

Stakeholder Management Models for Solid Waste Management Projects

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Abstract

The solid waste generation is a pressing issue in the global context because of the environmental pollution, limited choices to dispose solid waste properly and the lack of contribution from the stake holders. In the Sri Lankan context, landfills are still considered the most feasible method of managing solid waste. Most of the newly proposed waste management site construction projects face public oppression which makes it difficult to effectively execute the construction of those projects and implement them. Therefore, the need of a well research stakeholder conflict resolution procedure is often observed. Three Stakeholder Management Models have been short listed and discussed in this paper as a part of selecting a Model to conflict resolution. A systematic literature review is conducted using indexed journal and conference papers to identify stakeholders of Solid Waste Management Projects. The government, local authorities, neighboring community, public, environmental activists and media has been identified as key stakeholders. In government funded public projects a significant power resides in the government as the client. Power Versus Interest Grid is selected as the most suitable Stakeholder Management Model because it addresses the conflict of power in deciding location and facility route, validity of compensation system and procedure and necessity of Solid Waste Management projects.

Keywords

Stakeholders, Conflicts Management, Waste Management Projects

1. Introduction

Generation of solid waste has become a threat to the world due to massive environmental pollution, limited availability of the disposal areas and stakeholder commitment towards proper waste disposal methods (Chatzouridis & Komilis, 2012). Solid waste is generally consisting of garbage, sludge and refuse from waste water plants or disposed materials from commercial, industrial or agricultural operations (Allesch & Brunner, 2014). The historical method of collecting and dumping waste at bare lands is no longer accepted to be sustainable (Dos Muchangos, Tokai & Hanashima, 2015). In this light, Solid Waste Management (SWM) is one of the key areas that has attracted the global interest in terms of improving liveability and sustainability (Ak & Braid, 2015).

SWM is the process of sorting, collecting, transporting, and treating solid wastes (Allesch & Brunner, 2014). One of the main SWM issue is attributed to generation of large amounts of waste (Dos Muchangos, Tokai & Hanashima, 2015). Increasing urban population, waste generated from manufacturing and other industries have mainly contributed to the increased amounts of waste generation (Allesch & Brunner, 2014). Further, toxic substances are produced and are thrown away in hazardous manner regularly (Ezeah, Fazakerley, & Roberts, 2013). Hence, most of the lands get filled due to lack of proper SWM practices.

These mal practices of SWM create additional risk to the environment. In the long-term, landfills leak and pollute ground water and other neighboring environmental habitats, give off potentially unsafe gases, cause foul smell from biodegradable materials decomposed under unfitting and uncontrolled conditions (Allesch & Brunner, 2014). Moreover, it leads to outbreaks of vector-borne diseases spread by rats and insects (Das et al., 2019). Worsening the situation, waste disposal and management facilities have continued to rely on myopic and quick solutions, instead of developing effective recycling and waste reduction programs (Harshani, Nawagamuwa, & Senanayake, 2015). Consequently, it has created continued reliance on the use of outdated technologies to deal with waste disposal (Dos Muchangos, Tokai & Hanashima, 2015). Hence, proper SWM is crucial to urban areas to ensure the liveability of the inhabitants.

Stakeholders related to SWM are people and organisations having an interest in SWM, and participating in activities related to that. These include residents, manufacturers, office workers, garbage collectors and others who are engaged in some waste management activity (Chatzouridis & Komilis, 2012). Stakeholders may generate waste, function as service providers or participate as state or local government departments, non-governmental organisations (NGOs) and other organisations concerned with certain aspects of waste management (Ak & Braida, 2015). It is difficult to gain control over the many attempts now underway to site hazardous and solid waste management facilities in low-income and working-class communities (Das et al., 2019). This is captured by a growing rejection of the NIMBY (or Not in My Backyard) label and their embrace, ever more common, of a NIABY (or Not in Anybody's Backyard) solidarity (Heiman, 1990). For instance, Muthurajawela and Aruwakkalu Waste Management Project were launched as sustainable and scientific solutions to the solid waste disposal problem that has plagued many local government authorities in the Sri Lanka for years and the pressure from the neighborhood has resulted in difficulties to execute the projects as planned (Fernando, 2019).

Consideration of stakeholder and managing them is crucial in coordinating their participation and involvement in waste management (Kanchanabhan, Mohaideen, Srinivasan & Sundaram, 2011). Therefore, this study is aimed at enhancing stakeholder contribution in SWM projects and to minimize conflict situations. Accordingly, this paper identifies different types of stakeholder management and conflict resolution models that could be utilized in stakeholder conflict resolution and justifies the selection of the most appropriate model in addressing the stakeholder conflicts in SWM projects.

2. Literature Review

2.1 Municipal solid waste management: a global issue

Waste management is a growing and overwhelming concern around the world; this is particularly true in developing countries, where waste generation is sharply increasing and there is no sufficient collection and processing infrastructure (Yousefloo and Babazadeh, 2020). The lack of these types of systems has led to significant social and environmental issues that increase year by year with the generation of waste. According to the World Bank, the annual solid waste generation globally was 1.3 billion tons in 2012 and is expected to grow to 2.2 billion tons by 2025 (Hoorweg and Bhada-Tata, 2012). In the USA, the waste generation per day is approximately 0.64 MT, followed by Germany with 0.14 MT, Mexico with 0.13 MT, and Japan with 0.10 MT (Das et al., 2019). Landfill space and the collection and processing infrastructure are becoming increasingly constrained in large urban centers and might require the use of uncontrolled (open dump) sites for disposal (Ojeda-Benitez and Beraud-Lozano, 2003). The use of open dump systems is a common practice in developing countries such as Mexico. The Mexican environmental protection agency (SEMAR- NAT) reported in 2012 that, of all waste generated in the country, 72% was disposed of at sanitary landfills and regulated sites, 23% was disposed at open dumps, and only 5% was recycled (Semarnat, 2012). Unfortunately, the environmental, social, and safety impacts of open dump systems have not received as much attention from policy-makers and academics (Medina, 2010). These systems do not provide technologies of controlled landfills, such as leachate treatment, geological protection, and gas treatment (Ojeda- Benitez and Beraud-Lozano, 2003). As a result, methane, produced by the decomposition of organic materials, can leak to the environment and can trigger fires. Also, strong leachates can pollute surface and groundwater.

2.2 Public oppression to construction of waste management plants

Generally, SWM projects are executed as government funded construction projects which are compulsory for social development, and commonly plan for great objectives. However, they still face financial problems, social conflict, safety issue, and relationship problem (Ameyaw et al., 2015; Francis et al., 2016; Wang, 2009; Chen and Chen, 2014). These projects attract more publicity and attention from external stakeholders, they face more conflict during implementation. Damoah and Kumi (2018) claimed that these issues occurred during the construction phase could lead to projects failure. Although SWM projects aimed to benefit local residents, some projects brought with some potential harmful impacts, such as pollution and negative social impacts.

Due to the large amount of municipal solid waste (MSW) generated and the lack of sustainable waste disposal options, the disposal of municipal solid waste has become a national problem in Sri Lanka, especially in the Colombo area and other urban centers. The consequence of this situation is the accumulation of solid waste along roads, people resorting to environmentally unacceptable disposal methods and dirty urban environments. Due to overload conditions, the currently available medium-level waste treatment solutions cannot at least meet the minimum environmental standards.

Due to the inability to find socially and environmentally acceptable locations, high costs (high capital and operating costs), inconsistent methods adopted by local authorities and the politicization of the problem, it is often difficult to find a solution to the municipal solid waste problem. Solid waste disposal has become a problem for most local governments. In this sense, local authorities representing urban areas, such as municipal councils and municipal councils, have serious problems. It can be particularly emphasized in the Greater Colombo area. This area includes the Colombo City Council (CMC) and other surrounding towns and councils. The Colombo City Council alone generates nearly 1,000 tons of solid waste every day. The amount of waste generated in Western Province exceeds 3,200 tons per day.

In terms of disposal, the most common method is still open dumping. Considering the many social, environmental and public health issues associated with this practice, open dumping is an unpopular practice. There are few negative effects associated with open dumping practices, including soil and groundwater pollution, vector and rodent transmission, deterioration of public health, and degradation of environmental quality in disposal areas. The Colombo area may develop into an open dump. For many years, the Sri Lankan government has been trying to find a way to generate SWM project in Colombo area, which is environmentally acceptable and economically feasible, but with little success.

2.3 Stakeholder Management Models for Stakeholder Analysis

In many cases, SWM projects involve multiple stakeholders with different goals and roles (Achillas et al., 2013). It is important to note that the previously reported SWM strategic planning methods do not consider the interaction and conflict of interest of different stakeholders (Morrissey, 2004). When exploring issues such as SWM, the awareness of the status and the complexity of the relationships of the stakeholders with regards to decision making and understanding their objectives is possible through stakeholder analysis (Aly et al., 2019).

stakeholder analysis has laid a good foundation for the development of decision support tools (Reed et al., 2009) because it manages to recognize direct stakeholders and interrelationships, effects and goals related to decision-making (Aly et al., 2019). In the past few decades, stakeholder management has been elaborated in issues such as renewable energy technologies (Ahsan & Pedersen, 2018), energy plans and policies (Tsoutsos et al., 2009) and decision-making (Macharis, Milan, & Verlinde, 2014; Macharis & Bernardini, 2015). It allows academics to determine the significance level of stakeholders, for example, the capability to make or change decisions.

Hence, being able to sort pertinent stakeholders based on their significance level is very useful and helps deciding the potential impact that a specific stakeholder group may have on the decision-making process of complex issues such as SWM. For that purpose, Stakeholder Management Models has been employed (Reed et al., 2009). Apart from stakeholder analysis these stakeholder management models enable suggesting appropriate management measures of stakeholders. Power versus Interest Grid, Power Versus Influence Grid, Interest Versus Influence Grid, Salient Model and Attitude and Knowledge Stakeholder Map (PMBOK, 2013) are some of the widely used SMM in both organizational and project environments. Among them, Power Versus Interest Grid, Power Versus Interest Grid, Interest Versus Influence Grid have more common characteristics and similar outputs (Aly et al., 2019). Therefore, only Power versus Interest Grid, Salient Model and Attitude and Knowledge Stakeholder Map were selected for the analysis to derive a basis to analyze stakeholders and stakeholder related conflicts of SWM projects.

2.3.1 Power Versus Interest Grid

The power-interest matrix shown in Figure 1 has been used in numerous studies (Ahsan & Pedersen, 2018, Alvial et al., 2011; Aly et al., 2019). It is a common stakeholder analysis approach and is categorized as a top-down or analytical method of categorization to classify stakeholders into four groups based on their relative power and interest, or on their interest and influence/relevance over the issue being discussed (Eden & Ackermann, 1998). The popularity of this approach is the simplicity of which it can be implemented during focus groups, interviews, or seminars. The power-interest matrix could contribute to the discovery of fringe stakeholders who have less control over and less interest in the problem and who may consequently be overlooked in the analysis of the problem (Reed et al., 2009). The word "power" is described as the power of the stakeholder community to affect the matter under consideration. Interests relate to the interests of the stakeholders on the topic being discussed (Maley, 2012; Eskafi et al., 2019). The word "interest" represents both the optimistic interest and the negative interests of the parties concerned. Stakeholder groups are grouped into four predefined clusters, as seen in Figure 1.

The 2x2 matrix of Y-axis power and X-axis interest is plotted as seen in Figure 1. A 2x2 matrix of Y-axis power and X-axis interest is plotted as seen in Figure 1. The strength of the stakeholder rises as one travels from start to end along

the Y-axis. Interest of stakeholders is rising from left to right on the X-axis. Classify stakeholders on the basis of their power and interest Stakeholders in the upper right side of the grid have strong power and interest.

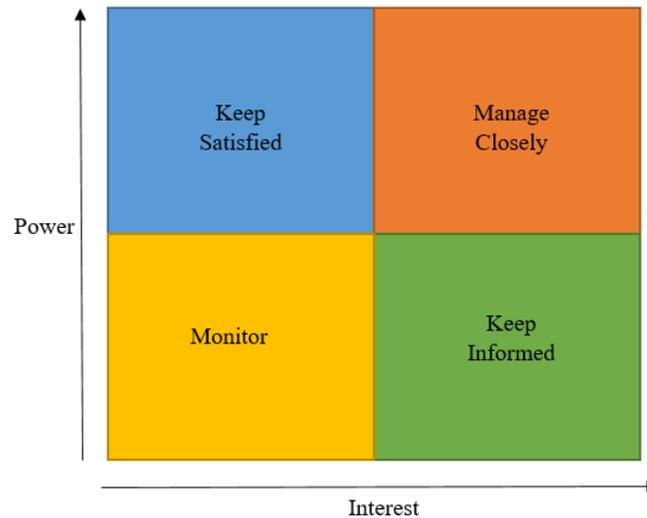


Figure 1: Power Versus Interest Grid

The clusters are named the Players (influential stakeholders), Subjects and Context Setters (medium-influence stakeholders), and Crowd (low-influence stakeholders) (Eden & Ackermann, 1998). Determine the interest (concern) stakeholders have and how much power(authority) they have to change the direction of the project is the basis of defining the above four clusters.

2.3.2 Salience Model

Figure 2 represents salience model which allows identifying the salient stakeholders from the trivial ones. This is a three dimensional model that considers the power, legitimacy and urgency of the stakeholders. The intersection of these three factors is plotted similar to a Venn diagram. Legitimacy is the rightfulness of the stakeholder’s involvement in the project. Urgency provides how quickly the stakeholder’s needs are to be addressed. A Venn diagram as in Figure 2 highlights the intersection of power, legitimacy and urgency. It forms seven categories of stakeholders.

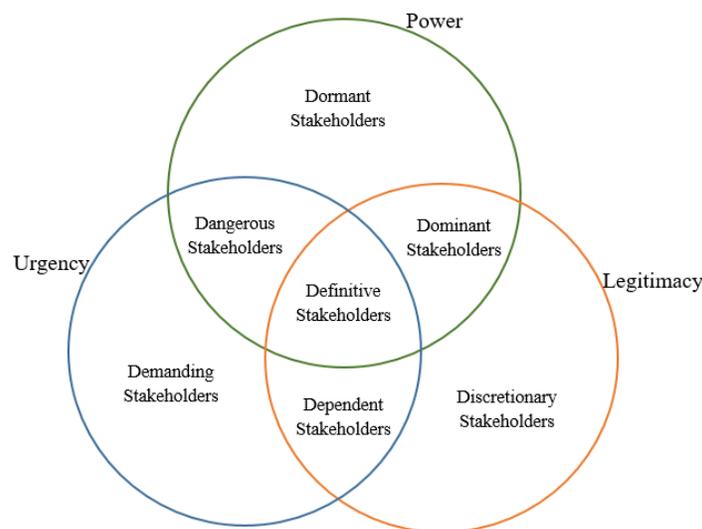


Figure 2: Salience Model, The triple circle typology by Mitchell et al. (1997, p 874)

Many with high influence but little authority or urgency are regarded as "Dormant." "Discretionary" group includes legal owners that do not have any urgency or influence. "Demanding" group has neither authority nor credibility, but requires items to be resolved immediately. The "dominant group has both control and authority, but it is not urgent. "Dangerous group has both strength and urgency, but is not really allowed to be part of the project. "Dependent" group is urgent and is part of the initiative but has little control. As a result, they lean on someone else to get a say on the initiative. The "Definitive" category has all three variables and thus the highest salience.

2.3.3 Attitude and Knowledge Stakeholder Map

Turner (2008) introduced the attitude and knowledge stakeholder map. Stakeholders' understanding of the project and their mindset are mapped to the matrix as seen in Figure 3. The matrix marks each box instead of using a range. Stakeholders who are aware of and respectful of the initiative are heroes, but should not be taken for granted. Supportive, but ignorant stakeholders need to be nurtured so that they are not forgotten. uninformed and dissenting stakeholders are a crucial target area, since their behaviors can be modified.

Opposed and aware stakeholders may never be supportive, and it is worth looking at contingency measures to manage the risks associated with these negative stakeholders (Turner,2008, p776).

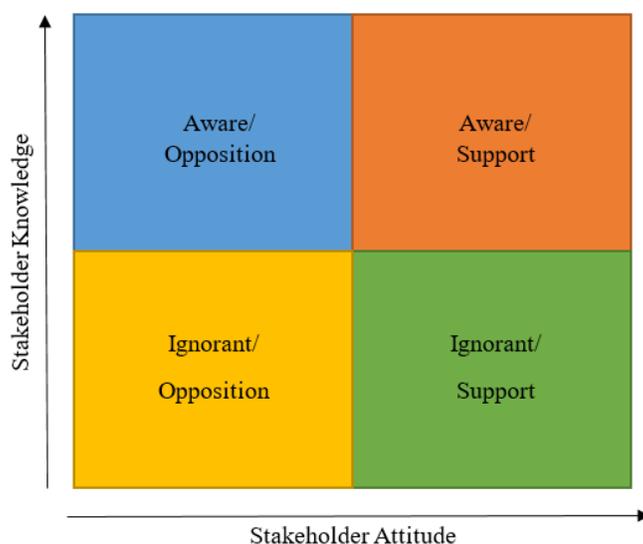


Figure 3: Attitude and Knowledge Stakeholder Map

The nature of stakeholders and their influence on the issues of SWM projects have different values. It could be the power or influence of the stakeholders, the right of the stakeholders to involve in a conflict, the urgency of the requirement of a resolution, the knowledge of the matter of conflict or the attitude of the stakeholder. Therefore, it is challenging to reduce the values into a single stakeholder analysis model.

When considering SWM projects, it is very complicated to consider an amalgamated SMM due to the unique nature of the issues. Since SWM are generally government funded projects, the conflicts are often against the government or the local authorities which have undeniable power. Therefore, the projects will be executed regardless of the objection from the public. Therefore, in selecting one SMM, the general characteristics of these model shall be analysed considering all the stakeholders and the likely conflicts. Moreover, the nature of the matter of conflict shall be scrutinized based on the key attributes of the identified models.

Hence, in this paper, the following method was followed to justify the selection of the most appropriate model out of the stakeholder management models discussed above in addressing the stakeholder conflicts in SWM projects.

3. Method

The paper presents the selection of suitable stakeholder management framework to analyse stakeholders and apply the findings for the conflict resolution of the stakeholders in SWM projects. A systematic literature review was followed as the method of conducting the study.

The systematic review has a formal protocol where the questions of the research are addressed and the methods to perform the analysis. The process consists of three stages as given in Figure 4. First stage is known as “conception” where the protocol is formalized, the criteria, platforms and frameworks are defined. Second stage is known as “execution”. The selection of the research in databases, importing bibliographic references and abstract publications is the preliminary selection. At secondary selection the selected abstracts and the most relevant scientific publications were imported in complete form and the publication extraction process was done. The final stage is “Analysis of research” where the data were categorized, analysed and findings were summarized.

Stage 01	Conception
	Formalization of protocol
	The criteria, platforms and frameworks are defined
Stage 02	Execution
	Preliminary selection - selection of the research in databases, importing bibliographic references and abstract publications
	Secondary selection - publications where a different context is referred, the abstract or key words are missing or contains corrupted data were removed
Stage 03	Analysis of research
	Content analysis via Nvivo software

Figure 4 : Method followed in conducting the literature analysis

The bibliographic management tool, Mendeley was used in the research. It was assisted in opening the abstracts and references which were imported in RIS format. The bibliographic platforms that were used are Scopus, Science Direct, Tylor and Francis and Web of Science. To answer the research questions, the method of systematic review was defined. The publications were searched based on the following search string.

(“stakeholder” or stakeholder*) and “solid waste” and (“conflicts” or “resolutions” or “management”) and (“methods” or “models” or “analysis” or “frameworks” or “tools”)

Moreover, the search results were filtered by year, where publications from 2007 are obtained as the result. Out of that the duplications were removed using a function available in Mendeley. At the preliminary selection the sources, publications where a different context is referred, the abstract or key words are missing or contains corrupted data were removed. Then, the eligibility was assessed using the full text articles. Articles written in different languages other than English, without significant findings, without the access to full text and not related to solid waste management directly were removed. The remaining articles were used for the synthesis.

4. Analysis and Discussion

The data collection was done through a systematic document review scrutinizing a sample of 80 research papers related to stakeholder management, stakeholder analysis and conflict resolution. The analysis was done under three themes. Firstly, the stakeholder was identified. Secondly, the nature of the potential conflicts was identified and finally, the characteristics of the stakeholder management models were identified.

4.1 Determining the Stakeholders related to Solid Waste Management Projects

The identification of the stakeholders related to a particular context is the primary step of applying any SMM. Hence, in the process of selecting a suitable stakeholder management models, a superficial understanding of the stakeholders could be rewarding as it facilitates considering the influential traits of the stakeholders. Figure 5 illustrates the key stakeholders of SWM projects.

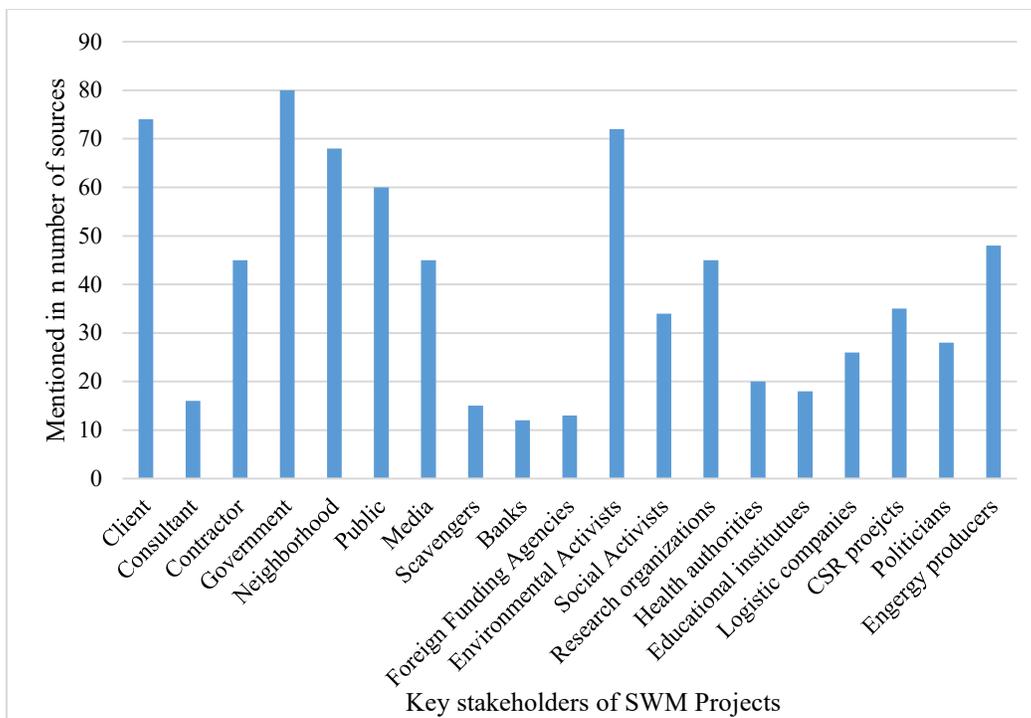


Figure 5: Key stakeholders of SWM Projects

Accordingly, government has been identified as the mostly mentioned stakeholder of the SWM projects. The second place has been obtained by client. A significant observation was that, in majority of the cases the government or a particular local authority is the client of the SWM projects. As outlined by Banihashemi et al. (2017) many public construction projects are conducted by government in which the project’s main emphasis is to stimulate economic growth, instead of enhancing the life of local communities or improving the quality of the output. The other highly mentioned stakeholder groups include neighborhood and the general public. In SWM project the neighborhood is highly affected due to pollution of ground water and environmental habitats, emission of potentially unsafe gases and foul smell from biodegradable materials decomposed under unfitting and uncontrolled conditions (Allesch & Brunner,2014). Along with the urban development, the public demand a higher quality of life which the government is struggling to grant due to lack of funds and planning (Gurgun and Touran 2014). Significant number of studies have identified the environmental activists and the media as stakeholders of SWM projects. The environmental impacts and the public repression to SWM projects could be reason behind identifying environmental activists and media as key stakeholders. Financial institutes, health institutes and educational institutes are among other stakeholders. There is a high possibility of having conflicts between different stakeholder groups considering the large number of stakeholders and their interests. The differences in the interest may lead to conflicts over the time.

4.2 Issues faced by Stakeholders of Solid Waste Management Projects

The issues faced by the stakeholders of SWM projects due to different interests have been identified in Table 1. These issues have the possibility of developing into a conflict, if they are not managed at an early stage (Min,2018). The key attributes of the considered stakeholder management models in the paper, are identified as the nature of the potential conflicts. Therefore, power, interest, urgency, legitimacy, knowledge and attitudes have been listed down and the issues have been categorized under them. For instance, suitability of compensation (Min,2018) have been identified

as a matter of interest and legitimacy. The individuals who are losing their land have an interest over the amount they are receiving as compensation. It could be identified as their legal right as well.

Table 1: Nature of the potential conflict

Stakeholder Management Model		Power Versus Interest Grid		Salient Model			Attitude and Knowledge Stakeholder Map	
Stake-holder's issues in Solid Waste Management Plants Construction	Number of Sources Mentioned in	Nature of the potential conflict						
		Power	Interest	Power	Urgency	Legitimacy	Knowledge	Attitude
Suitability of compensation	12		X			X		
Invading a private property	09	X	X	X	X	X		
Decline of land value due to regional image loss	34							X
Legitimacy and feasibility	22		X			X	X	X
Validity of public engagement process	43		X				X	
Procedure of selecting location and facility route	11	X	X	X	X	X		X
Validity of compensation system and procedure	21	X	X	X	X	X		
Necessity of project	63	X	X	X	X		X	X
Damage to the ecological environment	74	X	X	X		X	X	
Damage to the cultural asset or regional landmark	17	X	X	X	X		X	
Validity of technical alternatives and applicability	67	X	X	X			X	
Harmfulness of facility and its range of influence	60		X				X	X
Possibility of safety accident	43		X				X	
The spread of vector-borne diseases	69		X					
The contradictions regarding the instructions from different government departments	20	X		X			X	X
Insufficient municipal support from the community	72	X	X	X	X			
Belated municipal support services	50				X			
Neighboring residents' complaints on disturbance during construction	13	X	X	X				
Inconsistency in project objectives	12							X
		10	15	10	7	6	9	8

The purpose of developing Table 1 is to decide a suitable stakeholder management model to SWM projects through identifying the nature of the potential conflicts around SWM projects. Moreover, the number of mentions in other

researches have been tabulated as a measure of the generic nature of these issues. According to that, damage to the ecological system has 74 mentions and insufficient municipal support from the community has 72 mentions. It is in accordance with the finding illustrated in Figure 5 where environmentalists and neighboring community identified as critical stakeholders.

Accordingly, most of the issues are related to the “Interest “of the stakeholders. It provides that the differences in the interests could lead to potential conflicts among the stakeholders of SWM projects. When considering together, conflicts are more inclined towards being a matter of different interests and power levels. For instance, “Damage to the ecological environment” is a key issue in SWM projects. The interest of the environmentalists and the local authorities on the ecological system could be in two ends. The environmentalists prioritize the protection of the eco systems whereas the local authorities focus on giving a solution to the solid waste problem in the municipal areas. On a different note, procedure of selecting location and facility route might depend on the power of the stakeholders, interests as well as the legitimacy and the urgency of that activity.

In the cases in Table 1, the issues that have a potential to be developed as a conflicts are related to power of the stakeholders to execute the activity and the interest of the stakeholders. The urgency and legitimacy in the Salient model are also at a competitive edge. Therefore, it is suitable to consider the general characteristics of the models as well in selecting the most effective stakeholder management model.

4.3 Characteristics of Stakeholder Management Models

The SMM under discussion are generally used in organizational context. They are applicable to the project environments as well, considering their facilitating characteristics. Table 2 consists of the general characteristics identified through the reviewed articles on stakeholder management models.

Table 2 : The Characteristics of the Stakeholder Management Models

Model	Power Versus Interest Grid	Salient Model	Attitude and Knowledge Stakeholder Map
Positive Characteristics			
The assessment is done on standing in a neutral ground	+	+	+
Suggests stakeholder management strategies	+		+
Outlines stakeholders to develop communication plan	+	+	+
Reflects the power of each stakeholder	+	+	-
Reflects the level of interest of the stakeholders	+	-	-
The knowledge of the stakeholders regarding the matter of conflict is assessed	-	-	+
Applicable as a preventive measure of conflicts	+	+	+
General Negative Characteristics			
Outlines stakeholder relationships	-	-	-
Could be subjective	-	-	-
Effective when applied in regular basis	-	-	-
Does not reflect the feedback of the stakeholders on the conflict resolution proposition	-	-	-
Time consuming to monitor	-	-	-

According to Table 2, in all three stakeholder management models, the assessment is done on standing in a neutral ground. The models identify and classify the stakeholders allowing the application of stakeholder management strategies. Based on that the project manager could decide how to work closely with the stakeholders and make sure that they are consulted, collaborated with and involved with the project decision making. There could be stakeholders whose unawareness of the project outcomes and the benefits, has led to conflicts. They can be kept informed about the progress and changes.

The salient model and the power interest grids are the stakeholder management models that considers the power of the stakeholders. However, the government funded projects such as SWM, provides a unanimous power to the government or the relevant government authority. As outlined by, Min (2018), many public construction projects are conducted in an authoritarian manner, in which the project’s main emphasis is to stimulate economic growth, instead

of enhancing the life of local communities. Therefore, the aspect of power is very important to government funded project contexts unlike in private organizational contexts.

In addition, these conflicts are complex because each stakeholder has different values. Because of these characteristics, it is difficult to reduce conflicts in SWM projects to a single phenomenon. In other words, because the actions and responses of each stakeholder arise in a fluid manner, various events occur according to the passage of time and the result of each event becomes a factor for another conflict event. Therefore, as given in Table 2, the effect of applying a stakeholder management model would be insignificant unless it is applied periodically. In that perspective, the power interest grid is more unsolidified and a more stable strategy to manage the stakeholders could be proposed through the power interest grid.

As a way forward, the power interest grid could be applied to SWM projects that have persisting issues. For instance, in the Sri Lankan context, the projects such as Karadiyana and Aruwakkalu projects is subjected to the objection of some stakeholders while there are equal number of supportive stakeholders who see part the impacts of those projects. Based on the finding of this paper, power versus interest grid will be applied to the waste management projects in Sri Lanka

5. Conclusion

The key objectives of this paper are identifying the stakeholders of SWM projects and selecting a suitable SMM to manage the conflicts that may arise among the stakeholders. The stakeholder's identification was done through and extensive literature review, using 80 journal and conference papers. The government, relevant local authorities and the neighborhood community have been identified in majority of the researches who have a significant interest in the SWM projects. The unavailability of proper strategy to manage the stakeholders were evident through the literature review.

Therefore, as a part of fulfilling the objective of selecting a suitable stakeholder management model to address this, three stakeholder management models are selected and reviewed. As concluded through Table 01, the issues of conflicts in SWM projects, have a nature of conflicted power and interest. Procedure of selecting location and facility route, validity of compensation system and procedure necessity of project are issues that might result in a conflict due to the inconsistencies in power of the client and the interest of the community. Therefore, when considering the nature of the potential conflicts the power interest grid could be used as a stakeholder management model. Moreover, the findings presented in Table 2 outline that the power-interest grid demonstrates more positive characteristics of the stakeholder management models than other models. The reasons for the public oppression could identified and addressed using the selected SMM. The limitations of the selected SMM is that they do not outline the stakeholder relationship and it does not reflect the feedback of the stakeholders on the conflict resolution proposition. The power –interest grid serves as a tool to analyze stakeholders and apply suitable strategies to manage them effectively.

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