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Community Supported Mechanism of Solid Waste Management:

A Workable Model of Primary Waste Collection

(A Case Study of District Quetta)

By

[1]Hakeem Ullah,[2] Dr. Muhammad Alam Tareen,[3]Abdul Rahim Changezi,

Abstract:

The difference between ratio of solid waste generation and its collection and proper management is a major contributing factor towards the issue of environmental degradation everywhere. Unfortunately, Quetta is confronted with such a deplorable situation. As a result, it seems to have been forced to get its once positive characteristics of "little Paris" replaced by the second most polluted cities of Pakistan after Faisalabad. In order to get the situation reversed, awareness and willingness do exist among all stakeholders such as all three tiers of government, the private sector, civil society organizations including researchers, academicians and sensitized citizens and communities. Such as an effort of community support mechanism for primary collection of solid waste is successfully operational in Quetta City, however, with limited approach, resources, political support and areas of operation / coverage.

This research paper explores and explains details along with immediate effect of an operational mechanism while highlighting its pros and cons so that it can be best replicated elsewhere in the country. Data has been collected from grass root level and relevant literature has been reviewed to get it accomplished. Based on the findings of both primary and secondary data analyses the study was concluded while suggesting policy recommendations to relevant stakeholders to overcome the issue.

[1]Assistant Professor, Department of Sociology, General Muhammad Musa Government Postgraduate College, Quetta Pakistan

[2]Assistant Professor, Department of Sociology, University of Balochistan, Quetta Pakistan

[3]Assistant Professor, Department of Social Work, University of Balochistan, Quetta Pakistan

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Introduction:

Proper management of solid waste has always remained a main challenging task both for government and citizenry in most developing countries of the world including Pakistan. Solid waste management has emerged as a major challenge to environmental management also in the world, especially in the cities of developing countries (Han, H., 2015). The pace and intensity of issue gets more complex in cities where urbanization process is fast, town planning is missing and where the existing physical infrastructure such as roads, passages and lanes are predominantly narrow and congested. Quetta, unfortunately, possesses almost all above characteristics. Due to lack of social services in neighboring districts, the urbanization process is relatively rapid. Quetta Development Authority QDA and Quetta Metropolitan Corporation QMC seem to have failed to sagaciously deal with the burden of expansion of city by introducing well planned new human settlements. Roads and passages are already under heavy pressure due to burden of traffic with no option of further expansion. Consequently, the once “little Paris” is now ranked amongst the dirtiest cities in the country.

Presently, Quetta Metropolitan Corporation QMC is being run by an elected local government set up under the supervision of a well-educated Mayor, Dr. Kaleemullah Kakar who is adequately sensitized about all issues prevailing in the city including solid waste management. Lots of proclamation has been made to best address the issue, huge amount has also been allocated towards this end, however, ground realities depicts altogether a different scenario. Few parts of city are relatively cleaner, comparatively healthier as far hygienic conditions are concerned than many others parts / Union Councils

The sense of ownership is the immediate outcome of community participation. This notion besides being logical argument gets public support and social sanctioning while exploring the underlying causes of differences between various union councils within Quetta city as far as primary solid waste collection is concerned. Few Union Councils where primary waste collections at household level are being owned by residents of areas show relatively a better situation. In this research paper a preliminary effort has been made to not only identify such areas where situation of waste collection is comparatively better while exploring its

root causes. Community support mechanism of solid waste collection was found to be a workable tool. In this mechanism waste collectors are being hired by community, their daily performance is being monitored by each and every household head and elected representatives i.e. Councilors and further disposal of collected waste is well coordinated with already available services of QMC.

Literature Review:

Intellectually speaking, humankind is believed to be the dirtiest animal over the mother planet. He / she is adequately informed that ensuring availability of food items are a pre-requisite for sustenance of human life. Therefore, agriculture and livestock production has been promoted to all possible limits. In this regard various kinds of organized efforts have been made ranging from making factories for mass production to introduction of new technologies. Conservation, preservation and value additions are few of concepts which can be associated towards this end. These efforts guided human being to invent such items which can help them prolong the period of restoration of foods and other natural resources. While doing so, it was either compromised that all such efforts will create environmental issues, which might have tantalized the very basic existence of life or aftermath of all such interventions was not initially gauged due to limited knowledge available to them. Indeed, there were no such concepts about renewable and non-renewable energies sources, disposable and non-disposable produces

The world is an ever changing phenomenon; this ensures that issues being created by humankind can be resolved by humankind himself. Let it be either manmade or natural disaster such as war or earth quake etc. Like many other issues, solid waste management is basically a manmade issue, which can be best addressed by devising pragmatic policies and programs. However, the already prevailing model of waste collection needs to be scientifically promoted as an approach towards this end. Also important is to further explore the issue and get better use of already collected waste by converting it into energy sources to produce electricity, which is one the ever challenging demand of Pakistan

The first world or advanced countries such as Japan, China, Canada, Germany and USA have been successfully able to introduce the concept of reuse, recycle, refuseand by converting collected waste into energy producing plants, which according to international data provides and catering for the needs of a remote community within their geographical areas of governance. Japan almost recycle 50% of solid waste, 23% is incinerated and 26% is disposed in landfill. In USA recycling is 25%,

incineration, 16%, whereas landfilling is more than 60%.(Minghua et al., 2009). Moreover, the government is seeking to reduce the amounts of MSW by encouraging reduce; reuse and waste recycle to reduce the quantity of MSW generated for landfill and incineration. Presently china government is trying to decrease the MSW by promoting reduce, reuse and recycling, to decrease the amount of solid waste generated for other processes, i.e. incineration and landfilling.(Dr. Bouanini Samiha & Fatima, 2015). while 3R (Reduce, Reuse and Recycle) is becoming popular more and more in rising nation, because of the running down of natural assets and rise in environmental pollution. (Pariatamby, A., & Tanaka, M. 2014). 3R is favored due to effective usage of natural resources, and stabilizing both environment and economy (Yousuf, T. B. 2014)

China uses different methods for waste disposal, i.e. Sanitary landfill, Incineration and composting. (Huang Q, et al, 2006). In present era China use different methods for waste management in which 604 sanitary landfills, 188 incineration plants and 26 other units used for waste management. (Md Manik Mian, et al, 2016). Japan has given value to incineration as a primary source of disposal and landfilling is considered as secondary option. (Nobutoshin Tanaka et al, 2005).

The rate of getting solid waste properly managed is also very high among developing nations such as India, Indonesia and few other countries, however, getting it used as renewable resources is yet to be worked and invested on for future utilization.

General procedure which is used for MSW in Indonesia is**:** Collection, Transportation, and Disposal. And the trend has been changed in here to recycling. (Damanhuri, E. et al, 2014). Collection, transportation and disposal of waste is still a problem in rising nations, while in advance countries got progress by using new technologies to generate electricity, heat, bio-fuels and compost. (Diego Moya, et al. 2017). As far as new developing or third world countries are concerned, the situation is entirely different. Here its primary collection itself is an issue, transportation of collected waste is another issue, while it’s dumping, proper utilization and getting energy benefits are future program to be focused by both public and private sectors.

Lack of budget and ignorance of solid waste management methods prevent developing countries to overcome waste management. (Azni Idris, 2004).Primary collection of waste is one of the main parts of solid waste management system. (Mohee, R. et al, 2015).Solid waste in Pakistan mostly collected by municipalities, whereas the percentage of collection is

different in poor (low-income) area, it is 0 %, while in rich (high-income) areas it is 90%. (Pak-EPA, 2005). Municipalities actually collect 51 % to 69% of solid waste, from the total waste generated in their area. And the remaining waste percentage is 31% to 49%, which is lying on roads, streets, drains, empty plots, which cause environmental pollution. (Amanullah Mahar, 2014).

Getting better use of solid and all other kinds of waste is subject to new explorations such as scientific research, getting guidelines from it, devising pragmatic policies and programs and besides all, treating it as wealth not waste" is yet to be focused. However, one cannot deny the efforts being made by communities in Quetta city for its primary collection, which is discussed as a mechanism in detail in the following paragraph.

The Mechanism of Solid Waste Collecting:

Community arranged the process with enormous integrity that consisted of two elements. Social arrangement as a first element intends to form understanding, unify communities and enhance their abilities in order to tackle, execute and manage over collection and perfectly throw away of solid waste from their vicinities. The second element includes technical parts of mechanism as training of equipment, bound to the system and arranging persons for smooth running of mechanism.

Social Mobilization:

The active participation of the community in all parts has been established in the following lines:

Participation of Volunteers:

Volunteers who seemed interested fighting against such alarming problems were taken into great consideration to co-operate.

The argument of volunteers brought flawless development of fundamental concept as well as it increased understanding about the problems of inhabitants of that particular area. Their help brought organized form of activities for perfect execution.

Change in human behaviour, value, public involvement and application steps are as important as financial and technical part in solid waste management.(McAllister, 2015).One of the study express that, for the successful mechanism of solid waste, various features are necessary, which include, public involvement, teamwork, group act, interacting connection, judgement transparency and availability of information.

(Marshall and Farahbakhsh, 2013). Without the hand of volunteers, it would have remained a nightmare to complete in the sands of time. Brilliant job was done by volunteers to work according to the planned activities. They took starts by locating roads and streets as they were familiar with people of those locations, they were given orders to works down every task they had been assigned. A survey and then the meeting with community were done about tools and much more to be used in the process.

It has been observed that those areas where the ratio of education is high and self-help incentive is found, people help to participate in community development. Otherwise it is seen in other regions of the world, especially in developing nations literature on the voluntary parameter is relatively less. (Blackman, et al, 2013). Initially, voluntary amenability was used in American States "which is observed having less control". (Shortle JS, et al, 2001). According to one report, voluntary method and mandatory approach cannot provide required solution to environmental protection from pollution. (Segerson K, Wu J, 2006). While, using voluntary measure with compulsory, has been suggested to cover low sharing in environmental conservative plans. (Wilson PN, Needham RA, 2006). The people from low-income areas tries to improve their own services through self-help struggles, which can be possible with efforts of social mobilization and cooperation beneficiaries, these makes the system of solid waste management more effective. (Ahmed. N, 2009). The above stated references show that the volunteer option is successful with stress on every individual of society to follow the rules for waste management.

Community Meeting:

For inhabitants of each lane three meetings took places which were meant to guide them about the whole process as well as their participation in it. The first meeting was held about the raising problems for people due to undealt solid waste, as it also caused health problems. The purpose behind this was, to bring acknowledgement about health related issues for those living there. Participants were very much welcomed to contribute in order to share their ideas for the purpose of dealing with matter at hand. The second meeting was to give instructions to part takers about fundamentals of solid waste and community participation were also emphasized. The third meeting was held to address the organization of lane as well as office election.

The Structure of Lane Organization:

The inhabitants of one lane got the ability to form an association which required every member be the part of it during the second meeting. Three from them became the head members voluntarily.

Training Workshop:

In order that they could reach their goals, they held a few short training sessions due to ideas they collected from communities' meetings. Training instructions and charts were formed backed by survey and observations. For perfect acknowledgements in order to deliver the message, men and women organizations were organized.

Health and Hygiene Education:

Awareness was the main thing to achieve through such form of education. This awareness caused massive understanding both for women and men participants. Especially regarding environment, health and living condition.

Technical Aspect:

Even though many struggled against the problem of collection of waste, yet there was much more to offer in regards to office of lane organization. Disposal gave rise to the following activities step by step.

a) Aiming to Arrange Trolley and Features of Area:

In many prominent ways the features along with arrangement of areas, special trolleys were arranged to cover the generation of waste, and many safety precautions were taken. Tools, gloves, uniforms and equipment's were bought to enhance the growth of work by all means.

b) Arrangement of Waste Collector:

The duty of disposing waste was given to hired local men where they had to collect it from households and then dispose it. The waste collector was informed about his duties and lane residents waste collection system. These steps towards such alarming problems brought much development which left ever lasting effect on several generations.

c) Waste Collection Charges:

To look at the participation in collecting waste, it seemed important to have a meeting arranged in general. This meeting consists of those who inhabit lane in particular. Every member is required to have the contribution of PRs 30 each, so that they may manage the salary for those who devote their precious time to the job. Account system is simply dealt

along with silver line to welcome the ideas by inhabitants of the mentioned Lane.

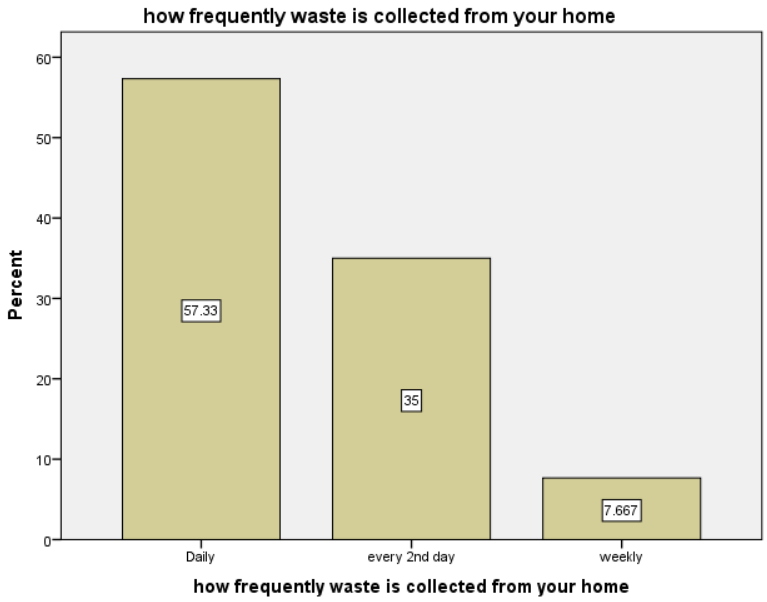
d) Accumulation of Solid Waste:

Solid waste is gathered by collector and then deposes it nearby natural sever, because of unavailability of communal bin in the area. Collection of waste happens every day early in the morning and this accumulation takes few hours a day. These collectors have also duty to clean the roads and lane during waste collection.

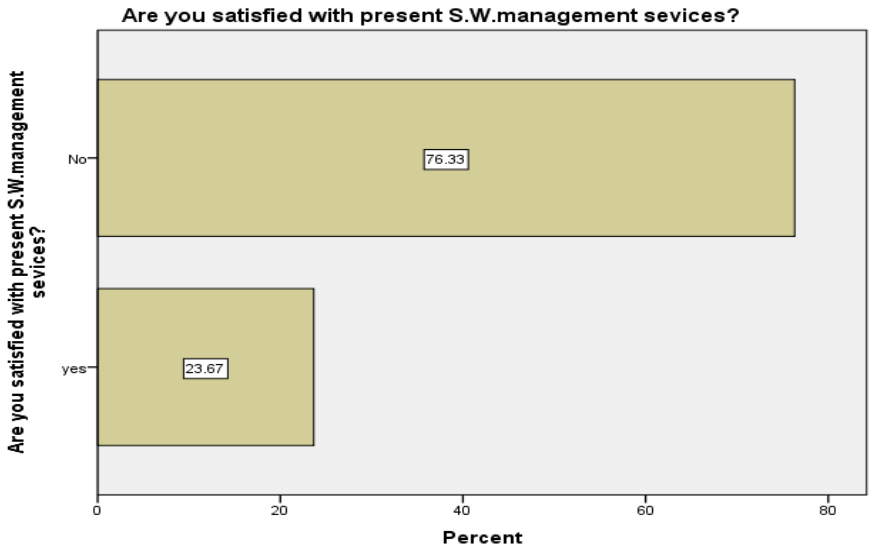
Methodology:

Apart from survey, a series of focus group discussion were held with elected representatives of different union council i.e. councilors, notables and political workers. Key informant interviews were also held with community and religious leaders. Based on the findings of their views an opinion was made that guided writing of this research paper.

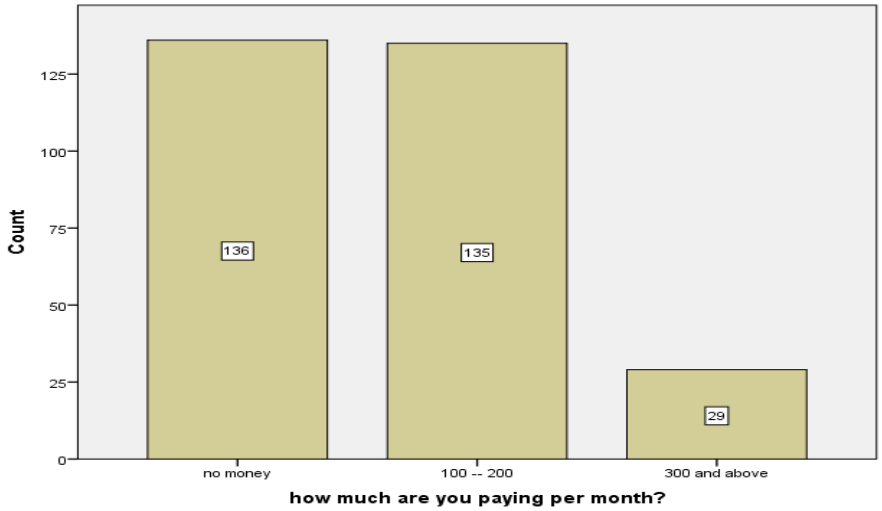
Result:



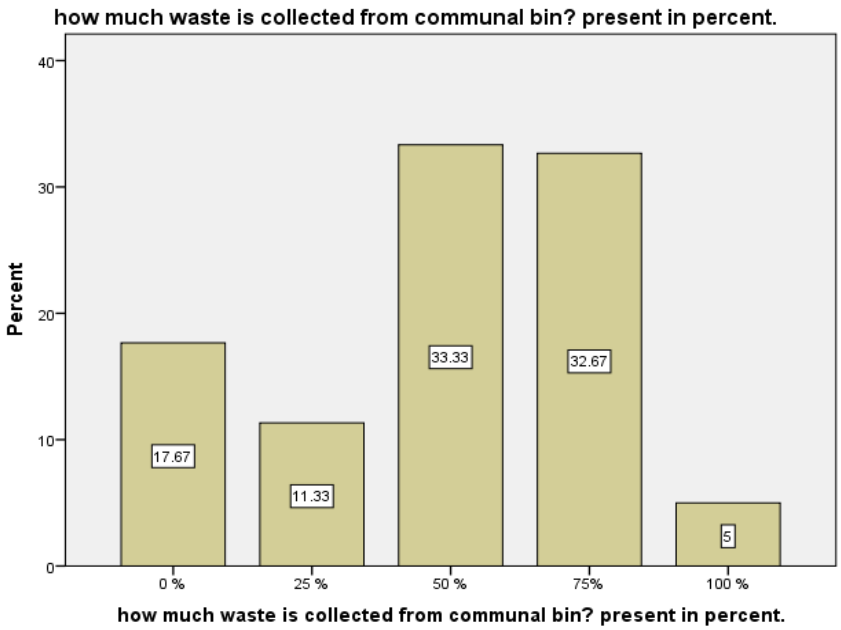
The above bar graph expresses that 57.33% houses waste is collected on daily basis while 35% are those houses where waste is collected every other day. And least number is 7.6%, from where garbage is gathered once a week. It means most of the households waste is collected every day.



This graph explains the satisfaction of respondents about S.W management services, in which 23.67 % are satisfied and 76.33% are not satisfied. This means that majority of people are not satisfied with solid waste management services.



The above figure reflects percentage of the monthly payment being paid by households for collection of generated waste. The figure express that 45.3% people do not pay for waste collection. Respondents who pay, Rs.100 to 200 are 45%, while 9.7% are those persons who pay 300 and above.



According to this 53 respondent says that no waste is collected from communal bin. Whereas 100 respondents answered that 50% garbage is collected from local bins. While 98 people said 75% waste is picked from waste bin of community. And 5 were those persons who stated that 100% waste is transported from waste bin. Overall result shows that few people were satisfied from transportation.

Discussion:

It is vividly evident that community participation has developed the sense of ownership among residents of few Union Councils regarding waste collection as a project, which in turns help manage solid waste and transport it to final dumping point. The sense of ownership has also proved a well working mechanism of coordination both between residents of areas with elected councilors and between councilors and QMC waste collection staff.

The research also reveals that through community participation, the community is basically empowered to find a pragmatic solution to the issue of solid waste collection along with the decision pertaining to its proper management as far as primary collection and its transportation is concerned.

Community participation, in this case, seems to have built confidence of residents of the areas for mutual cooperation both among themselves and with already available services of concerned department such as QMC and elected local government representatives at third tier of governance to address an issue

Equally important is to also highlight that such an effort minimizes ratio of dependency over government and public sector organization with regard to resolution of issues and problems that they are confronted with. The essence of collective responsibility will definitely help not only to best address a particular issue, but also to teaches us to get this mechanism replicated elsewhere as best practice.

Conclusion and Policy Implication:

Social issues and problems are multidimensional not only by their nature, pace and intensity, but also by their very root causes and diverse socio economic impacts that they have over our economy, environment and social fabrics. They do not have a simple “get fix” solution too. Therefore, each and every social issue must be addressed altogether separately while using indigenous knowledge and methods. However, while doing so research based efforts must be made and documented so that an effort such as this may not be neglected altogether and ensure the efficacy and efficiency of available resources is converted into the concept of “best resource use pattern”. The research paper suggests the following actions to taken and promoted to overcome the issue of solid waste and minimize its socio-economic impact over our society and environment.

1. Firstly, Quetta Metropolitan Corporation QMC must review its policy critically or devise a provincial broad based policy for every district to get the issue resolved while ensuring quality and standardization of services that are feasible to be provided in future.
2. While developing or reviewing any such policy or devising a new policy effort must be made to ensure participation of all stakeholders including communities from different areas of the city
3. Once policy document is developed the case may be taken to formal session of local bodies meeting for their approval, sanctioning, support, coordination and future help that may be required. Also important is to pass a bill for new legislation to higher forum such as Provincial and National Assemblies
4. After having passed a bill, all members of third tier of governance i.e. councilors must be given the task to take up the issue with their

members of Provincial Assembly MPA for new legislation with regard to promotion and protection of their efforts regarding proper management of solid waste

5. All concerned departments (public sector) must be well informed and communicated about the efforts in order to avoid any deficiency at their parts
6. Pragmatic efforts pertaining to mass awareness must be launched with provision of adequate financial and human recourses to get the work done to all possible extent according to its initial concept
7. Media must also be involved for public awareness. Separate program must be devised for promotion of ideas of community supported mechanism of solid waste management in national and private TV channels while exploring both electronic and press media.
8. Especial time and recourses should be allocated to educate masses through newly available and easily available media such as face book etc.
9. While exploring support for the proven mechanism of primary waste collection, efforts must be made to involve political parties to make it part and parcel of their election manifesto.
10. Educational institutions such as schools, colleges and universities must also be involved to promote the idea and make it course contents of their curricula
11. Religious institutions such as Mosques, Religious Leaders and all other influential must be made part of the program for its wider acceptance and operation to address the issue

References:

Ahmed, N, (2009) Sustainable community waste collection in Karachi, Pakistan.

Amanullah Mahar, (2014). The health risk management through environmentally sustainable solid waste management strategies: a case study of Pakistan. pp,44-50.

Azni Idris, Bulent Inane, Mohd Nassir Hassan, (2004). Overview of waste disposal and Landfills/dumps in Asian countries.pp 6:140—110.

Cunningham, (2001), Environmental Science: A Global Concern. PP-525-546.

Damanhuri, E., Handoko, W., & Padmi, T. (2014).Municipal Solid Waste Management in Indonesia.In Municipal Solid Waste Management in Asia and the Pacific Islands (pp. 139-155).Springer Singapore.

Diego Moya, Clay Aldas, Germanico Lopez, Prasad Kaparaju, (2017). Municipal solid waste as a valuable renewable energy resource: a worldwide opportunity of energy recovery by using Waste –to-Energy Technologies.pp.286-295.

Dr. Bouanini Samiha, & Fatima, D. L, (2005), China's Experience In Municipal Solid Waste Management- Lessons Learned For Algeria, European journal of Research and Reflection in Management Science, 3.

Hongyun Han, Zhijian Zhang, (2015), The impact of the policy of municipal solid waste source-separated collection on waste reduction: a case study of China.(pp. 382-393).

Huang Q. Wang Q, Dong L, Xi B, Zhou B (2006).The current situation of solid waste management in China.J Master Cycles Waste Manag. PP, 63-69.

Marshall, R.E. and Farahbakhsh, K. (2013) Systems Approaches to Integrated Solid Waste Management in Developing Countries. Waste Management, 33, 988-1003.

McAllister, j. (2015), Factors influencing Solid-Waste Management in the Developing world, Utah State University.

Md Manit Mian, Xiaolan Zeng, Allama al Naim Bin Nasry Sulala M.Z.F, Al-Hamadani, (2016), Municipal Solid Waste management in China: A Comparative Analysis.

Mohee, R., Mauthoor, S., Bundhoo, Z. M., Somaroo, G., Soobhany, N., & Gunasee, S. (2015). Current status of solid waste management in small island developing states: a review. Waste Management, 43, 539-549.

Minghua, Z., Xiumin, F., Rovetta, A., Qichang, H., Vicentini, F., Bingkai, L., . . . Yi, L, (2009). Municipal solid waste management in pudong New Area, China.Waste management, 29(3), 1227-1233.

Nobutoshi Tanaka, Yasumasa Tojo, Toshihiko Matsuto, (2005). Past, Present and Future of MSW Landfills in Japan. Pp-7:104—111.

Pariatamby, A., & Tanaka, M. (2014).Municipal solid waste management in Asia and the Pacific Islands. Environmental Science, Springer, Singapore.

Segerson K, Wu J (2006) Nonpoint pollution control: Including first-best outcomes through the use of threats. J Environ Econ Manag 51:165-184.

Shortle JS, Abler DG, Ribaudo M, (2001). Agriculture and water quality: the issues. In: Shortle JS, Abler DG (eds) Environmental policies for agricultural pollution control. CAB International publishing, New York, pp 1-18.

Wilson PN, Needham RA (2006) Groundwater conservation policy in Agriculture. In: 26th conference of the international association of agricultural economists, Queensland, Australia.

Yousuf, T. B. (2014). 3R (Reduce, Reuse and Recycle) in Bangladesh.In Municipal Solid Waste Management in Asia and the Pacific Islands (pp. 61-75).Springer Singapore.