



# The Concept of Environmental Leadership: The Case of Solid Waste Management (SWM) in Balangoda Municipal Council in Sri Lanka

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## Abstract

Most of the identified environmental problems if not addressed properly in timely manner will result in grave implications. Unsystematic garbage dumping is one of the key environmental issues in Sri Lanka, especially in the urban environments. Theories of environmental leadership work successfully as a way of changing the negative social practices and getting societies' commitment towards sustainability of systematic waste management. This article is discussing how the environmental leadership has contributed to maintaining good waste management practices in the society over direct or open dumping of waste which is unacceptable using insights from the waste management project of Balangoda Municipal Council (BMC). Waste management project of BMC further highlights number of initiatives which had been taken to promote systematic waste disposal, composting and other waste management concepts that should be adopted. Developing an organic culture, establishment of 3R societies, taking measures to gain a social recognition to the employees engaged in solid waste management project, building public-private partnerships, concern about the hazards waste, awareness through societies, branding of produced compost and etc. were among the strategies used to convince the community regarding the importance of acting in a way that will protect the environment. Environmental leadership plays a major role in shaping up communities' values, attitudes and beliefs towards sustainable use of resources to ensure their availability for the future generations as well.

**Keywords:** Environmental leadership; waste management; sustainable development; compost

## Background

Human interference on natural resources has increased with the development and population increase. Most of the identified environmental problems are complicated and have been happened due to uncontrolled pollution generated by the market-based economic development. Unsustainable practices in energy, water, food sectors and also impact of human activities and their lifestyles have made the livelihoods of future generations at high risk [1]. In 2002, Kollmuss & Agyeman explained that human behaviour has a significant impact on environmental problems. Most of the environmental issues we are facing today such as climate change, pollution of air and water, depletion of natural resources, uncontrollable waste generation, loss of biodiversity and so on has a

direct or indirect relationship with human activities. So, the human social practices that would be negatively affected and continue to affect towards environmental degradation needed to be changed for a better future. Therefore, development should be taken place in a sustainable manner to minimize environmental problems. The classic definition of the sustainable development provided in the Brundtland report is "meeting the needs of the present without compromising the ability of future generations to meet their needs" [2]. The report further states priority needed to be given to world's poor and to meet present and future needs. It has also highlighted careful use or limiting the resource use and it should be monitored by social organizations and state of technology.

However, Dager & Jordan [3] claim that sustainability will not occur naturally, or pre-ordered manner and it should be done in a very careful manner with series of processes until it is finally implemented. In order to find sustainable development solutions with more emphasis on environmental concern, environmental leadership is an important aspect which has newly emerged [4]. Leadership is a more widely used term. However, when considering the environmental leadership, it is consisting of several other distinguishing features that is not usually seen in ordinary leaders. "Environmental leadership is performed to achieve sustainable outcomes by protecting the environment and minimizing the pollution with providing social goals" [5]. With this background, in this article, authors wish to discuss the direct dumping of waste as a negative social practice and its implications on the environment and how various aspects of negative social practices can be changed with proper environmental leadership which identify and implement environmentally sound solutions to sustainable waste management. These good practices include reduction of generation of waste in community-level together with other steps which can be taken to change the existing negative practices on waste towards sustainability. The BMC is one of the best local governing body that has been successively implemented a municipal waste management programme and the case of BMC waste programme is used to illustrate how environmental leadership works successfully to address the municipal waste management problems in an acceptable manner. The key informant interviews and focus group discussions and site visits were carried out to gather data and information related to procedure of decision making, method of waste collection, transport, sorting, processing and so on. The data collection has been carried out during fourth quarter of year 2013. Collected data were validated through informal/casual discussions from local residents and commercial traders who were selected randomly and with their consent.

### **The Case of Waste Management in Balangoda Municipal Council (BMC)**

BMC is the oldest municipal council in Rathnapura district in Sri Lanka and it was initiated as a sanitation board and later converted to Municipal Council (MC). By now it has been governed by nine governors and a special commissioner. According to the 2013 statistics the population of BMC is about 35,855 people and generation of waste per day is around 0.9kg per person. In general, increased generation of waste has been created with the rapid development and social transformation, household habits and so on [6]. Practicing open dumping at the household level and municipality level make environmental degradation and create many issues to the surroundings [7]. Similar kinds of situations were experienced in BMC and the same was frequently reported from many other local authorities. In BMC, before the present waste management program, the waste collected from the council area was disposed

to a marshy land which was situated close to the "Dorawela Oya" (a lake) which flows across the Balangoda town. Not only in the council area, even at village level direct dump of waste had been practiced. These unhealthy unhygienic practices have created lot of issues to people who are living close to waste dumping sites. Spread of flies and scavenger creatures also reported to make a big hassle to the neighborhood. Since dumping grounds did not have proper measures to control the leachate, uncontrolled drainage of leachate substances took place contaminating the ground water as well as the surrounding surface water bodies. Drainage of leachate was more during rainy seasons. Unwanted odor was another main concern of the surrounding dwellings. These consequences may have led to loss of biodiversity, water quality deterioration, eutrophication and so on. The problem of unhygienic waste disposal has been triggered over the time due to increasing population and changing of people's lifestyles. These uncontrolled dumping sites are indirectly triggering the effects of climate change by generating greenhouse gases such as Methane. Further, many studies have recorded that household level unsanitary waste disposal make them expose to high risk by contaminating and spreading infection diseases [8]. A need of a proper solid waste management project to BMC was felt strongly in 1999, when it was reported an epidemic of diarrhea, typhoid and many other diseases caused basically by polluted water, mosquitoes and flies due to improper handling of solid wastes. Therefore, main objectives of the project of BMC were to create safer, cleaner, low cost, environmentally sound waste management project. The challenges the project managers had to face was to manage the solid wastes accumulated in the BMC without harming the environment while keeping the community intact with the project and getting the social acceptance to the employees who are working in the project.

### **Role of Environmental Leadership**

According to the Portugal & Yukl and Laabs [9,10], environmental leadership has prominent two levels of influence (individual and organization) and relationships (internal and external). Individual influence is marked by an interaction of a single or little group of individuals. Appeals to logic, values, and higher-order needs are used to influence individuals to transcend their own self-interests for the sake of the organization or an ideological cause. Environmental leadership with individuals may be exhibited by any member of the organization and may involve influencing peers, superiors, and outsiders as well as subordinates [9]. Flannery & May [11] have also briefly discussed the environmental leadership and kind of pro-environmental activities presumed by firms. They view environmental leaders as people who go beyond environmental regulations and assume a stewardship orientation toward the natural environment. Types of pro-environmental activities demonstrated by these firms include:

- a) Protection of the biosphere.

- b) Sustainable natural resource use.
- c) Reduction of waste.
- d) Marketing of safe products and services and
- e) Assessment and annual environmental audits of their operations [11].

In relation to environmental leadership, certain forms can be seen. To drive change of social behaviour knowledge about these different forms of leadership will be an added advantage in planning sustainable projects. One form of environmental leaders are persons who act as “emergent or change agents” within the organization unit [12]. They apply influence from top to bottom and bottom to top. The second form of environmental leaders are persons with leadership skills that is driven by champions [13]. During the Australian water projects three phases of environmental leadership (initiation phase, endorsement phase and implementation phase) process of champions were identified; “All three phases are assisted by executive leaders who create a safe environment for innovation, learning, risk-taking and collaboration, albeit in different ways” [14]. Implementer/leader should have concerns about the environment and without her/his concern and willingness such type of projects is difficult to implement and sustain. Though the Chairmanship is a politically appointed position in BMC as every other local authority. Initiation and continuation of the waste management project have been coordinated and closely monitored by the chairmen of BMC. The composting project is closely monitored by the chairman of the municipal council and a permanent work supervisor has been appointed for compost project under Public Health Inspector (PHI). This proves the claim of Portugal &Yukl that environmental leadership at the organizational level include the decision by a chief executive officer to establish a new policy of continuous improvement in the reduction of pollutants, or the decision by a board of directors to allocate a percentage of all sales revenues to support environmental causes [9].

### Identifying Proper Waste Management Mechanisms or Strategies

Proper management of waste means incorporation of sustainability elements into operations. Better understandings of the methods of waste generation, quantity of waste accumulated, composition, status and so on are few important factors to consider in developing a sound waste disposal system. Together waste disposal mechanism should be accountable, participatory, long-term sustainable and socially acceptable process [15]. The BMC waste management project is basically consisting of two phases. Those are recycling and composting. To reduce the environmental burden from waste, the project promotes the concept of reuse at household level, composting the organic fraction and less waste to landfills. Changes in community practices or behaviors are essential

for a society to achieve a sustainable waste disposal system as open dumping of waste practiced by the community had to be changed. Indeed, information awareness and pro-environmental education are key aspects of foster sustainability development [16]. Most of the behavioural strategies are framed based on individual decisions but Morris [17] argued that it is not true as most of the behaviour is social. However, a recent study has pointed out that behavioral strategies developed considering macro level are more successful than micro levels [18]. Another study claimed that internal factors like attitudes, values, knowledge and external factors like social context, institution etc. together is more important in achieving the pro-environmental behaviour [19]. People’s decisions are normally subjected to constraints such as time, income, or budget constraint. According to the behavioural economics, it’s explained that range of cognitive variables also plays a major role in the decision-making process [20,21]. Though there is a concern that community behaviour cannot be predicted by general environmental concern Hallin , Oskamp & Shrum [22-24], some studies argue that community concerns of resource and energy conservation, waste and landfill reduction reasons can be taken to the prediction of actual behaviour Hopper & Nielsen [25], but, some says it has not yet proved by research Tucker [26].

For awareness creation towards negative externalities and positive effects of new methods had to emphasize to the particular community. Parallel to that, institutional mechanisms also had to be strengthened to absorb new changes in the waste management systems. As a pilot initiative, household composting had been introduced to a manageable number of participants from the community to reduce the waste generation, transportation cost and environmental burden. This process acted as a showcase to the home composting practice and it enabled the surrounding communities to get motivated to follow the same. Branding, organic culture concept had been introduced to the community to enable this practice in a more sustainable way. Branding, making organic clubs, organic culture, creating awareness about advantages of consumption of organic food and so on are some of the strategies and it was expected to give a recognition to the people who are practicing the home composting. In addition to promoting this home composting concept, simultaneous induction of home gardening concept or backyard gardening was a good supplement to change the people’s inappropriate habit of open/direct waste dumping.

### Reduction of Solid Waste Generation at Household Level

Waste reduction consists three approaches. That is reducing the amount of waste generated, reusing and recycling of remaining has to be done [1]. The 3R concept (Reduce, Reuse, and Recycle) is one of the concepts used in the municipal solid waste management systems [27]. However, another 5R (Reduce, Reuse, Recycle, Repair,

and Reverence for nature) concept has also developed concerning further about the environment [28]. To provide information on the 3R concepts (Waste Reduction, Reuse, and Recycling), public awareness programmes had been conducted in BMC while explaining the National strategy on solid waste management developed by the Ministry of Environment. To reduce transportation cost and collection amount, household composting system were introduced and popularized. Due to continuous awareness programmes which highlight the importance of adopting above 3R concepts, it has been able to reduce the unsorted amount of waste from about 25MT which was generated in the year 2000 into 12MT by the year 2012 saving considerable space and labour hours spent for sorting. During training programmes, people were encouraged to imagine about the benefits of an environment free of pollution and their undesirable behaviours towards the environment was pointed out and potential good practices that can protect the environment. Each household located in BMC area, a green bin has given free of charge to promote composting. Though these kinds of programs need funds for implementation, government funding is minimal. Private-public partnerships are important linkages to implement those projects. At this juncture, a certain number of private sector companies under their Cooperate Social Responsibility (CSR) projects have agreed to provide funds for some activities of this project. They also have recognized home composting as a good initiation for sustainability of the project and also for increased stakeholder participation. Successiveness of the initiatives is the key to promote the community interest. Introduced behaviour has to be popularized among the community and it is really important to ensure the continuity for some time until these activities are embedded in people as a common practice.

### Establishing 3R Societies

Recycling and reuse of materials make less pressure to the natural resources and can minimize the usage of natural resources. However, recycling makes another set of problems to the environment as well as for humans. Handling of recycles is one common problem observed. Lacks of storage spaces, requirement of time are some of the "inconvenience factors" that were observed in the household levels which could demotivate people to recycle the products [29-33]. Energy saving bulbs and batteries are a common waste at household level and mixing those items with common waste makes the biggest problem to the waste management process and also concerning the environment. Recycling generates many other problems for the environment. It needs more energy to process and emits toxic gases, increases ecological footprint are some of the negative effects of recycling mechanism. So, the better option is to minimize the recycling process and try to reduce the generation of these products. However, recycle materials coming to the dumping site may cause more negative effects on the environment than that it is with recycling [34]. Hence, least priority has given to recycling

and need to promote reuse and minimize the use of recycles. In BMC, special programmers have been launched targeting of school children to make them change their attitude towards waste disposal at a household level. Blake and Hinchliffe [35,36] also have highlighted the importance of creating awareness campaigns for schools and institutions and cafeterias to convey messages like "Helping the earth begins at home" or "Green Societies" to make them think and touch the values, attitudes and believes to be a pro-environmentalist. Also, that helps to keep them informed about current progress and make them aware about future outcomes.

Resource centers have been established in 10 schools to include children of all religions and cultures. The school resource center is managed by its "3R Society" which comprises of 50 school children. These societies conduct programmes to popularize the 3R concept in the school system, to create awareness on benefits of waste separation at the household level as well as composting. School children were asked to bring non degradable wastes from their homes to schools' resource centers. Members of the 3R societies were expected to buy these non degradable items and mark the point cards. 3R societies were given an advance of Rs.1000/= to initial expenses by the municipal council. According to the point system, for those who earn 1000 points are eligible to get either Rs.1000/= or school equipment which is worth that amount of money or else credit that amount to a bank account. In appreciation of students who are very committed over this purpose is awarded by giving "environmental friendly badge" at 3000-point level, "Environment lover" badge at 5000-point level, "Nation friendly" at 10,000-point level and 15000 point level they will be awarded the badge of "Global lover". If students reach 20000 points they are expected to award "Presidential green award". This is actually bringing them aware the natural resources protection and rewarded being incorporated into the system to encourage them to continue practice [35,36].

In BMC area, four village 3R societies are functioning as a pilot project. Each society has 25 households and they are actively involved in 3R concepts. Members of these societies are expected to take measures to reduce generation of waste, separation of non-degradable waste at a household level and selling those items to the purchasing centers. They are eligible to receive Rs1000/- at the completion of one-point card. Considering the points accumulated for each member it is expected to give loan facilities to members if they wish to initiate any kind of self-employment. In addition, members get the opportunity of receiving knowledge and advice on various farming issues from agricultural experts. This is a kind of initiative which make an individual realize even she or he can make differences by acting alone [29]. As Hurt & Homan [37] mentioned choosing suitable people to get the community support has applied in this project. Project managers have identified the leaders in the community to promote the environmental friendly behavior.

## Imposing a Garbage Tax

As per "polluters pay principle" Nash [38], using the power entrusted on local government authorities, regarding disposal of waste, from 2008 Balangoda municipal council has adopted collecting a garbage tax from commercial establishments such as guest houses, supermarkets, retail and wholesale shops, food cabins and other commercial establishments with more than five employees within the urban council area. However, establishments that practice waste separation were released from paying this tax.

## Production of Compost

Household waste required to be sorted prior to practicing domestic composting. For this purpose, introducing separate containers for different waste categories seems to be the best practice enabling them to sort the waste materials when and where waste is generated. This process creates a good opportunity to separate the harmful (ex. energy saving bulbs) substances at the beginning and allow to dispose of harmful materials without mixing to the common waste. Also, recycles and reuse materials will not reach the dumping sites. Collection and managing the waste is another process. Punctuality, regular collections are making peoples adhere to the process. Organic fraction of waste can be used to generate compost or biogas. Recycles and reuse items can be treated separately. These activities contribute to lowering the requirement of land for dumping waste, minimize hazardous compounds coming into the dumping sites, reduce generation of harmful leachates and limit methane gas emissions by dumps. The process of household composting, waste separation in the house, reuse and reduce the generation of waste create environmentally friendly behaviours and that should be the emphasis on the community to motivate them. This will create them to change their mind and generate moral towards changing the negative environmental practices to positive. The process of making community groups and identifying community leaders are more important to take them to the decision-making process and built up awareness about the progress and consequences. These mechanisms will be enabling the community interaction for the process and potential influence of others in changing into normal behaviour. The normative behaviour can influence people interpersonal contacts and by the visual stimulating seeing of others behaviours [25,39].

This is a two stepped operation. One step is promoting the household composting mechanism and the second step is composting centrally collected organic residues by business centers, industry and agriculture lands and several food markets. Household composting is promoting by establishing Village 3R societies and green bins, technology, promotion of backyard gardening, providing seeds are controlled by the municipal council. To change the attitudes and values of the community,

the importance of doing composting and value of the organic produce has promoted. Literature shows that, peoples promoted to sustainable practices and keep on doing that and supporting and encouraging that will enhance the practice to the more sustainable way Warde [40]. Batteries, energy saving bulbs and fluorescent tubes disposed of households and commercial dwellings have been identified as a major obstacle in the environmental degradation. Special attention was given and huge public awareness program was launched now it was collected separately and by fixing the price of that even though it is not having recycle value. This can be used to prevent the environment by managing that hazardous waste separately without mixing with general waste.

## Maintaining social acceptance for the employees at Solid Waste Management Project

Collection of waste and sorting and management needs manual labour. However, in the society working in a waste management process does not have the good reputation. So, it is vital to creating a good respect for that kind of jobs to attract people for that process. Organizing training, building up a professional career for people who engage in the solid waste management sector definitely help in minimizing the labour shortage issue in this sector. In the waste management project of BMC, staff turnover is very less and to enhance their social recognition National Vocational Qualifications (NVQ) have given to the municipal solid waste operation assistants (social recognition or professional logo). Workers employed in the project are on casual or contract basis employment. Most of the employees are residents of the neighboring households and there have been only a few households before initiating this composting plant. Villagers have been benefited by getting employment, developed infrastructure facilities and etc. and due to these benefits so far, the project has not received any social objection from the surrounding villagers. Workers were given necessary items like gloves, boots, suitable uniforms etc. for their safety during their work at the composting plant to keep the personal hygiene and to improve their living style. No incidences of sickness have reported that has a link to their work at the composting plant.

## Summary

Changing attitudes of the people and their usual practices is not a simple task at all. Before changing the negative waste management practices, it is vital to consider the attitudes and perception of the respective community regarding importance of having a proper solid waste management program. Environmental leadership plays a leading role to maintain the sustainability of the programs. Environmental leadership can be described as the ability to influence the individuals and mobilization of communities towards long-term ecological sustainability. Direct dumping of waste should be discouraged as far as possible for environmental sustainability. It should be converted to a proper system which practices composting,

reuse and recycling of waste they generate. A project that consists of these kinds of eco-friendly, environmentally sound sustainable practice will indirectly result in promoting organic agriculture, reducing negative health impacts of the people and increase community awareness towards environmental sustainability. Environmental leadership shapes up the communities' values, attitudes and beliefs towards conservation of resources while emphasizing the importance of protecting resources to future generations as well. Changing people's social practices is a kind of process and it has many aspects and approaches. Several processes and approaches can be used to simultaneously to change the people's social practices for a betterment of the environment. The case study of Balangoda Municipal Council's Solid Waste Management program discussed here is showing the number of steps which had been taken to promote composting and other concepts to be adopted. Different mechanisms and programmes like branding, development of organic culture, 3R societies, social recognition, public-private partnerships, concern about the hazards waste, awareness through societies etc. had been used to get the people's participation towards a sustainable program to have a cleaner and a healthy environment.

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