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# BEHAVIOUR CHANGE STRATEGY

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FOR BETTER WASTE MANAGEMENT IN THIMPHU CITY



AUGUST 23, 2017

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## FOREWORD

Despite so many initiatives for better waste management and reduction, Thimphu City still continues to confront numerous challenges. We can debate on this issue from various perspectives but the root cause of the problem has always been people's mindset, and lack of proper waste management services and facilities. Therefore, solutions to waste management in a society like ours lie in the endeavours aimed at changing people's mindset and improving waste services and facilities. This is mainly why the 'Behaviour Change Strategy for Better Waste Management in Thimphu City' has been developed to bring behaviour changes in us.

Apart from adopting strategies to transform public mindset, we must also strive to achieve other aspects like adequate infrastructural support for proper waste management. This proposal stands out from any other since it takes into account almost all the major contributing factors for waste problems; mindset drawbacks of the people, outmoded legal tools, inadequate waste infrastructure, lack of proper and systematic inspection and monitoring systems, improper implementation of the rules and regulations, unrealized applications of spatial planning and design principles to mitigate improper waste management and littering, lack of awareness, inappropriate tools failing to make people act according to their awareness, and others.

The success of this proposal would now depend on its strict implementation and support from various stakeholders and residents of the city. However, if this isn't achieved, the competent (and implementing) authority's steady implementation and monitoring of the proposed strategies will also lead to the success of the waste management initiative. This paper solicits clear designation of power and duties with established accountability and transparency at all levels in accordance to the constitution of the Kingdom of Bhutan. An example of this is individual plot owners being accountable for any kinds of waste visible within their plots/plot boundaries regardless of who throws it or where the owner resides.

The constitution also establishes a legal power to punish those who fail to protect public properties. Article 8, sub article 2 & 7 states: A Bhutanese citizen shall have the duty to preserve, protect and respect the environment, culture & heritage of nation; a person shall have the responsibility to safeguard the public property. Moreover, our people must realize that it is not for these reasons that we must keep our surroundings clean but for our own good health and wellbeing.

Executive Secretary,  
Thimphu Thromde.

## INTRODUCTION

Waste management in Bhutan, especially Thimphu, has been a very challenging task. This however is due to reasons of agglomeration of people from different cultural and lifestyle backgrounds. They have different thoughts, beliefs and attitudes which make it even harder for proper waste management. So this research tries to formulate strategies which will work for all groups of people. The strategies include regulatory measures, awareness campaigns, collaborations among different institutions, and other urban design recommendations. However, the main focus of the paper is to adopt a shift in the approach which will eliminate the root cause of the waste littering problem, mindset of the people.

Isn't it so inspiring to see even a western child concerned and taking care of his or her own wastes and so frustrating to witness even an educated person in Thimphu knowingly throw his wastes anywhere he like? This is the difference in the mindset and attitude of the two. This is the main cause of the waste problem in our country and especially in Thimphu, the capital town of Bhutan, where young act cool and old very stupid.

There have been many tools in the past to manage the wastes but most weren't effective. This proposal is workable for the reasons it identifies the basic causes of the problem, takes care of so many important aspects for better waste management, suggests effective monitoring, and others. It is also recommended that the competent authority builds and provides adequate infrastructures for waste management along with establishment of accountability and transparency at various level.

This paper establishes some important strategies for better waste management very much applicable to the nature of people living in the city and the other characteristics of the city. These include community attitude, awareness and campaigns, infrastructure support, formulating legal tools, etc. However, it demands cooperation and collaboration among important stakeholders.

The paper analyses the contributing factors of waste problem one by one and then establishes proposals of actions for each factor. Some of the aspects or factors are related to one another thereby necessitating joint actions as specified in the proposals.

## A. COMMUNITY ATTITUDE AND BEHAVIOUR

### 1. BACKGROUND AND MICHIE'S BEHAVIOUR CHANGE WHEEL

A person's behaviour is influenced by various factors ranging from physical, social, psychological, reflective and automatic aspects (Refer figure below). Moreover, identification of intervention acts and policy guidelines, and their implementation should be in place to change people's behaviour. Inappropriate management of waste, i.e. the unsound ways in which the wastes are generated, handled (segregated, recycled, reused, and/or reduced) and disposed of, is an issue in Bhutan. Waste management issue is complex as it involves multitude of scientific, technical, economic and social factors. It will require cooperation from government, industry and individuals. Solid wastes are a major eyesore and deteriorate the environment. Also, the general mindset that Thromde (Municipality) is the only responsible entity to keep the city clean has often led the residents to ignore their own responsibilities to keep the city clean. Therefore, measures to combat the increasing urban waste management issues by changing the ignorant behaviors of people are required at individual, household, and community and institution levels. Section 53 of the **Waste Prevention and Management Act 2009** mandates that each person or organization is required to comply and cooperate with waste segregation, reduction, reuse and recycling initiatives by an authority or authorized service provider. It is essential to design programs or strategies aiming different groups according to age, gender, socio-economic position and levels of current waste management activity.

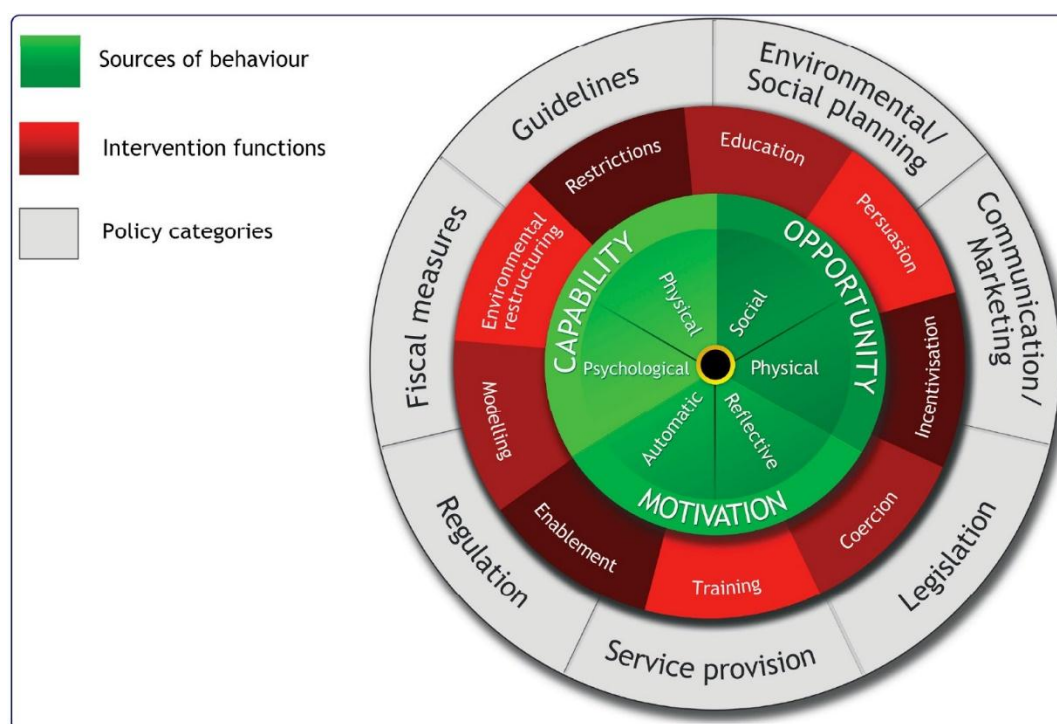


Figure 1. The Behaviour Change Wheel, Source: Michie et al, 2011

Michie's Behaviour Change Wheel (BCW) helps us understand how we can successfully introduce changes in behaviour and culture at the level of individuals, communities and populations. The wheel has three layers – Sources of behaviour (green), Intervention functions (red) and Policy categories (grey).

#### SOURCES OF BEHAVIOUR

Quoting US criminal law, she says that to prove someone is guilty of a crime you have to demonstrate the means or capability, opportunity and motive. Motivation, opportunity and capability, along with behaviour itself, are the four components of the COM-B Model.

**Capability** There must be the capability to do it. Capability includes both our psychological and physical capacity to engage in an activity, including the necessary knowledge, skills and tools. If you are courageous and not afraid enough to dump your waste in a drain, then you are psychologically strong enough to litter the surroundings.

**Opportunity** There must be the opportunity for the behaviour to occur. Opportunity includes everything that makes a behaviour possible or prompts it. Opportunity has social and physical aspects. For instance, if where you usually dump your wastes is in a location not having visual clearance and has a view blockage, then you have the opportunity to throw your waste there.

**Motivation** There must be sufficiently strong motivation. They must be more highly motivated to do the behaviour than to do something else. Motivation includes both unconscious habits and conscious thoughts and goals. These relate closely to fast automatic thinking (what Daniel Kahneman calls System 1) and slow reflective thinking (Kahneman's System 2), which work in very different ways [2]. Capability and opportunity also influence motivation. You will rather be motivated to throw your waste out of your window than going to your dustbin for example.

**Behaviour** change is what we are seeking. Capability, opportunity and motivation each influence behaviour and in turn are influenced by behaviour. To change behaviour, you need to be clear about what behaviour you want and the context in which that can be achieved. Then think about what needs to change to achieve that. For one type of behaviour change it may be most appropriate to remove a barrier by improving some aspect of capability, while for another it may be best to create a deterrent by restricting an opportunity.

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## INTERVENTION FUNCTIONS

Michie distinguishes between the ways that sources of behaviour can be influenced (intervention functions) and policies. She identifies 9 Intervention functions:

1. Education – increase knowledge or understanding
2. Persuasion – Use communication to induce positive or negative feelings or stimulate action
3. Incentivisation – Create expectation of reward
4. Coercion – Create expectation of punishment or cost
5. Training – impart skills
6. Restriction – Use rules to reduce the opportunity to engage in target behaviour (or to increase the target behaviour by reducing the opportunity to engage in competing behaviour)
7. Environmental restructuring – Change the physical or social context
8. Modelling – Provide examples for people to aspire to or imitate
9. Enablement – Increase means or reduce barriers to increase capability (beyond education) or opportunity (beyond environmental restructuring).

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## TYPES OF POLICY

She further identifies 7 types of policy



1. Communication/marketing – Use print, electronic, telephonic or broadcast media
2. Guidelines – Create documents that recommend or mandate practice. This includes all changes to service provision
3. Fiscal – Use the tax system to reduce or increase the financial cost
4. Regulation – Establish rules or principles of behaviour or practice
5. Legislation – Make or change laws
6. Environmental/social planning – Design or control the physical or social environment
7. Service Provision – Deliver a service.

These policy types, intervention functions and sources of behaviour can be mixed and matched in many different ways and it can be confusing to describe precisely how one intervention differs from another.

## 2. Impacts of Improper Waste Management

Prevention strategies should be customized to address the factors contributing to improper waste management in order to change community's behaviour. Illegal dumping raises significant concerns regarding public health and safety, property values, and quality of life (EPA, 1998). Besides health risks, children are vulnerable to physical (protruding nails or sharp edges) and chemical hazards. It attracts rodents, insects and other vermin, which attribute to diseases such as encephalitis and dengue fever. Dumping in creeks, culverts and drains could lead to improper drainage of runoff, making the areas susceptible to flooding. The figure below explains the communications used to overcome barriers to normative and social change.

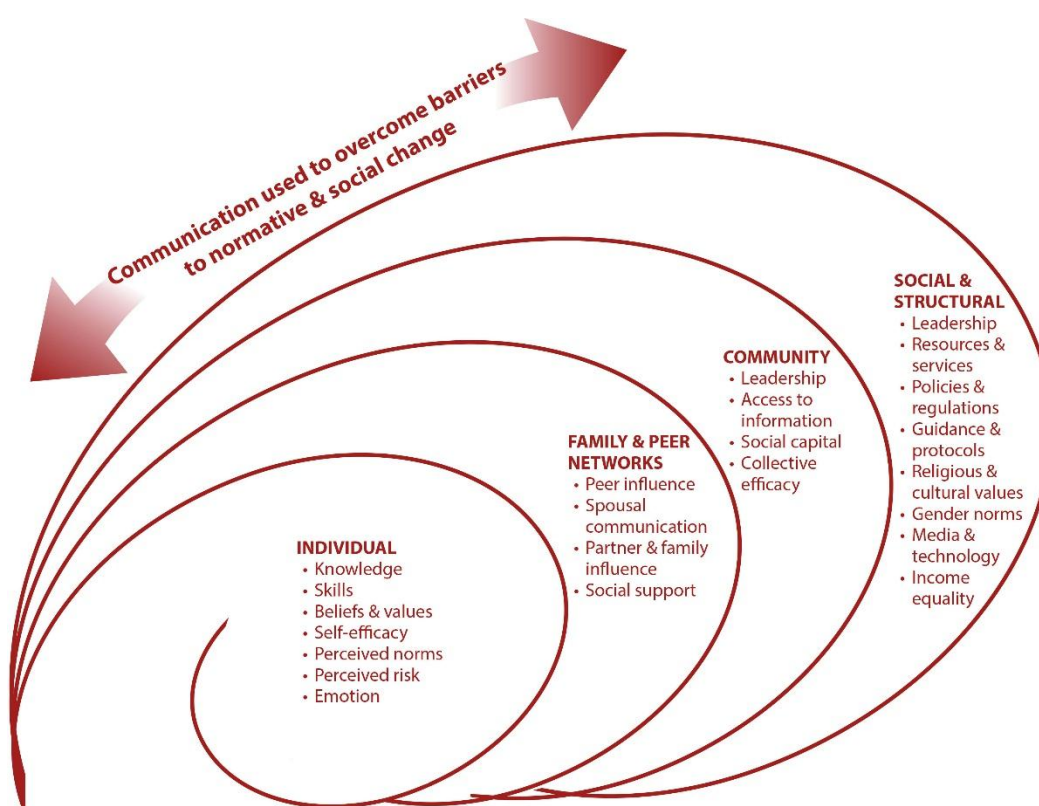


Figure 2. Communication used to overcome barriers

### 3. APPROACHES TO CHANGE COMMUNITY ATTITUDE AND BEHAVIOUR

**3.1 EDUCATION (LEARNING BY DOING):** UK's Cabinet Office (2002) research indicates that school and TV campaigns relating to waste management proved to be successful in raising awareness and interest amongst students. The kids are likely to pressurize or educate their families about proper waste management practices, effectively becoming 'advocates' of environmental change in households. Hence, education about positive behaviour towards waste management through formal schooling for children is the most common channel to change people's attitudes. Waste management should be practiced in school so that students are aware of the issue and get habituated to the practice. However, one major drawback about Bhutanese is that despite aware, they fail to act according to their awareness. The solutions to this problem is also discussed in later sections.

#### 3.1.1 Actions

##### a. Segregation

- Implement waste segregation program from pre-primary level, throughout schools.
- Work out funds in cooperation with Thromde or Dzongkhag Administrations (District Administrations) to provide bins to individual classrooms and big collection bins for waste segregation. Students tend to throw their leftover food around the campus, so having volunteers (scouts or captains) to watch the campus during lunchtime and report anyone who litters could be effective. The students should be directed to throw their food leftovers in green waste bins or the schools should adopt animal feeding programs through left over foods.

##### b. Reuse and Recycle

Schools in Bhutan already practise recycle and reuse strategies but only once a year or so; and it involves only those volunteers or the allocated groups of students. Primary schools should initiate a *Green Planet Team* (GPT) comprising of about 3 to 4 students from each class acting as a representative in order to collect clean, used papers and plastics in schools for reusing and recycling purposes. The representatives can keep on changing after three weeks. Their weekly activities could comprise of:

- Sorting & collecting papers and plastics in the larger bins
- Distribute small boxes for recycling and scrap papers to classrooms (if necessary)
- Weighing papers – weighing and write up data on a sheet every week
- Bringing papers for recycling - to a central location/recycling bins

GPT could come up with ideas to recycle their recyclable wastes and use the products for school or their classrooms. Thimphu Thromde and the schools could provide prizes to groups that come up with interesting innovative ideas. It is proven to be most effective when the information is provided by sources that are trusted by the recipients.

**3.2 PROGRAMS TARGETING LABOURERS:** Increase in migration from rural to urban areas has led to an increase in proportion of population in urban region who are unaware of the existing waste management policies. Awareness programs and campaigns aim to create awareness to all the population but are particularly accessible to groups of urban residents that have access to television and media. Certain groups are not aware of the existing waste issues especially immigrant construction workers and old illiterate people.

### 3.2.1 Actions

- Make it mandatory for the contractors/expatriate human resource hirers to provide their labourers with bins for segregation; the contractors could reuse it after labourers leave and use it for the next group.
- Make the labourers aware of the existing rules and on ways of waste segregation.
- The Thromde shall fine the contractor or such concerned personnel for waste littering but the latter may penalize his labourers.
- Let the labourers know about the collector trucks' timing; and allocate a person each week to throw the waste.
- Inform them about the existing or proposed garbage bins and their locations. Make sure that it is not placed more than 100 metres away from their camp or site, as people tend to throw their waste much more often in streets, open spaces, drains and rivers (Centre for Environment and Development, 2003).
- Awareness must be instilled in people through various means and strategies including short animated videos, documentaries, and others.
- The construction industry is a major source of employment for the poor and marginalized section of population of developing countries. Foreign labourers who come to Bhutan are solely for economic purpose; hence, an idea involving economic incentives for waste management should be developed and practiced. For instance, a project in Mexico involves women to separate their household waste and receive a discount when they buy vegetables. The vegetables they buy are produced with the bio-fertilizer made from their wastes. This kind of projects showing economic benefits from waste management show that it has influence on proper behaviour of the community.
- Thromde could enforce a law on leasing land to the contractors. They could take pictures of the plot conditions in advance and make it mandatory for the contractors to return the land in the same physical conditions as when it was initially leased.
- Awareness must be instilled to all sections of the society and to all age groups. However, it is most required for the young ones and olds. One major problem is despite having awareness, our people continue to throw their wastes anywhere they like acting so cool but foolish.

**3.3 CONSULTATION:** The top-down approach of passing information and education from governments to communities might be productive if there is good relationship between the governing authorities, waste service providers and communities. People might feel they are being excluded from discussions having local significances if they are not consulted. Their participation is merely taken for tokenism. It leads to the thinking that there are not enough opportunities for being involved and that perhaps it is not their 'sort of thing'. Not getting the people to participate could mean breakdown in trust, centralization of politics and dominance of the councilor's role. The community would think that it is not their job to participate and that their contribution would not be taken seriously.

### 3.3.1 Actions

- Making announcements that there is a consultation meeting before two to three weeks on media and that participation from the local community is essential.
- Setting a benchmark on the number of people from the local community that is needed (for example, 15 people minimum) for the consultation to be carried out. If the number of people from the local area is less than the benchmark set, then the meeting shall be postponed. In a society like ours, it is even necessary to deprive the absentees from certain incentives and benefits and also fine them if need be.

- Announcing that the meeting has been postponed due to less participation from the local community, hence making them feel important in the process.
- Also making it mandatory for every household (one person) to participate in the meeting should be enforced.

**3.4 MEDIA:** Mass media campaigns are used to pass messages to large population through the use of existing media such as television, radio and newspaper. However, such campaigns are frequently competing with pervasive product marketing and powerful social norms. Mass media promises a great deal in disseminating focused messages to large audiences repeatedly, over time, in an incidental manner, and at a low cost per head.

Bhutanese focuses more on the direct consequences than long-term ones; hence they are ignorant about the relevant actions that are needed to be taken. For instance, owners do not empty their septic tanks unless a complaint is filed against them due to the overflow of the tank. This social driver calls for the building owners to call for service. So, showing a short documentary on the consequences of not managing waste properly on national TV channel everyday would be a good reminder to the people.

#### 3.4.1 Action

- Film a documentary on the consequences of improper waste management. It should be a short film in simple language, understandable by all groups of audiences. Presenting facts by locals instead of involving actors would be good as people think actors are just acting, as it is their job. Having locals presenting facts would be more believable.
- Get a section on local channel, which is about 5 minutes. Timing should be taken into consideration. Office goers would most likely watch TV during dinnertime and old people usually watch it in the morning and early evening.
- Media should also be used in publicizing program success. If campaigns and programs in schools are successful, it should be publicized on national channel or school newsletter or social media to let everyone know what and how they are doing. It is important that everyone have an opportunity to see the results of their efforts. Moreover, it would motivate other citizens to follow the same steps.

## B. CHANGING CONSUMERIST BEHAVIOUR

### 1. BACKGROUND

In every issue of the national newspaper and media broadcasts, there is always the repeated reminder of the unsustainable Bhutanese behaviour related to waste management. Unpleasing to the eyes of the people and outsiders visiting Bhutan, it is quite annoying to hear about the mounting waste being thrown outside of the rubbish bins, along the river, clogged into the drains, alongside roads, etc.



Figure 3 Illegal Dumping of waste (Source: Kuensel, 2005)

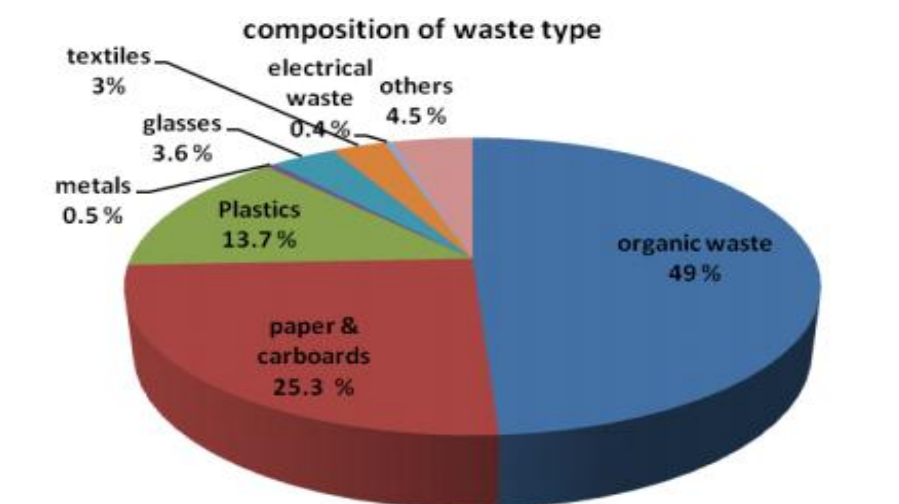


Figure 4 Percentage composition of waste types (Source: BO Focus, 2010)



With the advent of rapid urbanization, growing affluence, changing consumption patterns, and lack of civic responsibilities, there has been an increasing consumption and illegal dumping of waste. Such problems are very much evident especially in the urban areas concentrated with dense population. A survey conducted

| Urban Center     | Population (2005) | Household waste (mean) kg/person/day | Commercial waste (mean) kg/unit/day | Office waste (mean) kg/staff/day |
|------------------|-------------------|--------------------------------------|-------------------------------------|----------------------------------|
| Bumthang         | 3,246             | 0.29                                 | 3.12                                | -                                |
| Damphu           | 1,666             | 0.19                                 | 2.85                                | 0.21                             |
| Gelephu          | 9,199             | 0.24                                 | 1.64                                | 0.16                             |
| Mongar           | 3,502             | 0.28                                 | 2.86                                | 0.38                             |
| Paro             | 2,362             | 0.36                                 | 3.11                                | -                                |
| Phuentsholing    | 20,537            | 0.34                                 | 1.66                                | 0.21                             |
| Samdrup Jongkhar | 5,952             | 0.21                                 | 1.89                                | 0.19                             |
| Samtse           | 4,981             | 0.20                                 | 2.75                                | 0.17                             |
| Thimphu          | 79,185            | 0.23                                 | 2.48                                | 0.22                             |
| Trashigang       | 2,383             | 0.19                                 | 2.86                                | 0.29                             |

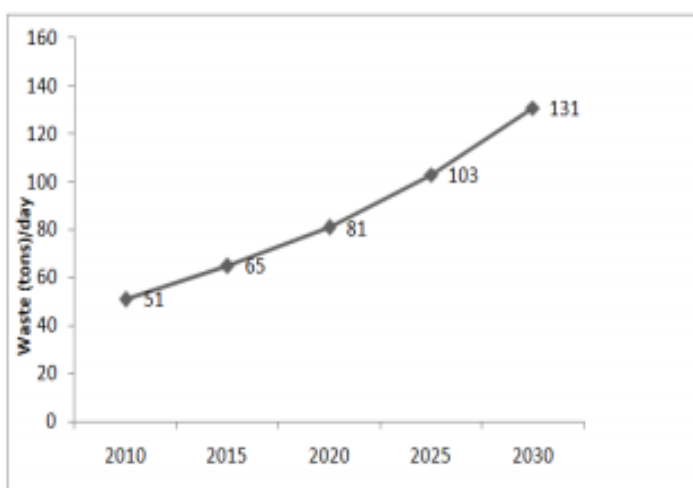
(Source: Phuntsho et al. 2008)

**Table 1. Average Solid Waste Generation in Urban Areas**

by the Department of Urban Development and Engineering Services (DUDES) between 2007 and 2008 (table 1) showed a total waste generation of almost 44,000 ton/year with Paro and Phuentsholing generating maximum per capita household waste. Bumthang and Paro have the maximum per unit commercial waste generation.

The amount of waste generated is likely to triple in the next two decades according to the graph (Figure 3). At present, only Thimphu and Phuentsholing

areas are the ones carrying out partial segregation of waste and the rest of the urban areas are faced with no proper solid waste management measures and controls with irregular waste collection truck services.



**Figure 3 Projection for Solid waste generation in Thimphu for 2010-2030**

The Waste Prevention and Management Act 2009 is undergoing some alterations while the Integrated Solid Waste Management Strategy has already been developed. The local municipalities provide door-to-door waste collection services. 'Greener Way' is the first private firm responsible for waste management and recycling of plastic wastes located and operating in Thimphu.

### 1.1. ISSUES REGARDING WASTE MANAGEMENT IN BHUTAN

- Lack of civic responsibilities.
- Inefficient institutional and legal arrangements for waste management.
- Lack of strategic planning.

- Lack of public awareness and advocacy.
- Rural-urban migration and urban agglomeration.
- Inadequate infrastructure and resources supporting waste management.
- Inconsistency in waste management service delivery.
- Lack of coordination and communication between public and relevant agencies responsible for waste management.
- Consumerist behaviour of the people.

## 2.0 INTRODUCTION

Like many other developing countries, Bhutan is no excuse when it comes to the problem of solid waste management. With the current trend of rural urban migration in the country, waste management is likely to deteriorate in the urban areas. Such a situation is likely to pose grave danger to the environment as well as to the people in the long term. In order to combat such complications, it is necessary to not only develop sufficient waste management agencies and or allocate resources to incinerate waste, etc., but to also try and change the behaviour of the Bhutanese communities in overcoming the challenges of waste management.

People should be made responsible and accountable for the management of waste generated by them. A small act of proper waste disposal by everyone could contribute significantly in ameliorating the environmental condition. It is essential to believe that we are part of something greater and bigger than ourselves. If you want people to change their behaviour, it is necessary to show them the greater meaning of it than just telling them what to do.

Waste is the function of consumption, and consumption is due to materialism. In order to change peoples' behaviour, it is crucial to first reduce waste at its source. Humans are much better than any other animals at changing behaviour that has long-term benefits. It is crucial to identify the challenges in introducing change before developing the necessary strategy to implement such change.

A typical nature of the Bhutanese people is their lack of willingness to adopt change despite being aware of the unsustainable nature of their behaviour. One area where such behaviours are clearly visible is in terms of ones' health. People are no doubt aware of their unhealthy dietary habits and how it can pose risks to their lives sooner or later. Despite such awareness, we still like to continue with it until it's too late. Only then comes the realization and the behaviour change when all the damages have been done. Therefore, in order to avoid such worst-case scenario we need to change our behaviour for the betterment of both oneself and the planet.

## 3.0 THE CONSUMERIST BEHAVIOUR

The problem of waste management was not so evident in the past due to its isolation from the rest of the world. However, with rapid urbanization in the past few years and increasing economic activities, there has been a drastic change in the consumption pattern. The increase in range of goods in the market economy has made Bhutanese rapacious consumers with change in both type and quantity of waste generated. The consumerist behaviour is very obvious with many Bhutanese desiring for more and more packaged foods, fashionable clothing, gadgets, cars, machines and other forms of entertainment shifting from the basic needs of food, shelter and clothing.

**3.1.1 FACTORS CONTRIBUTING TO INCREASING CONSUMERISM:** Some of the causes of increasing consumerism in Bhutan are listed below:

- Advertisements that are usually aimed at recruiting consumers to buy things that they don't actually need.
- Given the money and the availability of goods, people seem to desire for more.
- Influence from peers. People feel that buying things become 'socially necessary' to keep up with others and failing to do so would make them feel inferior and outcasted.
- Especially for the young adults, being fashionable is socially acceptable and a way to 'fit-in' the society.
- People tend to always compare themselves with others in terms of what they do, how they dress, what they own, where they live or what they get to experience. Such behaviour therefore induces people into buying unnecessary things just to feel equal with others.
- The 'Gruen-transfer' (aka gruen effect) is a manipulative technique deployed by large shopping malls to trick consumers into buying things by intentionally confusing the layout of the shops and making them buy things that they didn't intend to in the first place.

**3.1.2 UNDERSTANDING CONSUMER BEHAVIOUR:** In order to change the consumerist behaviour, it is necessary to understand the behaviour and attitudes of the consumer first. Different consumers have different needs according to the availability of information and how they get influenced by the media and other tools, etc. Strategies should be aimed at different individual groups taking into account their income, age, biases, attitudes and gender. However, Bhutan lacks any comprehensive studies on the household behaviour including waste generation, recycling, etc. in order to come up with any strategies that can be targeted towards specific age groups.

**a. Price and Income:** If sustainable products are sold at reasonable price range, such products become more appealing to the customer. However, quality and performance attributes are also important as well. The product should be efficient in design and performance for people to choose it over other products available in the market.

It is necessary to conduct consumer surveys to determine factors that influence their purchasing behaviour such as price, quality, sustainability, and so on. Such studies would be really useful in determining relevant planning policies and tools in changing community behaviour. Studies have shown that income plays a significant role in influencing sustainable consumption; wealthier households were found to be more sustainable in consumption. However, poorer households were less likely to make sustainable consumption.

**b. Personal biases:** Biases are evident when consumers make purchases and they may not always be rational while making decisions to purchase goods. Often their decisions are influenced by peers, advertisements, brand names, product promotion, and so on. Such biases can be directed towards making sustainable consumption choices, for example, through communication campaigns to instil motivations among costumers.

**c. Age:** There is differing consumption pattern among different age groups with younger people more willing to adopt and shift towards more sustainable consumption. Studies have shown that younger generations are environmentally aware of their consumption behaviour, conscious of their health and welcome any initiatives that are dedicated towards protecting the planet. Therefore, campaigns and initiatives should be targeted towards different age groups in order to reap successful results.



**d. Gender:** Both men and women have different consumption behaviours with women likely to make more sustainable consumption compared to their counterpart. Surveys conducted in United Kingdom showed that since women mostly dealt with the household shopping, they were also more likely to buy eco-labelled products, and recycled and energy efficient products and were found to pay closer attention towards labels on the products.

#### 4.0 ACTIONS TO CHANGE CONSUMERIST BEHAVIOUR

**4.1 THE ROLE OF MEDIA:** Media plays a key role in manipulating the behaviour and brainwashing the minds of the people. Advertising has been exploited by companies and agencies to attract consumers and induce consumerist behaviour in them. Such techniques could also be used in injecting sustainable consumerist behaviour in people. Media should focus on instilling fear about the negative impacts of increasing consumerism on the environment and how it accelerates climate change impacts, and moreover to the consumers themselves.

Advertising through television, radio, newspapers, flyers, magazines, pamphlets, etc. can be another powerful means to encourage sustainable consumption behaviour. This can be done by focusing on the sustainability attributes of the products.

Another important aspect of advertisement is who does that, not just any person influences people's behaviour. It should be done by a person who is highly revered and is trusted by the people and not by someone who says one thing and does another.

**4.2 POLICY TOOLS AND INSTRUMENTS:** Although, there are policies on banning the use of plastic bags it is still not implemented at present. Everyday we use plastic bags in our daily shopping routine, at such an unsustainable manner that too for small quantities of vegetables eventually landing up in the drains and water stream. The government should work towards reducing the import of plastic packaging materials through policy initiatives. Implement the 3Rs (reuse, recover, recycle) and explore other alternatives such as eco-friendly plastic bags such as jute bags, etc. These approaches require political intervention and economic investment to overcome the way things are done.

A more policy oriented approach that brings together effective governance and cooperation nationally and internationally to promote and reward sustainable consumption. It requires changing the way things are manufactured by substituting to a more sustainable and less toxic approaches through imposing tax and subsidies.

**4.2.1 PROPER LANDSCAPING:** People illegally dump their waste wherever they find a vacant plot that does not belong to a private owner. During a lot of cleaning campaigns organized by the Thimphu Thromde, such illegal dumping were a prominent scene. Whenever a small government plot is left vacant, people see it as an opportunity to dump their waste. After dumping their waste, no one takes the blame or responsibility but when inspected by the Thromde officials, a lot of fuss is created as to who should be responsible for such acts.

In order to avoid such confusions, there shouldn't be any vacant lands in the first place. Such vacant land should be converted to productive uses such as gardens, park benches, and so on. Proper landscaping can also prevent such illegal dumping of waste in vacant lots.

**4.2.2 Reducing packaged food offering during religious and other related events.**

This strategy is very much relevant in the context of Bhutan where there are thousands of Buddhist

devotees. During such times, people make mountain of offerings to show their deep devotion and reverence to the religious figures. Although it is a much respected and appreciated behaviour of the people to show such devotion during religious events, it is also a time when one sees a lot of plastic waste surrounding the area where such events are hosted.

Developing strict policies and rules would dramatically reduce the generation of waste during such events. The government can either ban people from selling plastic goods during such occasions or make people responsible for their own waste by imposing penalties, etc.

**4.3 PUBLIC PARTICIPATION:** People should be encouraged to participate in developing strategies towards creating comprehensive waste management strategies and solutions. Studies have shown that people tend to be more responsive and committed to adapting strategies that involve them. People should be given immense support when taking up initiatives that would change the behaviour of the community to minimise consumption and pollution.

**4.4 THE BODHISATTVA PRACTICE:** This approach not only applies to reducing consumerism but also deems to solve the environmental problems in a more positive way by following the six paramitas of the bodhisattva. This approach dates back to the time of Buddha where the monks followed zero waste practices thereby utilizing resources more efficiently.

|   |  |
|---|--|
| I. Generosity/Dana Paramita<br>(No attachment and willing to give or help others)   | <ul style="list-style-type: none"> <li>- Material Generosity</li> <li>- Giving time, energy and resources.</li> <li>- Walk for short distance, save power, etc.</li> <li>- Protection Generosity</li> <li>- Protection land, air &amp; water</li> <li>- Be vegetarian &amp; offer living places for wildlife</li> <li>- Dharma Generosity</li> </ul> |
| II. Morality/Sila Paramita<br>(Avoiding bad actions & discipline to embed virtuous) | <ul style="list-style-type: none"> <li>- Evaluate our limitation &amp; guide ourselves</li> <li>- Be a responsible citizen (not buying plastic bags, or driving short distances and be energy efficient and commit to environmentally friendly actions)</li> </ul>   |
| III. Patience/ Kshanti Paramita<br>(Practice love & compassion)                     | <ul style="list-style-type: none"> <li>- With cause and condition there is always solution</li> <li>- Perseverance of action on the path of solutions towards preserving &amp; protecting nature</li> <li>- Enthusiasm</li> <li>- Enjoying the journey</li> </ul>  |
| IV. Effort/ Virya Paramita<br>(Develop cause to have resort)                        | <ul style="list-style-type: none"> <li>- Enthusiasm (Determined to act)</li> <li>- Enjoying the journey</li> </ul>   |
| V. Concentration/ Dhyana Paramita<br>(Aware of one's action & be mindful)           | <ul style="list-style-type: none"> <li>- Ordinary awareness (attentive towards the sensitivities of the environment)</li> <li>- Self-awareness (have clear motivation)</li> </ul>  |

|   |   |
|---|---|
| VII. Wisdom/ Prajna Paramita<br>(To recognize the nature of true phenomena) | - Relative wisdom(Understanding the nature of our environment)<br>- Ultimate wisdom |
|---|---|

Table 1 Bodhisattva Practice in waste management

**4.5 SUSTAINABLE PRODUCTION AND CONSUMPTION:** This concept is about producing and consuming goods in a sustainable manner. It is not only concerned with waste itself, but also taking into account the waste at its origin, the demand for goods and services, and the raw materials involved in meeting those demands. Such measures assess the life cycle of the products beginning from raw material extraction, manufacturing, packaging, transport, distribution, sale, use and its end result, waste.

The stages involved in the life cycle of products can be altered in ways to minimize its impact on the environment. Such interventions involve using **cleaner production** and **resources efficiently** with minimal waste generation, and achieving **eco-efficiency** through reduced impact on the environment. Such processes also involve **eco-design** of products that considers the design attributes of the products encompassing: augmentation of product use period, repair and upgrading of products by incorporating components that are recyclable and can be reused, etc.



Figure 5 Concept on Waste Management

The **cradle-to-cradle** concept focuses on the positive aspects of the product on the environment and tries to eliminate the very concept of *waste* in the life cycle of the product. Instead of ending up as a waste, the product is designed in such a way that it can be reused for a different purpose time and again without the loss of its quality. However, such a strategy requires proper technology and raw materials, which can be used without its quality deteriorating overtime.

## C. AWARENESS AND CAMPAIGN

### 5.1 INTRODUCTION

Thimphu Thromde being the implementing agency for waste management has frequently invited and initiated numerous cleaning campaigns and events to create awareness about CLEAN CITY.

The Thromde held two cleaning campaigns in February and April, 2016. During those campaigns, Thromde was unable to gain much of public support. The coordination between Thromde and Public, Thromde and other Government Institutions, Thromde and Private Organization, etc. have been very weak. There is a need for improved and proper coordination and collaboration among different stakeholders to solve the waste problem.

### 5.2 NEED

As per the **Constitution of the Kingdom of BHUTAN 2008**, Article 8, sub article 2 & 7 states: ***A Bhutanese citizen shall have the duty to preserve, protect and respect the environment, culture & heritage of nation; a person shall have the responsibility to safeguard the public property.*** Under **Waste Prevention and Management Act 2009**, chapter IV, under Public Responsibility states; ***all person shall fulfil their civic responsibility and good ethics in waste management.***

### 5.3 APPROACH

**5.3.1 KNOWLEDGE:** It is important to emphasize on knowledge. Knowledge on a subject is acquired through learning. Awareness and knowledge on waste impacts and its management could be done through informing people through various means and methods.

**5.3.2 SOCIAL SUPPORT:** It is physical and emotional support from friends, seniors, family, strangers, public icons, co-workers, bosses, etc. It takes several forms such as *physical support*: Helping the sweeper to clean the street; *emotional support*: Parents praises the child for not throwing the waste on streets; *Informational support*: Teacher tells the students to segregate the waste: *Practical Advice*; A woman helping her neighbour build a compost pit. Such support encourages a person to behave in line to proper waste management.

**5.3.3 ENVIRONMENT:** The surroundings we live in and interact lead us to develop a sense of belonging and attachment if clean. Clean public spaces are often appreciated by public and more interactions take place in a much healthy manner. If the public spaces are well maintained with better infrastructure and facilities, people would utilize those spaces and even develop respect towards it. Moreover they would care the spaces and also contribute to the surveillance of those spaces. People naturally wouldn't like someone littering the places they regularly use for recreational purposes.

**5.3.4 SELF EFFICACY:** It is the capacity of an individual to behave or perform effectively. It is determined by the personal intention to behave, attitude towards waste and motivation. People are required to be motivated through incentives, be it emotional and physical, to optimize their effort. The person with good intention and attitude often acts independently and are very effective.

### 5.4 ACTIONS

Existing issues of waste management is due to Knowledge-Behaviour Gap. Everyone knows about waste issues and what we should do, but how many are actually doing is shocking. People should be forced to act according to their knowledge by now.

**5.4.1 EDUCATION & AWARENESS:** With advancement of communication and technology, effective and efficient dispensing of information or learning on waste and its long term impacts on our environment and living standards both for now and generations can be done easily.

For public awareness and education, various communication means could be utilized such as broadcasting media and newspapers, through channels such as short messaging service, popular networking platforms such as *wechat* and *facebook*. Awareness campaigns and competitions can be organized frequently. Awareness programs can be clubbed with other important functions and programs.

**5.4.2 ACTIVE PARTICIPATION:** To promote and actively involve the participants we should set target participants and involve them in the decision making processes. Setting the target participant groups helps define our goals and objectives specifically, thus enabling to work effectively and efficiently in a given frame of time.

**5.4.3 COMMITTEE AND TASK:** The implementing agency should establish a separate committee to organize and coordinate campaigns and other related events. The committee's duties, responsibilities, powers and rights must be clearly highlighted with specified accountability and transparency. There must also be clear cut rules and regulations to establish proper work functions of the committee. The committee members should include different groups of people namely public representatives, officials from competent authorities, etc. Here, what is meant to be proposed is **we should introduce and establish Waste Partnership Communities and Tshogpas for better collaboration and involvement of important stakeholders towards proper waste management with established accountability and transparency.**

## D. IMPROVING THE FINANCIAL AND TECHNICAL CAPACITY

### 6.1 INTRODUCTION

With rapid urban development and a vibrant economy, it has become very strenuous for individuals, households and communities to manage their own waste. There is an increasing trend in the waste generation in most of the towns, especially Thimphu and Phuntsholing. Thimphu alone generates about 220 tons of garbage in a week, averaging 36 tons of waste a day, almost double the amount (14 tons) produced in 1998.

A major factor in influencing behaviour change and reducing litter is to make it easier for people to do the right thing by providing and enhancing the physical infrastructure. Infrastructures include bins (litter, recycling), garbage trucks, containers and signages. It also includes repairing or improving furnitures, landscaping or other amenities, and adding or removing bins.

### 6.2 STRATEGIES

**6.2.1 PROVISION OF GARBAGE BINS AND CONTAINERS:** It is significant to provide adequate facilities and infrastructures for proper management of solid wastes even if the residents are careful, responsible and cooperative in handling their own wastes. Providing the right tools to the public makes it easier for them to dispose their wastes correctly. Despite constant efforts from the municipal bodies to maintain a clean and hygienic environment, littering and inappropriate disposal of waste is still a challenge in towns like Thimphu.

In areas with high pedestrian activity, the normal street bins are often ineffective due to the high proportion of wastes being disposed. The bins are often seen over-flowing with waste due to the restricted capacity exacerbated by the low frequency of waste collection. Solid waste and inappropriate dumping will spoil the visual amenity, block the drains and eventually pollute the waterways, posing serious health risks to the public.

Therefore, it is essential to provide efficient and well-planned waste infrastructures. The bins or the containers should be well fitted with permanent lids. It is significant to have labelled and coloured bin lids. Replacing and repairing damaged or missing lids should be a priority. The bins should be kept neat and free of any grime, dirt or accumulated wastes. Advocating a sense of place and ensuring a good management practice are at the core to changing the littering behaviour.

#### **Location of storage bins**

Garbage and recycling storage facilities should be located in places that:

- Allow easy, direct and convenient access for the users
- Are well hidden, concealed or shielded so that the visual amenity is not affected
- Allow easy transfer of bins to the collection point if needed.

#### **Areas with high pedestrian activities**

- We can either opt for a larger volume containers for low frequency waste collection or ensure regular collections.
- *Sustaining action:*

- After placing the bins, it is of utmost importance to increase the frequency of emptying the bins so that it does not overflow. Therefore, the bins need to be monitored regularly and be kept in functional conditions.
- We also need to achieve the visibility of the bins and make it presentable.
- Strategically, we need to install more bins as per need and type.
- We could make use of research and new technology in identifying proper locations for bins.

### 6.2.2 MITIGATING ILLEGAL DUMPING:

Different waste disposal methods adopted by the residents of Thimphu and Phuntsholing entail disposal of garbage in city allotted steel containers, concrete pits, private bins, through door-to-door collection, garbage collection truck service and open dumping and burning. Open dumping is one of the major disposal methods in Phuntsholing. Households located further into the clustered settlements tend to resort to dumping in the streams, rivers, gullies and open spaces.

Another area of concern entails the lack of resources to inspect known hotspots for dumping on a 24-hour basis. The idea of not getting caught sends a message to the community that illegal dumping of waste does

We should make the hotspots for dumping inaccessible and ensure the provisions of adequate infrastructure and services by:

- Proper landscaping- by planting trees and flowers to create a cleaner atmosphere, consequently making people feel positive about the location
- revegetation and beautification
- Providing barriers such as locked gates, fences, concrete blocks and earth mounds.
- Also, enhancing the maintenance of the infrastructures is a crucial step (e.g. fixing broken and dangerous furniture, providing bins where necessary).

#### 6.2.2.1 IMPROVISE ON SURVEILLANCE AND COMPLIANCE CAMPAIGNS BY:

- Utilizing surveillance cameras and signs to indicate the area is watched for illegal dumping
- Strengthening patrolling units in hotspot locations
- Facilitating community surveillance and reporting suspected activities
- Utilizing aerial surveillance in rural and remote areas.
- Installing street lighting in selected areas

### 6.3 ACTION: FACILITATING RESOURCES FOR ADEQUATE WASTE MANAGEMENT:

One of the biggest issues in managing urban waste is the inadequate financial capacity to implement their mandate effectively. The two largest cities in Bhutan, Thimphu and Phuntsholing, are currently utilizing the garbage compactor trucks donated by Japan. There is a concern of sustainability when these trucks break down. Unless the financial capacity of the municipalities improves, the municipalities will not be in a position to implement the plans effectively.

**6.3.1 RAISING REVENUE:** Given the insufficient financial capacity of the municipalities, it is necessary to come up with alternatives to increase the financial capacity.

- Effective implementation of “Polluter pays principle”
- The Polluter pays principle is basically a principle which holds the polluting party liable for the



damage caused to the environment. What it means is that companies, business firms, households and individuals are responsible for the damage and should pay accordingly, or compensate the ones affected by it. The polluters pay principle should be clearly incorporated in the policies on waste management and strongly executed.

- Furthermore, the advent of user charges in Bhutan could be an alternative to create revenue. The charges for the municipal sectors would be quite low but for commercial and industrial sector, the amount could be high in accordance with the polluter's pay principle. With such an approach, it would not only ensure clean urban environment but also make individuals responsible in managing their own waste.
- Penalty, fine and levy: Imposing fine and proper enforcement should be a part of any integrated approach to reducing litter. Although, proper provision of guidelines has been given according to the offences committed, the inspection is not as frequent and strict. Therefore, strong enforcement is necessary.

**6.3.2 PUBLIC PRIVATE PARTNERSHIP:** Despite the fact that a high proportion of urban waste in Bhutan are recyclable, the private sector is still not willing to invest in recycling facilities as the volume of waste is quite low to attract huge investment. Concerned stakeholder agencies depicted that there have been proposals from private entrepreneurs who were interested in setting up recycling plants if the government assisted them by obtaining equipment or in the form of subsidy. This is where the concept of private public partnerships comes into play.

- The government can assist by providing the required equipment, training subsidies and marketing.
- Another way is to partner with private sector to provide the required infrastructure. Although financially lacking, municipalities have access to land that can be used by private entrepreneurs. Besides, municipalities could explore low technology high labour intensive projects that does not need a high capital investment.

**6.3.4 ACTION: STRATEGY TO MINIMISE THE SIZE AT LANDFILL:** With the progressing issue of garbage, we also have the challenge of finding suitable sites for landfills. With the availability of minimal appropriate site, the risks associated with the leakage of toxic substances from the landfill site into water bodies presents great risk to the health of people. Besides, the landfill site in Thimphu has reached its limit although it was designed to last for seven years. Finding new sites will require valuable areas to be converted into dumpsites.

**6.3.4.1 COMPOSTING:** A major component of the wastes at the landfills are biodegradable green materials, which could be composted. In Thimphu, the green matter accounts for about 57.28 % of the total waste dumped in the landfill sites, meanwhile the proportion is higher in Phuentsholing, accounting for 90.21 % of the total wastes produced. Therefore, it presents great opportunity for the Phuentsholing Municipality to invest on composting as an alternative to increasing the life of the landfill site.

A composting plant in Serbithang has been instituted by the Thimphu Thromde under the ESPS project. The project aims to decrease the amount of waste destined for the landfill and also create some revenue by selling composts. Such innovative projects can serve as an example for other municipalities such as Phuentsholing.



## E. FORMULATING LEGAL TOOLS FOR WASTE ACCOUNTABILITY

### 7.1 INTRODUCTION

Waste problem and littering in Thimphu city is more deeply associated with the mindset of our people. Despite knowing that littering is aesthetically and environmentally degrading, our people continue to throw their waste anywhere they like. Their habitual tendencies of not caring about the exterior environment and just wanting to keep only their home-interior clean have led to improper disposal of waste and littering of the city. If everyone cared the exterior surroundings as much as their interiors, our city's beautification wouldn't depend on Thromde officials inspecting and forcefully imposing fines on the defaulters. Our people should really act according to their beliefs by now. Who wouldn't agree that all people in Thimphu will definitely know that improper dumping of waste is dreadful both for the people and environment except probably those six years and younger. However, people have been very reluctant and it's time to never keep on moving only with the lenient approaches. It's an opportunity for Thimphu Thromde to shift to strict approaches and punish severely the defaulters which is why some strict measures is being developed to tackle the waste problem in the city. Young ones are acting so cool and old very stupid spoiling our otherwise naturally beautiful country without any sense of respect towards nature or never even daring to ponder upon the law of human dependency on nature's wellbeing.

### 7.2 BRIEF NOTE ON THE PROPOSED STRATEGY

Since solutions to waste problem lies very much in the strict measures and never only in the lenient approaches in a society like ours where people don't act despite having awareness on what to do and what not to, the proposal on formulation and amendment of some policies which is specifically applicable to the root-causes of waste problem in our city is brought forward. One such policy note recommended is ***an individual plot owner being accountable for wastes visible within their plots***. Since the entire city is composed of so many different plots, if each plot is taken care, then definitely the entire city will be clean. Government plots can be fenced and prevented from littering by the Thromde. Other plot owners can complain anonymously to the Thromde and the inspection will be made immediately after which the informer may claim incentives. There is a need to form a different unit under Environment Division of the Thimphu Thromde to focus on waste complains and management. The unit can be termed '***Waste Complain and Management Unit***'.

Thromde will be accountable to safeguard the complainant's identity. Individual plots will be taken as the unit for waste management. This is how legal tools will be utilized for efficient waste management and control ultimately through transforming the mindsets of our people.

### 7.3 ARTICLE 8 OF THE CONSTITUTION OF BHUTAN

Article 8 of the Constitution of Bhutan states the following about the fundamental duties of Bhutanese Citizens;

*2. A Bhutanese citizen shall have the duty to preserve, protect and respect the environment, culture and heritage of the nation.*

*7. A person shall have the responsibility to safeguard public property.*

The information on these ***fundamental duties*** of the citizens of Bhutan and the newly formulated ***policy*** will be disseminated to the people (the plot owners especially and also others) through initial meetings with the help of community representatives. A single Local Area can be selected for piloting this initiative.

## 7.4 LEGAL TOOLS

*Waste Prevention and Management Regulation 2012* and *Waste Prevention and Management Act of Bhutan 2009* do not specifically mention the following points which are deemed necessary and applicable today with time's needs. So a separate rule must be formulated to aid and supplement the already existing rules and regulations regarding proper waste management. The rule must take care of the ground realities and difficulties in managing waste thereby becoming an effective tool to directly deal with the root causes, lack of accountability, of the waste problem. The rule must establish accountability on different players for waste management; plot owners, competent authority, etc. The following notes if incorporated in the new rule will aid much better in dealing with the waste littering problem in the city.

Owner of a particular plot of land should be made accountable for any kind of wastes visible within the boundary of his/her plot. In case the defaulting plot owner refuses to pay the fine and if he has building structures in his plot, provision of services such as water supply shall be discontinued by the Thromde until the defaulter pays the fine and in case of failure, the case must be directly be forwarded to the court. In case the defaulting plot owner has his plot undeveloped or vacant, he should be deprived of future plot development permissions until the fine is paid and the case should be forwarded to the court.

The waste visible in and around a public property must be the sole responsibility of the nearest plot owner directly next to such property for which he must be fined. Public Property would include but not limit to footpaths, drains, roads, parks and open spaces.

It would be applicable and effective to impose fines to the plot owner irrespective of who throws or litters a plot. Owner of the plot must be accountable for wastes in his plot. It is the fundamental duty of a plot owner to inform and make aware his/her tenants of Thromde's waste rule if he has rented structures in his plot. Individual plot owners facing problems of dumping of waste by others at odd hours like night-time should develop appropriate measures to tackle such issues by fencing the plot or putting Thromde-approved notice boards. Such inconveniences and issues must be dealt through discussions with the Thromde and other relevant agencies. If unauthorised waste dumping is unavoidable in a private plot, such plot owners must install Closed-Circuit Television cameras and other effective measures after consulting the Thromde.

In case the plot owner dwells not in his plot, he must appoint an in-charge to manage the wastes in his plot in his absence but the former shall be liable and accountable for any defaulting. The Thromde should inspect any plot of land anytime and should impose fines on the defaulters based on the Annexure VII of the Waste Prevention and Management Rules 2012. To protect the identity of the informer or the complainant should be the sole responsibility of the Thromde. The waste management in the government plots must be the responsibility of the Thromde.

Upon authentic evidence and proof, Thromde should impose fine the defaulter for littering the government plots or any such land under its jurisdiction and power. Thromde should fence government plots to prevent wastes littering. Thromde should manage the waste in public and semi-public spaces if such spaces have no management bodies.

Thromde should install Closed-Circuit Television cameras and other surveillance methods in hotspots where unauthorised waste dumping is common. Thromde should arrange appropriate timing and frequency of collection by garbage trucks according to the needs. Thromde should set up appropriate complain management bodies. Thromde should make its appropriate and convenient communication means for the public in times of urgency of complaints and information. Thromde should install segregated

dustbins (for degradable and non-degradable wastes) at appropriate locations and also make cheap and quality dustbins available. Government plots leased to private individuals/ institutions should be the responsibility of latter. The informer must choose to inform anonymously or reveal his/her identity to the Thromde and should be given incentives upon finding his complain genuine and true.

#### 7.6 EXISTING WASTE

The existing waste must be jointly cleaned on a fine schedule agreeable by the people. This will be done at local level and not entirely for the whole city at once. After this, the new regulation would come into function and no one will be exempted from fine.

#### 7.7 INSPECTION

Thromde inspectors should without fail make a timetable for inspections but never reveal the same to the people. However, it is best to never stick to one schedule but keep on changing the same on a weekly basis. It is also necessary that inspectors do their job properly and never fall prey to unhealthy practices. For this, Thromde should make inspectors accountable for wastes visible in their designated areas.

## CONCLUSION

Since solutions to waste problem in a community like ours need viewpoints from diverse perspectives and more importantly in endeavours to change the mindset of our people, it is essential to employ both regulatory measures and instil awareness in them at the same time. However, one big problem is that despite being aware of the waste implications, our people continue to throw their wastes randomly anywhere and litter our otherwise a very clean pristine country. This demands a unique approach that aims to identify and resolve the root problems of our waste. In this regard, the above measures are highly recommended for a better living. We must start doing all we can to better manage our waste. This approach ranges from awareness campaigns to inspection of the localities to fining the defaulters. The main motive of this proposal is to establish accountability to all the players for waste management which is missing currently.

In brief, the following areas must be taken care for our better living and clean environment:

1. Awareness on waste management and implications for not doing so must be instilled in our people starting from children to the old ones.
2. Though aware if people fail to act according to their awareness, they must be punished and for this, appropriate legal tools must be formulated and established.
3. These legal tools must be used effectively and monitoring must be strong.
4. There must be better collaborations among different groups and stakeholders to manage the waste.
5. Appropriate infrastructures for better waste management must be provided and built by the competent authority.
6. Spatial Planning must be sensitive and urban design must establish physical components of a city that encourages both passive and active surveillance.

There are many aspects to be taken care but the above ones are the most effective in a society like ours. So the above points must be seriously taken into account by now. Having noted that, our endeavours to deal with any issue in a country like Bhutan must be very much aimed at changing the mindset of the people. The main issue is not that our people don't know but that our people don't according to what they know.

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