And according to Nolan-ITU (2002) in their study conducted in Australia, they estimate that at least 0.8% of the total plastic shopping bags consumed are littered every year which means that almost 1% of 500 billion to 1 trillion of PSBs (5-10 billion) used every year end up in the natural environment as litter instead of being properly discarded in a managed system. Tweed (2008) in their study of assessing the International Coastal Cleanup Campaign carried out in 2006 found out that a total of 750,000,000 pieces of PSBs were collected which were littered in the oceans in over 60 countries. Owing to the PSBs' design and its single-use purpose, these items are littered in the nature due to laziness, irresponsibility and lack of proper disposal system, or unintentionally littered because of their light-weightedness and flimsiness which enables them to be carried away by the wind from disposal sites to other areas in the natural environment such as on trees, water bodies, beaches, and drains, and making these areas look unattractive to the eye.

Apart from making the environment look aesthetically displeasing, littering of PSBs can also cause detrimental environmental and human health impacts. Eagle *et. al.* (2016) states that the

threat of littering in the natural environment is that it can be ingested by animals or become entangled in it and thereby killing them. All animals can be at risk to litter of plastic bags even if they are marine, wildlife or livestock. Likewise, littering of PSBs has also affected human settlements where the bags have entered drainage and sewer systems causing blockage, proving difficult and expensive to clean-up, and thereby also leading to health hazards. The impact of PSB littering is further exacerbated with an accumulation of these litter in the environment – the length of time and quantity if PSBs accumulated in the environment depends on how frequently the litter clean-up operations are carried out – because it occurs irregularly, this makes it a difficult and an expensive clean-up ordeal (Kapinga & Chung, 2020).

A notorious example of plastic being littered into the natural environment is the Great Pacific Garbage Patch. The garbage patch, which is a spiraling vortex made up of all sorts of wastes, mostly plastic wastes, covers a large area measuring up to 1.6 million square kilometers (measuring almost three times the size of France) in the Pacific Ocean. Harse (2011) in his report states that plastic shopping bags are ubiquitous in the Pacific Garbage Patch. He emphasizes that floating plastic bags in the water bodies, be it in the garbage patch or anywhere in the world are being mistaken for jellyfish. Sea turtles are heavily impacted as their main source of food is jellyfish. Studies have also found plastic bags in the digestive tracts of dead sea turtles around the world (Eagle *et. al.,* 2016; Wilcox *et. al.,* 2018). A recent study by Kapinga & Chung (2020) points out that at least 1200 species of both land and marine wildlife are affected by plastic littering in the water bodies. When these plastic wastes in the water are photo-degraded, they are broken down into smaller particles known as microplastics which are then ingested by filter feeding marine animals which yet again gets passed up the food chain, ultimately ingested by humans (Fang *et. al.,* 2019). Plastic waste is so prevalent and poorly managed that microplastics can now be found in the atmosphere – causing a direct human exposure to it and thus potentially causing a health hazard (Gasperi *et. al.,* 2018).

Although it is difficult to get reliable figures on the generation of plastic shopping bag waste, PSB waste generation data can be estimated: the United States of America uses 100 billion plastic shopping bags each year (Durak *et.al.,* 2016); China uses an average of 300 billion plastic bags annually (Hilton, 2020); while Taiwan and Hong Kong uses 5.8 million and 9.8 million PSBs each year respectively (Chow, 2017); the United Kingdom uses over 8.5 billion plastic bags annually (Thomas *et. al.,* 2019); Canada with 3 billion every year (Banks, 2008); Japan consumes 30 billion PSBs annually (JFS, 2012); Australia with 6.7 billion (Aghdam, 2019); South Africa uses over 8 billion plastic bags every year (O'brien & Thondhlana, 2019); and Brazil consumes 12 billion PSBs annually (Santos & Sousa, 2013). While we can look at the overall consumption of PSBs of each country to see which country consumes the most, it is also important to look at the per capita consumption within the countries. It is interesting to note that while some countries may not top as the biggest consumer of PSBs, their per capita consumption of PSBs is relatively high. For example, the per capita consumption of PSBs of Hong Kong is 1,370 bags per person while the overall consumption is just 9.8 billion PSBs annually; comparing this to China's per capita consumption of only 208 PSBs in a year against their overall 300 billion PSBs in a year – this makes Hong Kong the highest per capita PSB consumers of the world.

In developing and emerging economies, globalization in tandem with rising economies, and thereafter with the change in consumption habits have increased the overall volume of waste generated. The problem of waste is a universal one and every country has faced or is facing challenges in sustainably managing them. Developed nations with plenty of monetary resources to spare have been able to tackle the waste problem in their respective country, not always in a sustainable manner whereas low-income countries, having different priorities as well as lacking proper resources and infrastructure often face difficulty in properly managing them. Such countries lack proper waste management systems and therefore face challenges and issues in

managing wastes. This is particularly evident for plastic waste or plastic shopping bag waste where they are found everywhere in great numbers and are littered easily.

Although the per capita consumption of goods and the production of waste thereafter is generally low as compared to that of the developed nations, municipal solid waste such as plastic waste is and has been a mounting environmental concern for the emerging nations (Kibria, 2018). This has been true for a low-income Asian country like Bhutan too. Rapid growth in population, improvement in socio-economic status, shift in the lifestyle from subsistence to a consumeristic one, and the consequent demand for imported goods have all exacerbated the plastic waste issue in the country. Therefore, it would be interesting to understand the status of waste, in particular, plastic bags in low-income nations, specifically Bhutan in this case, and find means to come up with a feasible solution(s) to tackle the growing problem of waste from plastic bags, and sustainably manage them.

1.1 Issue of Plastic bags in Bhutan

Over the last few decades, Bhutan has made a rapid and remarkable economic development; according to the World Bank (2018), the Gross Domestic Product (GDP) of the country grew from US $135 million in 1980 to US $2.53 billion in 2019, an eighteen-fold increase. Bhutan's high economic growth rate of 7.6% far exceeds that of the average global growth rate of 3.2%, making Bhutan one of the fastest growing economies in the world. Bhutan's population recorded in 2017 was 735,553, an increase of 55% from the 1980 recorded census of 409,172 (National Statistics Bureau, 2017). Based on its economic indicators and repaid socio-economic development, Bhutan has been recommended to graduate from Least Developed Country status to a Developing Country. While this generally means that the country is doing well, it is also accompanied by some undesirable outcomes. The National Environment Commission of Bhutan (NEC) in their 2016 'State of the Environment' report has pointed out that with the rapid increase in the socio-economic development of the country, increase in the population and urbanization, the country is seeing a drastic increase in the amount of solid waste generated. More problematically, the report points out that the composition of the waste which was traditionally biodegradable waste is now quickly shifting to non-biodegradable waste.

The waste composition of Thimphu, the capital city of Bhutan, consists of 58% organic waste, 9% of paper waste, 13% of plastic waste, 20% other waste (glass, textile, rubber, and sanitary waste) (Phuntsho *et. al.*, 2010). The national government of Bhutan has been able to manage paper and organic waste in the country to some degree successfully given the nature of the waste. But the remaining 13% of plastic waste including plastic shopping bag wastes have typically ended up in the landfill due to them being non-biodegradable and lack of proper management systems put in place. National Statistics Bureau (2018) in their waste report, 80% of the plastic waste ends up in the capital city's only landfill – Memelakha landfill site – which is running overcapacity, while the 20% of it are either littered or salvaged by informal waste collectors. According to Thimphu city's structural plan of 1992, the Memelakha landfill's site development document only considered 25,000 residents with an annual increase of 5% as an overall landfill carrying capacity (MoWHS, 2008). The resident population of Thimphu city was recorded to be 138,736 persons in 2017 according to the national Population and Housing Census of Bhutan (NSB, 2017). This shows that the only landfill in the city is well beyond its capacity and it will only become worse with the increase in the city's overall population in the future.

Bhutan has experienced the mounting problems of plastic waste and realized the detrimental effects of plastic waste on the environment early on. In 1999, the then Royal Government of Bhutan (RGoB) issued a nation-wide ban on single-use plastic bags including *doma* wrappers

(betel nut) and homemade ice-cream packaging. This was carried out in line with the environmentally-friendly country status of Bhutan which was threatened by the overuse of non-biodegradable plastic bags, and these very plastic bags being found littered everywhere, even in the remote villages, pristine high mountains, rivers, forests, and in the streets and drains of the urban centers.

Bhutan does not have a plastic production industry in the country – it heavily depends on imported products. All of the plastic bags that are distributed or used in the country are imported from India or Nepal. This means that the imported plastic bags which usually end up as waste in the landfill becomes a double loss for the country. When the plastic bags reach their end-of-life, majority of them end up in the landfills or are littered in the natural environment. Bhutan does not have any recycling or incineration facility to properly manage the waste, and landfilling is the commonly advocated method of waste management in the country. However, even this obsolete method of landfilling is not managed or implemented properly.

The 1999 nation-wide ban on plastic bags which came as a notification to all of its citizens was aimed at curbing the excessive use of plastic bags in the country. The following year after the ban was instituted, it was deemed a failure due to improper implementation owing to lack of financial and human resources. The then RGoB reinforced the ban again in 2005 and 2009 without optimistic results. In the beginning of 2019, after two decades of the first ban notification, the Government of Bhutan reinforced the ban yet again, still seeing no plausible outcomes. The National Newspaper, *Kuensel* (2019; 2021), in various incidents reported that the use of plastic shopping bags can be seen in 'abundance' throughout the country despite the ban.

Studies carried out on the effectiveness of the ban on plastic shopping bags around the world have seen mixed results. It proved to be ineffective in most of the cases that it has been tried, except Bangladesh, Eritrea, and Somaliland where it has seen partial success (Ritch *et. al.,* 2009; Danielsson, 2017). According to Ritch *et. al.,* (2009), these countries instituted stricter laws which would penalize the offenders as well as substituted plastic bags with other alternatives, which has made it possible to see partial success. However, these countries have also done away with the ban as it saw a rise in black markets and implementation failures over the years. Gupta (2011) suggest that the effectiveness of this type of measure is heavily dependent on how it is being implemented and also being context-specific. For instance, violation of this regulation is common in Bangladesh and India despite the ban on production, distribution and usage of plastic shopping bags. Gupta (2011) state that the outright ban on plastic bags is seen as too extreme of a measure and is rated low as compared to other successful policy instruments. Such is the case in Bhutan as well; the ban on plastic shopping bags did not see the end of light. Therefore, finding other supportive policy measure(s) successfully implemented in other countries would aid in combating the plastic shopping bag waste issue in Bhutan.

1.2 Aim and objectives of the Research

Considering the unsuccessful implementation of the ban on plastic shopping bags in Bhutan so far, this study aims to accumulate different experiences of policy interventions that have been carried out in different parts of the world and from which, suggest a policy instrument or a mix of policy instruments that is suitable for Thimphu, Bhutan. Following are the list of objectives that this thesis aims to answer:

1. How effective are other policy measures that address plastic shopping bag consumption, besides a ban?

2. What is the current development, and status and management of plastic shopping bag in Thimphu, Bhutan?

3. What are the main characteristics of the plastic shopping bag ban notification issued in the country?

    3.1. How was it implemented?

    3.2. How is the ban perceived by different members of the community?

4. What policy instrument or its package could be adopted to resolve the growing plastic shopping bag issue in Thimphu, Bhutan?

1.3 Relevance of the Study

This study is essentially meant to contribute to the ongoing research around the world in trying to come up with solutions to reduce their dependence on plastic shopping bags, and address the waste associated with it by finding appropriate policy measures. By getting an understanding on the situation in Bhutan through this study and finding an effective means in combating the plastic shopping bag waste issue in the country, this study would help in contributing to the wider audience interested in plastic shopping bag waste management with a unique Bhutanese context of its own – small, landlocked, low-income nation with no in country presence of plastic production industry. By trying to address this issue in Thimphu, Bhutan using context-specific insights and effective policy measures compiled from cases around the world, it would aid other low-income nations as well as the overall academic community by providing insights and useful information on the topic.

1.4 Scope and Limitation

The scope of this study would be limited to Thimphu city only and in no way the findings can be generalized or universally applied to the other districts of the country. However, the findings from the study can be used as possible suggestions at the district or even the national level owing to the size of the country as well as the similarities in the municipal structure that it shares with the other districts.

Taking a phased approach, the scope and result of this thesis is to be applied for Thimphu city. The failure of previous ban policies in the country was attributed to weak enforcement or shortages in working staff. Therefore, in order to overcome this, Thimphu city is taken as a pilot study for feasibility of other policies in this thesis.

The area of this research is on the pre-consumer aspect of plastic shopping bags, and does not touch upon the post-consumer aspect of the plastic shopping bag waste.

1.5 Audience

This thesis is written as fulfilment of the Master of Science degree awarded as a result of successful completion of the Erasmus Mundus Masters course in Environmental Sciences, Policy and Management (MESPOM) jointly operated by the university of the Aegean (Greece), Central European University (Austria), Lund University (Sweden) and the University of Manchester (United Kingdom).

This thesis also seeks to provide Bhutanese policy makers, an understanding of how to sustainably manage plastic shopping bag waste in the country with the help of the various policy options that have been identified.

This thesis will also aid in providing the wider audience in the academic world who are interested in waste management issues, particularly plastic bag wastes, by getting an understanding on this issue from a different angle that is the issue of the plastic bag waste in Bhutan which ahs not been carried out before.

1.6 Ethical Considerations

Honesty and personal integrity. This thesis is a project carried out by the author on their own and it has no direct interaction with any outside organization that would influence the outcome of the study. The author also ensured that other than the thesis supervisor, no outside parties were able to influence the analysis and conclusions. This study is not funded by any organization.

Ethical responsibilities to the subjects of research, such as consent, confidentiality, and courtesy. Prior to the interviews, all interviews were handed out with an informed consent form entailing the aim of the study, what information will be acquired from them and how it will be used. All the interviews were voluntary. To ensure confidentiality, as requested by most of the interviewees, no real names have been used. Instead the participants are named in general terms, for example 'employee at NEC' or 'interviewee 01'. In order for the author to use the information provided by the participants, they were asked to sign a consent form. The consent form also indicates that the participants can choose to withdraw their consent any time, and if so, all the personal data connected to them being made anonymous.

Ethics regarding the outcomes of the research. The author assures that none of the findings and outcomes of this thesis have the intention to harm the reputation, dignity, or privacy of any one connected to this study in any way.

Handling, storing, and/or making data records available. Any personal information and recordings from the interviews have been deleted at the end of the study. All the transcribed interviews have been stored securely for future references.

1.7 Structure

Chapter 2 of this paper outlines the methods that are used to answer the objectives of the research. It also entails the different methods used to acquire primary and secondary data to be used in the analysis as well as methods for analysis.

Chapter 3 of this paper provides various typologies for the management of plastic shopping bag waste, and builds on theories that would further aid in coming up with an effective context-specific policy instrument.

Chapter 4 sheds a light on the various types of policy instruments used around the world in managing PSB waste. It provides lessons from different countries that tried out different policy measures – what worked in their case and what didn't work out.

Chapter 5 of this paper contextualizes the case of Bhutan and presents various data collected through different modes of data collection methods.

Chapter 6 touches upon the various policy options to address PSB waste in Thimphu city and play out different scenarios of the said policy options. This chapter also provides a workable policy mix that can be used in Thimphu, Bhutan to manage PSB waste.

Finally, **Chapter 7** provides a summary of the whole thesis as well as provides future research and recommendations.

2 Research Design and Methodology

A number of approaches are used in this study including interviews to collect primary data, desktop case study of policy instruments used internationally, and selection and evaluation of policies to come up with possible outcomes of different policy measures that could be used in Thimphu, Bhutan.

2.1 Overview of Methodology

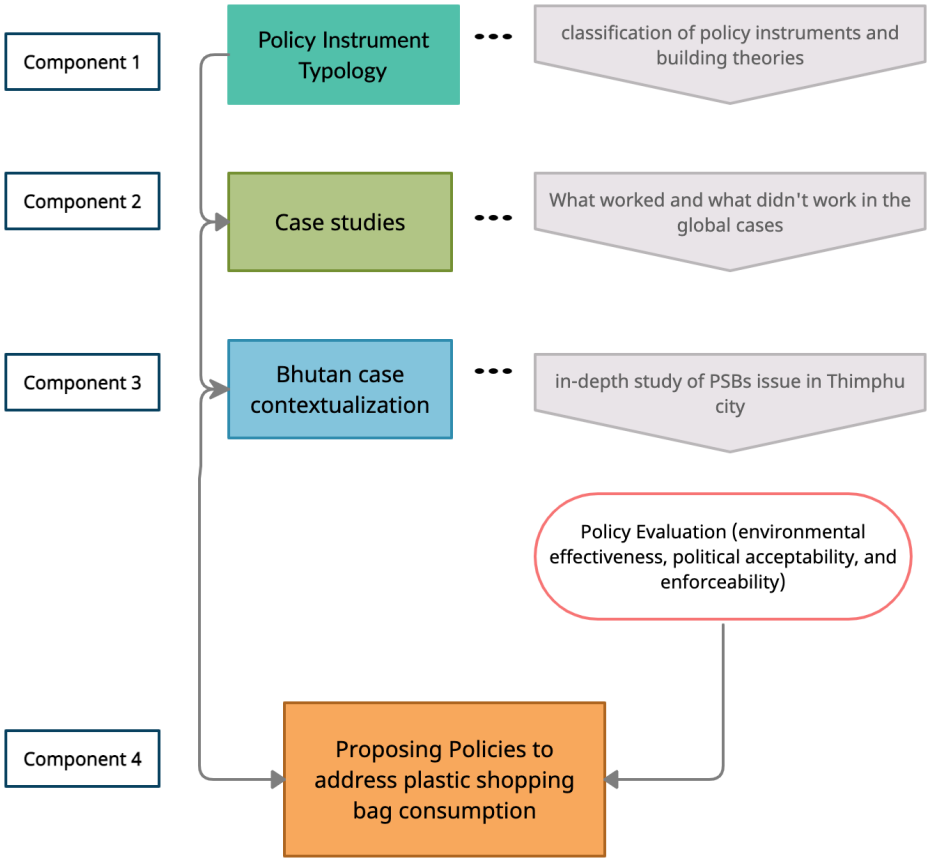

Figure 2-1 Overall Research Approach

Source: developed by the author

Figure 2-1. shows the overall research approach to this thesis. **Component 1** which includes the policy instrument typology including their pros and cons provides a guide or a framework to look into **component 2**.

Component 2 involves exploring and contextualizing different cases from around the world that instituted different policy measures in curbing plastic shopping bags, and getting an understanding of what was successful and what lacked progress in those countries.

Components 1 and **2** address **research question 1**.

Component 3 forms the basis of contextual assessment of the case of PSBs issue in Bhutan and gives an in-depth idea and insight on the country and addresses **research questions 2** and **3**.

Applying findings from **component 2** and **3**, and having a discussion on the different policy measures that could be implemented, will aid in constructing a policy or a policy mix that is specific to Thimphu, Bhutan which might aid in solving the plastic shopping bag issue in the country; addressing research **question 4.**

The research process for this study comprises two main processes: desktop research and the collection of empirical data.

Desktop research was carried out on the subject of policy measures related to plastic shopping bag waste management, document analysis of policy interventions established in various countries around the world, and environmental policies that are upcoming or are in effect in Bhutan.

Collection of empirical data was done using semi-structured interviews to understand the views and opinions of consumers and retailers on PSBs usage and waste. Interviews were also conducted with relevant stakeholders including professionals working in or associated to waste management, to gain their view on the matter.

2.2 Data collection

Both primary and secondary data collected for this study are qualitative. Qualitative data collection and analysis gives the researcher an overall idea of the concepts and phenomena occurring in the study. According to Richie and Spencer (2002), qualitative research helps the researcher in understanding the studied population's wide range of behaviors and motivation, define concepts occurring within the study area, understand the inter-relationship of phenomena, and develop new theories arising from it. Maxwell (2018) posits that qualitative research design plays an integral part in studying public policy as it provides important understanding of how people respond and interpret such policies; find out the effects that arise from implementation of such policies; and comprehend the reasons and causes through which a policy is accepted or ignored. Walker (1992) emphasizes the importance of qualitative research in connection with public policy, for being able to come up with theories where such policies affect the people involved or the people involved being the part of the very problem.

2.2.1.1 Literature Review

Literature search was carried out at various phases of the study, from the initial stage of problem formulation to the end of the study. Various books, academic papers, grey literature, and peer-reviewed papers related to plastic shopping bag waste management from around the world were studied. Policies related to the issue in Bhutan were studied as well through the use of law text/ policy books, workshop reports, government issued guides and leaflets. Since the culture of research in Bhutan is fairly new, not many peer-reviewed papers could be found, however wherever there was an information gap, it was filled out using information from news (media) sources.

Google Scholar and LUBSearch were the main search engines that were used to find relevant materials related to the study.

2.2.1.2 Interviews

Professionals

Semi-structured interviews were conducted with the relevant stakeholders to acquire primary data on the topic. Using purposeful sampling as one of the techniques, experts, knowledgeable people as well as government officials were interviewed; and other stakeholders and persons of interest were identified through the initial respondents by using snowball sampling technique. The interview consisted of qualitative in-depth semi-structured questions with open-ended questions. This format of interview was chosen to give the interviewees the opportunity to answer the questions by means of their own views, experiences, and memories as opposed to having the interview a structured one which would risk the answers being influenced by the author's own biases while setting up the questions.

An interview guide was formulated which includes what questions to ask and what kind of information is needed to answer the research questions, during the phase of the desktop research on policy measures of plastic shopping bags. The guide was specifically designed in a way that was not specific but open-ended which could be used for all of the interviewees. A funnel approach was used while interviewing the participants where they were asked open-ended questions at first and then depending on their responses, specific follow-up questions were asked. Most of the interviews were conducted face-to-face and some of them were conducted through phone calls. The average length of the interviews were 30-40 minutes. Notes were taken during the interviewing process while at the same time being electronically recorded. The recorded interviews were then transcribed and compiled along with the handwritten notes. Table 2-1 shows the list of experts, officials and knowledgeable people that were interviewed:

Table 2-1 List of experts and officials that were interviewed

	Name	Organization
1	National Environment Commission of Bhutan (NEC)	Government
2	Department of Trade and Industry	Government
3	Thimphu *Thromde* (administrative division)	Municipality
4	Greener Way	Waste Entrepreneur
5	Green Road	Waste Entrepreneur
6	Royal Society for the Protection of Nature	Non-governmental organization
7	Memelakha Landfill site	Municipality
8	Clean Bhutan Initiative	Non-governmental organization

Source: Author's compilation

Retailers and Consumers

Separate interview guides for both the retailers and consumers were created. Similar to the interviews set for the professionals, these interviews also are semi-structured with open-ended questions. The main aim of the interview for the retailers and consumers is to gain insights on what they think about the plastic shopping bag ban that was initiated – their perception and attitude – their awareness level on PSBs wastes, and their overall suggestion on managing PSBs waste in the country. The consumers were also asked on their 'willingness to pay' for a single plastic shopping bag if ever there was a levy put on them.

The Centenary Farmers Market (CFM) in Thimphu city which hosts over 400 vendors and more than 1000 shoppers over the weekends has been observed to be one of the hotspots where plastic shopping bags are freely and rampantly distributed according to the media sources (Choden, 2018). The sample size for interviewing retailers and consumers was set at 12 individuals (6 vendors and 6 consumers). As opposed to quantitative research, qualitative research usually requires a smaller sample size. According to Glaser and Strauss (1967), with qualitative analyses, one thing to keep in mind is the level of saturation with information when more and more participants are recruited - Morse (1994) suggests that 50 to 60 participants is an appropriate sample size for ethnographic research; 20-30 participants for grounded theory (Creswell, 1998); and at least 6 participants for phenomenological qualitative research (Morse, 1994). Apart from the 6 vendors from the Centenary Farmers Market that are interviewed, 3 additional retailers from outside the CFM were also interviewed. This is done so to elicit information from retailers that are not situated inside the CFM, who might hold different views on the issue.

2.2.1.3 Case studies from other countries

A series of case studies are utilized in this study which aids in providing an overview of different policies which are used to combat plastic shopping bag issues around the world. A case study approach is a complex one where the phenomenon occurring is context-specific and the outcomes are bound to a single event or that specific location; which at a different context or location would show different results (Crowe *et. al.*, 2011). The case studies presented in the later chapter are all done at a national level and hence could be thought of as a cross-cultural comparative design to further understand each case's specific contextual factors, outcomes, and reactions.

Desktop research is the main and only approach used in the compiling of the cases. LUBSearch and Google Scholar were used to compile the cases along with studying the case related academic papers.

2.3 Data Analysis

Data gathered by interviewing retailers, consumers, experts on the field and officials in Thimphu, Bhutan forms the basis of analysis for this study. Using the results from the case studies would further give a foundation to help explore different policy measures to address the plastic shopping bag waste issue in Thimphu, Bhutan.

2.3.1.1 Contextualizing the issue in Bhutan

The method that was used to analyze the contextual responses from the interviews was content analysis. Content analysis is the process of analyzing huge chunks of data using coding methods or categorization of data by identifying patterns thereby forming a conceptualization (Lacey *et.*

al., 2015). The transcribed interview responses were coded according to the overall idea or pattern they fell in. The coded or labelled data were then sorted and categorized: Status of plastic bag waste in the country, the status of the ban, different stakeholder's perception of the ban, retailers' and consumers' attitudes towards the ban, their overall awareness on the issue of PSB, how the ban was enforced, what worked and what didn't work, and so on. More on this will be discussed in Chapter 5.

2.3.1.2 Policy measure/mix proposal

As mentioned in Figure 2-1. the selection of policy or policy mix to address the plastic shopping bag waste issue in Thimphu, Bhutan will be carried out by applying the results from Chapter 3, 4, and 5. After the deliberation of the results, a selection of policy instruments is proposed in chapter 6 that are then evaluated using three criteria for environmental policy assessment, namely effectiveness, acceptability, and enforceability. Cost-effectiveness is another criterion which was originally added, but due to lack of data in the context of Bhutan, the criterion is not used in the evaluation of the proposed policies in this thesis.

Table 2-2 Evaluation Criteria for the proposed policy instruments`

Criterion	Definition
Environmental Effectiveness	- "Will the instrument achieve the environmental objective within the specified time span and what degree of certainty can be expected? ", (Panayotou, 1994, pg. 50). - "The extent to which the instrument is expected to achieve established waste prevention objectives and/or the extent to which improvements in waste prevention occur from year to year. Components of environmental effectiveness may include changes in environmental quality, health risk reduction, and resource efficiency", (Vancini, 2000, pg. 70).
Acceptability	- (=Acceptability): "Is the instrument understandable to the public, acceptable to the industry, and politically saleable?", (Panayotou, 1994, pg. 52). - (=Legitimacy): "To what degree do individuals and organizations, such as nongovernmental organizations (NGOs), interest organizations and firms accept the environmental policy instrument?", (Mickwitz, 2003, pg. 427) - (=Political Acceptability): "The extent to which the instrument is expected to enjoy political acceptance", (Vancini, 2000, pg. 71)
Enforceability	- Enforcement requires energy and resources… and there will always be other calls on these resources; furthermore, there will always be people whose interests lie in not having environmental policies enforced thus enforcement is unlikely to happen automatically. The costs of enforcement, although perhaps not as large as overall compliance costs in most cases, are critical to the success of environmental quality programs and ought to be treated explicitly in evaluating the overall social costs of these programs (Field). - (=Administrability): Is the program feasible to carry out? (OECD, 2001). - (=Ease of Monitoring and Enforcement): How difficult or costly will monitoring and enforcement be? (Panayotou, 1994). 7

Source: taken from Bahri (2005)

3 Policy Instruments addressing Plastic Shopping Bags

In this chapter, before delving into the analysis part of the data, the theoretical background of the subject of this study is carried out carefully. Key concepts, relevant ideas and practical knowledge are identified and explored which will help in steering this study into answering the research questions. The main aim of this chapter is to build a theoretical foundation which will aid in analyzing the data that was collected.

This chapter starts with a discussion on the need for government intervention in curbing the increase in plastic shopping bags and how market failure is driving PSB usage. It will subsequently explore different types of policy instruments that are in place to address plastic shopping bags.

3.1 Government interventions addressing plastic shopping bags

Realizing the detrimental effects of plastic shopping bag waste on the natural environment, governments around the world, today, have put measures in place to tackle the rising consumption of PSBs. The issue of PSB waste being a ubiquitous one and posing threat to the environment, policies addressing it can be found in all the six populated continents. These policies range from being regulatory in characteristics (banning) to economic (taxation), to non-regulatory (voluntary). According to Warner (2009) and Heath and Palenchar (2008), there are several barriers that bars the proper implementation of such policies; from the many barriers, three of them stand out – since plastic shopping bags have become pervasive in our society and the consumers have become so depended to it, it is rather hard to change their behavior; if policies are not implemented properly, there is a risk of creating secondary problems that arises from a faulty policy; and there is still an ongoing defiance from plastic industry that depend on it for profit and retailers who believe PSBs is the passage for their customers to buy from them.

3.1.1 Market failure

The rampant use of plastic shopping bags around the world and the seemingly 'free' cost of PSBs are the results of a world market failure. Consumers are blinded by the fact that they are getting PSBs for free while shopping without realizing the full impacts that they are inadvertently causing. This idea of not associating the cost of disrupting something and getting away without fixing it and harming others on the way is known as an externality. The U.S Environment Protection Agency defines externalities as when "*the market does not compensate for the effect of a party's activities on another party's well-being*" (USEPA, 2010, p.3). An externality can also be thought of as the difference between social cost and private cost, where social cost is the full resource costs put on the society during an economic transaction, and private cost is the cost of resources directly borne by the consumer or producer immediately during an economic transaction (Field, 1994). Most consumers fail to recognize the externalities associated with PSBs – when each consumer derives the benefits of using a bag, a collective price i.e. externality is put on the society and that externality keeps growing if it is not properly addressed. However, these externalities may not be created intentionally by the consumers but still they are very difficult to avoid. The visible impacts of these externalities include the depletion of non-renewable resources and carbon dioxide emissions during production, and thereafter the use, generate solid waste, destroy biodiversity and wildlife, and incur huge amounts of money to the society for clean-up programs.

3.1.2 Government Involvement

Governments play an important role in addressing issues that arise in their states and they are among the crucial actors to bring in true change to the society. An important role that the government plays is the creation and proper implementation of policies that rightly address market failures, their own shortcomings as well as address concerns and provide public goods. Government involvement is particularly needed if it involves public concern and safety that risk the economy, social structures and the environment. In the case of plastic shopping bag issues, states that do not have a proper policy put in place to address this issue, generally suffer from governmental failures and therefore cannot control the issue of PSB waste (Ogwo *et. al.,* 2013). The main area that the governments need to focus on, is to correct the market failure because the market will not correct on its own without the help of the government. Heath and Palenchar (2008) note that national governments hold more power and resources and therefore have the means to bring in change such as through policies than compared to local governments or other organizations. Tough (2007) in his study found that as long as the benefits of reducing PSBs from the market outweigh the costs on the consumers, governments would be the right channel to pass a policy intervention compared to any other entities. Due to their very nature of assuming power and resources of the state, governments can work with a variety of stakeholders with ease and provide the much-needed funding to bring in the necessary changes.

3.2 Environmental Policy Instruments

One of the important tenets of analyzing policies is that they manifest different forms of power that would bring change to a system in question – they form the basis that stimulates actions or process that make subjects comply (Vedung, 1997). Throughout history, with environmental challenges moving hand in hand with developmental activities of the society, people have come up with a large toolkit or guide of policy instruments to address these challenges. This study recognizes three main types of policy instruments that have been implemented throughout the globe – legal, economic, and non-regulatory policy instruments. These instruments have been applied in various nations in order to influence and thus create individual or collective actions against various environmental issues. In Figure 3-1, the three main types of policy instruments can be seen with various tools employed under them as examples but are not limited to them.

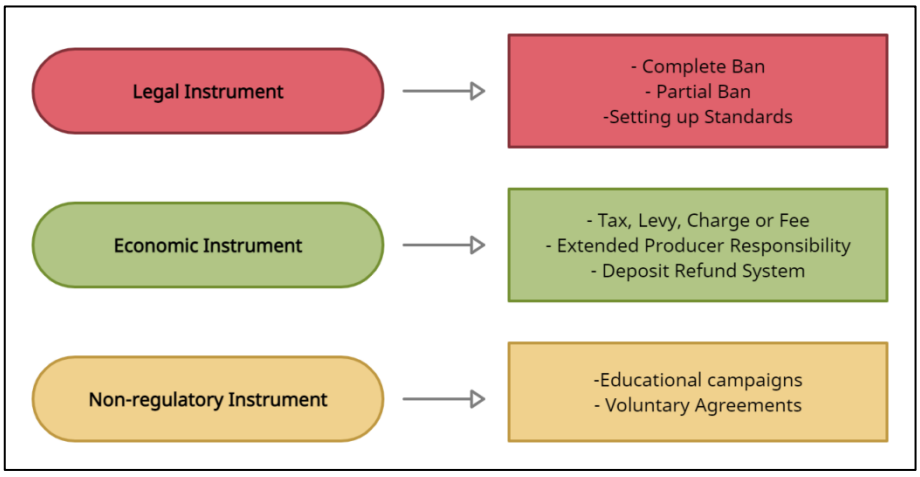

Figure 3-1 Environmental Policy typologies and their examples

Source: Author's own

3.2.1 Legal Policy Instrument

Legal policy instruments are also known as regulatory instruments, administrative instruments or command-and-control regulations which involve setting up of directives or coercive actions by decision makers such as governmental organizations on the market requiring them to prohibit inputs or outcomes of the market from falling or exceeding some specified levels often carried out through the means of physical sanctions (Vedung, 1997; Taylor *et. al.,* 2012). Taylor *et. al.* (2012) also states that this type of policy instrument tries to control the actions of the actors instead of changing the outcomes of those activities, and is normally targeted at the largest risks and problems. Governments or organizations with legal backing are the right entities to carry out such instruments who have the power as well as resources to assert direct control on the market. Legal policy instruments require vigilance and resources for the purpose of monitoring and enforcement. To expect compliance from the actors, the governments should assert authority with the help of sanctions for non-compliance. With the help of sanctions, actors in the market will feel motivated to comply with regulations in place. According to Keohane *et. al.* (1998) legal instruments by the nature of being carried out by governmental institutions who have the required knowledge and power to carry it out will have the advantage of predicting the expected outcomes, and guarantees equality since the regulation put in place will be applying to all the actors involved. On the contrary, Taylor *et. al.* (2012) argue that because of its enormity, monitoring and implementation at a larger scale will be time consuming as well as require vast human and financial resources, and create other secondary problems such as black markets.

3.2.2 Economic Policy Instrument

According to Hiltunen (2004), economic policy instruments also known as market-based policy instruments are economic incentives asserted on the parties of the market to have control over the material resources in question. Economic policy instruments directly and closely try to impact the behavior of the actors involved through the means of incentives. Hilutnen (2004) states that economic policy instruments when instituted acts as a mechanism to actually incentivize a change in behavior of the actors while at the same time cover the costs of environmental expenditures resulted from the market failure to account for the cost of not being able to manage the problem before the instrument was instituted. Lindeneg (1992) articulates that such instruments will incentivize producers and consumers to account for the negative externality exerted on the overall society by them. Compared to legal policy instruments, economic policy instruments do not require heavy government control, however monitoring of revenue generated from the tax as well as administering it and enforcement would be carried out by the government. Bohm and Russell (1985) in their comparative study of environmental policy instruments establishes that economic policy instruments enjoy much flexibility meaning that when an extra charge is set upon a commodity, consumers can choose to buy the goods by paying the extra charge or avoid it by not consuming the goods. However, Hiltunen (2004) and Taylor *et. al.* (2012) in their studies sheds a light on such instruments that it requires more research to be carried out on the appropriate amount of money to be charged as fees or tax, and by placing a fee or taxing goods or services, there is a high probability of distorting the cost of the goods and services and also place burdens on the economically disadvantaged people.

3.2.3 Non-regulatory Policy Instrument

Non-regulatory policy instruments, based on information, volunteerism and often void of governmental regulation, are also known as voluntary or informative policy instruments. Voluntary policy instruments employ a mechanism where standards and rules are set within the actors of the market which requires them go beyond the regulation put forward by the government and commit to voluntary environmental improvements (Carrarro & Lévêque,

2013). Informative policy instruments on the other hand works as a vessel to disseminate information to the actors or individuals to make them aware of the environmental concerns and therefore lead to a possible change in the behavior, for example educational or awareness campaigns on implications of uncontrolled solid waste generation on the society and environment.

Voluntary Agreements is one of the popular tools of non-regulatory policy instruments – participants come together and take up responsibility for reducing environmental issues or improving them. Costs of drafting the agreement are borne by the participants which include the cost of starting up the agreement, administrative cost, data collection, enforcement, monitoring and sanctioning (Karamanos, 2001) with little to no involvement of the government. However, the government might participate in the agreement if the government deems this type of policy instrument proves more success than the other alternative measures.

3.3 Plastic Shopping Bag Policy Typology

According to Taylor *et. al.* (2012), policy makers must deliberate which policy instrument to design and implement to address the plastic shopping bag issue – how it should be designed, who all should be involved in the process, which instrument should be chosen over the other and why and what timeline should be followed for proper implementation. Currently, governments around the globe, be it a small nation or a big one, have implemented a vast range of PSB policies to address the problem of over-consumption of PSBs, and seek to induce a behavioral change in the consumers; while the detrimental impacts of PSB waste on the environment, society and human health is all agreed upon by the world, there are different views by different governments on how the issue of PSB waste must be addressed depending on their country specific context. In the below sections, the three types of policy instruments associated with plastic shopping bags are discussed in detail.

3.3.1 Legal Policy Instrument: Plastic shopping bag ban

Creating restrictions on or banning plastic shopping bags was one of the most popular regulatory policy instruments implemented around the world to address the plastic pollution issue. Bangladesh was among the first countries to design a comprehensive regulatory ban on plastic shopping bags in 2002, where several countries after that followed suit to address the plastic waste issue (UNEP, 2018). Bans on plastic shopping bags aim to take out single-use plastic shopping bags out of the market, which are usually used and then discarded, by putting a stop to the production, distribution, and use of plastic shopping bags. This type of policy usually aims at directly controlling the activities of the actors rather than controlling the outcomes resulting from these activities. Government while developing regulatory bans of plastic shopping bags in their country, they consider several key elements that would make the legislation implementable.

3.3.1.1 Material composition

Most countries around the world today who have instituted a ban on plastic shopping bags have done so by considering the thickness threshold of the PSB – allowing PSBs with certain thickness in the market while single-use plastic bags that have thinner walls to be banned. Since there is no universally accepted standard on the thickness threshold of the walls of plastic shopping bags to be banned, different countries have adopted different thresholds and measurements of PSBs to be banned. For example, the Andorran government legislated to ban PSBs below 15 microns only and allow the ones above that thickness whereas the Jordanian government has mandated to ban all the PSBs in the country that do not meet 100 microns

thickness (Chasse, 2019; UNEP, 2018). Currently, the most targeted threshold thickness of PSBs in most countries is 50 micron of wall thickness. Single-use or lightweight plastic shopping bags below the wall thickness of 50 micron are banned or targeted for reduction in countries such as India, European Union, and the U.S.A. These PSBs with less than 50-micron thickness are targeted because of their notoriety of being lightweight, single use, and potential to be discarded or littered easily. Schnurr *et. al.* (2018) and Kish (2018) in their studies have found out that the government should however target PSBs to be banned depending on which bags are the most problematic ones and which are easily discarded or littered by the consumers in their respective countries irrespective of their thickness. Schburr *et. al.* (2018) also states that banning PSBs with certain thickness will be problematic as it might lead to an increase in the usage of thicker PSBs, and therefore not achieve the overall goal of reducing the usage.

3.3.1.2 Activities to be targeted

When a ban or restriction ensues, it usually looks at the product chain of the commodity that needs to be banned – production, supply and distribution (importation), and usage. Some states restrict production of plastic shopping bags in their country, others restrict retail distribution of them, while some states stop the importation of PSBs into their country. For example, the European Union's legislation restricts the distribution of PSBs in their member states whereas states such as Algeria and Lebanon stop the entry of these bags into the market through importation (UNEP, 2018).

3.3.1.3 Exemptions

There are certain specific uses of plastic shopping bags owing to hygiene, accessibility and security that makes them too valuable to ban them totally. Exemptions of such kinds of PSBs should be allowed given the fact that without them, the activities that require such bags would become unsafe or costly. The United Nation Environmental Programme in their document itemizes such activities that require the use of PSBs as shown in the Table 3-1.

Table 3-1 List of exemption of PSB for a range of product uses

Sl.	Activity	Examples	Reason(s)
1	Carrying fresh and perishable food	Carry bags for meat and other fresh products	Hygiene
2	Clinical/Scientific use	Use for research and medical purposes	Safety
3	Sanitation and Waste collection	Bin liners or bags	Hygiene and safety
4	Usage for disabled persons		Hygiene and safety
5	Commercial purposes	Laundry bags	Safety

Source: UNEP, 2018

3.3.1.4 Alternatives

Alternatives to conventional plastic shopping bags are important when considering a ban on PSBs - consumers would need to be able to shift to a sustainable alternative from the conventional PSBs for easy implementation and success of the ban.

Plastic Alternatives

In some cases where there is a need for a replacement for PSBs, other types of shopping bags such as compostable, biodegradable and bio-based plastics have been suggested. While these types of alternatives have been put in place in some states, policy makers should be aware of the potential harm of them. While not as serious as the fossil-fuel based plastic shopping bags, these alternative plastic bags have been known to cause harmful impacts nonetheless, as outlined in Table 3-2. However, if the government resorts to using such alternatives, Kubowicz and Booth (2017) suggests that policies that look into the production as well as waste management of such alternative plastics should be formulated too as impacts from these alternative plastics can be similar to the impacts from conventional plastics if not managed properly.

Table 3-2 Negative impacts of alternative plastics

Sl. No	Type of Alternative Plastic	Harmful effects
1	Compostable plastic	- Likely to end up in the waste stream if not segregated at the source leading to be landfilled or incinerated instead of being composted - Compostable bags should be true to its name and should be substantiated with scientific evidence going through rigorous evaluation. Cases of greenwashing conventional plastic as compostable one has been observed in the markets. Many countries are not equipped with industrial composters where these compost bags could be composted.
2	Bio-degradable plastic	- They can undergo process of breaking down into smaller pieces known as microplastics that can be equally harmful - These plastics need to be exposed to temperature above 50 C for a prolonged period to be broken down completely - Biodegradable plastics that end up in landfills also produce methane gas - This type of plastic when littered in the ocean exert the same harmful impacts as the plastics derived from fossil fuels.
3	Bio-based plastic	- Production requires huge land areas to grow bio-feedstock. There will be change in the land use where farmers will resort to growing bio feedstock with an increase use of fertilizers, exacerbating food insecurity and polluting land at the same time - Deforestation and loss of habitat from clearing lands for growing feedstock - Not all types of bio-based plastics are biodegradable

Source: summarized by author based on European Bioplastics (2016); UNEP (2015); and UNEP (2018)

Non-plastic Alternatives

It is imperative that before banning plastic shopping bags, consumers are given a choice of PSB alternatives – governments should study if there is availability of alternatives and if so, study the lifecycle of these alternatives to find out their positive and negative impacts to the cause. Currently, in countries that banned PSBs, the governments have encouraged and promoted the use of such types of alternatives. Different countries have adopted different ways to promote the use of non-plastic alternatives: in Andorra, reusable bags are provided to consumers for free or a minimal charge through the government's subsidy program on such bags; reusable bags are exempted from the PSB ban in Turkey; and receiving loyalty points or discounts at stores in Thailand if you carry a reusable bag with you (UNEP, 2018). Kubowicz and Booth (2017) in their paper points out that when instituting bans, governments should carry out proper study on alternatives and find out if they are readily available and are affordable or not. They also mention that the government should play a proactive role in encouraging industries that manufacture these alternatives if such goods are not readily available.

3.3.1.5 Transition periods and effective dates

When bans are implemented effectively immediately, actors in the market are not given ample time to get used to the policy and therefore will encounter retaliatory actions from them. Giving grace periods and phasing the implementation of the ban into phases will allow the actors to transition to the new change easily. Educational campaigns and dissemination of proper information on the ban can be carried out during the transition period to further gain the trust and acceptance of the actors on the policy before the actual implementation is carried out. The Moldovan government took a phased approach with its PSB ban policy in the country depending on the thickness of the plastic shopping bags – all plastic shopping bags were to be phased out by 2021 where PSBs with more than 50 micron thickness phasing out by 2019, PSBs with thickness 15 micron to 50 micron to be phased out by 2020 and PSBs of thickness less than 15 micron to be phased out by 2021 (UNEP, 2018). Such is the case in Pakistan where the implementation of the ban was done phase-wise – the ban on PSB was first implemented in the capital city and major cities and then slowly expanding to other areas of the country (Nielsen *et. al.,* 2019).

3.3.1.6 Enforcement and Sanctions

One of the important parts of such a policy tool to be successful is that there should be proper enforcement. Governments should pick an organization that would look after the enforcement and monitoring of the ban. In the case of Bangladesh in 2002 when their ban on plastic shopping bags was first instituted, the Ministry of Forest, Environment and Climate Change was assigned the responsibility to implement the policy with a provision for it to coordinate with other relevant agencies for implementation and receive assistance from the police in enforcing the ban (Mourshed *et. al.,* 2017). According to Schnurr *et. al.* (2018), the implementing or enforcing agencies should be given enough power such as the power to investigate, inspect and impose sanctions on the offenders. A complaint mechanism should also be set up, for instance a toll-free phone number, for the people to report on non-compliance, receive feedback on the implementation of the ban or appeal a penalty imposed on them.

According to Miller (2012), the implementing agency should take into account the type and extent of the penalty on the offenders of the ban. He points out that a regulatory policy instrument such as this without sanctions or penalties will be ignored and be deemed ineffective. Penalties could include warnings, monetary fines, confiscation of banned plastic shopping bags, clean-up cost or imprisonment. Schnurr *et. al.* (2018) emphasizes that penalties should have a

monetary range of a minimum and maximum value, should be based on; the severity of the offense, possession versus distribution versus production; and the offender, small business vs big chain supermarkets.

3.3.1.7 Implementation challenges

Some countries around the world that have implemented this type of regulatory ban on plastic shopping bags have seen effective results as well as have become ineffective. There are many reasons or challenges drawn from these countries that dictates a policy such as this would become successful or not.

There are possibilities of spillover effects in the system when a ban is not clearly defined. A ban of one product could lead to an **increase in the use of another harmful product** (Taylor, 2019). For instance, when a ban on thin plastic shopping bags was instituted in the northern territory of Australia in 2011, there was a sharp decline in the use of thin PSBs but at the same time retailers switched to offering thicker PSBs, which was not included in the ban, to consumers ultimately increasing the total amount of waste generated (Nielsen *et. al.,* 2019). Another case in the US, the State of California, when lightweight PSBs were banned, encountered a similar case as that of Australia – it drove up the sales of thicker PSBs which ultimately added more waste to the waste stream than actually reducing it (Stephenson, 2018).

Taylor (2019) sheds light on the issues of **alternatives of plastic shopping bags** when it comes to their actual carbon footprint – the manufacture of alternatives of PSBs actually consumes more energy and emits more during production and transportation than that of fossil-fueled PSBs. Alternatives on the whole due to their reusability and versatile functionality often gets overlooked on their carbon footprint using their production and transportation. Paper bags are biodegradable but require intensive use of energy and water to produce them thereby emitting huge amounts of greenhouse gas than plastic shopping bags and such is the case of cotton bags whose process of production is very resource intensive (UNEP, 2018). Therefore, implementers of such policies should always conduct life cycle analysis of alternatives in order for such such policies to emerge as successful.

With the institution of ban on plastic shopping bags, especially in developing nations, there has been an emergence of **black market** for PSBs. In Bangladesh, because of the porous borders with India, illegal PSBs were imported constantly from India that could not be controlled (Miller, 2012); in Rwanda where the policy was robustly enforced with high penalties for offenders, there was a boom of black market selling PSBs that were imported from the neighboring countries such as Burundi and Uganda (Xanthos & Walker, 2017). As discussed in the above section on 'Alternatives', it is imperative for the policy makers to look at the availability and affordability of alternatives to PSBs before implementing a complete ban to negate such challenges. Xanthos & Walker (2017) posits that this kind of challenge often takes place in low income countries where the disadvantaged poor are dependent on the banned product.

There is a **pushback from the plastic industry** while instituting a ban policy on plastic shopping bags. Due to loss of income and profit, plastic industries around the world are resisting such policies. For example, the State of Maharashtra in India proposed a ban on the production of PSBs by 2022, the plastic industry argued saying that there will be a loss of annual revenue of over US$2 billion and loss of employment of over 300,000 people thereby pressuring the government to do away with the proposal (Harchekar & Kandalgaonkar, 2018). Similar pressure has been exerted on the government through the lobbying power of the plastic industry in the US. The government of Michigan enacted a law that would prohibit local governments from

regulating on the use of disposable plastic products including plastic shopping bags, similarly, in other States such as Idaho, Arizona and Missouri "bans on banning" disposable plastic products have been lobbied in an attempt to protect the plastic industry in the United States (Wagner, 2017).

One of the most prevalent challenges of bans is the **lack of proper enforcement**. The ban policy on single-use plastic shopping bags in Bangladesh in 2002 hardly resulted in any fruitful outcomes. The ban was considered ineffective due to the lack of enforcement where there were shortages in human resources to actually implement the ban while corrupt officials accepting bribes contributed to accelerating the policy's failure. Such was the case in Somalia and Rwanda in the African continent, where there were too few officials to enforce the policy on millions of citizens (Pilgrim, 2016).

3.3.2 Economic Policy Instrument: Tax or Levy and Fees on Plastic Shopping Bags

Taxes are monetary charges that are imposed by the governments to alter the behavior of the actors in the market such as production, distribution and consumption of a commodity. When the price of a commodity is increased through a tax, it disincentivizes the consumer to buy that commodity and impact a change in their behavior. This type of instrument reduces the consumption of plastic shopping bags while at the same time allowing the consumers to reflect on their consumption behavior by asking if they really need the plastic shopping bag. According to Romer and Tamminen (2014), the implementation of the Irish tax on PSBs popularly known as the 'PlasTax' boasts reducing PSBs by 90% from their baseline. While some experts distinguish between a tax and a levy, this study will use the two terms interchangeably which would mean an extra charge put on a specified commodity that wholly goes to the Government as a revenue. Whereas, a fee is an extra charge put on the commodity that is mandated but is not collected by the Government.

3.3.2.1 Point of payment

Depending on which stream to focus on, taxes can either be levied on the producers of plastic shopping bags, importers, suppliers, retailers or the consumers. Hiltunen (2004) claims that theoretically, whichever component of the chain the tax is levied upon, the impact of it will be felt by all the actors throughout the product chain. For instance, putting a tax directly on the producers of the plastic shopping bags will increase the cost of the bags being sold, this will impact the consumer's choice as the bags are now expensive. This will in turn impact the producers and retailers now that the consumers behavior has been altered.

According to Wagner (2017), policy makers should ensure when implementing economic policy instruments such as a tax that consumers are made aware of the extra charge on the PSBs. This will make sure that the consumers know that they are paying an extra charge or a tax on the bags which might lead to a change in their consumption behavior and avoid buying PSBs and resort to using other sustainable alternatives. Countries such as Fiji and Spain have a regulation in place for the retailers to have mandatory posters or notice that informs their customers that the PSBs are charged; other countries require the retailers to reflect the amount charged for the PSB in their customers' receipts (Martinho *et. al.,* 2017).

3.3.2.2 Unit to be taxed

When a tax on a commodity is imminent, the unit of the product that needs to be taxed should be determined (Nilsen, 2010). In the case of plastic shopping bags, in almost all the cases today where such a policy instrument is used, the unit of product to be taxed for PSB at a retail store is one plastic bag. For example, 10 euro-cent for each bag. In other cases, some implementers make the retailers charge a set price per sale. For example, 15 euro-cent for one plastic shopping bag or 15 euro-cent for 10 plastic shopping bags, the charge remaining the same no matter how many plastic shopping bags the customer takes.

3.3.2.3 Tax rate

Nilsen (2010) states that the tax rate of plastic shopping bags can either be set in absolute or percentile terms but usually Governments resort to setting it in an absolute term at the retail point of sale. Policy makers have the power to either let retailers disallow giving away PSBs for free and let them set the price at their discretion or set the price themselves and require retailers to pass it on to the consumers. Martinho *et. al.* (2017) believe that while setting the charge for the tax, policy makers should take into account the actual charge of the PSBs and the amount that would be needed to cover the cost of cleaning it up. Taylor *et. al.* (2012) in their paper notes that policy makers need to be wary of the final rates that they decide on – if set too low, there will be no effective outcome resulting from it; and if set too high, there will be resistance from the consumers and producers which will result in secondary impacts such as emergence of black markets or evasion of charges. Nielsen (2010) also points out that policy makers should fix the tax charge with a possibility for it to be flexible – a charge which can be adjusted to market changes or a raise on it if it does not contribute towards reducing the PSBs below the target level.

3.3.2.4 Enforcement and Sanctions

According to Hiltunen (2004) in their paper, studies carried out in Finland and other European countries where a tax on plastic shopping bags was instituted, one of the most important stages of the policy is in the enforcement part – where a good system is put in place which decides the responsibilities of the organizations that will look after the activities of implementing the policy, reporting the progress, collecting tax and the management of it. It is imperative to have good recordkeeping on the process and process of the policy from time to time for monitoring purposes and to modify the policy according to target needs. The policy makers should also task an enforcing agency that takes care of policy non-compliance cases.

3.3.2.5 Implementation challenges

Policy instruments such as a tax on plastic shopping bags if designed and implemented properly, have been known to deter the consumers from over-consuming PSBs and in theory, such policies that include putting an extra charge on the bags is proved to be effective in changing the behavior of the consumers. But in practice, if the policy is not designed properly and consists of loopholes, this type of policy instrument will be hard to implement and enforce leading to a failure.

With such policies, it is known that when an **additional charge** is put on a commodity it increases the total price of that commodity. This change in price will affect the financially **disadvantaged people** who cannot absorb the cost more severely than the affluent population of society. A study in Kenya by Watts (2018) found out that consumers and small businesses in the country were burdened by the tax and the high cost of alternatives with cases of

biodegradable fiber bags costing 6 times higher than conventional plastic shopping bags. When alternatives are not affordable and readily available and the government does not aid the citizens to transition to alternatives, out of necessity people will continue using PSBs. And as in the case of Rwanda and Bangladesh as discussed in the previous sections, there will be a boom in the black market of plastic shopping bags which will greatly hinder the progress of the policy.

Setting the **tax too low** can become a problem for the overall progress of the ban policy too. When the tax is set too low, it does not inculcate a **deterrent effect** on the consumers as the cost can be easily absorbed by them. The cost should also change according to target set to reduce the overall plastic shopping bags from the waste stream – if the total PSBs waste is increasing the cost should be set at a higher rate but if the total waste of PSBs is dwindling and is on progress with the target, the rate of the tax should be the same. For instance, in South Africa a model of Irish Plastic Tax was introduced to control the PSBs in the market. It saw great progress at the outset but the following year the consumers absorbed the tax on the PSBs as it was set too low, even by the standards of the poor people (Dikgang *et. al.,* 2012).

Nielsen (2010) points out that it is important for the people to know how the **tax collected is being managed or used** – if the tax collected directly goes into the Government revenue or as in the case in some countries, the tax is diverted to special funds system, sometimes called as environmental fund, which is reserved for improving environmental issues in the country. For example, in Fiji the tax collected from the sale of plastic shopping bags in the country is diverted to an 'Environmental Funds' account where the fund is used for programs such as conserving biodiversity and wildlife, and mitigation and adaptation of climate change in the country (UNEP 2018). Nielsen (2010) emphasizes the importance of transparency in the collection and management of the tax. If the system is not communicated to the public clearly or there is no clarity in the management of the fund, it will only draw public scrutiny and distrust in the tax system which will ultimately hamper the effectiveness of such policies.

3.3.3 Non-regulatory Policy Instruments - Voluntary Agreements

Borkey *et. al.,* (1998) defines Voluntary Agreements for plastic shopping bag policy as schemes where retailers or firms take up responsibilities to improve their performance in managing and reducing plastic shopping bag wastes, going beyond the requirement of the regulations. An example of such agreements drawn to manage PSBs was successfully introduced in Australia in 2004. The Australian businesses introduced a National Code of Practice for the Management of Plastic Retail Carry Bags where businesses were given materials on how to reduce PSBs, promote alternatives, and set a target to reduce 50% of PSBs from the market by 2005 (Cleanup Australia, 2007).

3.3.3.1 Strengths and weaknesses

Since Voluntary Agreements are flexible in characteristics meaning that they are not regulated by a legislation or a government body, they are less tedious to implement, often non-compliance can go unpunished or penalized as they are purely based on volunteerism. A study by Blackman (2008) shows that Voluntary Agreements on their own have been found to be less effective. They posit that if the firms do not think the government has plans for other stricter policy measures that could be implemented, Voluntary Agreements have shown little improvements. But they also found out that in cases where the firms know that the government has plans for regulatory or economic policy instruments if voluntary agreements fail, the firms have been known to make strong voluntary commitments for the reduction of waste. Karamanos (2001) in their study argues that Voluntary Agreements owing it to being flexible and negotiable will only compromise the objective of the whole target of reducing plastic shopping bags. The firms

have the freedom to set their targets and even if they do not meet the target, there are no repercussions. Therefore, it is believed that other policy instruments such as command-and-control or economic instruments will be more suitable for the reduction.

3.3.4 Non-regulatory Policy Instrument: Informative Campaigns

Informative policy instruments such as awareness or education programs have become pervasive in recent years with the advancement in Information and Technology – such programs have been able to penetrate the market rather easily enabling informed choices for the actors involved in the market (Sterner, 2003). Tietenberg (1998) classifies such policies into two groups: ***Information dissemination***, the government provides information to the public or the firms about policies that will be introduced and management of environmental issues such as the issue of plastic shopping bags; and ***Information disclosure***, where the government requires the firms or actors to disclose information related to plastic shopping bags such as emission from production, number of sales by the retailers, or the volume of PSBs imported or exported, etc. The main aim of such programs under this policy is to make the actors take in and realize the right information provided by the government and other relevant organizations so that they can make better informed decisions.

3.3.4.1 Strengths and Weaknesses

Karl and Orwat (1999) states that informative policy instruments should not be used on its own or as a replacement for other policy instruments as it often lacks regulatory backing, and should therefore be used only as supplements to the other policy instruments. While this type of policy is cost effective and easier to implement, the effectiveness of it relies heavily on the behaviors of the individuals who receive the information. This means that no matter how rigorously the policy is designed, if the individual who receives the information does not change their behavior after the program is implemented, the policy will be considered to be a failure. Sterner (2003) also argues that *Information disclosure* or *Information dissemination* will not factor in changes in the behaviors of PSB users if economic incentives are lacking or if the alternatives to PSBs are not readily available or are too expensive to purchase.

3.4 Summary of Plastic Shopping Bag Policy Instruments

Command-and-control policy instrument or a ban on plastic shopping bags as a policy tool has the potential to generate reduction results if it is backed by government legislation and comes with strong penalties and sanctions. However, if the implementation, enforcement and monitoring of the policy is weak, there are chances of secondary impacts leaked into the society which will cause more harm. Unavailability and unaffordability of alternatives to the conventional plastic shopping bags will create black markets for PSBs and the use of seemingly 'sustainable' alternatives will do more damage than good. This type of policy instrument is costly to implement as it needs large financial and human resources for enforcement and monitoring purposes.

An economic policy instrument that involves a tax or fee on the plastic shopping bag in theory is effective to change the consumer's behavior as an extra cost is added to the price of the plastic shopping bags but in practice, if proper research and feasibility study is not properly conducted, there are many challenges which could lead to its failure. Setting up high tax or mandating high fees on the PSBs will affect the low-income households and small businesses since they will not be able to absorb the new cost, and if the tax or the mandated fee is set too low, the consumers will easily absorb the price and there wouldn't be a change in their consumption behavior thereby leading to no reduction in the PSB waste. Lack of alternatives or alternatives being

costly will make the consumers continue using PSBs. However, if the policy is designed and implemented successfully, the fund generated from the tax can be used as funds for further improvement of the policy or to be used in improvements of other environmental issues in the country. Nevertheless, when these funds are not managed properly with clarity or transparency, there are chances of scrutiny and distrust from the public which will cause them to not trust the tax system.

Informative policy instruments and Voluntary Agreements are very flexible with reduction targets and compliance and are therefore less demanding of a work than compared to banning or taxation. These types of instruments will enable increased awareness that might lead to actors making informed decisions. However, a crucial weakness of this type of policy instrument is that the effectiveness of such an instrument is uncertain – cannot be transferred to other cases, and is highly dependent on case specific conditions.

3.5 Policy Instruments in developing countries

Developing or low-income nations typically lack the financial resources and infrastructure to address environmental issues properly. Policy Instruments which require investments in infrastructure and huge resources in its implementation, enforcement and monitoring, have been observed to be poorly working in low-income nations (Blackman, 2009). Blackman (2009) in their study observed that command-and-control policy instruments in developing nations in both Asia and Africa have failed owing to the lack of financial resources to employ officials for enforcement and monitoring of the ban. Similarly, with economic policy instruments such as a tax or a fee, according to Knoblauch *et. al,* (2018), owing to its need for a high institutional capacity, low-income nations find it rather difficult to implement the model. It can be proposed that developing or low-income nations should adopt non-regulatory policy instruments as they are cost-effective and easy to implement but according to Blackman (2009), considering the disadvantages and weaknesses of such policy instruments, the issue of plastic shopping bag waste which is ever growing will not be addressed fully. Blackman (2009) notes that such a type of policy, using on its own, will only compromise the real objective of reducing PSB waste and may act as a diversion for the low-income nation to actually develop an appropriate policy tool that is context-specific which might prove to be successful in their their case.

4 Plastic Shopping Bag Policies: Global cases

This chapter looks into the different cases of policy instruments introduced by the governments around the world to address the issue of plastic shopping bags in their respective countries. A handful of cases or countries are picked that have had success or failure with the three types of environmental policy instruments regarding plastic shopping bags and are studied carefully to draw their lessons that could be borrowed for use for designing a policy or policy mix for Bhutan. The cases for this chapter are selected based on their popularity of being successfully implemented and those that have had implementation failures whose results can be used as a lesson to be learnt, as well as strictly limiting them to developing countries or geographically small countries whose policy model might fit the context of Bhutan, However the Author also seeks to focus on cases of Ireland and Australia given the fact that the information is readily available on these two cases. The cases listed in this chapter are by no means an exhaustive list of the policy instruments that have been introduced globally to address PSBs but serves to further describe and understand the different policy instruments with these cases as practical examples. The main objectives of this chapter are to understand the practical knowledge of the theoretical policy instruments, draw their lessons (what worked and what did not work), and use these insights to design a policy measure for the Bhutanese context.

4.1 Rwanda (Ban)

The Government of Rwanda in 2005 implemented a ban on plastic shopping bags in the country. The Government's agenda for VISION 2020 strategy included making Rwanda a country that prides in a knowledge-based economy to accelerate development through tourism and investment (Behuria and Goodfellow, 2019). According to Clapp and Swanston (2009), the Rwandan Government initiated the plan to ban plastic shopping bags in 2003 when a study funded by the Rwanda Environment Management Authority (REMA) entailed the damage done by PSBs on the country's environment. The main impacts of the overuse and littering of PSBs in the country are associated with blocking drainages and littering in the urban centers, pollution of soil with the excessive buildup of PSB wastes, and the dangers posed to livestock who consume them.

The blanket ban on plastic shopping bags was thought to be one of the strictest policies in the African continent where plastic shopping bags below 100-micron thickness were to be taken out from the market – production, importation, distribution and use of PSBs were all made illegal under the policy. Implementation was perceived to be very strict by its citizens where the offenders of the policy could get up to six months in jail. Enforcement of the policy was periodically carried out where surprise checks of stores and production facilities were carried out by government officials (Danielsson, 2017). However, even with a rigorous enforcement and penalization of offenders, the use of plastic shopping bags obtained through smuggling and black market is rampant. Xanthos & Walker (2017) in his study mentions people smugglers in PSBs from the neighboring countries of Uganda and Burundi who do not have such policies in place.

Many stakeholders that were not involved in the policy making process observed that the government did not carry out a proper study on how to implement the policy – there were reports that the policy came into effect without giving its citizens or firms a transition period to adjust to the policy. Danielsson (2017) makes note of such incidents when the plastic manufacturing plants were asked by the government to end their operations after a few weeks of the policy's implementation. Behuria and Goodfellow (2019) in their study states that the ban policy of Rwanda lacked vision on some levels – alternatives were not readily available and even when manufacturers wanted the government's support on producing alternatives to plastic

shopping bags – little to no subsidies were provided. The government initially promised to support local manufacturers of alternatives when the ban was being formulated but after the implementation of the ban, the government failed to keep their promise which made the people lose their trust in the policy. It was known later that the government instead planned to give tax incentives to entrepreneurs to buy recycling equipment to recycle plastic. The local manufacturing plants that manufactured the alternatives to the PSBs faced stiff competition from the neighboring countries whose paper bags or cloth bags were sold at a lower rate in the market.

After the institution of the ban, Rwanda's ban on plastic shopping bags was applauded by the international community and was seen as a success story. The ban was able to achieve its main objective (at some level) of reducing the plastic shopping bag waste in the country but it also generated unexpected secondary (negative) impacts that would ultimately make this policy to be concluded as an ineffective one. Danielsson (2017) in his study found out that there is rampant smuggling and sale of PSBs in the black market, however there the cases of offenders penalized for such cases is not that many (once a year) - this shows that there is weak enforcement in the policy.

4.2 State of Sikkim – India (Ban)

Sikkim is one of the smallest States in India and has often been regarded as the first State in India to introduce a ban policy on plastic shopping bags. It borders China in the north, Bhutan in the east and Nepal in the west, measuring 7,096 sq. km of total area. It shares similar cultures, biodiversity and climates as Bhutan. Sikkim first introduced the ban on plastic shopping bags in 1998 to address the issue of PSBs being littered in the city which blocked the drainage systems of Gangtok (capital city) causing a series of life-threatening landslides (Department of Forest, Environment and Wildlife Management of Sikkim, 2016). Government notification dated 4 June 1998 No.GOS/UD&HD/97-98/6(84) issued by the State of Sikkim states that "*you shall not deliver any goods or materials purchased or otherwise to any person, firm, shop, company or any other agency or organization in plastic wrappers or plastic bags*". No sources can be found to know if the State Government has managed to transform the notification into a Plastic ban regulation as indicated by Toxics Link (environmental NGO) in their 2014 report or it still remains a notification. The ban covers all plastic bags that are wholly or partially made out of polyethylene or PET. However, polypropylene bags or non-woven bags which are also made up of polyethylene are not listed under the banned item list. The ban is applicable only to traders/importers, retailers and street hawkers and consumers are not liable to get penalized.

A survey conducted in 2014 by Toxic Links found out that there was a drop in the usage of plastic shopping bags overall and awareness level on the ban remained above 80% which helped maintain the retailers' compliance with the ban. There was a dramatic increase in plastic bag alternatives used in the shops which included 34% paper bags, 29% newspaper wrapping, 28% non-woven Polypropylene bags, 1% jute bags. According to the study, 8% of total bags provided were still conventional plastic shopping bags that were distributed clandestinely. It was also observed that the awareness level on the ban in rural areas was very high, above 75% due to the periodic informational campaigns and distribution of informative pamphlets on the ban notification initiated by the State and local governments. However, the NGO found that effectiveness level in the rural areas were negligible since there enforcement and monitoring was lacking in these areas. The study also found that the number of people carrying their own reusable bags were dwindling and mostly depended on the alternatives provided by the shops. In the capital and major urban areas, regular inspections were carried out and penalties were imposed on the offenders strictly, creating a level of fear that has made the ban quite effective.

Offenders were fined up to INR 20,000 (1 EUR = 88 INR) or got their licenses cancelled/suspended, or both.

There are no plastic manufacturing plants in the State of Sikkim and most of the alternatives to plastic shopping bags found, in particular the polypropylene bags or non-woven bags, are imported from the neighboring state of West Bengal. The study conducted by Toxic Links (2014) found out that the local wholesalers and retailers sold non-woven bags to buyers in Sikkim as eco-friendly bags. These non-woven bags are actually made out of the same materials as the conventional plastic bags, however because the texture of these non-woven bags is similar to cloth bags, people believe that they are eco-friendly. On the whole there are limited options for sustainable alternatives with jute and cloth bags constituting less than 1% of the total alternatives distributed in the State.

One of the major weaknesses of the ban notification, although progressive and showing results, is that there are no liabilities for the consumers. People import plastic shopping bags from the neighboring states for domestic use and they are not penalized under the ban notification. There is also no monitoring and enforcement in the bordering town and rural areas that the ban cannot be proven effective as compared to the capital city. More awareness and educational campaigns should be carried out in these areas if the State government cannot reach their controlling hands for monitoring as this will ensure that the people will make an informed decision where monitoring is absent.

4.3 Ireland (Levy)

A levy on plastic shopping bags known as the Irish PlasTax was introduced in Ireland in 2002 by the Irish Government to address the rising disposable plastic shopping bags in the waste stream – a levy of 15 euro-cent per bag was first applied which gradually increased to 22 euro-cent from 2007 (Nielsen *et. al.,* 2019). The reason for this increase was that the per capita consumption of the PSBs increased from 21 to 31 PSBs from 2001 to 2006 – the Government setting the desired target at 21 PSBs per person or below for all times (Nielsen *et. al.,* 2019). As seen in Figure 4-1, despite the increase in the rate of the levy, the total amount generated from the levy also decreased with it, signifying that such measures are actually effective. The strategy also entails revising the rate of the levy every year according to market inflation as well as administering the per capita consumption, capped at 70 euro-cent. The tax or levy was introduced with the main intention to trigger behavior change in consumers and promote the use of reusable bags. However, exemptions were made for plastic bags that were used primarily for packaging hygiene and safety reasons such as bags used for carrying fish, meat, fruits, nuts, vegetables, baked items, dairy products, cooked food and ice.

A survey conducted in 2014 highlights that the plastic shopping bags constituted only 0.13% of the total litter compared to 5% before the implementation of the levy and that there was 40 times less litter from plastic bags in the litter stream than compared to the years before the introduction of the levy (Xanthos and Walker, 2017). And according to Newman *et. al.,* (2013), the overall marine litter from plastic shopping bags decreased from 5% in the year before the levy to 0.25% in 2010. Also exempted from the levy were bags sold on ships, airplanes, in airports, and reusable plastic bags sold by retailers which cost not less than 0.74 euro (Waste Management Regulations, 2001).

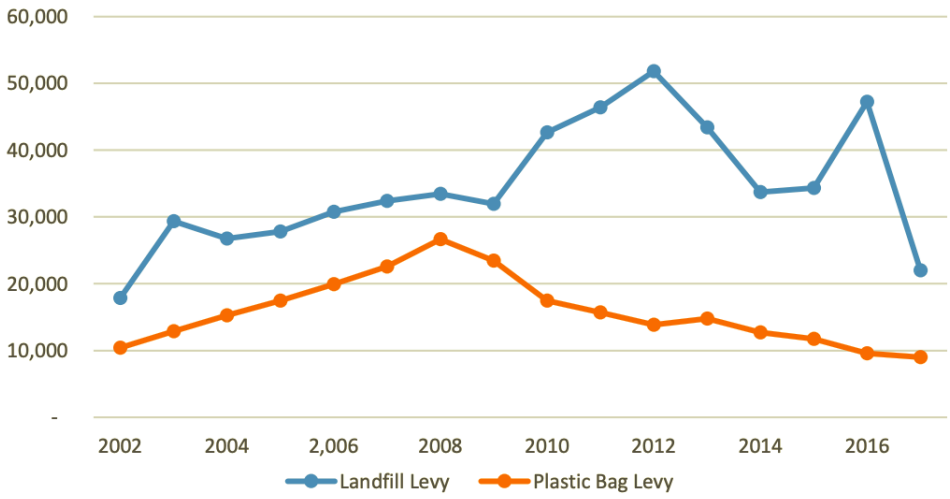

Figure 4-1 Revenue generated from the Plastic Bag levy in euro '000

Source: Taken from Environment Fund report (Department of Public Expenditure and Reform, 2017)

According to Convery *et. al.* (2007), concerns for the retailers as the levy was introduced were that the retailers would be blamed by the consumers for charging the extra cost on the plastic shopping bags as well as customers bringing their own reusable bags leading to increase in shoplifting incidents. This was however resolved by a huge campaign on the implementation, the advantages and consequences of the levy which cost almost 400,000 euro sensitizing on the advantages of the levy over the trivial concerns that could be managed easily. Having a transparent system of collecting the levy and then using the fund generated from it as a revenue for environmental initiatives in the country further increased the trust in the policy. Another reason for the successful implementation of the levy on the retailers' part was that the cost of administering the levy was low to modest where the collection and reporting of levy was integrated easily in the already existing Value Added Tax (VAT) system.

Fehily *et. al.* (1999) notes that the majority of the plastic shopping bags that enter the Irish market are imported – 20% of plastic shopping bags are produced in the country while 80% of PSBs are imported from outside. The fact that there is little presence of plastic bag manufacturing plants meant that the levy could be introduced with not much resistance from the plastic industry in the country. And when the levy was actually introduced, there was limited impact on the jobs of these industries.

Another important factor that led to the success of the levy on plastic shopping bags in Ireland is that the Government consulted and engaged all the concerned stakeholders (Nielsen *et. al.,* 2019). Stakeholders engagement ensures the affected parties' willingness to pay, how much they are willing to pay, drawing up exemptions and proper time and channel to introduce the levy.

The Department of Environment, Community, and Local Government uses a system called the National Litter Pollution Monitoring system which helps in evaluating the progress by providing data on the number of total plastic shopping bags consumed and per capita consumption to analyze the impact of the levy. Enforcement of the process is taken care by the local authorities and the collection of the levy collected by the retailers is carried out by the Revenue Commissioners. The levy collected is diverted to a separate fund called the Environment Fund which is used for improving environmental issues and promote environmental initiatives in the

country such as but not limited to waste management, distribution and sale of sustainable alternatives to plastic shopping bags, promotion of awareness and education campaigns, improving environmental quality at local level, and funding research and development in the waste management field (Xanthos & Walker, 2017). According to an article by The Journal (2013), the revenue from the plastic bag tax generated in Ireland totaled up to 203.4 million euro from 2002 till 2013.

4.4 Fiji (Partial Ban + Levy)

Fiji is an island country in the South Pacific Ocean measuring 18,274 sq. km in area and has a population of 926,276. The Government of Fiji in 2017 introduced a levy on plastic shopping bags that are distributed in the country. According to Dehm *et. al.* (2020), in 2010 alone the island consumed over 70 million plastic shopping bags. This has been seen as an alarming trend by the Government which was made worse by a study conducted in the waters of Fiji, New Zealand, Rapa Nui and Samoa which showed that 97% of the fish that were sampled for the study contained microplastic – a 30% more than the global average (Ferreira *et. al.,* 2020). The people of the island being directly dependent on fish for protein, the marine environment being littered and plastic pollution on the island has made the Fijian Government push for a policy to address these issues with PSBs.

The Environment and Climate Adaptation Levy Act (2015) of Fiji requires the retailers to charge FJD 0.10 per shopping bag to consumers (1 EUR = 2.44 FJD). The Government was able to successfully levy over 43 million PSBs on the island from 2017 to 2018 after the introduction of the policy. However, with the per capita usage of PSB still higher than the desired target and the ongoing attempt to actually phase out PSBs from the island, the Government released an amendment on the Levy Act in 2019 that puts a partial ban on the PSBs and an increase in the levy charge – PSBs with thickness of less than 50 microns will be banned and other PSBs distributed at the point of sale will be charged FJD 0.20 per bag (Fiji Revenue and Custom Services, 2019).

The Levy Act requires all businesses on the island to charge the levy on plastic shopping bags with a thickness of 50 microns or above and eliminate distributing other PSBs from 1 January 2020. Businesses that have a Point of Sale (POS) invoicing device are included in phase 1 of the policy meaning that the policy will be implemented and enforced in such businesses only, however if other businesses that do charge the levy without such devices, could do so by reporting to the Revenue and Customs with copies of receipts. The Government in the next phases will slowly include the rest of businesses by requiring them to have a POS invoicing device (Fiji Revenue and Custom Services, 2019).

The monies collected from the levy is transferred to an environmental fund called the Environment and Climate Adaptation Levy or ECAL Fund where the Government utilizes it to fund environmental initiatives such as waste collection and management, climate change and adaptation programs, and biodiversity and wildlife conservation.

There are several factors that led to the success of the levy: the policy was carried out in phases where large businesses were made to comply to the policy first followed by smaller businesses, this helped the government officials to enforce the levy by not having to inspect all the businesses all at once; there was a huge campaign organized by the Government to make its citizens aware of the problems associated to PSBs on the island; and strict penalties for the offenders. Manufacturing of PSBs on the island is fined up to FJD 500,000 or imprisonment up to 7 years, or both, and a person who is found to distribute or sell PSBs will be fined up to FJD 150,000 or imprisonment up to 2 years, or both (Fiji Revenue and Custom Services, 2019).

South Africa in 2002, designed a plastic shopping bag policy based on the Irish Plastic Tax model as well as supplementing it with a partial ban. Plastic shopping bags with thickness of 30 microns and below were all subjected to the ban while other PSBs sold at a point of sale would be subjected to a levy of ZAR 0.46 (1 EUR = 17 ZAR). O'Brien and Thondhalana (2019) reports that the policy has seen mixed results – there was clear decline in lightweight plastic shopping bags through the ban and a decline in other PSBs that were levied. However, the effect of the tax decline gradually over the years. According to Dikgang *et. al.* (2012), it was found that the levy was set too low even by the standards of the poor resulting in the cost being readily absorbed by all. Other reasons that O'Brien and Thodhalana (2019) outline are the lack of viable alternatives and the people's high dependence on PSBs.

1.1 Wales (Mandating a compulsory fee)

The Welsh Governmnet, in 2011, introduced a mandatory fee EUR 0.06 on single-use plastic shopping bags to be charged by retailers on the consumers, making Wales the first country in the United Kingdom to require a charge on most plastic shopping bags to address its waste problem. All stores that are staffed with more than 250 workers are subjected to the mandatory fees while small businesses or retailers with less than 250 staff are not required by law to enforce the fee on single-use plastic shopping bag, however from April 2022, the Government has amended the law to require all shops, regardless of the number of staff in their establishment, to enforce the mandatory fee on single-use plastic shopping bags, which is to be increased from 5 pence to 10 pence (DEFRA, 2018).

The Department for Environment, Food and Rural Affairs (DEFRA), the implementing agency, does not require the retailers to transfer the revenue generated from the mandatory fee but requires them to charge at least 5 pence or more on all single-use plastic shopping bags and thus the revenue generated from it be donated to charitable causes. DEFRA however requires stores that employ ten people or more to keep a detailed record on the number of plastic shopping bags they sell and report on what they do with the revenue generated from it. These stores are legally required to publish these records to the public and the Government.

None of the 5 pence fee on single-use plastic shopping bags charged goes to the Welsh Government. The Governemnt, however, through the enforcement scheme can generate some fund through penalties on non-compliance ranging from GBP 100 to 20,000.

The mandatory fee on single-use plastic shopping bag scheme generally saw effective results. A Cardiff University study found out that after the scheme was implemented, 34% more of shoppers resorted to taking their own reusable bags in their recent shopping trips. The overall support for the mandatory fee increased from 59% to 70% over the years; the Welsh Government estimates that there was more than 70% reduction in single-use PSBs across retailers in the country (Poortinga *et. al.,* 2013).

4.5 Australia (Voluntary Agreements)

In 2003, retailers in Australia voluntarily agreed upon an approach to reduce plastic shopping bags in the market, known as the Voluntary Code of Practice which aimed to reduce plastic shopping bag distribution and consumption by 50% from the baseline of 6 billion plastic shopping bags (annual average) by 2005 (Nielsen *et. al.,* 2019). This voluntary approach emerged as the Government announced a mandatory EUR 0.15 tax per plastic shopping bag if the firms and consumers do not reduce their distribution and consumption of PSBs by 50% by 2005.

The Voluntary Code of Practice required participation from 90% of the supermarkets and 25% of smaller retail businesses, however participation rate from smaller businesses such as fast food, liquor stores, outlets and pharmacies, was recorded to be very low. According to Miller (2012), the Environment Protection and Heritage council of Australia (EPHC)'s study on the case reports that the Retailers; Association spent over AUD 50 million on the program including setting up projects to encourage consumers to decrease their PSB consumption and increase recycling as well as making alternatives such as cloth bags, jute bags, string bags, baskets and biodegradable bags available in the market.

According to Nolan ITU (2005), an environmental consultancy in Australia, reports that by the end of 2004, retailers were only able to reduce 25% of plastic shopping bags from the market as opposed to the 50% target. They believe that while the larger supermarkets have worked together to achieve the target, smaller businesses who make up 50% of PSBs source in the country have had limited participation and compliance.

The Australian Government at the end of 2005, noting the failure of the Voluntary Agreement informed the public that a ban on plastic shopping bags or a levy per plastic shopping bags is imminent, given the splat of studies showing that the PSB consumption in the country is still increasing (Nolan ITU, 2005; Miller, 2012). Nolan ITU (2005) however suggests that a ban on PSB can be seen as an extreme measure in Australia and instead a levy on PSBs should be explored by the Government.

A similar approach was taken by retailers in Los Angeles Country in California (USA) to reduce distribution and consumption of plastic shopping bag by 30% in 2008. Over the two-year period of the agreement, there was found to be inconsistency in the data provided by the retailers. The LA Country Board concluded that the attempt was a failure with no goals achieved. It was, however, later reported that out of the all the stores that should have participated in the agreement, only eight stores at any time had met the requirements of the agreement. In 2010, the Board passed a carryout bag ordinance which banned single-use plastic shopping bags in the county and a minimum charge of USD 0.10 per PSB where the charge is not collected as government tax but used by retailers as cost for complying (Wagner, 2017).

4.6 Issues and considerations for different policy approaches

In this section, different considerations and issues associated with the three types of policy instrument that address plastic shopping bags wastes, are outlined and discussed below. The solutions or considerations for the issues are drawn using the review of the cases in chapter 4 and policy typologies discussed in chapter 3.

4.6.1 Ban

Issues and considerations regarding a ban policy are discussed below.

4.6.1.1 Enforcement

With a policy such as a ban that requires huge commitment in terms of both financial and human resources by the government, lack of enforcement and monitoring is one of the main issues. As discussed in the cases in the previous sections, weak enforcement and monitoring has led to the failure of the ban. With weak enforcement of policies, compliance is reduced and thereby offenses will be rampant. The ban policy, even if backed by strong government legislation, if not enforced or inspected properly, the actors in the market will not comply or make the

necessary behavioral changes. In the case of Rwanda and Kenya, where the population is big, total enforcement and inspection can be a difficult job to be carried out. Some solutions or considerations that could be taken to remedy enforcement issues with such policies are presented in Figure 4-2.

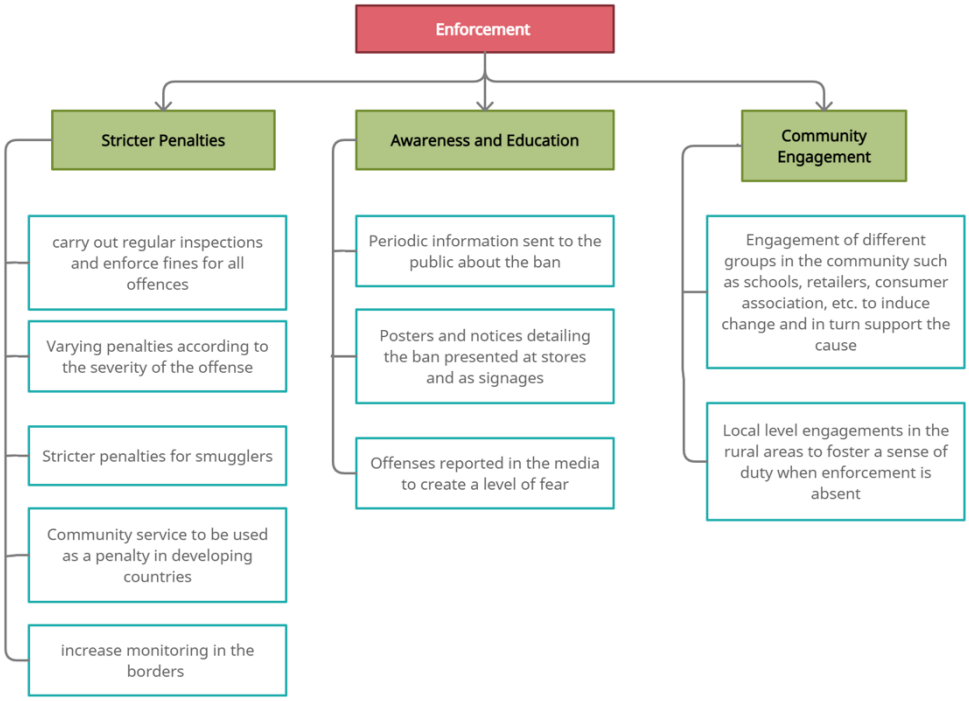

Figure 4-2 Considerations for a weak enforcement

Source: Author's own compilation based on information presented in Chapter 3 and 4 of this thesis

4.6.1.2 Alternatives

Another top consideration when a ban must be introduced is the availability of viable alternatives. If there are no alternatives provided or available in the market when plastic shopping bags are completely banned, people will continue using PSBs as there are no other options to substitute it.

In cases where alternatives are available, the sustainability of these alternatives should be studied. According to Cooper (2016), paper bags, one of the most commonly advocated alternatives, is energy and water intensive during production that one would need to reuse it four times to compensate for the larger carbon footprint; plastic bags thicker than 50 microns should be reused 5 times; and cotton bags should be reused 173 times. Cooper suggests that cotton bags are superior in this case as they are durable and can outlast its recommended 173 uses, emphasizing that 1 cotton bag is better than 173 plastic shopping bags in the landfill.

As seen in the case of Sikkim, polypropylene bags are used as alternatives to plastic shopping bags in the State under the pretense that they are environment-friendly. These polypropylene bags or non-woven bags which are made to feel like a cloth bag are actually made out of the same materials as polyethylene bags. Therefore, consumers must be provided with adequate information on issues regarding PSB waste as well as the sustainability of such alternatives to

make informed decisions. Figure 4-3 shows the considerations and steps that could be taken to resolve the alternative issue for such policy:

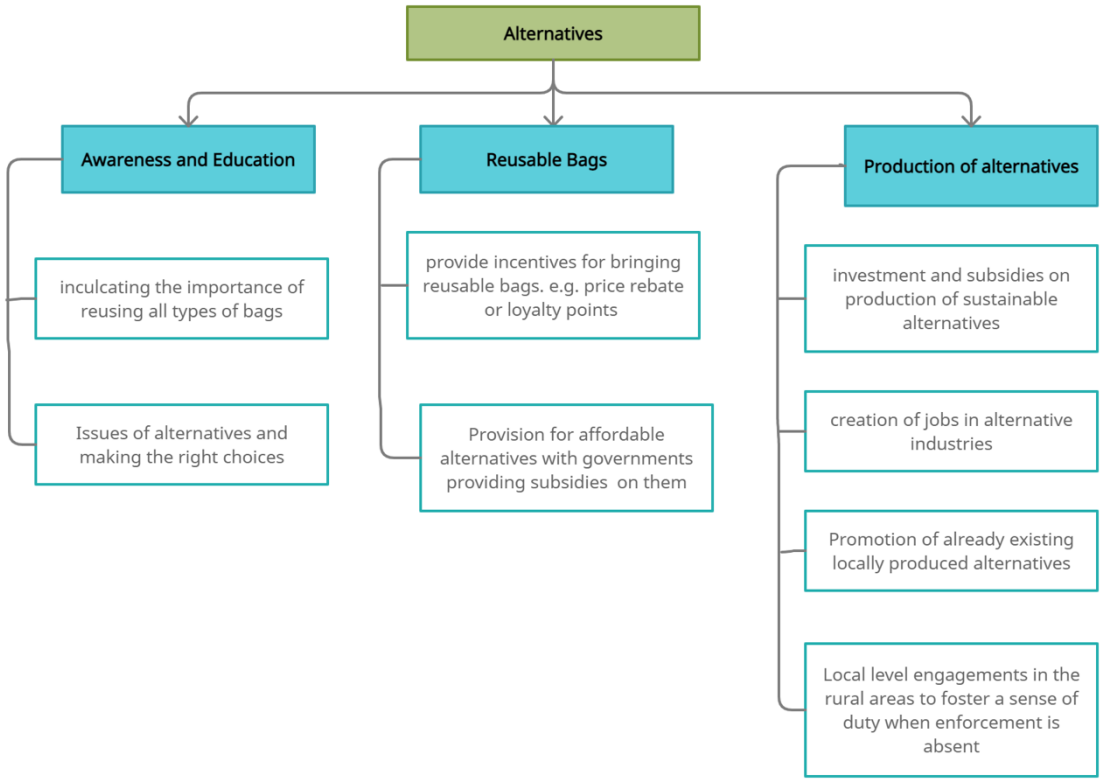

Figure 4-3 Considerations for issues with Alternatives

Source: Author's own compilation based on information presented in Chapter 3 and 4 of this thesis

4.6.1.3 Black Market

In most of the cases where a blanket ban or a complete ban on plastic shopping bag was introduced, there have been incidents of smuggling of PSBs. In the case of Rwanda and Kenya, PSBs were smuggled from the neighboring countries and there has been a rise in black markets which challenges the effectiveness of the policy. With porous borders and lack of monitoring in such places, people easily smuggle in contraband items. The cases where the emergence of black market for PSBs was observed, were in the countries that did not provide other alternatives or where affordable alternatives were not available in the market.

In order for the policy to work and eliminate the issue of black markets emerging, elements such as proper enforcement, educational campaigns, and provision of alternatives should be considered. A diagrammatic representation of the considerations for such an issue is presented in Figure 4-4.

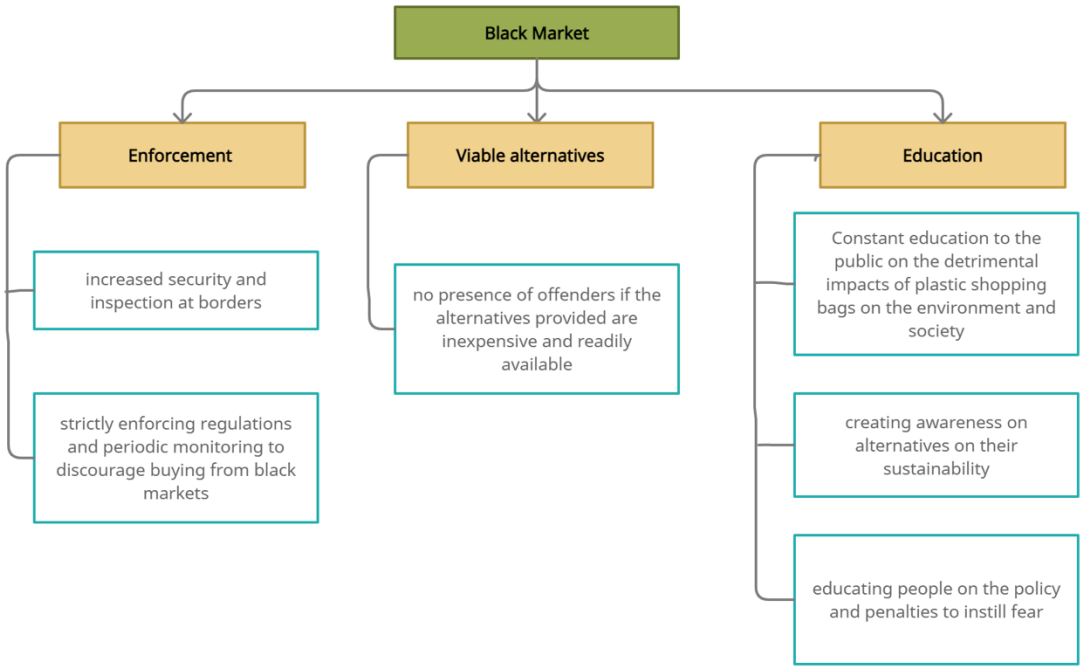

Figure 4-4 Considerations for black market emergence issue

Source: Author's own compilation based on information presented in Chapter 3 and 4 of this thesis

4.6.1.4 Side effects

An important consideration when drafting a ban policy is to take into account the possible loopholes that might occur and take necessary measures to correct them. Having loopholes in the policy would mean that the actors in the market will be able to exploit it to their advantage, In the case of the U.S.A as discussed in chapter 3, ban of plastic shopping bags below 50-micron thickness only increased the usage of plastic shopping bags of thicker walls which were not banned. Or in the case of Kenya, where PSBs below 30-micron thickness was banned but monitoring it was found to be too difficult. Hence the Government putting a blanket ban on PSB to make the enforcement and monitoring easily implementable. Such loopholes should be addressed so that the policy is not taken advantage of. A diagrammatic representation of the considerations for such an issue is presented in Figure 4-5.

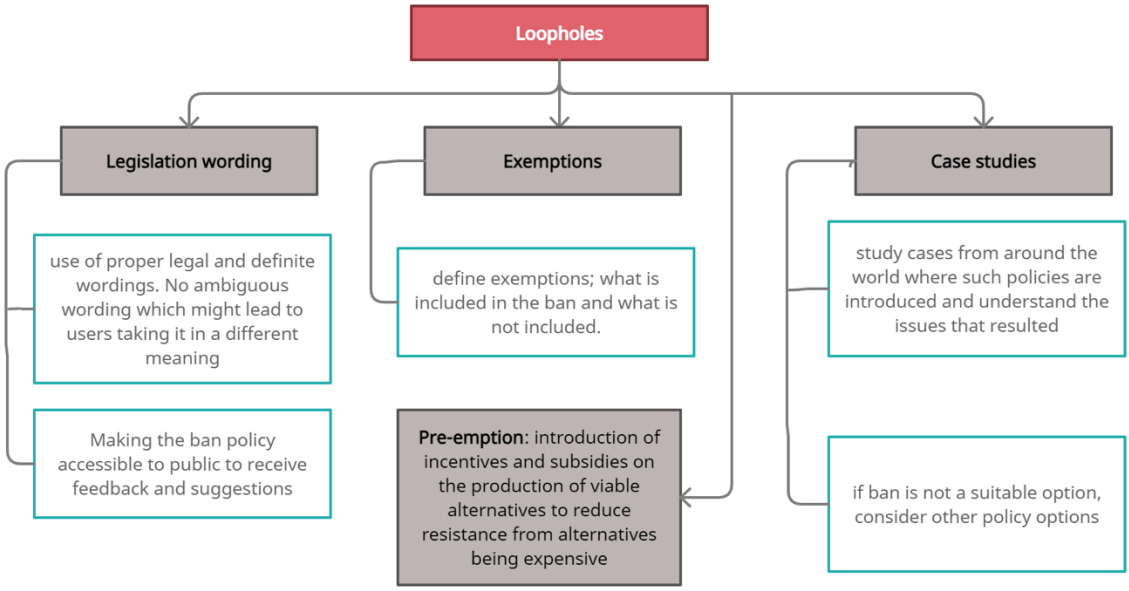

Figure 4-5 Considerations for countering side effects

Source: Author's own compilation based on information presented in Chapter 3 and 4 of this thesis

4.6.2 Tax or Levy and Fee

The section contains the issues and considerations associated with a levy or fee type of policy instrument. From the cases outlined and discussed in the previous sections and in particular, the Irish and Fiji plastic shopping bag levy, the main factor that led to the success of the policy was that rigorous consultations and engagement of all the affected stakeholders was taken into consideration where inputs from different agencies and stakeholders were incorporated in the policy. The cost at which the levy would be set was also consulted with consumers and retailers – willingness to pay for one plastic bag by the consumers was observed to be low but the Government in consultation with the environmental analysts raised it so that it triggers a behavioral change in the consumers when thinking of using a plastic shopping bag at a point of sale. This is an important aspect of the levy policy where the extra cost should be set at the right level otherwise if the cost is too low, consumers will easily absorb the price. Such was the case in South Africa, where the levy was so low, even by the standards of the poor, that the levy was absorbed by the consumers and the consumption of PSBs increased.

An issue with taxing of plastic shopping bags, in terms of transferability, is that such policy needs existing infrastructure that could be readily utilized. In Ireland, the levy was recorded and collected through an already existing VAT system which made the implementation easy. In the case of Fiji, during phase-1 of the introduction of the levy, only larger supermarkets and businesses that had a Point of Sale invoicing device were included for enforcement. During the next phases, other smaller businesses were added by requiring them to have a POS invoicing device for recording and reporting the sale of PSBs at their stores. Low-income countries lack such a system in place and therefore there are challenges in administering the levy in such countries should a policy such a levy be introduced.

Other issues and considerations for a levy are presented as a diagram that can be seen in Figure 4-6.

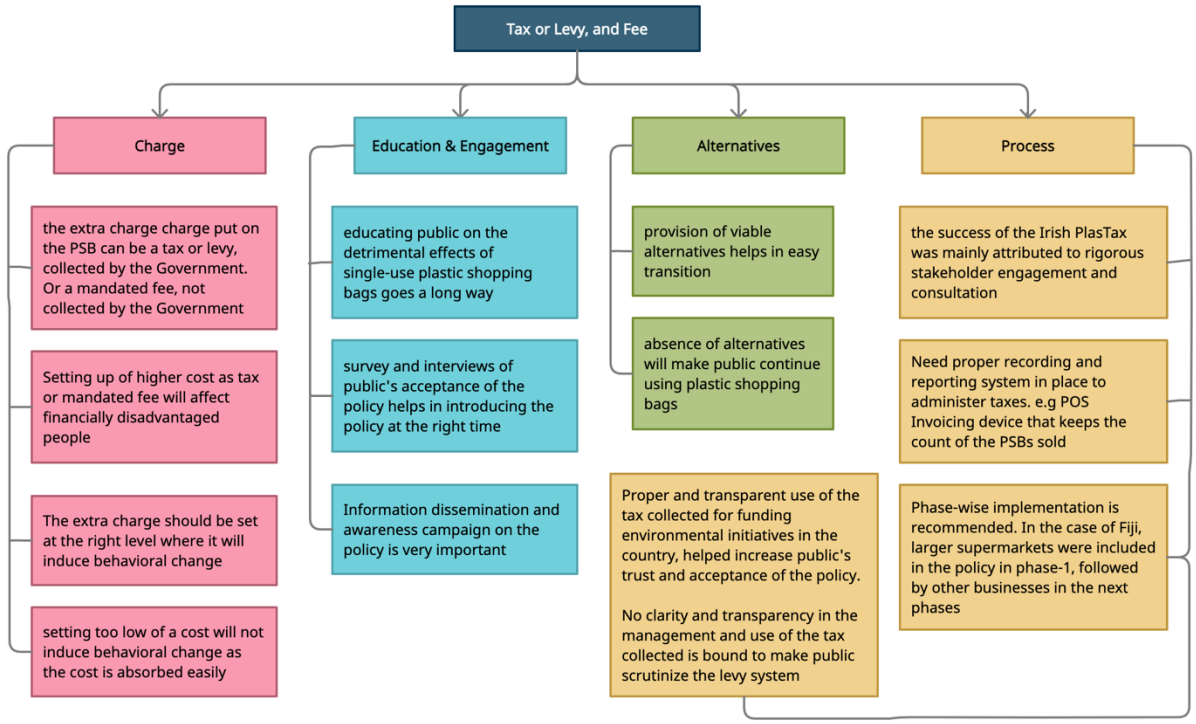

Figure 4-6 Considerations for a Levy or mandated fee policy

Source: Source: Author's own compilation based on information presented in Chapter 3 and 4 of this thesis

4.6.3 Voluntary Agreements

Non-regulatory policy instruments such as Voluntary Agreements have been known to show results to a certain level. In the case of Australia, there was a reduction of plastic shopping bags from the waste stream up to a certain level but did not have that much of an effectiveness to reduce PSBs to a desired target to call it a success. Such was the case in LA county in California where participation from the retailers was very low and the commitments were negligible leading to an adoption of other policy alternatives. Voluntary Agreements are chosen by actors and governments because it is less of a burden for governments as they do not have to regulate it, and retailers enjoy the flexibility of choosing how to reduce the PSBs in their own accords. This is particularly troublesome because there is often the lack of enforcement and monitoring of the Agreement with no sanctions for non-compliance in place.

The nature of the Agreement being voluntary means that participation from all the retailers is not mandatory. Larger businesses with corporate social responsibility are the type of businesses that typically join the Voluntary Agreement while smaller businesses, who usually are the main source of major PSBs, are reluctant to join. Since it is an initiative taken by the retailers, there are also incidences of consumer opposition for paying the price of alternatives.

From different literature and case studies, there is strong evidence that Voluntary Agreements only show limited environmental benefits. According to OECD (2003), among a number of cases where voluntary approaches have been taken to reduce environmental issues, only a few cases resulted in environmental improvements – and not very significant. According to Koehler (2008), the failure of voluntary agreements was attributed to either lack of participation from firms or the lack of reporting thereof and the successful cases were the ones that had the government's legal backing. According to Blackman (2008), in his study of 11 cases of Voluntary

Agreements introduced in developing countries, only one case gave reasonable evidence that Voluntary Agreements show significant positive results in affecting actors in developing countries.

5 Bhutan: Plastic shopping bag use, disposal and current management system

This chapter provides a case study of Thimphu, Bhutan focusing on the situation of plastic shopping bags and its current management in the city. The objective of this chapter is to build a context on Thimphu, Bhutan and use it as a basis for designing a policy or policy mix that would appropriately address the issue of plastic shopping bag waste in the city.

This chapter contains different topics ranging from the management of plastic shopping bags in Thimphu, Bhutan to the perceptions and attitudes towards the PSB ban introduced in the country. The content of this chapter is presented by using primary and secondary data collected through literature analysis, interviews and news sources. Following are the topics that will be covered under this chapter:

1. Waste Management System in Bhutan (5.2)
2. Status of plastic shopping bags in Bhutan (5.3)
3. Environmental agencies addressing the problem of PSB waste in the country (5.6)
4. Legal frameworks that addresses PSBs (5.7)
5. Characteristics of PSB ban introduced in the country (5.8)
6. Perceptions and attitudes towards the ban (5.9)

5.1 Case study area description

The Kingdom of Bhutan (Bhutan) is located in the Eastern part of the Himalayan range bordering China in the north and India in the south, east, and west, and measures 36,294 sq. km in area. The total population of Bhutan is 727,145 in 2017 (PHCB, 2017). The climate of the country ranges from subtropical in the south to alpine/arctic in the north. The terrain of the country is mountainous and most of the landscape is considered to be rugged. Bhutan is regarded as one of the world's top 10 important biodiversity hotspots owing to its rich flora and fauna – 70% of the country is under the cover of forest while more than 50% of the total area of the country is designated as protected area. Administratively, the country is divided into 20 *Dzongkhags* (districts) with Thimphu *Dzongkhag* being its capital city.

Until 1999, Bhutan was a subsistence farming country that depended on agriculture for sustenance. Bhutan, opening doors to the outside world, made great strides in its economy mainly through the export of hydroelectricity and high-end tourism. The Gross Domestic Product (GDP) per capita of Bhutan grew from USD 560 in 1990 to USD 2656 in 2015 (UNDP, 2018). However, the country's economy is aid dependent, and import-driven. Its economy is a single-sector driven economy i.e. hydropower which lacks diversification. A snapshot of the developmental activities that have taken place in a span of 30 years in Thimphu city can be seen in Figure 5-1.

The country's currency which is of the same value as Indian Rupee is known as Bhutanese Ngultrum (BTN). The current exchange rate of EUR 1.00 is equivalent to BTN 88.00.

Bhutan is considered a least developed country according to the UN's economic country status. However, with rapid growth in economy and development in sectors such as health and education, Bhutan will be graduating to a 'developing country' status by 2023.

Bhutan's development is guided by a principle known as the Gross National Happiness (GNH) which was coined by the fourth King of Bhutan in 1972. The GNH principle as opposed to GDP guides the development of the country and its economy in a sustainable manner taking

into account all the three pillars of sustainability: environment, society and economy. The GNH principle takes a holistic approach to development by taking into account not only economic but also social, emotional, spiritual and cultural needs of the citizens. Bhutan's environmental projects are influenced by the GNH philosophy, which has environmental conservation as one of its pillars, and tries to steer its outcomes that are beneficial to people as well as doing little to no harm to the environment.

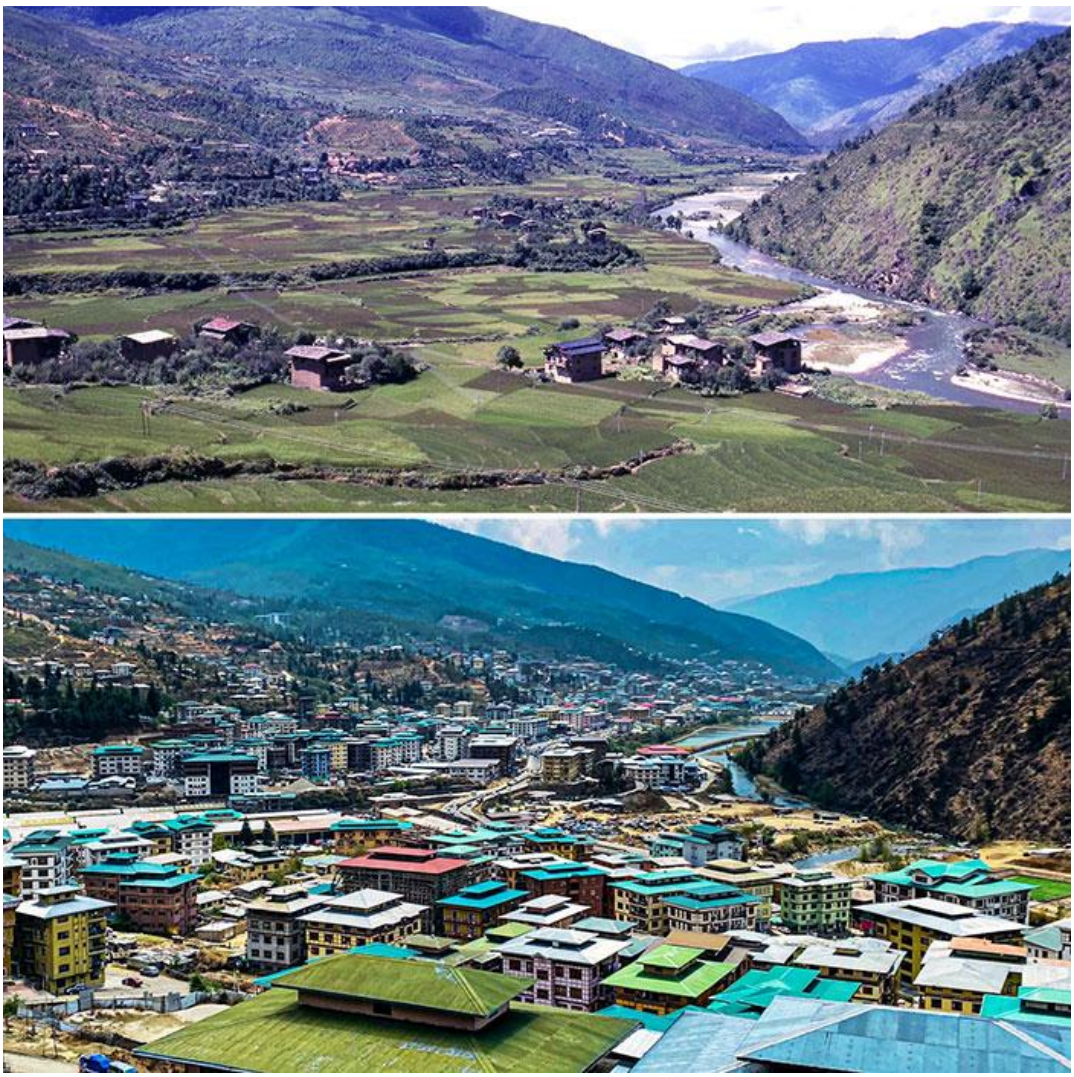

Figure 5-1 Lower Thimphu City in 1990s (top) vs 2020 (bottom)

Source: ©Kuensel, 2021

Thimphu city of Thimphu valley sits at an elevation of 2300 meters above sea level (masl.), located in the western region of the country. The capital city measures approximately 26 sq. km in area. The total residential population of Thimphu is 138,736 (PHCB, 2017). The population of Thimphu constitutes 19.1% of the total population of the country and is considered the largest urban settlement in Bhutan. Thimphu municipality comprises various stakeholders as shown in Table 5-1 which also represents the sources of waste generation from different establishments belonging to the municipality.

Table 5-1 Waste sources in Thimphu municipality

Source	No.	Source of information
Residential households	30,672	Population and Housing Census of Bhutan (2017)
Schools and institutions	35	Thimphu Thromde (2020); National Statistics Bureau (2019)
Industries (production and manufacturing)	658	Ministry of Economic Affairs (2019)
Industries (services)	6438	Ministry of Economic Affairs (2019)
Hospitals	5	National Statistics Bureau (2019)
Farmers' market	1	National Statistics Bureau (2019)
Total	37,809	

According to the interviews conducted with officials from the National Environment Commission of Bhutan (NEC) and Thimphu *Thromde* (Municipal administration), both agree that the main source of plastic shopping bag waste comes from the Centenary Farmers Market (CFM) followed by general stores and restaurants in the city.

5.2 Overview of Waste Management in Bhutan

The topic of sustainable waste management is relatively new in Bhutan with waste management issues becoming a priority only after the year 2000. However, basic principles of waste management were being followed as early as the 1960s where food waste and farm waste have been used as composts during the time of green revolution (Rai, 2015). According to Guerrero *et. al.* (2013), waste is a complex issue with multi-dimensional aspects and equally a difficult task to manage that requires environmental, social and technological perspectives to sustainably address it, and because of waste being a multi-dimensional issue, it has been proven a challenge for a low-income country like Bhutan too. Therefore, Bhutan is no exception when talking about waste management issues in the world.

According to Namgay (2020), in 2019, Bhutan generated about 170,000 kgs of solid waste per day which is equivalent to 0.2 kgs per capita per day. As shown in Figure 5-2, 46% of the total waste constitutes food waste; plastic waste tops the non-biodegradable waste category with 17% of the total waste being plastic wastes. Households and commercial units have been the main source of solid waste generation with 85% of the total solid wastes coming from these establishments. Households in Bhutan in 2019 generated about 80 tons of solid waste everyday while commercial units generated 67 tons of it in 2019. Commercial units which include retailers, shops and restaurants, and farmer's markets have been identified as the number one source of plastic waste generation with 12,060 kgs and 420 kgs of plastic waste generated everyday, respectively.

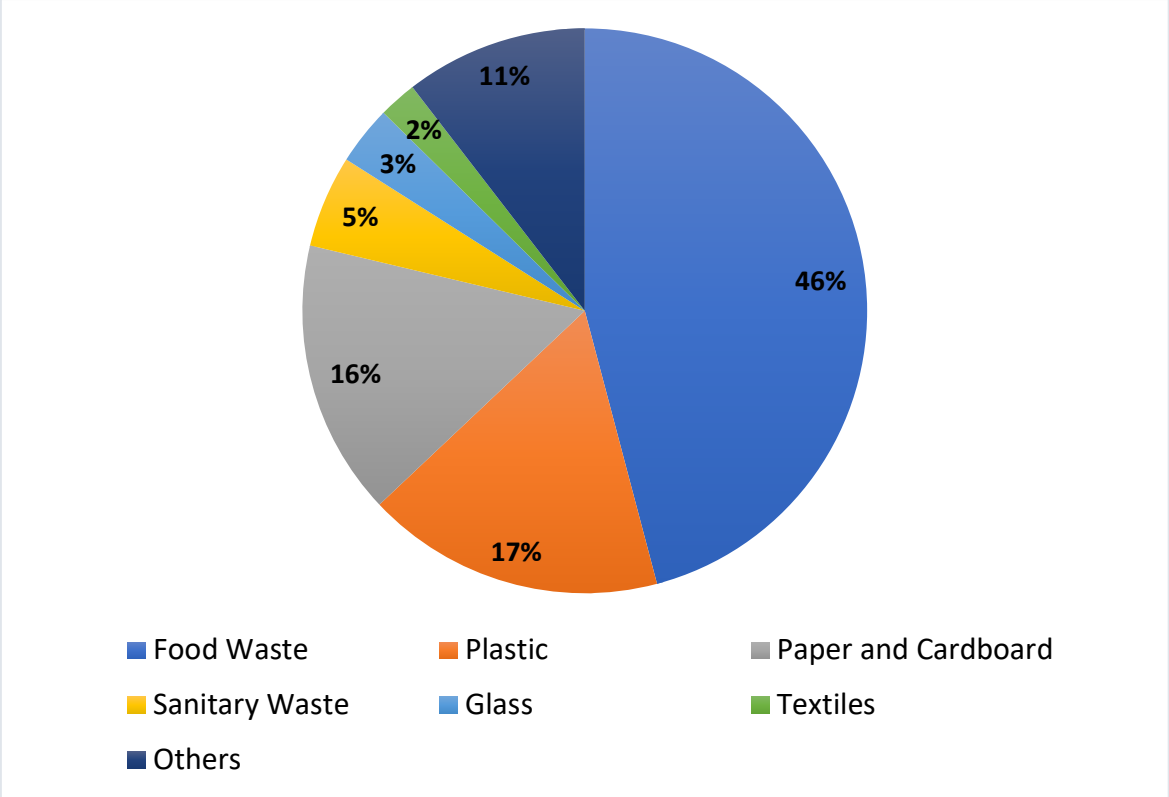

Figure 5-2 Waste composition of Bhutan in percentage

Source: Adapted from Namgay, 2020

According to a waste inventory study carried out by Phuntsho *et. al.* (2010), Thimphu city generates about 40 tons of solid waste everyday with each household contributing to 0.6 to 1.2 kgs of wastes per day. Out of the total wastes generated everyday, 58% was composed of organic waste, 13% of plastic, and 9.2% paper and cardboard. There is an increase in the waste volume in the city and the number is only growing. To make matters even worse, the complexity of the waste type is changing with the change in the consumption habits of the residents. Thimphu city's only landfill, *Memelhakha* landfill, is running over capacity; and even this obsolete method of landfilling is not carried out properly. The Memelhakha landfill with a present total area of 6,310 m^2, was built in 1992 to support the waste generated from the city. The landfill was built with a lifespan of 10 years but lasted for only 6 years. Currently the only form of waste management in the city or the whole country is landfilling. The Memlakha landfill receives over 50 tons of waste every day (Kuensel, 2018). According to the official interviewed from NEC, there is a mismatch between the amount of waste generated and the infrastructure and facilities that support it to ensure sound waste management in the country.

Currently, there are dumping grounds designated in every district but due to inefficiencies in the waste collection system, it is a common practice in rural areas to burn their waste, if not littered in the environment (Kuensel, 2012). There is no recycling industry present in the country; only a number of upcycling companies are present that upcycle waste at a small scale. Although there are a few entrepreneurs in the waste management sectors, they are mainly focused on collecting, segregating, and exporting recyclable wastes.

5.3 Status of plastic shopping bags in Bhutan

There is no comprehensive data on Bhutan's plastic shopping bag usage and lifecycle. While some data is available that informs estimates without a full lifecycle analysis of plastic bags in the country, definitive estimates of the country's PSB consumption cannot be known. Bhutan, with research culture only picking up recently, has limited literature on plastic shopping bags. Most of the studies carried out up until now, remotely on the subject, were conducted with a main emphasis on municipal solid wastes. Official figures on how much plastic shopping bags were imported in the country could be only found out by studying the country's yearly trade statistics documents (in kilograms and not in numbers) as shown in Figure 5-4. It should be noted that there is a large fluctuation in the official import figure, making the data not very reliable. From the documents, it could be said that Bhutan from 2009 to 2019 has imported an average of 4256 kilograms of plastic carry bags annually. This translates into 8,51,200 plastic bags in a year if each plastic bag weighed an average of 5 grams.

In 2019, the Ministry of Finance in their trade statistics document states that the country imported only 333 kgs of plastic carry bags but contrary to this, a trade analyst company in India known as Connect2India suggests that Bhutan has imported a whopping 37400 kgs of plastic bags or 1,87,000 of plastic bags in 2019 alone from India (Ministry of Finance, 2019; Connect2India, 2020). This shows the inconsistencies in the data of PSBs imported into the country. Through the interviews, it is learnt that the official figures of PSBs imported in the country are only the ones that have been recorded through official means, and that most of the importers do so informally through the bordering Indian towns without informing the officials which goes unrecorded. This means that PSBs imported could be way higher than recorded where informal imports which are imported illegally go unrecorded more often than not.

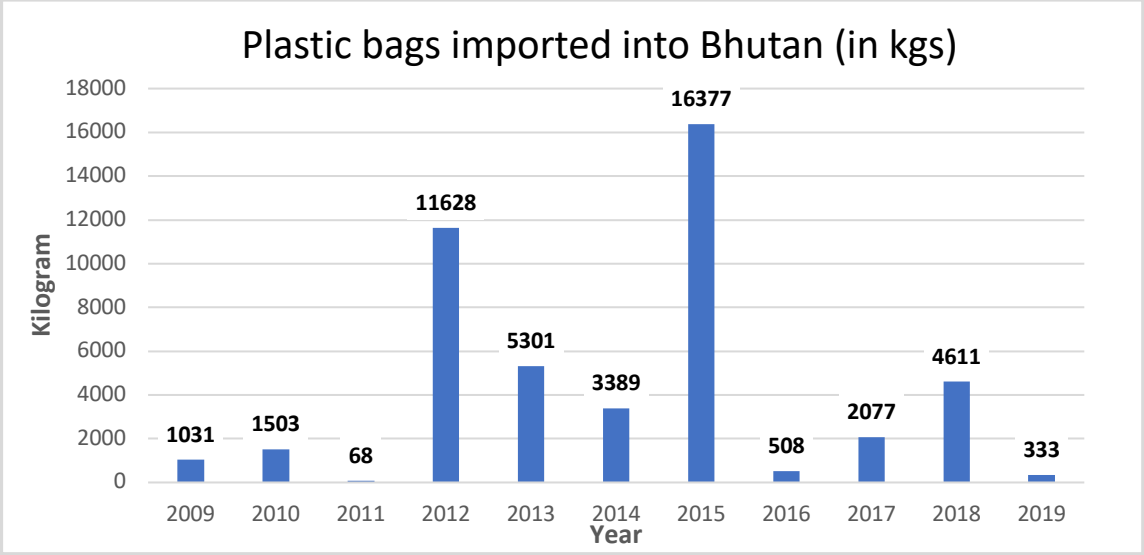

Figure 5-3 Plastic shopping bags imported into Bhutan in Kgs

Source: Ministry of Finance, 2009- 2019

The National Environment Commission of Bhutan deems the import of plastic shopping bags into the country as illegal as per the institution of the ban on the distribution of plastic shopping bags. According to the official interviewed, import of PSBs into the country is illegal and anyone found doing so is penalized. However, the use of PSBs in the country can be found in abundance even though the illegal importers have been known to be penalized.

5.4 Sources of Plastic Shopping Bags

The presence of the plastic manufacturing industry is non-existent throughout Bhutan and all of the plastic shopping bags are imported into the country, mostly from India. There is no official importing agent in the country, the suppliers are situated in the bordering towns in India where wholesalers or shops in Bhutan directly buy from them.

Research indicates that supermarkets as well as fast food stores/vendors are the leading source of PSBs (Nolan ITU, 2005). With supermarket culture almost nonexistent in Bhutan, the leading source for PSB in the country or specifically Thimphu city could be linked to the farmer's market known as the Centenary Farmers Market (CFM) and grocery stores (Choden, 2019). According to the author, Bhutanese people carry out one major weekly shopping trip to the CFM and few minor trips to smaller convenience stores or grocery stores. Choden (2019) points out that out of 145 sellers interviewed, 91% preferred to use plastic bags over other alternatives, and alternative carry bags such as paper bags and baskets scored very low amongst both sellers and customers of the CFM.

5.5 Disposal of Plastic Shopping Bags

Bhutan lacks the necessary awareness on segregating waste. All household wastes get segregated into two types of wastes: dry waste and wet waste. Wet wastes consist of organic kitchen wastes whereas dry waste covers all the other remaining wastes. Due to lack of infrastructure and services, the waste collection is designed in a way that only collects wastes in these two categories. This also means that even if a household segregates their dry waste, the municipal based collector will collect and empty the segregated wastes into the truck together and then discard them in the landfill. Upcycling of plastic wastes including PSB wastes has been carried out in a small scale by local waste management groups; Greener Way, has been managing plastic wastes in Thimphu city and has upcycled the wastes into plastic poles to be used as a substitute for wooden poles used in electric fencing. Also, Green Road, a waste entrepreneur, is experimenting on using plastic waste to be used with bitumen for black topping roads. Initiatives like these could go a long way in managing the end of life of plastic bag wastes but these are only done so on small scales that it would not fully give way for a full solution to the problem. Figure 5-4 shows the flow of plastic shopping bags in Thimphu municipality where plastic shopping bags are mostly distributed from commercial units which are then discarded and transferred to the landfill after its use. According to the consumers that were interviewed at the CFM, all of them agreed that they reuse most of the single-use plastic shopping bags at least once but they typically discard them after a few uses. All of the plastic shopping bag waste ends up in the capital city's only landfill, if not they are littered in the environment. According to the official from the Thimphu Thromde, illegal dumping of waste is a major issue in the city, even with the provision of a waste drop-in center, there are numerous cases of illegal waste dumping. Although offenders are penalized, there are cases where it is hard to monitor when monitoring is scanty due to staff shortages. According to the official, there were cases where repeat offenders dump waste illegally out of spite for being caught and others, doing it repeatedly because they have been able to get away with it. Other reasons for seeing a rise in illegal dumping in the environment can be attributed to the inefficient collection system of waste in the city. Residents have complained that once in a week collection of both the dry and wet waste is inefficient where sometimes the waste collectors even going without collection for up to two weeks.

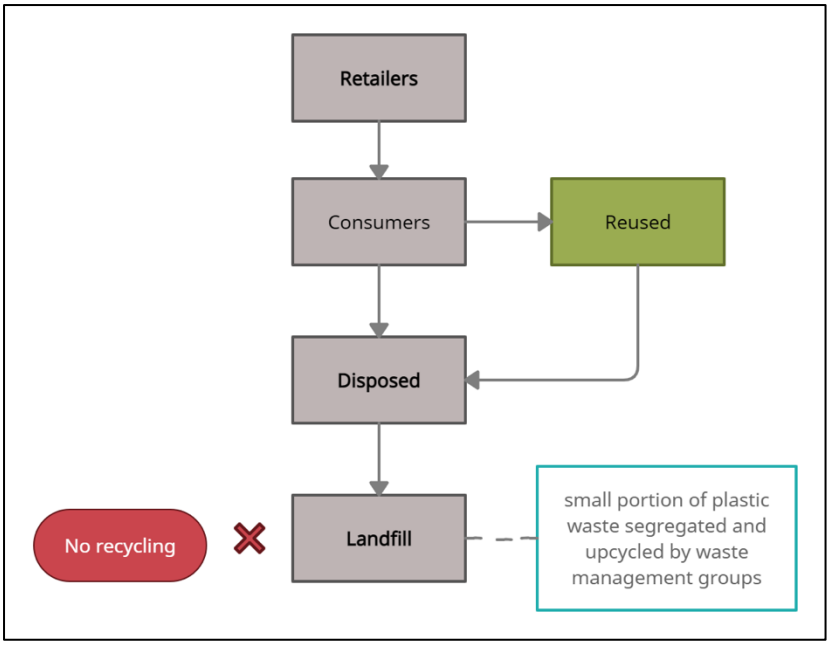

Figure 5-4 Flow plastic shopping bag waste in Thimphu municipality

Source: Author's own illustration

5.6 Environmental Agencies and Organizations Addressing Plastic Bags

1) National Environment Commission

The National Environment Commission (NEC) is a high-level autonomous agency of the Royal Government of Bhutan and is mandated to look after all issues related to the environment in Bhutan. Its high-level commission ensures that it will have the authority to call for assistance it will need from other government bodies. The Commission also monitors the impact of development on the environment and aims to put in place the necessary controls, regulations and incentives to the private/public sectors to achieve sustainable development through the judicious use of natural resources. The coordination of inter-sectoral programs, the implementation of policies and legislation with regard to the environment is also another important mandate of the Commission. NEC is in the forefront of coming up with environmental policies such as wastes and implementing them. The Waste Management Division under the NEC deals with all the matter related to waste management in the country.

2) Department of Trade and Industry

The Department of Trade and Industry has been one of the pioneers in coming up with the 1999 ban on plastic shopping bags in an effort to curb its use and promote other sustainable alternatives. The department still plays a key role in policy consultations with other agencies in addressing waste issues.

3) The Royal Society for Protection of Nature

The Royal Society for Protection of Nature is Bhutan's first and only non-governmental organization with nationwide operations. Since its establishment in 1987, the RSPN has promoted environmental education and advocacy, conservation and sustainable livelihoods, research and emerging issues like climate change, water and solid waste. The RSPN has been a key player in carrying out studies related to promoting sustainable alternatives to plastic carry bags and advocating for reduction in the use of single use carry bags in the country.

4) Greenerway

Greenerway is a private waste management company located in the capital city of Bhutan, Thimphu established in 2010. Greenerways main activity is the waste collection and segregation in Thimphu city; they are currently not involved in the processing aspect though they have future plans to establish recycling plants for all recyclable wastes (Sharma, 2013). Currently, they are striving to establish an efficient collection and disposal system in Thimphu city. As per the report by Sharma (2013), the gross annual profit of the company is at the time was only about Nu. 120, 000 which in combination with its nature of activity, suggests that the company is merely acting as a middleman to supply the wastes to India rather than creating and adding value to wastes in the city. Important development in favor of Greenerway is that the Thimphu Municipality (*Thromde*) has outsourced its responsibility in the waste management to Greenerway.

5) *Green Road*

Green Road is a waste management company started by an entrepreneur in Bhutan to make use of plastic wastes generated in the country to build roads. The company makes use of plastic wastes by using them as a substitute for aggregates and bitumen in the construction of motorable roads. They have so far built more than 100m of roads in the country where they have substituted more than 10% of total bitumen used in blacktopping roads with plastic wastes in all of their projects.

6) Clean Bhutan Initiative

Clean Bhutan Initiative is an organization established to shoulder the responsibility of changing the mindset of the citizens of Bhutan on the practice of sustainably managing municipal solid waste, advocate behavioral change and achieve zero waste by 2030. Clean Bhutan organization has been leading projects related to plastic bag consumption in the society whereby they collaborate with other relevant organizations to come up with plastic bag alternatives

5.7 Institutional Arrangements

The legal framework overall is weak for the effective implementation of managing plastic bag wastes. Numerous environmental policy documents, guidelines and reports already exist. Of those, the following documents only indirectly address the single use plastic shopping bag issue in the country.

1) Waste Management and Prevention Act

In spite of the fact that there were attempts and genuine worry to the waste issues previously, the primary real strides towards precise waste administration in Bhutan was the introduction of National Waste Prevention and Management Act 2009 (Rai, 2015). Bhutan also came up with a waste minimization and management plan after the establishment of Waste Prevention and Management Regulation in 2012 which became effective on 18th of April in the same year. This Regulation is embraced in the Waste Prevention and Management Act, 2009 under Section 53. The National Environment Commission Secretariat (NECS) is the general administrative power in charge of managing and executing the procurements in the Act and Regulation (Rai, 2015). The Regulation distinguishes the work and obligations of various stakeholders to guarantee an effective waste management system as shown in Table 5-2.

Table 5-2 Waste Prevention Act, Strategy and regulation of Bhutan

Document	Type	Purpose	Leading/Responsible Authority
National system, activity design incorporates solid waste management, 2007.	Strategy	Gives direction on how waste, which may negatively affect human health and the environment, can be expelled routine	Ministry of Works and Human Settlement, National Environment Commission
Waste Prevention and Management Act, 2009	Act	Decreases waste generation at source; advances separation, reuse, and recycling; discards waste in an environmentally effective way; and guarantees viable working and coordination among executing organizations	Ministry of Works and Human Settlement, Thimphu Thromde, Dzongkhag and Gewog (County) councils supported by their organizations.
Waste Prevention and Management Regulation, 2012	Regulation	Sets up strategies to execute the Waste Prevention and Management Act, 2009.	Ministry of Works and Human Settlement, city corporation, dzongkhag and gewog councils supported by their organizations

Source: Gawel & Ahsan, 2014

2) Bhutan Environmental Outlook, 2008

To promote the concept and practices of reduce, reuse and recycle, this document was initiated. A detailed assessment of existing and potential opportunities to reduce, recycle and reuse various types of waste would need to be carried out and that recommendations should be made for integration in the solid waste management program with a special mention of plastic bag wastes. As a concerted effort in reducing the use of plastic bags, the Royal Society for Protection of Nature has initiated sale of cotton and jute bag projects under the Clean Bhutan Program.

3) State of the Environment, Bhutan, 2001 - 2019

This report has provisioned a chapter on the state of solid waste management every year to draw the attention of the decision makers. The report highlights the state and causes of the problem of solid waste management including plastic bag waste, with recommendations to adapt scientific techniques to minimize wastes and waste problems. Thimphu and Phuentsholing were specifically identified for prompt action considerations.

4) Solid Waste Management in Urban Areas (NEC, 2000);

This guideline encourages community involvement and responsibility sharing mechanism focused on providing guidelines in training, education and awareness, and waste handling of public, commercial and industrial areas, schools and institutions, automobile workshops and the residential areas. The recycling of wastes with incentives such as tax reduction, waste segregation at source and privatization were discussed in this guideline too.

5) The Bhutan Municipal Act of 1999 (RGoB, 1999);

The Bhutan Municipal Act of 1999 has focused mainly on defining the authority and administrative jurisdictions of the Municipal Corporations. Not much has been covered on specific activities of municipal agencies. The only mention of the Sustainable Waste Management in the Act is mandating the municipal authorities to collect/dispose wastes and control littering as a functionary obligation under the general public services. Although the Act

authorizes the municipal authorities to manage its finances, the then Thimphu City Corporation (Thimphu Thromde) continues to depend on the fund allocation from the government.

On top of the above policy documents, the Royal Government has also exercised initiatives through issuance of government circulars and notifications between the years 1999 to 2019, which would significantly benefit plastic shopping bag reduction aspects.

5.8 Characteristics of the plastic shopping bag ban of Bhutan

Most of the regulations and Acts address the general issue of solid waste management in the country and how Bhutan aims to regulate and manage them. But none of them has specific objectives or aims that addresses plastic shopping bag litter problem even though Bhutan has been working on realizing the said waste issue and endeavoring to sustainably manage them. However, Bhutan has come up with a single-use plastic bag ban notification (not policy per se.) in 1999 to address this issue. The ban suffered unfruitful results whereby the ban was re-introduced again in 2005 and 2009, suffering the same fate.

On January 19, 2019, the NEC issued another notification stating that:

> This has reference to the Notification on the Ban of the Use/Sale of Plastic Carry Bags, Doma Wrappers and Homemade Ice Cream (Pepsi) Pouches issued by the then Ministry of Trade and Industry vide letter No. MTI/VIII-3/427 dated April 20, 1999, in conjunction with the then Ministry of Health and Education, the then Ministry of Communication, the National Environment Commission and the Bhutan Chamber of Commerce & Industry. After decades of notification and diligent efforts by the relevant agencies, the implementation of the ban is still a challenge. In this connection, the National Environment Commission Secretariat (NECS) consulted relevant agencies on November 13, 2018, wherein the agencies came to an agreement to reinforce the ban. Therefore, the NECS would like to notify the relevant agencies that reinforcement of the ban will commence with effect from April 1, 2019.

The notification was mainly issued by the NEC and is not passed as a separate bill but as one page legal notification that has the legal backing of the Waste Management and Prevention Act 2009.

5.8.1 Sanctions

There were no official statistics on how many establishments have been fined so far under the plastic bag ban policy but according to the NEC official, as few as 20 shops have been fined so far. The responsibility to penalize offenders has been given to the NEC enforcement officers and offenders are caught usually during random surprise inspections. According to the notification, offences are punishable by a fine of BTN 500 or EUR 5 (1 BTN = 0.011EUR) for the first offence, BTN 1000 or EUR 10 for the second offence, and cancellation of business license for offences thereafter. The ban notification only applies to retailers and consumers are not liable for adhering to the ban. According to a retailer (interviewee 14), there were only instances of shops being fined once, and no shops were fined for the second time or had their licenses revoked because within a month after the implementation of the ban, it was business as usual where all the shops started using plastic bags and no subsequent inspections were carried out.

5.8.2 Dissemination of information

According to the retailers and the consumers who were interviewed, the information about the ban came as pure information about what the ban entails and how it will be enforced and never as a motivational instrument. No motivational campaigns were conducted to first change the

mindset of the users/citizens on the ban or elicit their opinions. The ban was mostly seen as a draconian law when it was first established and implemented. The information on the ban was first disseminated through media outlets via radio, Television, and newspapers. Interviewee 06 from the Royal Society for Protection of Nature said that there were no coordinated efforts in raising awareness on the issue of plastic shopping bags before or after the implementation of the ban – it was as if all the citizens should know the detrimental effects of using single-use plastic bags on our environment.

Another way that the ban was disseminated to the people was through an "email" sent to the district environment officers about the ban notification where they were required to sensitize the people on the ban and start enforcing it. With only one environment officer designated in each district (20 districts), it was impossible to enforce and monitor the ban.

5.8.3 Alternatives

There were no clear alternatives to plastic bags given or provided by the NEC or the government before and after the ban. The NEC assures that they had and continue to have the political will to manage the issue of single-use plastic bags but it was also learnt that they had difficulty bringing forward the alternatives as most of the alternatives were either fragile or expensive. One of the retailers (interviewee 13) said that the only options that they could provide in replacement of plastic bags in their shop were paper bags and cardboard boxes; he said that paper bags were fragile and all of the customers who do own a car wouldn't carry their goods in the boxes – he has lived in fear that he would lose his customers because he can't provide his customers with a better alternative. He also said that there are customers who bring their own reusable bags – woven plastic bags, could cost BTN 700 – 1500 per bag depending on the size, locally known as *Kuto* – which are expensive and most people wouldn't think of buying them.

Other firms came up with the idea of selling 'biodegradable bags' that are imported from India but the NEC carrying out the life cycle analysis on such bags found out that they were not really biodegradable bags and could do more damage to the environment than the conventional plastic shopping bags. However, in 2016, considering there were no viable alternatives, the NEC approved the supply and use of oxo-degradable plastic bags to one agency for a period of one year. Oxo-degradable plastic bags are plastic bags made out of traditional plastics mixed with biodegradable starch or bioadditives which are often marketed as biodegradable plastics. These oxo-degradable plastic bags when not managed properly or littered in the environment cause the same detrimental effect as that of traditional fossil fuel generated plastic bags. Such bags are pervasive in Bhutan today even though the agency was approved to supply the bags in the country for only one year as a trial run in 2016.

Polypropylene bags or non-woven bags which are made out of propylene, another by product of crude oil, which is essentially plastic, were also found to be used in the country extensively. With no proper indication of what is included in the plastic bag ban, people believed that non-woven bags can be used as a sustainable substitute for traditional plastic bags. In 2019, the NEC reiterated that non-woven bags as well as uncertified biodegradable carry bags are all included in the ban list. However, with the absence of enforcement and monitoring, such bags can be found everywhere in the country today.

Figure 5-5 Oxo-degradable bags which are marketed as biodegradable bags in the country

Source: NEC, 2019

Figure 5-6 Non-woven bags that are in use in the country

Source: Author's own

The Royal Society for Protection of Nature in collaboration with the Clean Bhutan Program also initiated the sale of jute and cotton bags. The project was brought up by a private entrepreneur called Happy Valley. According to the interview with the RSPN employee, the project didn't see a clear-cut success as it could not garner much public support.

5.9 Perceptions and Attitudes

Different stakeholders were interviewed on what they thought of on the ban on plastic bags and their attitudes towards it, and found out if they agree or disagree on the ban that was introduced to address the issue of plastic shopping bag waste in the country.

5.9.1 Environmental impacts

The awareness level on the issue of single-use plastic bags among the retailers and the consumers were generally high. All of the stakeholders interviewed including policy makers and environmental NGOs outlined all the risks associated with single-use plastic bags including giving references to the situations experienced in Thimphu as well as the whole of Bhutan. As shown in Box 1, all the detrimental impacts of plastic shopping bags on the environment and human health are outlined as identified by the various stakeholders that were interviewed. According to Choden (2018) in her study titled 'Plastic bag usage in Thimphu Centenary Farmers' Market', out of 135 customers of the market and 237 vendors, 93.1 % and 94.8% could successfully identify the impacts of plastic shopping bags on the environment, human health and economy. The author posits that the awareness amongst the citizens is very high and therefore this could aid in changing the behavior of the users easily since it would be easier to sensitize the public on the subject as they are already aware of it. Therefore, this begs the question of why the ban is still proven to be ineffective in the country even when the awareness level of the public on the detrimental impacts of using single use plastic bags is very high.

Box 1. Impacts of single-use plastic bags on the environment, human-health and economy as expressed by retailers and consumers interviewed

Environmental risks:

- ✓ Plastic bags are non-biodegradable and stay in the environment for years. They eventually degrade into smaller pieces that become microplastic, which often ends up in the ocean.
- ✓ Wild animals, birds and fishes are injured or killed by getting entangled in, or ingesting, the bags.
- ✓ Bags in the soil may cause erosion and decrease soil fertility, indirectly threatening biodiversity.
- ✓ Most plastic bags are made from fossil raw materials, causing greenhouse gas emissions that lead to global warming and climate change.
- ✓ Some plastics contain toxic chemicals that leak into soil or water, and may also cause chemicals to accumulate, for example in microplastics.

Human health risks:

- ✓ Bags collect rainwater and become breathing grounds for mosquitoes, increasing risk of malaria and other infectious diseases
- ✓ When plastic waste is burned, toxic gases are released into the air.
- ✓ During rainy season the bags cause blockages of pipes and drains, exacerbating floods that could pose a direct risk to human lives. Floods also increase the risks of unsanitary conditions and contamination of drinking water. Thimphu city has been suffering from this case.
- ✓ When accumulated, some of the chemicals added to plastics can affect the human hormone system. This can be linked to health risks and certain types of cancer.

Economic risks:

- ✓ The effects on soil quality and livestock threaten food production and the livelihood of farmers.
- ✓ Bags accumulated in rivers, trees or other parts of the scenery are unaesthetic and may
  hurt tourism and other economic activities in the area.
- ✓ The clean-ups of plastic debris and the damage created by bags are costly to abate.
- ✓ The low recycling rate of plastic packaging and limited usage means that most of the product's value is lost after very short time.

5.9.2 Motivation

Most of the interviewees from the retail side said that the demand for the plastic shopping bags remained the same (high). Customers would still ask for plastic shopping bags even when the ban was introduced and enforced again. One of the retailers, interviewee 11, said that he did not utilize plastic shopping bags at all in the shop after the ban in fear of being fined or getting his shop license suspended by the NEC. He believes that the reason why the consumers still ask for plastic bags in the shop even after the implementation of that ban might be because the consumers are not penalized for carrying plastic bags. However, after the implementation of the ban, most customers brought reusable bags with them while shopping for a period of time. This shows that policies like these have power to change consumer's behavior if enforced and monitored properly.

5.9.3 View on enforcement

Weak enforcement and lack of human resources

According to Choden (2018) the ban lacked enforcement and provision of alternatives to plastic bags and therefore has failed.

"I don't think it is a policy failure but a failure of the coordination on the Government's side, and cooperation from retailers and shoppers. The ban is still in effect." (Interviewee 01).

During the interview with the NEC staff, when asked if the ban can be called a 'policy failure', they said that it is not exactly a policy failure, and the ban policy in Bhutan if implemented properly is one of the best among many other developing countries today. They said that the failure was mainly attributed to coordination and cooperation amongst the Government, retailers and the consumers. Moreover, there was no separate division at the NEC before, such as the current Waste Management Division that caters to particularly addressing waste issues in the country. The division is very new which was only formed in February, 2018 and the division has already started working on reinforcement of the policy. They also mentioned that, *"the ban is not easily implementable. Before the ban, the government should be responsible to come up with alternatives, and we are working on biodegradable plastic which will decompose within 3 months*" (Choden, 2018). During a reconnaissancee for alternatives that are available in the capital city today, no viable alternatives to the conventional plastic bags that are sustainable were to be found.

"There was no proper enforcement on the Government's side – there were cases of shops and people using plastic shopping bags freely after a week of reintroducing the ban – the porous border with India only means that people will continue to use PSBs" (interviewee 06)

The official from the Royal Society for Protection of Nature also agrees that the ban was unsuccessful mainly because there was weak enforcement and monitoring on the implementing agency's part. They said that the ban turned out to be an impossible mission to enforce because the bags were still imported into Bhutan from the porous Indian borders for dirt-cheap price and the consumers still preferring it over other alternatives (expensive) available in the market.

Lack of collaboration and resources

The participants from NEC and Thimphu *Thromde* were also interviewed on the challenges faced in implementing the policy.

> *"Currently, only the NEC has been identified as the implementing agency for the ban. There should be responsibility given to other relevant agencies and overcome the single-sector mentality. There is no rigid collaboration with other agencies right now"* (interviewee 21).

According to the NEC staff, the main challenges faced while implementing policies was in terms of coordination, cooperation, and collaboration among implementing agencies. They believe that the ban would have seen a bteer outcome had there been collaboration with relevant stakeholders and cooperation among government sectors during introduction, implementation and monitoring of the ban.

> *"We have shortage in staff, technical capacity, and funds which hinders the implementation process"* (interviewee 01)

Other challenges included 'lack of alternatives', 'lack of human capacity', 'lack of technical capacity', and 'funds"'. In a similar manner, the respondent from Thimphu Thromde also mentioned the same challenges.

According to both the staff of National Environment Commission, and Thimphu *Thromde*, the year 1999 was not the right time to come up with a plastic bag ban policy. However, they said that Bhutan by now seems to be more ready to accept the policy and will work on with implementations. However, when asked if there was a consultation with affected stakeholders such as retailers and consumers, no study was or is being carried out on it as of now.

The environment officer from Thimphu *Thromde* said that it was high time for Bhutanese to move from 'Linear Economy' towards 'Circular Economy'. Furthermore, the Waste Management Division under NEC has just been introduced from Feb 2018, and all of the 20 *Dzongkhags* are equipped with one environmental officer each, and therefore now hopes to combat the issue dead on. However, media reports have shown clear evidence that none of these endeavors have worked out - businesses are still using single use plastic shopping bags and the usage is rampant as usual.

5.9.4 Attitudes towards the ban

The overall attitudes towards the ban from all the stakeholders interviewed consisted of generally mixed feelings, with some people thinking a ban policy is recommendable and few people others advocating for other policy measures.

> *"I think the ban is a great move considering the amount of waste that goes into the landfill and therefore the NEC should work more on making it more effective"* (Interviewee 08)

The senior staff from the Clean Bhutan Initiative believes that the main idea behind the ban is for a country to emerge as an environmentally-friendly one where pollution from such wastes is eradicated. A ban should be considered and implemented for a country like Bhutan where landfilling is tricky considering the terrain of the country and where no other options of waste management system is available. However, he believes that the ban needs proper legislation and wordings to back it up to become effective.

"*The ban is harsh and excessive on the retailers where we could lose our business licenses if we are caught selling even a single plastic bag. But our customers keep demanding such bags when they come for shopping"* (Interviewee 11, retailer)

This retailer believes that when the ban only penalizes shops with fines, it does nothing for the consumers who use them. No penalty or fines are imposed on the consumers for using plastic shopping bags. When consumers don't bring carry bags and demand for PSBs, the businesses are forced to provide them in fear of losing customers.

"*Looking at the litter that is surrounding us right now, and the state of Thimphu city in the summer where flooding is rampant due to blockage of the drainage system, I think the ban is a good step taken by the Government"* (interviewee 16, consumer)

Thimphu *Thromde* and the NEC staff have identified the problems of plastic shopping bag wastes in the city where the littered bags block the drainage system and cause floods during monsoon seasons. Thimphu city's drainage system is as old as the city and plastic shopping bags that enter the system have a high chance of blocking the drains and causing urban flooding. According to the interviewee, since 2010 there was not a single time where the city was not flooded during summer months.

"I sell vegetables and fruits. People still demand plastic bags to segregate their vegetables even if they carry their own reusable bags" (interviewee 09, vendor)

The vendor brings out the issue of people's dependence on plastic shopping bags. Even with bringing their own reusable shopping bags, consumers are known to ask for extra PSBs to segregate their bought items. All retailers agree that most of the consumers always ask for plastic shopping bags even when they carry a reusable bag.

"It would be easier on our part as well as the people, if the Government could think of providing inexpensive alternatives. I think if people have access to cheaper alternatives, they will surely use them and eliminate the use of plastic shopping bags" (interviewee 12, retailer)

Bhutan currently lacks a source for viable alternatives. An import-driven country, there are no production facilities in the country that could produce alternatives that could compete with the price of conventional plastic shopping bags. Therefore, the Government should look into such initiatives or promote production by giving subsidies and incentives.

"*The fact that all of the times that the ban was introduced and re-introduced didn't bring successful results, I think the government should look into other measures in controlling plastic bags instead of banning them completely"* (interviewee 06)

"I don't really understand how the ban is supposed to work. The government says all plastic bags are banned but they should know better that exemptions should be made for other cases. If you look at other countries where plastic shopping bags are banned, some exceptions are made. I don't think putting a complete ban would be effective. The Government might want to focus on changing the consumer's behavior instead. (Interviewee 04)

These officials from the RSPN and Greener way believe that the Government's failure on the implementation of the ban is telling. There are several other policy instruments apart from banning that have clearly resulted in effective outcomes throughout the world. If regulatory policy instruments such as banning do not now, the Government should work out to fix what

had gone wrong to make the instrument work again or supplement it with other instruments to bring in positive changes to the issue.

6 Analysis and Discussion

This chapter examines why the multiple ban on plastic shopping bags was ineffective in Bhutan, and explores different policy measures that would address the issue of plastic shopping bag consumption in the country. The policy instruments based on chapter 3 will be examined using the information from contextual assessment of Bhutan done in chapter 5 as well as using the results of the global case studies carried out in chapter 4 of this paper.

Following is a brief outline of what will be discussed in this chapter:

1. Why didn't the ban work?
2. Exploration of different policy measures that would address the issue, and
3. Selecting appropriate policy options that best fit the context of Bhutan that will address the issue of excessive plastic shopping bag consumption in the country based on the lessons regarding various policy approaches found in literature as well as development and current situation related to plastic shopping bag waste in Bhutan.

The policy instruments that are proposed to address the consumption of plastic shopping bags in Thimphu, Bhutan will be evaluated using environmental criteria namely, **environmental effectiveness**, **political acceptability**, and **enforceability** as discussed in the methodology Chapter.

In chapter 3, with the examination of theoretical foundations of policy instruments, three main tools to combat plastic shopping bag consumption were identified – **ban**, **tax or levy**, **voluntary agreements**. However, studying the different cases which introduced stand-alone policy measures as well as a mixture of policy measures around the world, and further understanding the situation in Bhutan, a number of policy measures are rejected and a few of them that could address the issue of PSB consumption in Thimphu, Bhutan are proposed. Given the context of Bhutan as discussed in Chapter 4, not all policies that are typically applied in other countries could be readily transferred and have positive outcomes. Therefore, a focused approach is taken where only the policy tools that might work out in the context of Thimphu, Bhutan are selected as possible outcomes.

6.1 Ineffectiveness of the Ban on Plastic Shopping bag

This section explores the reasons and factors that led to the ineffectiveness of the ban on plastic shopping bags introduced in 1999 and re-introduced in 2005, 2009, and 2019 in Bhutan. Over the span of two decades, the ban owing to several factors and circumstances, failed to observe effective outcome:

Blanket Ban

The ban which was introduced in 1999 on plastic shopping bags was issued as a blanket ban on all PSBs. There were no exceptions made for other plastic carry bags that are required for hygiene and sanitary purposes. There were still no provisions made for such exemptions when the ban was reintroduced in 2005, 2009, and 2019. UNEP (2018) emphasizes the importance of exemptions when introducing such regulatory policies to help with the proper implementation of the policy as without them would make the bags unsafe or costly. With no exemptions made, people were forced to use PSBs out of necessity even if they were banned under the policy.

Retailers vs. Consumers

The blanket ban on plastic shopping bags which came as a notification in 1999 was implemented and enforced on the retailer sector only. Sanctions were imposed on the retailers for non-compliance whereas consumers were not implicated for using PSBs whatsoever. Many retailers believe that since consumers can freely use PSBs, the demand for PSBs was still high when the ban was implemented or reintroduced. The fact that no sanctions or penalties are imposed consumer means that their behavior and notion on the PSBs have remained the same and that only the retailers are required to follow through via the notification. Instances where consumers demanded PSBs from the retailers were high during the implementation of the ban where some retailers have been forced to provide them with PSBs to retain their customers. Enforcement of the ban was also made tricky, such a tricky provision where it was hard to inspect where the PSBs were coming from when consumers were freely using them.

Lack of Alternatives

The lack of sustainable alternatives in the market has been one of the main factors that has led to consumers and retailers being non-compliant to the ban policy. The alternatives that were provided were biodegradable and Oxo-degradable plastic bags which were introduced as 'environment friendly' options to plastic shopping bags. 'Biodegradable bags' that were introduced were called off after failing test runs on its effectiveness. Oxo-degradable bags are still being issued in the market even though such bags have been found to be equally menacing as conventional plastic shopping bags. Other alternatives such as reusable cloth bags and plastic woven-bags are not readily available in the market for consumers to take up, and at the same time were too-expensive, costing between BTN 100 – 1500 per bag.

There is no presence of industry in the country that produces such alternatives. Most of these reusable bags, if not all, are imported into the country from outside. The cost of such bags which are more than conventional plastic shopping bags are further increased when imported into the country. There are no records if subsidies were planned for such alternatives to reduce their cost so that consumers could readily switch to them. The Royal Society for Protection of Nature, an environmental NGO in Bhutan, has funded small projects in the past to manufacture reusable alternatives but have failed in sustaining themselves after finding them not profitable – with the rampant use of PSBs even after the ban, people avoided buying reusable bags. From the Government's side, there is no evidence showing their endeavor in the promotion of alternative industries.

Kubowicz & Booth (2017) emphasizes the importance of providing inexpensive alternatives to plastic shopping bags when introducing regulatory policies - with the provision of cheap alternatives, consumers will have the option to switch to other alternatives. When no other viable alternatives are provided or when they are not present in the market, people are forced to use PSBs. In the case of Bhutan, there was no proper feasibility study carried out on viable alternatives to PSBs prior to introducing the ban.

Little efforts have been made in terms of educating the public on reducing PSBs usage and the importance of using sustainable alternatives.

Absence of transition period or effective dates

One of the key factors in the implementation of policy instruments such as a ban, is that there needs to be a forethought for transitions – giving grace periods and phasing the implementation into different stages will give actors ample time to transition to the new change, easily (Nielsen

et. al., 2019). The ban on plastic shopping bags in Bhutan was introduced in April 1999 and it was effective immediately – this means that the actors were not given enough time to transition to the new policy. When it was business as usual after the ban was deemed ineffective, and when the ban was again introduced in 2005, 2009, and 2019, there were still no provisions made for setting up effective dates and transition periods. Many believe that the method taken by the Government to be a top-down approach where the actors are not given enough information and time to transition to the new change. A phased approach for such policies has seen success in other countries where the ban was introduced in one area first and then implemented in other areas depending on the results from the first case, incorporating the lessons and transferring them to the new areas in practice (Nielsen *et. al.,* 2019).

Weak enforcement

The implementing agency for the ban policy in 1999, when the current National Environment Commission of Bhutan (NEC) was not formed, was the Department of Trade and Industry (DTI). The DTI was the sole implementing agency for the ban policy that took care of the enforcement process. Starting from 2005, the reintroduction of the ban was carried out by the NEC through 2019. Currently, the NEC is the only organization that takes care of the ban policy with the Waste Management Division under the organization being the focal division looking after the process. With limitations in staff number, constant inspection and monitoring has been one of the challenges for the organization - there are less than 50 working staff under the NEC in Thimphu city, including 5 personnel under the Waste Management Division, and 1 environment officer each in other 19 districts. With a shortage in working staff, it has been found out that the enforcement has been carried out sporadically thus reducing the policy's effectiveness.

There is also a lack of coordination from other sectors. It is learnt that a single-sector mentality has plagued the sectors in the Government of Bhutan where people believe that the NEC is the only organization that should address the environmental issues and that other sectors are not required to bring forward a solution or proactively participate in the process that concerns that environment. However the NEC is the only implementing agency that requires the implementation of the ban policy as per the notification. There is no provision made in the ban notification for other sectors to coordinate with the implementing agency to help with the process. The ban notification, on its own, is just a one-page document that entails the introduction of the blanket ban; it has a legal basis based on the Waste Prevention and Management Act of Bhutan, 2009. However, nowhere in the subsequent regulations, the coordination of the ban policy is provided. Hiltunen (2004) states that a policy implementation process needs a system where clear responsibilities are given to organizations to look after the implementation, coordination, and monitoring process, so that each organization knows their terms of responsibilities to carry out the process effectively. In the case of Bhutan, with the ban notification, no division of responsibilities for different sectors are laid out.

Reduced Sanctions

The sanction imposed for non-compliance for the ban policy was one-dimensional and very low that it may not work as a deterrent – BTN 500 for the first offence, BTN 1000 for second offence, and cancellation of business license thereafter. This monetary value for the penalty was set up arbitrarily without taking into account the type and extent of the offense or the cost of cleaning up if littered or discarded. According to Schnurr *et. al.,* (2018), penalties should be multi-dimensional meaning that it should have a monetary range of minimum and maximum value, should be based on the type and severity of the offense, possession vs distribution, and type of offender, big supermarkets or small businesses. Less than 20 retailers have been

penalized since the introduction of ban and there are no cases of repeat offenders recorded even though the distribution of PSBs was rampants after a month of the introduction of the ban, where no subsequent inspection and monitoring were being carried out.

Smuggling of plastic shopping bags

There is an absence of a strict monitoring system put in place at the point of entry(s) into the country. The porous border with India means that people are able to easily smuggle in plastic shopping bags. Even though illegal import of PSBs is penalized, the penalty for smuggling PSBs into the country is the same as distributing PSBs. With such a low penalty on illegally importing PSBs and no major repercussions, people readily smuggle PSBs and distribute them in the country. As discussed in chapter 4, countries like Kenya and Rwanda where a ban on PSB was instituted, with no options for alternatives provided, people have resorted to smuggling PSBs from the neighboring countries where such contraband items are readily available.

6.2 Feasibility of introducing other policy measures

Under this section, different policy measures that have been introduced in Chapter 4 and 5 will be explored and assessed in the context of Bhutan using the three environmental criteria which were mentioned in the methodology Chapter. Feasibility of a partial ban on plastic shopping bags, a tax on PSBs on consumers at the point of sale, a compulsory fee charged on consumers at the point of sale, voluntary agreements and educational and information campaigns, will be carried out using the three criteria – environmental effectiveness, enforceability, and acceptability.

Taxing manufacturers of plastic shopping bags is a good way of internalizing the external costs of PSBs; by taxing the producers, the extra cost on the plastic shopping bags will be passed on to the retailers and consumers which might induce a change in behavior. However, policy options that address the manufacturing sector of plastic shopping bags are excluded from the discussion owing to the very reason that there is an absence of such industry in the country.

6.2.1 Partial Ban

A partial ban based on the thickness of the plastic shopping bag can be considered. Cases such as India and South Africa have a Standard on minimum thickness where plastic shopping bags below a certain micron thickness are banned and rest of the PSBs which are considered reusable are in distribution. A partial ban policy is intended to encourage the use of reusable bags and change the throw away attitude of consumers. The member states of the European Union, India, and most of the countries that have a standard on minimum thickness of a plastic bag in circulation is set at 50-microns and above. PSBs below 50 microns are considered lightweight plastic bags which suffer the fate of being used a single time and typically ending up in the landfill or being littered in the environment owing to its lightweight properties. Most of the PSBs distributed in Bhutan or particularly Thimphu city, are single use plastic shopping bags or PSBs that are of less than 50-micron wall thickness. These single use PSBs have been considered a menace in the country as they are litterred easily casing major issues in the city such as urban floodings.

Effectiveness

There has been success with the implementation of such policy where a minimum thickness standard is set for plastic shopping bags for distribution – PSBs less than 50-micron thickness are banned in Brussels and Wallonia in Belgium and compliance by the retailers are found to be very high by the retailers (Corroenenne, 2017). In Goa, India, plastic shopping bags with a wall thickness of 40 microns and below were first banned in 2002 leading to a significant decrease in such type of PSBs; when people resorted to using thicker walled plastic shopping bags, the Goan government increased the minimum thickness standard of PSBs to 50 microns leading to an overall significant decrease in single use plastic shopping bags (Bhattacharya *et. al.,* 2018). This gradual extension of the ban suggests that such policies where thinner wall PSBs are banned, do come with successful outcomes. However, studies have also shown that cases in the US and Australia where in some States and Provinces, a minimum thickness standard of 50 micron was instituted, people resorted to buying thicker walled plastic bags where there was a decrease in the consumption of lightweight plastic shopping bags but significantly increased the overall volume of plastic shopping bag waste in the waste stream; there was an increase in the volume of thicker trash liner bags being distributed to bypass the ban on thinner walled plastic shopping bags (Schnurr *et. al.,* 2018; Walquist, 2018). This shows that the consumer behavior did not change when it comes to having the partial ban as a standalone policy tool to address the PSB consumption issue. A minimum thickness standard without a separate policy that could supplement it with offsetting secondary impacts is an ineffective policy – such policy needs to be supplemented by other policy options to take into account the spillover impacts, to make it more effective.

A partial ban on single-use plastic shopping bags could prove effective in Thimphu, Bhutan owing to the fact that the most of PSBs distributed, which are easily discarded and littered, fall under the single-use category – less than 50-micron wall thickness. There might arise a point where people will resort to using reusable plastic shopping bags and increasing its overall volume and waste but with a provision for other policy options, a partial ban can be supplemented with another policy option to address the increase in the use of thicker walled PSBs.

Acceptability

Devoid of a plastic manufacturing industry in the country, acceptability is not an issue for such a policy. In cases such as India, Kenya, and South Africa, acceptability was found to be low as there was a constant opposition from the prevalent plastic manufacturing industries. In Ireland, where the presence of plastic bag manufacturing industry is negligible, introduction of policies of controlling PSB usage came with little opposition.

With previous blanket bans implemented in the country that were found to be ineffective, a partial ban in Thimphu city could be welcomed with support as such a policy provides an option for other plastic alternatives. As discussed in the previous chapter, the lack of viable alternatives in the country has led to the ineffectiveness of the blanket ban, providing an alternative even if it is a plastic alternative but a reusable one, could help actors do away with the throw-away attitude and resort to using reusable plastic bags thereby encourage reuse and making bags expensive to throw away.

A medium resistance from the retail sector can be expected as the retailers would need to switch to distributing thicker walled plastic shopping bags which can be expensive. However, observing the current situation in Thimphu city, there are a number of stores that distribute PSBs of wall thickness above 50 microns for free. This could mean that retailers are able to absorb the extra

price for purchasing thicker walled plastic bags and hence exert little to medium resistance to the policy in question.

Enforceability

Deriving the lessons from the case studies and Bhutan's ban on plastic shopping bag policy, a partial ban, having the same characteristics and principles as that of a complete ban ranks low in enforceability. If the situation in Bhutan remains the same on the governance of policies on such issues, a weak enforcement is to be expected. A partial ban requires strict inspection and monitoring and thus requires the implementing agency to formulate better coordination to overcome the issue.

There are various factors that need to be considered for the application of a partial ban – transition periods need to be propositioned, there needs to be a phase out period before the implementation of the ban, and strict sanctions for non-compliance, specification of responsibility to designated organizations, as well as implications of public acceptance to future environmental campaigns are needed.

6.2.2 Tax on Plastic shopping bag on consumers at a point of sale

A tax or levy is a cost charged to the consumers by the retailers on plastic shopping bags where the charge is collected by the government from the retailers as a tax. Revenues collected through such policies around the world have been used as an environmental fund where governments fund environmental initiatives in their countries. During the interviews with the stakeholders, willingness to pay for PSBs was elicited. Retailers and consumers' willingness to pay for a single PSB was BTN 01 – 05 whereas officials from the government and other environmental NGOs believe that it should be atleast BTN 05 ranging to BTN 10, considering the cost of clean up when littered and managing the landfill when discarded there (current market price of a single PSB is BTN 1.25, where 1 kg of single-use PSB costs BTN 250). The target group for the tax on PSBs is the consumers who use them, the impacts from the tax or levy will result in the reduction of PSB consumption.

Effectiveness

When an extra charge is imposed on a commodity, consumers will feel the burnt of having to pay extra to buy it thereby inducing a behavioral change. In case of plastic shopping bags, when retailers are made to charge an extra fee by the Government as a tax on PSBs instead of handing them out for free, this extra charge will act as a deterrent for the consumers to think of reducing their single-use PSB consumption and switch to bringing their own reusable bags. Successful outcomes from a tax or levy put on plastic shopping bags found around the world include 90% reduction of single-use PSBs in Ireland, 66% reduction in Denmark, and 79% in Australia, among many others (Convery *et. al,* 2007; Taylor & Villas-Boas, 2016). The effectiveness of an economic policy tool such as a tax or levy will also depend on the value of the charge – when the tax is set too low, consumers will easily absorb the price, and if the tax is set too high, there will be opposition from actors which will encourage tax evasion. In the case of Bhutan, according to the professionals in the environment field who were interviewed, charging even a minimum of BTN 05 per plastic shopping bags will be good enough to bring in a change in the behavior of the consumers that will show significant reduction in PSB consumption, if enforced properly.

Enforceability

As discussed in the case studies and the theoretical foundations of policies in Chapter 3, although a tax on plastic shopping bag consumption is very effective and has shown considerable reduction in PSB consumption, it cannot be replicated in a low-income nation which lacks institutional capacity. As discussed in Chapter 5, under the contextual assessment of Thimphu city, there is a lack of infrastructure and technology that would aid in the proper implementation and collection of such tax. According to Bell (2003, p.13), collection of revenue in developing countries are far from reliable and "*efforts to collect sales and income taxes in most countries in which these ideas are proposed already encounter the difficulty of monitoring sales or wages, and corruption.*". Only a few businesses in Thimphu city have a Point of Sale Invoicing Device and most of the shops, if not all, do not have the system of handing out receipts. Without such a technological system and good monitoring channel in place, even if a tax is levied, there will be a hard time in administering the process with no way of knowing where the tax is ending up.

Acceptability

Covery *et. al.,* (2003) suggest that economic instruments such as a tax or levy is considered favorable when compared to a regulatory ban instrument – in the case of Ireland, public acceptance played a major role in the success of the policy. Through rigorous communication campaigns, advertising and stakeholder consultations, public support and political acceptance were garnered for the plastic tax policy. The Fijian Government as discussed in the case study modeled their plastic bag tax after Ireland's PlasTax, and have garnered considerable public support through educational campaigns which have led to the smooth implementation of the tax policy on PSB in the country.

In case of Ireland and Australia, a resistance or reluctance from the retailer sector was felt when the tax was first introduced as the cost of administering the tax or levy had to be borne by the retailers themselves. But the overall net cost was very low, after the implementation of the tax, as the costs were offset by reducing the use of single-use PSBs and an increase in the sale of reusable bags.

There was evidence of losses in the plastic industry in Ireland because of the Plastax but considering Bhutan's plastic industry situation, no strong opposition to the policy can be considered.

6.2.3 Voluntary Agreements

There is a growing global trend in the adoption of Voluntary Agreements (VA), especially in the field of environmental policy which resulted from the introduction of Agenda 21 of 1992 and Brundtland Commission of 1987. Actors in the market and governments alike have generally favored voluntary approaches for environmental policy due to its nature of being voluntary, and a dislike towards a command-and-control mechanism (Hatch, 2005). Voluntary approaches or agreements in Bhutan for environmental policies are non-existent. The idea of social corporate responsibility and reporting is fairly a new phenomenon in the country that it is yet to take off in a meaningful manner.

Effectiveness

Voluntary Agreements being voluntary and non-binding in nature are often seen as a policy instrument that is easier to implement and administer. However, because of these reasons, Voluntary Agreements often bring in weak outcomes – the agreements are flexible and set at the discretion of the signatories. Compliance and enforcement are hard to measure and implement as it would be contrasting the principles of VA – flexibility and discretionary. In the case of Australia, as discussed in Chapter 4, because the VAs are voluntary, many signatories when they do not achieve the goals, they drop out or do not participate in the agreement; it is also impossible to sanction non-compliance under such policies.

According to Hatch (2005), free-riding and cheating is prevalent within the Voluntary Agreements. With no enforcements and penalties put in place, the problem of free-riding is enhanced where the cost of actions is distributed to others while enjoying the benefit of being labelled as signatory within the agreement.

Backing from the government can enhance the effectiveness of the voluntary approach. In the case of Australia, when the Government issued a regulatory threat for addressing plastic shopping bag issue, businesses resorted to VA, seeing considerable but not significant reduction in PSB waste targets.

Voluntary Agreements on the whole have low environmental benefits when compared to other policy instruments such as a ban or a tax or levy. However, according to Palmers and Wells (2002), voluntary approaches have positive impacts on the actors in the market where education and awareness level is increased which can decrease the costs of future programs and policies.

Enforceability

Bhutan does not have a supermarket culture. Most of the larger businesses or shops that are in Thimphu city can be considered a convenience store if one has to compare them to the international standards. Other smaller stores are grocery stores, restaurants and vendors that operate at a small scale. Thimphu city's retailers do not have an Association where retailer related issues are handled. From the case of Australia on Voluntary Agreements, the reduction targets are propositioned and funded by the retailers themselves. An issue with the Agreement in Australia and the LA county of California, as discussed in the case studies, was that there were low participation rates from smaller businesses as the Agreement was based on volunteerism. There might be a chance of this happening in the case of Thimphu, where there are no instances of voluntary approaches being carried out by retailers. The Agreement with no regulatory backing will only mean that most businesses will not participate. As discussed earlier, in Blackman's (2008) study of 11 cases in the developing countries of Voluntary Agreements being introduced, only one case was deemed successful. There is growing literature that shows that Voluntary Agreements that lack government backing, which are usually high in cost and low in enforceability, are not an effective tool to use, especially in the developing countries.

Acceptability

Voluntary Agreements score high in acceptability as seen in the case of Australia and Kenya. It has been preferred by the industry because of their nature of being voluntary and discretionary with no penalties for non-compliance. Retailers have also been known to prefer such policies due to their disaffection for a ban policy.

6.2.4 Mandating a compulsory fee on plastic shopping bags charged at a point of sale on consumers

This type of policy instrument which has been introduced in some of the States in the US and mostly recently in Japan have seen significant reduction in plastic shopping bag consumption. Having the same principle as a levy charged on the consumers' purchase, this type of system puts a fee on the plastic shopping bags where consumers are made to think about their choices when the buy the bags. Unlike a tax or levy, the fee is usually retained by the retailer as a charge for implementing the policy. The Government is in charge of setting a minimum and maximum fee, where the retailers are free to charge a fee within the range.

Effectiveness

Having the same principle as a tax or levy, a fee imposed on the plastic shopping bags will deter consumers as the higher price or a new cost in buying the plastic shopping bag will discourage consumers from buying them. There are, however, some considerations to take into account: the set fee for the plastic shopping bags should be high enough to act as a deterrent for consumers and not very low that they can absorb the price easily; there is a problem of weak enforcement that could lead to retailers not charging the fee. As discussed in chapter 5, retailers worry about losing their customers when they do not provide them free plastic bags. The issue of retailers not charging the fee to retain their customers might arise. Therefore, there is the need for periodic enforcement as well as setting up strict penalties for such offenders. There is also the need for the Government to raise awareness and educate the retailers and the public constantly on the issue of over-consumption of PSBs so that they will become more compliant. Judging by the results achieved in the case study and other cases as discussed in chapter 4, the environmental effectiveness of such a policy is very high.

Acceptability

This type of policy tool can be easily introduced, however there will be some level of difficulty regarding enforcement and monitoring. For a country like Bhutan that does not have a system in place to carry out a tax or levy on PSBs kind of policy instrument, charging a fee is the method of inducing the same outcome as a tax or levy from the consumers. Governments can easily develop ordinance for mandating the fee and set the right price to deter the consumers from buying PSBs. The government's acceptability of such tools is very high as they are easy to implement and outcomes are considerably positive.

The reason why a tax or levy is not acceptable and a compulsory fee will work in Bhutanese context is that the government is not required to put extra manpower to enforce where the fee is going. The fee is mandated to be charged by the retailers and the Government does not collect the charged fee on the plastic shopping bags. Such as in the case of Wales, as discussed in chapter 4, the mandated fee imposed by retailers are retained by themselves, and has the option for them to use the collected fee for improving environmental initiatives or donating them to environmental charities, as part of their contribution towards *corporate social responsibility*.

Retailers' acceptability of such tools is high as well since they do not have to cover for the cost of buying plastic shopping bags – the cost now being borne by the consumers. Retailers however would have to make the consumers aware of the fee so that they do not blame them for the extra cost charged on the bags.

Consumer acceptability on putting a fee could be received with some resistance. The extra fee on the plastic shopping bag would mean that they would have to pay extra money to buy a single piece of plastic bag. But from what can be learned from different cases that put a fee on plastic

shopping bags, awareness campaigns and environmental education goes a long way. In the case of the US, there was a constant flow of information through different media sources on the implementation of the fee and how the fee is supposed to help reduce the overall consumption of PSBs. There is also reporting from the local government's side on the progress of the policy which stimulates and motivates the consumers to adhere to the policy.

Enforceability

The government or the legislative body could easily set up the fee and mandate the retailers in the city to start charging the fee on plastic shopping bags. This type of economic policy instrument is easy to introduce in a system, however could face difficulties in enforcement and monitoring. The ban in Bhutan did not work out because there was weak enforcement and monitoring on the implementing agency's part. If such a trend continues, the effectiveness of the tool will be at minimum. The Government should identify all the relevant agencies that could work together in collaboration to coordinate proper enforcement and monitoring.

Another important aspect to have in this tool is to have a provision for sanctions and penalties, where retailers who do not charge for the plastic shopping bags are strictly penalized. A toll-free number could be set up to receive complaints and feedback so that the policy can be implemented effectively with the help of public support.

6.2.5 Educational and Awareness campaign

This thesis disregards the use of educational and awareness campaigns as a standalone policy instrument to address plastic shopping bag consumption in Thimphu, Bhutan. However, given the importance of awareness campaigns and environmental education, these instruments can be used to educate and inform people on the subject. These instruments can provide moderate results that do not necessarily satisfy the end goal of the policy. Educational and awareness campaigns could target people and educate them on the idea of refusing, reusing, reducing, and proper disposal of plastic shopping bags. Considering the satisfactory effectiveness of the instrument and also being a powerful tool to inform and educate the actors, this type of policy instrument can be used to supplement the other feasible policy instruments for Thimphu, Bhutan.

6.2.6 Summary of assessed policy options

A summary of the policy options that have been assessed using the three environmental criteria can be seen in Table 6-1. Relevant policies that had scored medium to high are considered for policy suggestions for Thimphu, Bhutan to address the issues of excessive plastic shopping bag consumption. A tax or levy policy even though scoring 'medium' in the assessment has been disregarded due to the fact that the application of such policy is not currently feasible in the country.

Table 6-1 Summary: evaluation of relevant policy measures

	Partial ban	**Tax or Levy**	**Fee**	**Voluntary Agreements**	**Educational and awareness campaign**
Effectiveness	**High**. Reduces targeted type of PSBs but might increase other types of PSBs	**Very High**. Addresses the issue of throwaway attitude	**Very High**. Addresses the issue of throwaway attitude	**Low**. Less participation and non-compliance = reduced effectiveness	**Low**. Increase in the level of awareness but insignificant change in behavior
Acceptability	**Medium**. As opposed to a complete ban, considered more favorable	**Medium**. Need to strive for public support; financial resources for administration	**High**. Cost-effective in terms of administering the fee. Seen favorably by retailers	**High**. Favored by actors for being voluntary.	**Very High**
Enforceability	**Low**. Requires strict monitoring and enforcement	**Very low**. Lack of institutional and financial capacity	**Medium**. Requires enforcement and monitoring of fee	**Very Low**. Commitment rate expected to be very low	**Very High**
Summary	**Medium**	**Medium**	**High**	**Low**	**High**

Source: Author's own compilation

6.3 Suggested Policy Option for Thimphu, Bhutan

Drawing from the insights from the discussion so far from the above sections, a policy mix that would address the problem of excessive consumption of plastic shopping bags in Thimphu, Bhutan is suggested under this section.

6.3.1 Ban on plastic shopping bags of thickness <50 micron, and mandate a compulsory fee on thicker plastic shopping bags at the point of sale on the consumers

This type of policy mix offers a range of benefits which a stand-alone policy instrument cannot offer. Majority of plastic shopping bags in Bhutan are below the thickness of 50 micron which are considered to be lightweight plastic shopping bags by the standards of many countries (e.g. European Union and India). Due to their flimsiness and being lightweight, these types of plastic shopping bags are the source of litter, and even if they are discarded in the landfill, wind carries them around into the natural environment resulting in pollution. This type of policy mix will work well if the Government's intention is to phase out single-use plastic shopping bags and promote the use of reusable bags.

Effectiveness

The current use of single-use plastic shopping bags and the waste that it generates cannot be managed properly as discussed in the in the previous chapters. In addition, the collection rate of such lightweight bags is very low. By banning lightweight plastic shopping bags and promoting the use of alternatives and reusable shopping bags, the waste volume from the lightweight shopping bags could be significantly decreased. As a stand-alone policy, the partial ban on lightweight plastic shopping bags could mean that the retailers have to buy costlier thicker PSBs but by supplementing the partial ban with a compulsory fee, the cost is covered by the consumers. This mix in policies helps the retailer implement the tool without paying extra cost as well as still making the consumers pay an extra fee on PSBs which could induce a behavioral change in them.

Acceptability

The compulsory fee instrument by supplementing the partial ban instrument makes this policy mix an acceptable tool to reduce plastic shopping bag waste. The issue with partial ban is that there is a loophole where retailers and consumers will start using thicker plastic shopping bags that are not included in the ban which will increase the volume of thicker PSB; and then there is the issue with mandating a compulsory fee, where lightweight plastic shopping bags are still consumed causing litter problems; therefore by combining these two policy instruments, both the objectives will be achieved as well as having a policy mix that works smoothly.

The acceptability from the retailers' side is high since the cost of buying and providing thicker plastic shopping bags is covered by the consumers when they pay the fee. Since the retailers are providing thicker reusable bags, the cost and the extra fee charged on the bag will be higher than what used to be for lightweight PSBs, therefore the retailers would need to educate the consumers on the change so that they are not blamed for implementing the policy.

Awareness and educational campaigns could be carried on increasing the acceptability by the consumers. There can be resistance from the consumers on having to pay an extra cost for thicker plastic shopping bags. Dissemination of information on the policy through various

media sources and educating the consumers on the effects of single-use plastic shopping bags on the environment goes a long way in changing consumer's acceptance of such policies, as observed in the cases in chapter 4.

Enforceability

Bhutan should have better coordination amongst its government agencies so that they can collaborate to enforce and monitor the policies together to achieve better results. By fostering strong enforcement and periodic monitoring of the policy, countries around the world have been able to witness positive outcomes through such policies. Different enforcement and monitoring systems are not needed in this kind of policy mix. Since the two policy instruments complement each other perfectly, monitoring and enforcement can be carried out together at one go.

Provision for strict penalties and fines should be made for such a policy mix as there will be incidents of plastic shopping bags not being charged by retailers. An accessible system such as a toll-free number or a website can be created to welcome complaints on the offences, and suggestions.

6.3.2 Considerations for smooth implementation

As discussed in Chapter 5 and 6, there lacks a clear coordination of sectors in implementing the policy. The suggested model for it to be effective needs changes in how the policy will be carried out in the first place as opposed to the previous ban with no proper designation of responsibilities. Even though plastic shopping bags are considered to be a small portion in the waste stream, enough attention needs to be given to the issue that it creates in the long run. The government needs to treat excessive use of PSBs with utmost importance and should therefore consider formulating separate regulations for PSBs which require specific solution and attention – compared to the current management where all types of waste are clubbed together under one regulation.

A task force needs to be set up where it will develop a national directive to reduce the consumption of plastic shopping bags in the country, in particular Thimphu city, and decrease the social, environmental and economic impacts generated by it. The directive could set goals and targets to reduce excessive plastic shopping bag consumption. For example, a target and goal of 50% reduction in PSB usage in the first two years and 80% reduction after 5 years could be set. Implementation and monitoring will be carried out throughout the years to ensure the directive is being followed. The directive will also highlight which responsibilities are designated to which organizations so that the duties can be conducted effectively, unlike the previous case where the NEC has been burdened with all the responsibilities of implementation and monitoring.

The partial ban should be treated with caution and the lessons from the previous blanket ban can be applied to it. The legislative wording of the ban with provisions for exemptions, loophole considerations, proper enforcement, smuggling issues should all be considered.

As indicated in the previous sections, the mandated fee should not be set too low or high which will affect the outcome of the policy mix. A minimum of BTN 05 per plastic shopping bag should be applied at first. Depending on the outcome of the policy, if the fee is too low to bring forth changes, then the fee should be increased to a level that the government will think will bring in the necessary reduction in PSB consumption.

It is very imperative for the government to encourage the establishment of an alternative industry that provides sustainable non-plastic alternatives to conventional PSBs. If viable alternatives are not available, people will resort to using thicker walled plastic shopping bags under the suggested policy mix which will increase the overall volume of PSBs even if there is a reduction in single-use PSBs.

An important element that the government needs to consider in the future when introducing policies is the provision for phased approach and effective dates. Such elements should be considered for the actors to adapt to the new policies and provide a smooth transistion to the new change.

Finally, educational and information campaigns will need to be considered for all the stakeholders before and after the introduction of the suggested policy mix. This thesis realizes the importance of such instruments, even though such instruments contribute to low environmental effectiveness; they make actors more aware and hence compliant both before the introduction of the policy as well as after the implementation of the policy.

6.4 Critical Reflections on Research

A significant limitation for this research is a lack of stakeholder involvement from the international non-governmental organizations' side. UNDP and WWF offices in Bhutan would have been involved to elicit information on the plastic bag issue in the country through the eyes of an international organization but due to Covid 19, and strict health protocols put in place, interviews with the said stakeholders could not be arranged. Another stakeholder – plastic bag wholesaler/importer could not be availed for interviews for fear of being called out, even after ensuring their confidentiality. This research would have been comprehensive and representative if all the stakeholders had been successfully involved.

A semi-structured interview was conducted on a limited number of consumers and retailers in this research to gain information on their perception, motivation, and attitude towards the ban policy. However, the author believes that a survey would have been a better method to gain such insights as such a method employs a large number of people which would contribute more valid results of the general public. Again, with time constraints during the research, the author has resorted to using a semi-structured interview method which nonetheless provides results or opinions representative of the general public to a certain degree

The case studies that are used in this thesis were gathered by studying peer reviewed journals, news articles, environmental reports and grey literature. Interviews with focal people who have first-hand knowledge on the cases would have made the cases used in this study more valid in my opinion. There were times during the compilation of the cases when there were discrepancies in the data. For example, there is a lot of literature that shows the ban on plastic shopping bags in Rwanda being a success when in reality, it has been ineffective or how the case of Bhutan's ineffectiveness has been cited as a success story in the reading materials on the internet.

More case studies could have been utilized to gain even more comprehensive data on the policies. The intention of the author at the outset of the thesis preparation was to use cases that share geographical, cultural, demographic and economic status to Bhutan. But there was limited literature related to plastic shopping bag policy in countries that are similar to Bhutan, and the literature that were available were mostly on developed or populous countries. If suitable cases were available, a cross-examination of the cases with Bhutan's context would have made policy suggestions more comprehensive and reliable.

7 Conclusion

Bhutan has been one of the first countries in the world that instituted a nation-wide ban policy on plastic shopping bags to tackle the problem of plastic shopping bag over-consumption and reduce the harmful impacts of PSBs on the environment and human-health. However, owing to several factors, the ban policy failed to see effective outcomes. This thesis looked at different policy measures that were utilized around the world to address PSB consumption, explored and assessed relevant policies that could be utilized in Bhutan, and examined the issue of excessive PSB consumption in the country to suggest a policy mix that would sustainably address the issue of PSBs in Thimphu, Bhutan.

The current state of plastic shopping bag waste in Thimphu, Bhutan is alarming. Various issues related to excessive plastic shopping bag consumption have resulted in several issues – plastic shopping bag is the number one cause of urban flooding in the city, that occurs several times during the monsoon season every year, discarded plastic shopping bags mostly end up in the city's only semi-managed landfill that is running over capacity, and other PSB waste that do not get sent to the landfill have been littered in the environment for everyone to see. The issue of plastic shopping bag needs to be managed properly

Through the lessons and insights derived from the different case studies that utilized different policy instruments to address the issue of plastic bag waste, a policy mix to address Thimphu's problem of PSB waste is suggested. Standalone policies were found to be ineffective or hard to enforce on their own, hence with growing evidence showing policy mix exhibiting successful outcomes in the case studies and throughout literature, a policy mix for Thimphu, Bhutan was considered and suggested. A hybrid policy of a partial ban on single-use plastic shopping bags (<50-micron wall thickness) and mandating a compulsory fee on other types of plastic shopping bags is found to be feasible for a case like Thimphu, Bhutan. A partial ban on single-use plastic shopping bag on its own will aid in the reduction of the targeted type of PSBs but there are chances of people resorting to using other types of PSBs that is not included in the ban. This will not change the consumers' dependence on plastic shopping bags and will only increase in the waste volume of thicker PSBs. In order to solve this issue, a supplementary policy of mandating a compulsory fee on thicker PSBs that are distributed by the retailers is suggested. When PSBs are not distributed freely and an extra cost is charged on it, it might make the consumers change their behavior since the fee will act as a deterrent to consuming PSBs.

By getting an understanding on the situation in Bhutan through this study and proposing an effective means in combating the plastic shopping bag waste issue in the country, this study might aid in contributing to the wider audience, as well as policy makers in Bhutan, interested in plastic shopping bag waste management, with a unique Bhutanese context of its own – small, landlocked, low-income nation with no in country presence of plastic production industry. Addressing this issue in Thimphu, Bhutan using context-specific insights and effective policy measures compiled from cases around the world, it would aid other low-income nations as well as the overall academic community by providing insights and useful information on the issue.

Future Research

The area of this thesis was focused on the pre-consumer aspect of plastic shopping bags that looked at different policies that address them in the market. An important area that this thesis lacked was looking into the post-consumer aspect of plastic shopping bags – management of plastic shopping bag after it has been consumed and littered or discarded – which is equally important. There are several interesting policies that looks into the management of discarded or littered plastic shopping bags that should be carried out for Thimphu, Bhutan as well since, managing the issue on the pre-consumer aspect is not enough to address the overall problem.

Another interesting area to focus future research would be on analyzing the tax or levy and fee system quantitatively. In this research, with a small sample size, willingness to pay for a single plastic shopping bag was acquired to understand how much people are willing to pay. This data was used qualitatively to understand how much plastic shopping bags are needed to charged for if there should be a fee put on them. Future research based on quantitative models on the tax or fee could paint a better picture of how such a system would work and predict outcomes in a quantitative manner.

Bibliography

Aghdam, F. B., Alamdari, Z. D., Nadrian, H., Jafarabadi, M. A., & Dehghanzadeh, R. (2019). Personal, social, and environmental factors associated with the behavior of plastic bag use among urban residents: A study with socioecological approach. *International journal of preventive medicine*, *10*.

Alam, O., Billah, M., & Yajie, D. (2018). Characteristics of plastic bags and their potential environmental hazards. *Resources, Conservation and Recycling*, *132*, 121-129.

Bahri, G. (2005). Sustainable Management of Plastic Bag Waste. The Case of Nairobi, Kenya.

Behuria, P., & Goodfellow, T. (2019). Leapfrogging manufacturing? Rwanda's attempt to build a services-led 'developmental state'. *The European Journal of Development Research*, *31*(3), 581-603.

Bhattacharya, R. R. N., Chandrasekhar, K., Roy, P., & Khan, A. (2018). Challenges and opportunities: plastic waste management in India.

Blackman, A. (2008). Can voluntary environmental regulation work in developing countries? Lessons from case studies. *Policy Studies Journal*, *36*(1), 119-141.

Bohm, P., & Russell, C. S. (1985). Comparative analysis of alternative policy instruments. In *Handbook of natural resource and energy economics* (Vol. 1, pp. 395-460). Elsevier.

Börkey, P., Glachant, M., & Lévêque, F. (1998). Voluntary approaches for environmental policy in OECD countries: An assessment. *CERNA, Centre d'économie industrielle, Ecole Nationale Supérieure des Mines de Paris*.

Carraro, C., & Lévêque, F. (Eds.). (2013). *Voluntary approaches in environmental policy* (Vol. 14). Springer Science & Business Media.

Chasse, C. (2018). *Evaluation of legal strategies for the reduction of plastic bag consumption* (Doctoral dissertation, Harvard University).

Choden, P. (2018). Study of Plastic Bag Usage in Thimphu Centenary Farmers' Market (CFM) by Vegetable Buyers and Sellers. *Royal Institute of Management*. Thimphu, Bhutan.

Chow, C. F., So, W. M. W., Cheung, T. Y., & Yeung, S. K. D. (2017). Plastic waste problem and education for plastic waste management. In *Emerging practices in scholarship of learning and teaching in a digital era* (pp. 125-140). Springer, Singapore.

Clapp, J., & Swanston, L. (2009). Doing away with plastic shopping bags: international patterns of norm emergence and policy implementation. *Environmental politics*, *18*(3), 315-332.

Convery, F., McDonnell, S., & Ferreira, S. (2007). The most popular tax in Europe? Lessons from the Irish plastic bags levy. *Environmental and resource economics*, *38*(1), 1-11.

Cooper, T. (2016). *Longer lasting products: Alternatives to the throwaway society*. CRC Press.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Sage Publications, Inc.

Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC medical research methodology*, *11*(1), 1-9.

Danielsson, M. (2017). The plastic bag ban in Rwanda: local procedures and successful outcomes. https://www.diva-portal.org/smash/get/diva2:1067480/FULLTEXT01.pdf

Dehm, J., Singh, S., Ferreira, M., & Piovano, S. (2020). Microplastics in subsurface coastal waters along the southern coast of Viti Levu in Fiji, South Pacific. *Marine Pollution Bulletin*, *156*, 111239.

Dikgang, J., Leiman, A., & Visser, M. (2012). Analysis of the plastic-bag levy in South Africa. *Resources, Conservation and Recycling*, *66*, 59-65.

Durak, S. G. (2016). Investigation and Evaluation of the Effect to Environmental Pollution of Plastic Shopping Bags. *Türk Bilimsel Derlemeler Dergisi*, *9*(2), 20-24.

Eagle, L., Hamann, M., & Low, D. R. (2016). The role of social marketing, marine turtles and sustainable tourism in reducing plastic pollution. *Marine pollution bulletin*, *107*(1), 324-332.

Fang, C., Zheng, R., Chen, H., Hong, F., Lin, L., Lin, H., ... & Bo, J. (2019). Comparison of microplastic contamination in fish and bivalves from two major cities in Fujian province, China and the implications for human health. *Aquaculture*, *512*, 734322.

Fehily, T. (1999) Consultancy study on plastic bags. Report prepared for the Department of Environment and Local Government, Dublin

Ferreira, M., Thompson, J., Paris, A., Rohindra, D., & Rico, C. (2020). Presence of microplastics in water, sediments and fish species in an urban coastal environment of Fiji, a Pacific small island developing state. *Marine pollution bulletin*, *153*, 110991.

Field, B. C. (1994). *Environmental economics: an introduction*. McGraw-Hill Book Company (UK) Ltd.

Filatov, V. V., Zaitseva, N. A., Larionova, A. A., Zhenzhebir, V. N., Polozhentseva, I. V., Takhumova, O. V., & Kolosova, G. M. (2018). State Management of Plastic Production Based on the Implementation of UN Decisions on Environmental Protection. *Ekoloji Dergisi*, (106).

Gasperi, J., Wright, S. L., Dris, R., Collard, F., Mandin, C., Guerrouache, M., ... & Tassin, B. (2018). Microplastics in air: are we breathing it in?. *Current Opinion in Environmental Science & Health*, *1*, 1-5.

Geyer, R., Jambeck, J. R., Law, K. L. (2017). Production, use, and fate of all plastics ever made. *Sci Adv*.doi: 10.1126/sciadv

Glasser, B. G. & Strauss, L. A. (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research. Aldine de Gruyter Ltd

Grissom, S. (2017). The Urban Tumbleweed: An Analysis of Single-Use Plastic Bag Regulations and the Battle over Local Control. *Tex. Tech L. Rev.*, *50*, 759.

Gupta, K. (2011). *Consumer responses to incentives to reduce plastic bag use: Evidence from a field experiment in urban India*. SAMDEE.

Harchekar, J. S., & Kandalgaonkar, S. R. (2018). Ban on plastic! a blessing or a curse. http://210.212.169.38/xmlui/handle/123456789/4516

Harse, G. A. (2011). Plastic, the great pacific garbage patch, and international misfires at a cure. *UCLA J. Envtl. L. & Pol'y*, *29*, 331.

Heath, R. L., & Palenchar, M. J. (2008). *Strategic issues management: Organizations and public policy challenges*. Sage Publications.

Hilton, I. (2020). Plastic in China: A Short History of a Crisis. In *Mare Plasticum-The Plastic Sea* (pp. 129-139). Springer, Cham.

Hiltunen, M. (2004). Economic environmental policy instruments in Finland. https://helda.helsinki.fi/bitstream/handle/10138/40441/FE_676en.pdf?

Kapinga, C. P., & Chung, S. H. (2020). MARINE PLASTIC POLLUTION IN SOUTH ASIA.

Karamanos, P. (2001). Voluntary environmental agreements: evolution and definition of a new environmental policy approach. *Journal of environmental planning and management*, *44*(1), 67-84.

Karl, H., & Orwat, C. (1999). Economic aspects of environmental labelling. *The international yearbook of environmental and resource economics*, *2000*, 107-170.

Keohane, N. O., Revesz, R. L., & Stavins, R. N. (2019). The choice of regulatory instruments in environmental policy. *Environmental law*, 491-545.

Kibria, G. (2018). Plastic Pollution Sources, Global Production, Global Hot spots, Impacts on Biodiversity & Seafood. *Adsorption of Organic*.

Kish, R. J. (2018). Using legislation to reduce one-time plastic bag usage. *Economic Affairs*, *38*(2), 224-239.

Knoblauch, D., Mederake, L., & Stein, U. (2018). Developing countries in the lead—what drives the diffusion of plastic bag policies?. *Sustainability*, *10*(6), 1994.

Kuensel. (2018). Saving the environment – on paper. Retrieved from: https://kuenselonline.com/saving-the-environment-on-paper/

Kuensel. (2019). Plastic ban must be taken seriously. Retrieved from: https://kuenselonline.com/plastic-ban-must-be-taken-seriously/

Kuensel. (2021). Plastic bag ban is only on paper. Retrieved from: https://kuenselonline.com/plastic-ban-is-only-on-paper/

Lacy, S., Watson, B. R., Riffe, D., & Lovejoy, J. (2015). Issues and best practices in content analysis. *Journalism & Mass Communication Quarterly*, *92*(4), 791-811.

Lindeneg, K. (1992). Instruments in environmental policy—Different approaches. *Waste management & research*, *10*(3), 281-287.

Martinho, G., Balaia, N., & Pires, A. (2017). The Portuguese plastic carrier bag tax: The effects on consumers' behavior. Waste management, 61, 3-12.

Maxwell, J. A. (2012). *Qualitative research design: An interactive approach* (Vol. 41). Sage publications.

Miller, R. (2012). *Plastic shopping bags: An analysis of policy instruments for plastic bag reduction* (Master's thesis).

Ministry of Finance. (2009-2019). Bhutan Trade Statistics. Royal Government of Bhutan. Retrieved from: https://www.mof.gov.bt/publications/reports/bhutan-trade-statistics/

Ministry of Works and Human Settlement (MoWHS). (2008). Thimphu City Development strategy. https://mowhs.gov.bt/wp-content/uploads/2010/11/Thimphu_City_Development_Strategy_2008.pdf

Morse, J.M. (1994) Designing funded qualitative research. In: Denzin, N.K. and Lincoln, Y.S., Eds., Handbook of Qualitative Inquiry, Sage Publications Ltd., Thousand Oaks, 220-235.

Mourshed, M., Masud, M. H., Rashid, F., & Joardder, M. U. H. (2017). Towards the effective plastic waste management in Bangladesh: a review. *Environmental Science and Pollution Research*, *24*(35), 27021-27046.

Namgay. T. (2020). Nation's Waste on Scale: Bhutan's first waste inventory. *IOS Press*. Retrieved: https://content.iospress.com/download/statistical-journal-of-the-iaos/sji200742?id=statistical-journal-of-the-iaos%2Fsji200742

Narayan, Y. DeepWaste: Instantaneous and Ubiquitous Waste Classification using Artificial Intelligence for Combating Climate Change.

National Statistic Bureau. (2017). Population and Housing Census of Bhutan. Retrieved from: https://www.nsb.gov.bt/download/5006/

Nielsen, T. D., Holmberg, K., & Stripple, J. (2019). Need a bag? A review of public policies on plastic carrier bags–Where, how and to what effect?. *Waste management*, *87*, 428-440.

Nilsen, A. (2010). *An Economic Evaluation of Plastic Bag Regulation* (Master's thesis). https://www.duo.uio.no/bitstream/handle/10852/16927/FINALCOPY.Sept.24.8amAndersNilsenThesis.pdf?sequence=1&isAllowed=y

O'Brien, J., & Thondhlana, G. (2019). Plastic bag use in South Africa: Perceptions, practices and potential intervention strategies. *Waste Management*, *84*, 320-328.

Ogwo, P. A., Obasi, L. O., Okoroigwe, D. S., & Dibia, N. O. (2013). From plastic bag wastes to wealth: a case study of Abia State University, Nigeria. *Journal of Environmental Management and Safety*, *4*(1), 35-39.

Phuntsho, S., Dulal, I., & Yangzom, D. (2010). Studying municipal solid waste generation and composition in the urban areas of Bhutan. *Sage Journal*. https://journals.sagepub.com/doi/abs/10.1177/0734242X09343118

Poortinga, W., Whitmarsh, L., & Suffolk, C. (2013). The introduction of a single-use carrier bag charge in Wales: Attitude change and behavioural spillover effects. *Journal of Environmental Psychology*, *36*, 240-247.

Rai, S. B. (2015). Understanding the effectiveness of the current waste management system in Thimphu city, Bhutan (Master's Thesis). Retrieved from: https://core.ac.uk/download/pdf/60551508.pdf

Ritch, E., Brennan, C., & MacLeod, C. (2009). Plastic bag politics: modifying consumer behaviour for sustainable development. *International Journal of Consumer Studies*, *33*(2), 168-174.

Ritchie, J. & Spencer, L. (2002). Qualitative Data Analysis for Applied Policy Research. https://dx.doi.org/10.4135/9781412986274.n12

Romer, J. R., & Tamminen, L. M. (2013). Plastic Bag Reduction Ordinances: New York City's Proposed Change on All Carryout Bags as a Model for US Cities. *Tul. Envtl. LJ*, *27*, 237.

Santos, S. C., Sousa, C. V. E., de Oliveira Sampaio, D., & Fagundes, A. F. A. (2013). The impact of using compostable carrier bags on consumer behaviour in the City of Belo Horizonte, Brazil. *Ambiente & Sociedade*, *16*(4).

Stephenson, E. F. (2018). Persecuting Plastic Bags. *For Your Own Good: Taxes, Paternalism, and Fiscal Discrimination in the Twenty-First Century. Arlington, VA: Mercatus Center at George Mason University.*

Sterner, T., & Coria, J. (2013). *Policy instruments for environmental and natural resource management*. Routledge. https://doi.org/10.4324/9781315780894

Taylor, C., Pollard, S., Rocks, S., & Angus, A. (2012). Selecting policy instruments for better environmental regulation: a critique and future research agenda. Environmental Policy and Governance, 22(4), 268-292.

Taylor, R. L. (2019). Bag leakage: The effect of disposable carryout bag regulations on unregulated bags. *Journal of Environmental Economics and Management*, *93*, 254-271.

Taylor, R. L., & Villas-Boas, S. B. (2016). Bans vs. fees: Disposable carryout bag policies and bag usage. *Applied Economic Perspectives and Policy*, *38*(2), 351-372.

The World Bank. (2018). Bhutan country Data. Retrieved from: https://data.worldbank.org/country/BT

Thomas, G. O., Sautkina, E., Poortinga, W., Wolstenholme, E., & Whitmarsh, L. (2019). The English plastic bag charge changed behavior and increased support for other charges to reduce plastic waste. *Frontiers in Psychology*, *10*, 266.

Tietenberg, T. (1998). Disclosure strategies for pollution control. *Environmental and resource Economics*, *11*(3), 587-602.

Tough, R. (2007). Plastic shopping bags: environmental impacts and policy options. http://researcharchive.vuw.ac.nz/handle/10063/571

Toxics Link. (2014). Plastics and the Environment - Assessing the Impacts of the Complete Ban on Plastic Carry Bag. Retrieved on 14 May 2020 from: https://toxicslink.org/docs/Full-Report-Plastic-and-the-Environment.pdf

Tudor, V. C., Marin, A., Vasca, D. Z., Micu, M. M., & Smedescu, D. I. (2018). The influence of the plastic bags on the Environment. *Materiale plastice*, *55*(4), 595.

Vedung, E. (1997). Public policy and program evaluation. New Brunswick: Transaction

Warner, B. M. (2009). Sacking the culture of convenience: regulating plastic shopping bags to prevent further environmental harm. *U. Mem. L. Rev.*, *40*, 645.

Wilcox, C., Puckridge, M., Schuyler, Q. A., Townsend, K., & Hardesty, B. D. (2018). A quantitative analysis linking sea turtle mortality and plastic debris ingestion. *Scientific reports*, *8*(1), 1-11.

Xanthos, D., & Walker, T. R. (2017). International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): a review. *Marine pollution bulletin*, *118*(1-2), 17-26.

Appendix 1. Consent Form

Thesis Title: "Failure of the Ban on Plastic Shopping Bags: Finding Supportive Policy Measures to Address Excessive Plastic Shopping Bag Consumption - A case of Thimphu, Bhutan"

Background

This study is carried out as part of a thesis for the fulfilment of the Master of Science in Environmental Sciences, Policy & Management (MESPOM) jointly operated by Lund University – University of Manchester - University of the Aegean – Central European University, conducted by Jigme Palden (student).

Purpose of the study

The main objective of this study is to analyze why the ban policy on plastic shopping bags that was implemented in the country has been ineffective in addressing the problem of excessive plastic shopping bag consumption. By recruiting participants for interviews from governmental and non-governmental organizations, retailers, and consumer sector, this study aims to further understand the issue of plastic shopping bags in Thimphu, Bhutan and come up with a selection of alternative policy measures that would address the unsustainable consumption of plastic shopping bags in Thimphu, Bhutan.

Through interviews, general information related to plastic shopping bag consumption in Thimphu, Bhutan as well as your opinion on current policies regarding plastic shopping bags will be recorded for analysis.

The information provided by the participants will remain confidential and the identity of the participants will be kept private. This information will only be available to the student carrying out the study and their supervisor. The information you provide will not be connected to your name to ensure confidentiality – participants will be described in general terms in the thesis, for example 'employee at National Environment Commission", retailer 01. 02 …. etc. Any personal information and recordings from the interviews will be deleted at the end of the study, and all transcribed interviews will be stored securely by the concerned university in their database.

This study is scheduled for completion by June 2021.

It is ***voluntary to participate*** in this study, and you can choose to withdraw your consent at any time without stating any reason. If you choose to withdraw, all your personal data will be made anonymous.

If you have questions or concerns regarding this study, please contact:

Jigme Palden +9757777xxxx, jigme.palden@mespom.eu

I have received information about this study, and consent to participate,

_____

Signed by participant, date

Appendix 2. List of Interviewees

Interviewee	Who?	Organisation	Mode of Interview	Date
01	Senior official	Waste Management Division (NEC)	Face to face	01-02-2021
02	Staff	Department of Trade and industry	Email	10-04-2020
03	Environment Officer	Thimphu Thromde	Face to face	01-02-2021
04	Staff	GreenerWay	Face to face	14-04-2020
05	Staff	Green Road	Phone	16-04-2020
06	Senior Staff	Royal Society for the Protection of Nature	Phone	10-04-2020
07	Worker	Memelhakha Landfill	Face to face	20-04-2020
08	Senior official	Clean Bhutan Initiative	Face to face	21-04-2020
09	CFM Vendor	Retail Sector	Face to face	25-04-2020
10	CFM Vendor	Retail Sector	Face to face	25-04-2020
11	CFM Vendor	Retail Sector	Face to face	25-04-2020
12	Grocery Store Owner	Retail Sector	Face to face	25-04-2020
13	Convienance Store Owner	Retail Sector	Face to face	25-04-2020
14	Convienance Store Owner	Retail Sector	Face to face	25-04-2020
15	Shopper	Consumer Sector	Face to face	25-04-2020

16	Shopper	Consumer Sector	Face to face	25-04-2020
17	Shopper	Consumer Sector	Face to face	25-04-2020
18	Shopper	Consumer Sector	Face to face	25-04-2020
19	Shopper	Consumer Sector	Face to face	25-04-2020
20	Shopper	Consumer Sector	Face to face	25-04-2020
21	Staff	National Environment Commission	Phone	15-04-2020