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Draft Report

**Prospects and Constrains of
Public Private Partnership for
Urban Waste Management**

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Executive Summary (Text to be inserted)

Policy Action Matrix

SN	Constraints	Recommendation	Activities	Measurable Indicators	Responsible Organisation	Time Frame
1	Policy					
1.1	Lack of Comprehensive PPP Policy	Review and Amend Existing Policy on SWM 1996	<ul style="list-style-type: none"> - Develop PPP Models - Prepare Implementation Strategy - Prepare Manual of Procedures - Conduct Interactive Seminars 	Documents prepared	NPC, MOF, MOPE, MLD, NCSWM	Immediate
1.2	Unclear National Policy and Strategy on SWM 1996	Review Existing Policy and Strategy on SWM 1996	<ul style="list-style-type: none"> - Identify Gaps in the Policy Objectives - Amend Existing Policy - Introduce PPP Policy - Appoint Line Ministry - Build Consensus on Revised Policy - Adopt Policy 	Documents prepared	NCSWM, NPC, MOF, MOPE, MLD, COM	Immediate
1.3	Gap between various Acts and Regulations	Review Existing Acts and Regulations	<ul style="list-style-type: none"> - Identify Gaps and Duplication in existing Acts, Regulations - Amendment Acts and Regulations - Introduce PPP arrangements - Build Consensus on Revised Acts and Regulations - Adopt amended Acts and Regulation 	Documents prepared	NCSWM, NPC, MOF, MOPE, MLD, COM, Parliament	Long Term
1.4	Lack of Awareness and civic Concern	Empower Civil Societies	<ul style="list-style-type: none"> - Encourage development of Civil Societies - Create Forum of Civil Societies on UWM 	Forum / NGO/CBO established and Functioning	Line Ministry	Immediate
1.5	Lack of Empowerment Development Policy	Introduce Institutions for Surveillance (Listening, Watching and Action)	<ul style="list-style-type: none"> - Establish Feed back System through outsourcing - Establish One Window Action Centre (NCSWM) - Empower Civic Societies for Surveillance (similarly as Human Right Association) 	System and Centre Established and Functioning	COM	Immediate
1.6	Lack of Recognition of UWM as Development Sector at par with other sectors	Empower National Council of SWM	<ul style="list-style-type: none"> - Introduce UWM as part of Social and Corporate Code - Introduce UWM as part of Urban Development 	Relevant By-laws changed	Line Ministry, COM	Medium
1.7	Lack of Coordination on Implementation of International Commitments	Empower National Council of SWM	<ul style="list-style-type: none"> - Follow up for implementation of International Commitments in relation to UWM 	Periodic reporting	NCSWM	Long Term
1.9	Lack of confidence and trust between Politicians and Bureaucracy	Provide appropriate Training to politicians and bureaucrats	<ul style="list-style-type: none"> - Conduct Training Programs and Seminars 	Training Conducted and continued	NCSWM	Long Term
3	Vision, Goals, Objectives and Purpose					
3.1	Lack of vision, clear cut Goals and Objectives	Develop Vision, Review Goals and Objectives	<ul style="list-style-type: none"> - Carry out Problem, Objective and participatory analysis and carry out in -depth studies 	Seminar conducted	NPC, NCSWM	Immediate
3.2	Lack of clear Purpose	Develop Purpose of UWM	<ul style="list-style-type: none"> - Identify and consolidate purpose of UWM 	Seminar conducted	NPC, NCSWM	Immediate
3.3	Lack of Knowledge on Benefits of Recycling	Demonstrate and disseminate information on benefits of recycling	<ul style="list-style-type: none"> - Collect information on advantage of recycling, - Disseminate information - Motivate and provide for incentives for efficient recycling 	Reports, Surveys, Observation	NCSWM	Immediate
4	Activities					
4.1	Lack of Comprehensive approach	National and Municipal Councils undertake responsibility	<ul style="list-style-type: none"> - Define Institutional Structure - Define Roles and Responsibilities - Prepare Detailed Programs - Define Modality of Implementation - Identify resources - Build Awareness and Consensus - Design Procedures of UWM - Design PPP Programme, Guidelines and Manuals - Prepare Procurement and Outsourcing Guidelines - Develop Pilot Programmes - Develop Incentives and award Schemes - Nominate Independent Monitoring Entities 	<ul style="list-style-type: none"> - Councils are functioning - Documents prepared and used - Performance monitoring and reporting 	NPC, NCSWM	Immediate

4.2	Lack of Environmental Consideration in current WM Practice	Monitor Environmental Performance	<ul style="list-style-type: none"> - Intervene Current Practice to reduce environmental hazard and to enhance cost effectiveness - Carry out Third Party assessment of Environmental Performance - Prepare Environmental Mitigation action Plan - Carry Out Periodic Environmental audit 	<ul style="list-style-type: none"> - Carry out Survey as IEE/EIA including social and cost effectiveness assessment 	NCSWM, MOPE, Third Party	Immediate
4.3	UWM Execution Authority is limited to Agency Management, other sectors are deprived of participation	Extend Partnership to other stakeholders as community, formal and informal sectors, business houses	<ul style="list-style-type: none"> - Encourage Participation of Community, formal and informal sector - Issue disposal ban policy on public place and nature - Monitor final disposal 	<ul style="list-style-type: none"> - Create data base of participation by Community and other stakeholders 	Municipal Councils	Immediate
5	Technology and subject matter					
5.1	Lack of reliable data	Develop Data base at Municipal and selected Household Level	<ul style="list-style-type: none"> - Monitor Quantity of Waste Collection - Check category of waste collected - Identify Origin and Destination of Waste - Determine cost incurred in waste management 	Periodic and annual reports published and disseminated	National and Municipal Councils	Long Term
5.2	Inadequate and unreliable quantities of waste for particular technology	Create Competitive advantage for supply of waste materials	<ul style="list-style-type: none"> - Motivate for clean waste supply and provide incentives 	Periodic Reports	Respective Enterprises, DDC	Long Term
5.3	Lack of information and Knowledge on Technology available on recycling and Reuse of waste	Encourage Formal and Informal Sector to Create Information and Technology Centres	<ul style="list-style-type: none"> - Outsource the Activities at competitive basis - Monitor performance of sector stakeholders - Disseminate information on responsible entities 	Performance Survey and Reports	NCSWM and Local Councils	Immediate
6	Institutional Framework					
6.1	Lack of Independent and dedicated Institution (existence of several institutions is confusing)	Establish a dedicated institution/strengthen existing institution	<ul style="list-style-type: none"> - Empower existing NCSWM - Establish Local Councils for SWM 	A dedicated institution is established	NPC, COM	Immediate
6.2	Lack of Commitment and accountability for Institutional Development	Carry out Training Programmes	<ul style="list-style-type: none"> - Develop performance indicators - Develop Corporate Culture 	Performance Reports	NCSWM	Long term
6.3	Gender Influence	Consider gender Issues	<ul style="list-style-type: none"> - Eliminate Hazardous jobs - Improve work conditions - Safeguard Women and Children from Hazardous and heavy duty works 	Survey, Monitoring and Report	NCSWM	Long term
7	Legal Frame Work					
7.1	Lack of dedicated Legal Framework	Review Legal Framework	<ul style="list-style-type: none"> - Update Legislative and Regulatory Framework 	Update made	NCSWM	Long term
7.2	FAR and Procurement Guidelines are inadequate to deal with private sector initiatives and PPP	Review Existing Rules and Regulations	<ul style="list-style-type: none"> - Amend FAR and procurement guidelines for partnership development, outsourcing of activities, recognition of community and private sector initiatives - Adopt tax incentive schemes for enterprise development - Develop Marketing Strategy 	Amendment completed and approved	NCSWM	Long term
7.3	Cross-Sectoral Resistance	Review current situation	<ul style="list-style-type: none"> - Defines roles and responsibilities - Define area of activities of various sectors 	Document prepared	NCSWM	Long term
8	Financial Resource					
8.1	Diversion of Revenue, Tax and Funds	Carry out Studies for proper use of resources	<ul style="list-style-type: none"> - Develop program to appropriate use of revenue and funds - Develop consensus 	Reports	NCSWM	Immediate
8.2	Lack of reliable source of funding and Investment	Carry out detailed study of potential sources funds	<ul style="list-style-type: none"> - Create UWM Fund from: <ul style="list-style-type: none"> o Revenues collected by the Government o Charges to Polluters o Beneficiaries contribution (Municipality and Government Grants) o Tourism Industry Grants o Charges to Beneficiary Households and Business 	Performance Reports	NCSWM	Immediate
8.3	Starvation of Funds for Formal and Informal Sector	Assess the need of resources for Formal and Informal Sector	<ul style="list-style-type: none"> - Develop incentives schemes based on actual works carried out - Create environment for sustainability of enterprises based on WM - Develop Program for Outsourcing of Jobs 	<ul style="list-style-type: none"> - Incentive Schemes established and executed - Jobs outsourcing carried out 	NCSWM and Local Councils	Immediate
8.4	Managing External	Assess the external	<ul style="list-style-type: none"> - Use external resources as basket fund for UWM 	Develop	NPC, MOF,	Long

	Support	support available	Fund	Consensus with Donor agencies	NCSWM	Term
			- Prepare program for utilisation of external support as part of National Policy			
9	Capacity Building Mechanism					
9.1	In adequate capability due to uncompetitive recruitment	Assess Institutional Capacity and Procedures	- Develop Manual of Procedures - Carry out recruitment based on knowledge, skill, experience and commitment - Provide training	- Documents prepared - Performance Evaluation	NCSWM	Long Term
9.2	Lack of institutional capability and experience	Carry out capability Assessment of all stakeholders and staff	- Carry out training suitable to the job position - Build awareness and Consensus	Reports	NCSWM	Long Term
9.3	Lack of Partnership with Communities, Formal and Informal Sector	Include Stakeholders as part of Institutional Structure	- Amend Institutional Structure - Strengthen Community and Private Sector Initiatives	Performance Evaluation	NPC, Formal Sector	Long Term
9.4	Donor Influence, specific interest, magnitude of Intervention and coordination	Carry out Need Assessment and Coordinate with Donors on Need of their support	- Identify Donor Assistance Required on Short Term and Long term basis - Analyse comparative efficiency of Donor Assistance	Reports Prepared	NCSWM	Long Term
10	Research, Development and Market					
10.1	Constraints on Critical Thinking and Will	Encourage innovative Approach on UWM	- Encourage National and International conference, Seminars - Encourage sharing of experience and Good Practice	Performance Report	NCSWM and Formal Private sector	Long Term
10.2	Low and Inconsistent quality of waste materials	Encourage Production of Clean Waste	- Develop Economic instruments for production of clean and high quality waste materials - Outsource Waste collection jobs	Periodic Survey and Reporting	Formal Private Sector	Immediate
10.3	Lack of Environmental Awareness and Obligation	Carry out Environmental Performance of Local Authorities	- Introduce Environment Protection Action as part of corporate culture - Promote Environmental Awareness and Education - Encourage Preparation of Environmental Mitigation Action Plan for Local authorities	Performance Report Environmental Audit Report	NCSWM, Local Authorities	Immediate
10.4	Lack of Market Research on Waste Recycle demand	Carry out Assessment of Demand and Supply of Waste Material	- Encourage for assessment of potential waste generation from Institutional and Business Operation - Encourage Assessment of Waste disposal method by Institutions and Business	Prepare Reports	NCSWM	Immediate
10.5	Lack of Environmental Education	Encourage Environmental Education in Schools	- Develop Environmental Education in Schools together with Schools Associations and Forums - Provide assistance and Incentives	Performance	NCSWM and Local Authorities/ Municipalities	Long term
11	Motivation, Incentives, Awards					
11.1	Lack of Motivation, Incentives and Awards for initiatives taken by Formal, Informal Sector and other stakeholders	Introduce Motivation, Incentives and awards for Innovative and Good Practice	- Develop Motivation, Incentives and Award Schemes for good practice, Innovative approach, Contribution	Performance Reports	NCSWM and Local Councils/ Municipalities	Immediate
11.2	Lack of Corporate Schemes for Incentives for Waste management Initiatives	Introduce Incentives Schemes as corporate policy	- Encourage Government and Corporate bodies to adopt Waste Management Policy - Encourage Government organisations and corporate bodies to introduce Incentive Schemes for Waste Management Schemes	Performance Reports	Corporate Bodies	Long Term
12	Monitoring and Evaluation					
12.1	Lack of Performance monitoring mechanism of central and municipal authorities	Develop Monitoring and Evaluation Mechanism for Waste Management Initiatives taken by Central and local authorities	- Carry out Performance monitoring of Municipal Bodies on Waste Management	M&E reports	NCSWM	Long Term

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Preface

This paper is basically a summary of various experiences gained at national and international practice and is a compilation of various papers, articles and policies adopted by regional and overseas governments and private sector. This is not a reinvention of the old wheel, but polishing and trying to recast to suit the conditions of the country. In doing this, the experience of various organisations working in waste management in Nepal including Zero Waste Nepal is extensively used. Many thanks go to all those who have made direct or indirect contribution including SCAEF for the wonderful opportunity given.

Over the last few years the topic of Public Private Partnership (PPP) for Sustainable Development was one of the hot issues on the national and international agenda. In an era of globalization and particularly with accession of Nepal into WTO and with highly constrained national budgets and increasing public expectations, the Government only cannot fulfill the complex tasks of Urban Waste Management. Today, the governments are obliged to seek more innovative ways of attracting private investments to meet the objectives of Development Plans.

Historically, the PPP in Nepal is not new. The entire cityscape of Kathmandu Valley Towns and many townships in Nepal are good examples of PPP. During calamities and disasters, the private and public sector cooperate with each other based on the dire necessity of the time. The idea of PPP in modern context, as we understand today, is more comprehensively targeted: cooperation not only occasional but in a more systematic and institutionalized way. Both sectors should work together in mutual interest. Each partner brings his specific experience and abilities for resolving the common interest.

Advantages of PPP for the public sector are: improved access to private capital, efficient management, know-how, and principles. But there are also advantages for the private sector like investment security as a result of extensive public preliminary preparations and clear-cut public decisions.

There are no specific forms for PPP and there is no one size fits for all. The UN's "Global Partnerships Initiatives" is an excellent form of PPP. In general, PPP attempts to bridge the gap of understanding and trust between the public and private sectors. It is expected that this paper examines the prospects and constrains of PPP for Urban Waste Management. This paper also summarizes the limited experience gained in PPP in various municipalities.

The Prospects and Constrains of PPP being discussed herewith focuses mostly on the issues of Solid Waste Management. Further in this document, reference to either Solid Waste or Urban Waste is made depending upon the context. It is assumed that the PPP models discussed would be relevant and applicable to other form of Urban Waste as well.

I. Background and Introduction

1. Cultural aspect of Waste Management

The ancient Hindu Culture has made a deep sense of belonging of the Waste Management concept. It says, "Lawanam Samudra Davatayoh, Phalam Vanaspati Devatayoh, Pakwanam Vishnu Devtayoh, Jalam Varun Devetayoh". Similarly, Gautam Buddha in his teachings refers to the reuse of the Saffron robe Chibar for reusing as Bed Cover, Pillow Cover, Foot Wrap and finally as floor wipe. The Islam says, "Kullu Saiya Yarju Ila Islah meaning Send back to its source of Origin". Waste Management was part of the traditional societies following the Nature where there is no waste material creating environmental hazard. Every thing is perishable. Every thing is recycled back to its origin - the Panch mahabhuta tatwoh: Earth, Water, Air, Sky, and Light.

2. Initiation of Waste Management

In 1970 for the first time in Nepal, the problems and issues of urban waste management of Kathmandu were addressed by F. Flintoff from WHO and followed by Professor Tabasaran from University of Stuttgart in 1976. These two reports became the foundation for Cooperation between HMGN and the Government of the Federal Republic of German in Solid Waste Management. The Solid Waste Management Project was initiated in 1980 with establishment of Solid Waste Management Centre under the Ministry of Housing and Physical Planning.

3. Waste Management a local issue

Prior to 1980, the solid waste in municipal areas was locally managed. Almost all the waste was of organic nature. Only little volume was disposed and almost everything were reused, recycled or assimilated into the soil. The organic waste easily biodegradable was either used as animal feed or widely recycled into the compost manure. In due course of time, significant change, both in volume and composition of the waste, led to haphazard disposal and dumping in nearby open spaces. This is true for the rural areas or the district headquarters as well.

4. Change in consumption habit

Rapid urbanization, change in consumption habit and negligence towards preservation of environmental condition brought new scenario of urban and rural areas where dumping of solid waste, emission from vehicles and industries, disposal of waste water and industrial effluent in the river systems have become regular phenomena. Despite significant efforts in the last decades, the majority of the municipalities including Kathmandu and Lalitpur could not manage the growing volume of the waste in their areas. As a result of following the steps established by Kathmandu and Lalitpur Municipalities, the whole nation imitated the waste management procedures creating numerous environmental and health hazards. The problems are aggravating from day to day due to the increasing volume of urban waste dumped over land, water masses and air (by incineration) from Terai to Himalayas, from urban to rural areas, from farmland to nature. Practically, the efforts were concentrated for diversion of waste from urban areas to the rural areas without much value added benefits.

5. Components of Urban Waste Management

UWM has many facets of covering vast area of environmental issues including:

Solid (Domestic Waste, Municipal Mixed Waste, Business and Industry Waste, Hospital Waste, Electronic Waste, - Mechanical Equipment and vehicle waste)

Liquid (Waste Water, Industrial Affluent, Combined Sewage and Drainage) and

Gaseous Waste (Vehicular Emission, Industrial Emission, Incineration Emission, Landfill Emission)

All of these three forms of waste are the product of modern life style based on consumerism and "Throw Away Culture" which in turn attributed to the behavior of the stakeholders contributing to the waste generation.

6. Prime cause of collapse of the tourism industry in Nepal

The waste management issues in Nepal have been particularly alarming subject for the Government, Municipal authorities and local residents all over the country. The citizens and the nature were the direct victims with ever increasing environmental related diseases and deteriorating urban and natural environment. Back in 1992, following the take over of waste management responsibility by Kathmandu and Lalitpur Municipalities, the Solid Waste Mismanagement became so prominent that the issue became the prime cause for total collapse of the tourism industry in Nepal.

7. Loss of tree plantation along Satdobato-Gwarko Ring Road

A glaring example of the hazards of solid waste mismanagement is the loss of trees along Satdobato-Gwarko Ring Road. Another example is the agitation of the people of Gokarna area who suffered to the limits and before they were compelled to agitate for closure of Gokarna Landfill Site. Similarly, the people from Seuchatar and Ramkot struggled and opposed the transfer of urban waste to their areas.

8. Havoc to the Trivuban International Airport

The dumping of Solid Waste along Bagmati River at Guheswori area created huge havoc to the Trivuban International Airport Authorities because of the Bird Hazard to Trivuban Airport in Kathmandu created due to solid waste dump. Several International Flights were diverted because of the Bird Hazards created.

9. Abuse of River corridors

Bagmati, Bishnumati and Manohara River corridors from Gokarna to Chobhar are today turned to graveyard with garbage disposed from the civilized mega cities of Kathmandu Valley. The rivers will remain contaminated forever.

10. Unforgettable crime of our time

Today, the Himalayan range from Mount Everest to Annapurna and the Wild life Reserves are full of Solid Waste. This is unforgettable crime of our time made in the history.

11. Liquid Waste

The Liquid Waste generated from the disposal of wastewater from households and industries is directly diverted to the natural river system without proper treatment. Because of this issue, the river system in Kathmandu Valley has been permanently polluted with all aquatic life ceased to exist and the wild life of the Kathmandu Valley as the monkeys in Pashupati area that depend on the river water for livelihood are infected with various diseases and waiting for total extinction. Many river systems near the urban areas have similar fate.

12. Gaseous waste

The Gaseous waste is generated from following particular activities:

- Burning of fossil fuel, firewood, coal for household purpose
- Burning of fossil fuel as a result of operation of vehicular transport,
- Burning of fossil fuel, firewood, coal for industrial purpose
- Incineration of Solid Waste, particularly plastics and paper,
- Incineration of medical waste,
- Emissions of dust and ash from industries.

13. Lack of proper treatment of Urban Waste

Lack of proper attention to safe and scientific treatment of Urban Waste (UW) has had disastrous consequences to quality of life, not only in the city but also in surrounding areas. The effects were proved as harmful to human, animal and plant life. Destruction of trees along the Ring Road at Satdobato and health of Monkeys of Pashupati Area are glaring examples. Untreated waste apart from polluting land, water and air contributed to deteriorating quality of life. Accumulated solid waste piled up on roadsides obstructed city traffic, degraded the aesthetics and totally destroyed the tourism industry in Nepal.

14. Gokarna Landfill site

The Gokarna Landfill site, particularly after the take over of the Solid Waste Management by Kathmandu and Lalitpur Municipalities, suffered and became defunct due to the agitation by the local residents supported by the opposition political parties for the number of reasons as: a) The air quality in the surrounding area deteriorated due to the foul smell of decomposing waste; b) Leachate from the Landfill was not properly managed and Pollution of the natural drainage was effected; c) The area was infested with swarm of flies, insects and rodents; d) Decomposing waste from the municipality trucks transporting garbage to the site spilled over on roadsides and remained there. There was no system to collect the spilled waste and foul smell enveloped the area; e) Rumors that Residents from other villages refused to enter into marriage with the village residents due to the stigma attached to staying near the plant; f) The birds and animals spilled the waste picked up from the Landfill site in their households and surrounding areas; g) The quality of waste delivered to the site deteriorated continuously and virtually no separation of organic and recyclable waste was done; h) Inadequate equipment, negligence of SW workers over their duties, disrespect to the voices of the local residents, uncollected waste at the street and transfer station were other issues.

15. Agency-managed SWM systems

The Agency-managed SWM systems suffered from the misuse of investment and inefficient use of infrastructure made and negligence towards environmental and social consideration explicitly expressed in the Policy documents. The JICA funded CKV studies suffered from this aspect and resulted in the transfer of municipal mixed waste to Landfill site at Sisdol, and inappropriate selection of landfill site and construction of unloading platform at Teku Station. The negligence towards the health concern of Waste Pickers is a direct violence to the requirements of JICA Guidelines, 2004.

16. Attention on short-term solutions

The Government and Municipalities had always given attention on short-term solutions and never cared about long-term solutions. It was never considered that Long-term solutions had to be started from today.

17. National Context

In general at national context, the Government, the municipalities and local Authorities are still exploring for appropriate ways of Urban Waste Management, which requires a comprehensive and consolidated approach. Currently, the effort of the Government is limited to finding the solution to the Urban Waste Management for Kathmandu Valley and is based on the character of waste and executing agency without any cross relationship.

18. Clean Kathmandu Valley Programme

The Clean Kathmandu Valley Programme (CKVP) being implemented currently with cooperation of JICA deals with the Solid Waste Management of Kathmandu Valley and mainly focuses on establishment of mixed waste landfill site at Sisdol based on transfer of mixed waste from Teku Transfer Station, partial recovery of market waste from the mixed waste and followed by community mobilization programme for Reducing, Reuse and Recycling (3R) of waste. The Sisdol Landfill Site planned for operation for next two years receives mixed waste that is covered with soil layer. The plant is equipped with a combined leachate and rainwater runoff recycling pond located at close proximity of a natural stream. The CKV is two steps backward approach compared to GTZ approach (1980-1990) that brought the SWM to the current state of disaster.

The CKV approach is based on mixed waste landfill site without separation of market waste. The CKV does not consider the hazard on health of waste pickers, local people and nature. The heritage of hazards created by the Project does not affect the expatriates and authorities since they will be gone away when actual problem will be matured. What is next after next two years is a big question in itself.

19. Current Practice

The current practice of “Through Away, We Take It Over” approach adopted by CKV Programme requires serious rethinking since the ever-increasing volume of Solid Waste generated is no more sustainable unless some new approach is derived. There is a great risk that the system will collapse as soon as the external support from JICA will be withdrawn and the community will feel the negligence made towards environmental and social consideration. It is obvious the government has accepted whatever resources are provided to them without due consideration to subsequent consequences and value addition the programme has inherited.

20. Worldwide Trend

The Current trend worldwide has indicated that there is no limit for waste generation and it continues to grow as the societies become modernized. Here is some statistics: SW generation ranges from 0.2 Kg per capita per day of disposed waste in Nepal to 2.2 kg (or more?) in US. As the awareness on Environmental Hazards will get strength, the availability of dumping sites would be jeopardized. Why should the rural areas accept garbage from urban or other areas and invite huge environmental problem for themselves? There is no rationale behind. More and more rural communities will resist the dumping of waste from the urban areas. There is no safe solution to the burgeoning Solid Waste problem unless we look from a different perspective and adopt innovative approaches towards managing the Waste.

21. Current practice of Solid Waste Management

The current practice of Solid Waste Management is based on the producing garbage in the form of mixed waste, dumping in streets or open place in the nature, collection by local authorities, recovery of contaminated recyclable materials from garbage heaps and finally disposal of residue in landfill sites or rural areas without any significant value addition. It is merely a shifting of the problem from one area to another.

22. Degree of Solid Waste Hazard

The degree of Solid Waste Hazard is largely dependent on the population density and more severe in the urban areas. With consideration of the facts that the rural areas in Nepal are environmentally highly fragile, it may be concluded that the disposal of Solid Waste Management in rural areas would be equally vulnerable since the institutional capacity of the rural areas will be less. There are less number of institutions concerned with hazard reduction, and costs for undertaking mitigation measures will be very high as the collection of solid waste from nature is very difficult. There is dire need for adopting new approach towards Solid Waste Management Approach that will guarantee preservation of nature, involve the communities that generate solid waste for its safe management, and help resource recovery.

23. Lack of effective monitoring agencies

Solid Waste Management system in Nepal suffered from lack of effective monitoring agencies. None of the existing NGO or consumer organisations is encouraged to function properly and the government agencies as Ministry of Environment and Population required strengthening their capacity to undertake the monitoring responsibility.

24. Limited experience of PPP implementation

The PPP experience in municipalities as Biratnagar (Dumping of waste away from municipal areas involving Private Sector without any environmental and value benefits), Dharan (Involvement of Private sector for collection and disposal of waste in forest area and nature), Itahari (involvement of private sector for collection and dumping of waste in open area), Bharatpur (Private sector involved for collection and dumping of waste in open nature and forest), Kathmandu (Private

Sector involved for door-to-door collection of mixed waste, composting of mixed waste, sorting for recycling and disposal in Transfer Station), and Hetauda (Involving NGO for collection of mixed waste and disposal in designated open space).

25. Community Based Waste Management

Project Zero Waste (Patan Durbar Square), Waste Free Communities (Bafal, Kathmandu), Zero waste Schools (Prabhat School, Gwarko, Lalitpur) and Waste Free Everest (sponsored by Rotary Clubs of Nepal) are special programmes promoted by Zero Waste Nepal and based on community initiatives. Waste Free Everest was an exclusive value added programme attached to the Rotary Centennial Everest Expedition - 2005 and launched to celebrate the occasion of the Rotary International Centennial Year 2005. These programmes aimed for raising awareness in communities and among the Everest Expedition Teams. The All the programmes carry slogans as “Don’t Throw Away, Don’t Burn, Don’t Bury, Bring Back/Send Back”.

26. Waste Free Everest programme

The Waste Free Everest programme fulfilled its objectives by carrying out number of pioneering activities as bringing back all expedition materials, human excreta and delivery of it to the authorities as SPCC, collection of 200 Kg of remains of helicopter crashed some 25 years ago from the ravines of Everest, recovery of a dead body that fell down 60 m due to snow avalanche in April 2005, collection of 130 Kg of expedition materials from various camps disposed by previous expedition teams. If every expedition teams replicate the lessons learnt, Nepal would be saving huge resources that is erstwhile spend at a rate of US \$ 400/Kg of waste collected and safely disposed.

27. Gender Issues

It is observed that there is in general certain difference in job character where women and men are involved. It is more likely that women are more involved where job requires individual and manual approach compared to men who is more involved in mechanized and organized jobs. The risk of women and children to the health hazard due to direct exposure to waste is more severe.

II. Review of Policies, Legislation and Development Plans

28. The Governmental and Sector Policy

With realization of the facts, the Government of Nepal formulated and enacted sector policies and several legislative measures highlighted below.

29. The Constitution of Nepal, 1991

The Article 26(4) proclaims: “The state shall give priority to the protection of the environment and also to prevent its further damage due to the physical development activities by increasing the awareness of the general public about environmental cleanliness and the State shall also arrange for the specific protection of rare wildlife, forest and vegetation”. Article 88 (2) has conferred a right where any person can directly move an appeal to the Supreme Court on any issue of public interest or importance, including environmental issues”.

30. National Policy on Solid Waste Management, 1996

The policy has the following five objectives:

- To make solid waste management system simple and effective
- To minimize adverse effect of solid waste on environmental and public health
- To mobilize solid waste as a resource
- To privatise solid waste management
- To promote public awareness for greater public participation on solid waste management

31 Strategies of National Policy on SWM

In order to achieve the above objectives, the strategies adopted in the national policy include:

- Development of Expertise in local bodies and institutions, and
- Launching of solid waste management and sanitation as priority programs
- Technological development for final disposal system as per the nature of waste and local, social and economic situations
- Launching of public awareness programs in close association with NGOs and social organizations to ensure greater public participation,
- Enhancing financial self-sufficiency of institutions in solid waste management particularly involving private sector in the business of waste management, and
- Promotion of waste reduction at source and utilization of generated waste as resources promoting reuse and recycling activities.

31. Environmental Protection Act 1997

EPA 1997 requires all projects to review and carry out environmental studies for all proposed projects. The basic provisions of the Act are as follows:

- A proponent shall submit a proposal for implementation along with a report on Initial Environmental Examination and Environmental Impact Assessment of the proposal as prescribed for approval by the concerned agency
- Prohibition on implementation of proposals without approval from the concerned agency or the Ministry.

32. Local Self-Governance Act and Regulation, 1999

The Part 2, Part 3 and Part 4 of the Act have given ample power to the local bodies (Village Development Committees, Municipalities and District Development Committees respectively) in relation to the environmental and sanitation issues. The duty for arrangement for street cleaning, disposal of wastes, dirt and rotten materials, and to make arrangements to encourage the inhabitants of the Ward for maintaining sanitation is given to the Ward Committee under Village Development Committee and Municipalities. The local bodies are given authority for preparation of programmes on primary health, education, sanitation, and collection, transportation, disposal of wastes and garbage in the village development area. Accordingly, the Local Self-Governance Regulation has prescribed the procedures for formulation of plans, programmes and resource maps and procedures for their implementation.

33. Solid Waste Management and Resource Mobilization Centre Act, 1987

Solid Waste (Management and Resource Mobilization) Act 1987 has had given the responsibility for pollution free disposal of solid waste to SWMRMC. The center is empowered to take necessary measures to stop Air, Water and Soil pollution caused by solid waste. While doing this, it has to coordinate with local municipalities. Now the roles and responsibilities of SWMRMC are partially transferred to Kathmandu Municipality and the center is now functioning under the Ministry of Local Development.

34. Child Labour Laws

Nepal is one of the countries to ratify following Child Labour Conventions as: **Minimum Age Convention 138 (C138), 1973**, Adopted by the International Labour Organization (ILO) in 1973, C138 binds ratifying countries to pursue a national policy for the abolition of child labour with minimum age of 15 years. According to the convention, the minimum age for work that is unlikely to jeopardize the health, safety or morals of young persons is 18; and **Worst Forms of Child Labor Convention 182 (C182), 1999** - On June 17, 1999 the ILO adopted Convention 182, which calls for immediate and effective measures to prohibit and eliminate the worst forms of child labour.

35. Kyoto Protocol

The Protocol has had focused on following points related to waste management (Nepal had not so far ratified the Protocol:

- Progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting sectors that run counter to the objective of the Convention and application of market instruments;
- Encouragement of appropriate reforms in relevant sectors aimed at promoting policies and measures which limit or reduce emissions of greenhouse gases not controlled by the Montreal Protocol;
- Measures to limit and/or reduce emissions of greenhouse gases not controlled by the Montreal Protocol in the transport sector;
- Limitation and/or reduction of methane emissions through recovery and use in waste management, as well as in the production, transport and distribution of energy;

The Protocol focuses on limitations of Solid waste disposal on land, wastewater handling, and waste incineration.

36. Basal Convention 1989

The Basal Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal was adopted in 1989 in response to concerns about toxic waste from industrialized countries being dumped in developing countries and countries with economies in transition. During its first decade, the convention's principal focus was the elaboration of controls on the "trans-boundary" movement of hazardous wastes that is the movement of such wastes across international frontiers, and the development of criteria for environmentally sound management of the wastes. More recently the work of the Convention has emphasized full implementation of treaty commitments and minimization of hazardous waste generation. As of 15 July 2002, there were 151 Parties to the Basel Convention. These obligations under the Convention are to:

- Minimise generation of hazardous waste;
- Ensure adequate disposal facilities are available;
- Control and reduce international movements of hazardous waste;

37. Rotterdam Convention 1998

The Rotterdam Convention on Prior Informed Consent (PIC) procedure for Certain Hazardous Chemicals and Pesticides in International Trade was adopted in 1998. Dramatic growth in chemicals production and trade during the past three decades had highlighted the potential risks posed by hazardous chemicals and pesticides. Countries lacking adequate infrastructure to monitor the import and use of such substances were particularly vulnerable. In the 1980s, UNEP and FAO developed voluntary codes of conduct and information exchange systems, culminating in the Prior Informed Consent (PIC) procedure introduced in 1989. The new Convention will replace this arrangement with a mandatory PIC procedure. As of 15 July 2002, the Rotterdam Convention had 73 signatories and 22 Parties. It will enter into force after the 50th ratification.

38. Stockholm Convention, 2001

The Stockholm Convention on Persistent Organic Pollutants (POPs) was adopted in 2001 in response to the urgent need for global action to protect human health and the environment from “POPs”. These are chemicals that are highly toxic, persistent, bio-accumulate and move long distance in the environment. The Convention seeks the elimination or restriction of production and use of all intentionally produced POPs (i.e. industrial chemicals and pesticides). It also seeks the continuing minimization and, where feasible, ultimate elimination of the releases unintentionally produced POPs such as dioxins and furans. Stockpiles must be managed and disposed of in a safe, efficient and environmentally sound manner. The Convention imposes certain trade restrictions. As of 15 July 2002, the Stockholm Convention had 151 signatories and 12 Parties. It will enter into force after the 50th ratification.

Together, the Basel, Rotterdam and Stockholm Conventions cover key elements of “cradle -to-grave” management of hazardous chemicals, most comprehensively in the case of POPs, which are covered by all three treaties. The Basel Convention (Article 4) requires each party to minimize waste generation and to ensure, to the extent possible, the availability of disposal facilities within its own territory. The objective of environmentally sound management of hazardous wastes underpins the Convention. At its fifth meeting in December 1999, the Conference of the Parties adopted the Basel Declaration on Environmentally Sound Management. Three Conventions developed under UNEP auspices together provide an international framework governing the environmentally sound management of hazardous chemicals throughout their lifecycles.

39. Millennium Development Goals Agenda 21

The Millennium Goals have focused on Waste management issues very strongly. Particularly, Chapter 20 deals with Environmentally sound management of hazardous wastes, Chapter 21 with Environmentally sound management of solid wastes and sewage-related issues, Chapter 22 with Safe and environmentally sound management of radioactive wastes are specifically relevant for Urban Waste Management.

40. International Standard Organisation 14001

ISO promotes the development and implementation of voluntary international standards, both for particular products and for environmental management issues. ISO 14000 refers to a series of voluntary standards in the environmental field including ISO 14001 related to Environmental Systems (EMS) Standard and other standards in fields such as environmental auditing, environmental performance evaluation, environmental labelling, and life -cycle assessment. The ISO 14001 standard requires that a municipality, community or organization put in place and implement a series of practices and procedures that, when taken together, result in an environmental management system. ISO 14001 is not a technical standard and as such does not in any way replace technical requirements embodied in statutes or regulations. It also does not set prescribed standards of performance for organizations. The major requirements of an EMS under ISO 14001 include: A policy statement that includes commitments to prevention of pollution, continual improvement of the EMS leading to improvements in overall environmental performance, and compliance with all applicable statutory and regulatory requirements.

41. Use of EMS by Municipalities

Municipalities, towns, townships and Business houses typically oversee a number of activities, facilities and operations. EMSs can be used as a framework to help these operations to improve their environmental performance and make greater use of pollution prevention approaches. Use of the standard by municipalities and businesses is not well established at this point, but its use will help for pollution prevention and production of cleaner production, cost saving and enhance public image.

42. PPP Policy 2060 (2004) and PPP Guidelines, 2061 (2005)

The Public Private Partnership framework in broader sense is introduced in Nepal through issue of:

- An Ordinance “Private Investment in Infrastructure Development and operation 2060
- Public -Private Partnership Policy-Local Authority 2060

43. Two major factors: Value of Money and Project Structure

The two major factors upon which the concept of PPP is based on are: Value of Money and Project Structure. Based on the above broader framework, His Majesty's Government of Nepal has shown increased interest in involving the private sector in upgrading the level of services locally and included the concept of Public-Private Partnership (PPP) as part of the 10th five-year development plan. To create an enabling environment and introduce PPP as a viable development alternative, HMG/UNDP Nepal launched the Public-Private Partnership for Urban Environment (PPPUE) in March 2002-2007. The development objective of PPPUE is to increase the access of the urban citizens to basic services, and therewith, to contribute to the creation of a healthy environment and the improvement of living conditions in the urban and peri-urban areas, by promotion of partnerships between public and private sectors for the sustainable provision of urban services.

44. Environmental pollution not Priority Issues

The problem of environmental pollution from industries or urban sectors was not a priority issue of the government in its initial phases of development planning. Main focuses of development in the early planning stages are seen revolving around development of infrastructures, human resources and productivity. It is only after the Sixth Plan (1980-85) that the issue of environmental pollution and its social costs has been realized at least in the policy level. By the turn of Eighth Plan (1992-1997), environmental pollution has been one of the key priority policy concerns.

45. Ninth Five -Year Plan

The Ninth Plan included the following objectives in solid waste management:

- To make legal provisions for mobilization of non-governmental and private sector effectively in environmental public health and garbage management;
- Promotion of Private sector and joint venture investments by making active participation of local bodies,
- Recycling will be promoted by motivating people engaged in recycling business.
- Enabling of the local bodies for effective management of waste with increased efficiency and reliability,
- Reduction of the volume of waste to be treated at the point of generation,
- Conduction of public awareness campaign to promote people's participation,
- Involvement of NGOs,
- Development of cleanliness concept as per the local, social and economic conditions
- Management of the waste and their disposal according to their volume and types,
- Recycling and resource recovery in waste management, especially for the production of organic fertilizer, energy and other products with market demand,
- Use of cost-effective appropriate technology enabling recycling and materials recovery, and Environmental consideration.

46. Tenth Five Year Plan

The 10th Plan has dealt the policy and the strategy related to the Waste Management described as follows: An Environment Management and Promotion Center will be established under the Ministry of Population and Environment with focal points in each ministry for coordination of various programs related to international treaties (e.g., climate change, desertification control, Basel Treaty of Hazardous Waste Management, Rotterdam and Stockholm Conventions).

III. Problems and Issues

47. Selected problems and Issues

The problems and Issues related to the Solid Waste Management are summarized herewith:

- Currently, Solid Waste Management is the job of the Government and Municipality and without particular relation to the citizens, Businesses and Industries. The general public rarely show any concern how Waste is managed until they are directly affected with the hazards created by Waste Management system.
- The people from Gokarna had tough time for organising agitation and fighting against the way waste was dumped in the landfill site. The people of Suichatar refused to allow using their neighbourhood for developing landfill site.
- Several Plans and Programmes prepared and implemented by HMG **do not provide adequate emphasis on the issues of Solid Waste Management** in par with other infrastructure as Water Supply, Sanitation, Transport, Electricity and Telecommunication.
- The Issues associated with **Solid Waste management are dealt at sporadic level** and shadowed by the general environmental issues.
- **No exclusive and dedicated organisation** at National level exists to take care of Solid Waste Issues.
- Waste Management is considered as the business of the Central Government and Municipalities only. No regard is made to the role of waste generators; waste pickers and other formal and informal waste management private sector organisations.
- Dumping of waste at land, air and water is the simplest form of disposal for the municipalities. The government is irresponsible to its international commitments, and mostly short sighted and focus on immediate solutions.

- The waste generators and stakeholders are disorganised, illiterate and indifferent to environmental issues and health hazards unless they are directly affected. Neighbourhood environmental issues are almost not recognised and taken care of. This characteristic behaviour is often an advantage for the Government to neglect the SWM Issues.
- Solid Waste is considered as not useful for any purpose. This is the reason why everything is dumped into Nature as riverbanks, hill slopes, open land, forests, riverbanks and water.
- Huge resources are spent on Solid Waste collection from streets and dumping into Nature causing unrecoverable environmental damage. Several studies indicated that the solid waste dumped in Kathmandu could generate huge resource apart from saving the resources spent for waste dumping and health recovery (ZWN, 2002).
- The reasons behind the unfulfilled Environmental and Resource protection policy and programs proposed in the Ninth Plan are the lack of commitment and accountability for institutional development for the materialization of the policies set in the Plan.
- Lack of vision, required prioritization given to the policies, coordination of among different organization, and adequate capability of the executing agencies
- Ignorance about the history of UWM and lack of understanding on lessons learnt from previous projects and mistakes done,
- Lack of capability of the concerned institutions for monitoring and evaluation of environmental issues of SWM,
- Lack of ability to recognize and evaluate the works carried out by Formal and Informal private Sector as Non-governmental organizations and donor agencies.
- Political interference in Solid Waste Management is very high and detrimental.
- Community groups, local government and business have all had to struggle because they have been starved of financial support and leadership in respect of waste reduction. No incentives and financial resources are available for the supplemental contribution made for reducing burden of municipalities and the central government.
- Blame is given to Plastic Bags ignoring the deterioration of human behavior, degrading cultural values and tradition due to the Throw way culture culminated by the Municipalities and the Central Government.

48. Long Term Vision and Goals

Lack of Long term Vision and Goals had had its toll on Urban Waste Management Sector. The hazards created today in Nepal are the direct result of such a deficiency. Lack of the recognition for need for such vision and planning is the key issue. Ability to understand that long-term vision starts from today is a strong barrier in itself if not understood properly.

49. Effects of environmental degradation

The effects of environmental degradation caused by solid waste management are multifaceted and include (a) deteriorating public health, (b) adverse impact to the tourism industry, (c) decay of cultural heritage and tradition, (d) productivity decline, (e) loss of amenities, (f) additional hardship for poor, (g) reduced property values, (h) land pollution, (I) water pollution, (j) air pollution, (k) damage to urban infrastructure and aesthetics, and (m) economic loss.

50. Diversion of resources

The DDC that are responsible for raising tax for export of Waste from districts are diverting the taxes collected to the administrative and staff costs of DDC and do not utilize the tax payers' money for developing capacity. The municipalities and the Formal and Informal sectors do not get support from DDC.

51. Technological Constraints

There are technological issues affecting the success of partnerships among various stakeholders. Technology choice for final disposal of waste generally has a severely limiting effect on the institutional arrangements since the waste materials are heterogeneous and feasible quantities may not be available. At the same time, the choice in favor of appropriately designed and scaled technical solid waste tools and systems is a necessary but hardly a sufficient condition for the creation of partnerships among the stakeholders.

52. Recognition

Lack of recognition of the informal sector working in the Solid Waste Management itself has proved a significant barrier to partnership between Municipalities, DDC and informal sector. Resistance to institutionalization on the part of both formal and informal actors is a barrier in itself. The resistance of Government and Municipalities expressed in the form of mistrust in the legitimacy of other partners, or the fear that other partners may disrupt the status quo and gradually take over the jobs currently being carried out by the Government and Municipalities or DDC.

IV. Waste Generation

53. Sources of Waste

There are six general sources of solid waste generation. They are:

- **Household Waste** comprising *kitchen wastes, paper and cartons, plastics, rubber, leather, bone, glass, garbage, ashes and metals,*
- **Commercial waste** producers are stores, tea stalls, business premises, godowns, restaurants, markets, fruit vendors, hotels and motor repair shops producing wastes like *paper and cartons, glass, waste from food preparation, vegetable and fruit waste, hair, ashes, spoiled and discarded goods,* and Market waste as packaging materials,
- **Industrial wastes** refer to the waste generated from sources such as construction sites, demolition debris, food processing industries, slaughter houses, manufacturing establishments and breweries, leather industries, carpets and garments factories, chemical plants and tourist facilities *comprising earth, brickbats, stones, sand and wood, packaging materials, food wastes, bones, feathers, hazardous wastes and old machine parts, discarded vehicles, chemicals, scraps,*
- **Hospital and medical Waste** *comprise of infectious and non-infectious waste generated during the operation of health operation and treatment of patients. They are human body parts, infectious instruments and tools, sharps as blade and syringes, plastic containers, pipes, bandages, cotton pads, plaster, aluminium blister, various packaging materials, pathological waste, food waste,*
- **Electronic and mechanical Waste** *comprise of waste as computers, printers, electrical gadgets, telecom, TV, VCR, DVD Players, washing machines, kitchen equipment, old vehicles, Electronic toys,*
- **Agricultural wastes** refer to the waste outcome from dairies, poultry farms, livestock and other agricultural activities like vegetable cultivation, and farm lands
- **Institutional waste** producers are religious places, schools, banks, offices, etc and contains *paper and cartons, food wastes, glass, plastics, hazardous wastes and pathological wastes,*
- **Natural waste** consists of *leaves, tree branches, seeds and carcasses of animals.*

54. Waste Generation

The solid waste generated in various cities as reported by various projects are as summarized below:

Table IV-1: Average Waste Generation

Population	Estimated waste generation rate per person per day	Reference Area
Less than 20,000	0.25 kg	
20,001 to 50,000	0.30 kg	
50,001 to 100,000	0.35 kg	Dharan
1 00,00 1 to 400,000	0.40 kg	
More than 400,000	0.50 kg	Kathmandu
Average	0.34 Kg	

Source: SOE/NEPAL 2001, MOPE/ICIMOD/SACEP/NORAD/UNEP

Total Solid Waste generated all over the country is believed to be around 426,500 ton/day, out of which 29% belong to Kathmandu alone. IPCM project in 1995 estimated a total of 219,000 tons of solid waste generated by industries of Nepal employing 10 or more labour.

The population density in these areas is grossly less than 500 persons/ha and solid waste generated is practically very low in volume. Over 66% of Solid Waste comprising of Biodegradable could be composted. The Recyclable and Market Waste comprising around 25% are packaging materials, plastics, glass, paper, wood, cans, and metal. The balance waste comprising of 9% is the inert materials as construction debris, earth, sand and dust that require sending to landfill sites or to land reclamation sites. Following Table summarizes the waste composition as estimated by various projects.

Table IV-2: Waste Generation

Category of Waste	KV M (1)	KMC (2)	KMC (3)	PSM (4)	BIDCM (5)	58 Municipalities (6)	Average	Generation Rate, Kg	Quantity for 58 municipalities, Tons/day
Organic and garbage	82 %	68%	70%	65%	65%	62%	66%	0.217	951
Recyclable	17%	26%	24%	28%	23%	22%	25%	0.068	297
Inert and Others	1%	6%	6%	7%	12%	16%	9%	0.055	241
Total								0.340	1489

Source: (1) CKV JICA 2004, (2) RESTUK/KMC 2001, (3) KVMP/KMC 2001, (4) PSM/PEIP 2000, (5) SEAM-N 2004, (6) SWMRMC 2004

55. Indicative quantity of waste generated

Based on above figures, the indicative quantity of waste generated could be summarized as follows:

Category of Waste	Average Generation	Quantity for 58 municipalities, Tons/day
Plastics	10 %	86
Paper/Carton	8 %	117
Glass	2%	32
Textile/Jute	3%	39
Metal	1%	12
Rubber/Leather	1%	11
Total	25%	297

Source: SWMRMC 2004, PEIP/PSM 2000, SEAM-N 2004, CKV/JICA 2003, RESTUK/KCM 2000, KVMP/KMC 2001

V. Public Private Partnership

56. Characteristics of Public Private Partnership

The Urban Waste Issues from Policy and Legislation to administration, management, technology, approach, economy, workforce, require a comprehensive approach for partnership among the various stakeholders as Public Sector comprising of Government and Municipalities, Waste Generators as communities and Business, and service providers from Private Sector as formal and informal sectors for entrepreneurship development.

57. Objectives of Public Private Partnership

The objectives of PPP are to introduce and explore the role of the formal and the informal private sector and community actors in relation to sustainable urban waste policy, to ensure that integrated approaches result in real and measurable gains in the management of urban waste. Its purpose is to explore the aspects of participation and integration of the different sectors in detail, in order to arrive at a framework for action. One of the difficulties of the task like this is the need to find access to the number of actors working in the field without reference to any legitimate framework and with the huge differences of their objectives, purposes and approaches.

58. Categories of Partnership

This section focuses on the roles and responsibilities of the various sectors of partnership for more clarity and eliminating the confusion about their boundaries. The main categories of partners in Urban Waste Management including stakeholders and beneficiaries are categorized into categorized into seven groups:

- **The Central Government** - Working for overall Solid Waste Management with limited regard to community attitudes and accountability or without it;
- **The Donor Agencies** – A number of Bilateral and Multilateral agencies established by international communities working for capacity building of local institutions through the promotion of their own Technology and Knowledge sharing through their Country Assistance and Environmental Protection Programs.
- **The Local Municipal Governments** – Working for overall Solid Waste Management with limited regard to community attitudes and accountability or without it;
- **The formal private (commercial) sector**, in their role as potential solid waste function contractors or industrial enterprises working for Waste market.
- **The informal private sector**, including individuals, small entrepreneurs, and micro-enterprises, already working with waste materials
- **Community based organizations (CBOs)**, either idealistically motivated or working for their own welfare, and
- **Non-governmental organizations (NGOs)**, usually in pursuit of their own idealistic goals.

59. The Central Government

The central Government comprises of various ministries and line agencies as Departments. They are:

Ministry of Local Development - Ministry of Local Development (MLD) concerned with the administration of the development activities of Village Development Committees (4,000 VDC), District Development Committees (75 DDC) and 58 Municipalities of Nepal has a major role in preventing pollution. Solid Waste Management in the municipal areas is one of the key issues handled by this ministry in coordination with the Municipal authorities providing the solid waste management services. But the ministry has no plan for solid waste management in DDC and VDC.

Ministry of Industry, Commerce and Supplies (MOICS) - The ministry has a dual role of industrial promotion and prevention of industrial pollution. Department of Industry (DOI) and Department of Cottage and Small Industry (DOCSI) under the ministry have prime responsibilities in monitoring and regulating industrial pollution.

Ministry of Population and Environment - The Environmental Protection Act 1997, to some extent, has established the Ministry of Population and Environment as the higher authority in the environmental matters. As this ministry is relatively younger than others, an attitude of disregard to the ministry directives by the powerful ministries is a matter of serious concern. Besides EPA provisions lack the cooperative operational model on how to integrate other institutions to meet the environmental objectives.

Ministry of Forestry and Soil Conservation – The Forestry Act 2049 entrusted and charged the Ministry with responsibility for ensuring the development and conservation of forest and proper utilization of its products to attain social and economic development and to promote a healthy environment and for encouraging co-operation in the conservation and development of various category of the national forest in the form of government managed forest, protected forest, community forest, leasehold forest and religious forest.

Department of Local Infrastructure Development and Agricultural Roads - DOLIDAR is a technical agency in the Ministry of Local Development. The objective of DOLIDAR is to undertake infrastructure development programmes in accordance with decentralization policies for attaining the goals set forth by the HMG's National Strategy for Rural Infrastructure Development by making the local authorities technically capable and competent through provision of technical assistance and advise.

National Council for Solid Waste Management - National Council for Solid Waste Management established under MLD is headed by the Minister for Local Development and includes representatives of all related ministries, municipalities, the private sector, and experts. The Council, however, is not active and has not met for several years.

Solid Waste Management and Resource Mobilization Centre - In 1980 solid waste management was introduced by establishing the Solid Waste Management Project with collaboration of GTZ including a landfill site for solid waste in Kathmandu. In 1987, the project was converted to SWMRMC through adoption of SWMRMC Act, 1987. The Centre is a specialized unit in the Ministry of Local Development with a mandate to coordinate the solid waste management activities in all the urban centers. The problems with SWMRMC are unavailability of dumping site and old vehicles. Although the project was quite successful in managing Kathmandu's waste in the 1980s, the system collapsed when the project ended in 1993. The government was unable to provide the SWMRMC with the necessary support and there was little coordination between SWMRMC and the municipalities. Currently, with the cooperation of JICA, SWMRMC is operating a new landfill site at Sisdol, 25 Km from Kathmandu. SWMRMC is one of units under the Ministry of Local Development (MLD).

60. Donor Agencies

A number of Bilateral Agencies and International Financing Institutions are involved in Solid Waste Management in various forms. The Solid Waste Management is addressed by many of them in their Country Assistance and Environmental Protection Programs.

61. Local Governments

The municipal/district Governments comprise of elected bodies at village/municipal and district levels popularly known as Municipality, VDC and DDC. They are autonomous and independent from the Central Government for their functioning and financing. These organizations are governed by a separate Local Self-Governance Act and Regulations and delegated with decentralized authority and functions. The members of VDC and DDC are elected by adult franchise.

These local semi-government organizations are legally made responsible for Solid Waste Issues and have a role in the set-up and operation of waste management systems. The urban authorities receive their powers and obligations from Local Self-governance Act and Regulations that have vested the powers and responsibilities to protect the rights of the citizens, to provide services, and to serve for improved quality of life. On the one hand, they have to implement laws and regulations in order to fulfill their statutory obligations. On the other, a failure to provide a public service can result in those in power risking the criticism of their constituents and the international community, and (at least in the case of democratically elected officials) ultimately their ability to get elected and enjoy the privileges of public office.

Local municipal governments, almost by definition, are charged with controlling living conditions and public health. Within this framework, urban authorities traditionally include in their mandate the jobs to include the delivery of services, including sanitation, waste removal, and disposal, within their political and geographic jurisdiction. This gives them formal responsibility for solid waste management; this responsibility is generally assigned to the Health or Sanitation Department.

62. District Development Committees

The District Development Committees have no direct obligation for waste management, but they are the one to collect waste tax by regulating and contracting the private sector within the districts of their jurisdiction. They use the waste tax collected to meet their administrative costs or other development works, but not for better waste management.

63. Formal private (commercial) sector

The formal private (commercial) sector, in their role as potential solid waste function contractors or industrial enterprises working for Waste market. The list of formal private sector organizations is provided in Appendix-B.

The 'formal private sector' is here understood to refer to operating private sector companies, corporations, institutions, firms and individuals, registered and/or incorporated businesses with official business licenses, an organized labour force governed by labour laws, with some capital investment and technology. In general, the formal private sector is characterized by that its main objective is to generate a profit on investments. Formal private companies are involved in wide-ranging activities in waste management systems, varying from waste collection (Biratnagar and Kathmandu West), resource recovery (WEPCO and WEG), incineration, dumping (Biratnagar), and landfill operation. They may participate in the waste management system in a number of ways, including:

- Entering into contracts paid by the municipality to perform collection (Dharan), processing, disposal (Dharan), or cleaning services for compensation
- Purchasing the right to perform services and keep (all or part of) the income generated
- Entering into contracts with individuals households or businesses for collection services (WEPCO/WEG/SILT)
- Functioning as a purchaser of recovered materials from the municipality or the collector (Scrap Dealers).

64. Characteristics of typical formal private sector

The following characteristics are typical of the formal private sector in its participation in waste management systems:

- Motivated by the need for subsistence activities and survival
- Performing activities because of their potential to generate income or produce needed goods
- Using resources too marginal to attract competition from the formal sector
- Using private resources
- At times taking away municipal assets as manhole covers, traffic signs and posts, street railings, street lamp posts, rain inlet gratings, hoarding boards, and items from the streets that could be easily lifted,
- Beneath the notice of most decision makers in municipal government, or
- Taking benefit of inefficiency of the municipal government
- Regulated and/or contracted by the municipal and District governments.

65. Informal private sector

The informal private sector, including individuals, small entrepreneurs, and micro-enterprises, already working with waste materials. (Refer Appendix-B). The term 'informal private sector' refers to unregistered, unregulated, or casual activities carried out by individuals and/or family or community enterprises or municipality staff, that engage in value-adding activities on a small-scale with minimal capital input, using local materials and labour-intensive techniques.

Informal Sector activities, in contrast with the formal sector in waste collecting and recycling, are often driven by poverty, and are initiated personally and spontaneously (and sometimes haphazardly) in the struggle for survival (although some enterprises, especially the ones engaged in recycling activities, manage to make considerable profits). Consequently, the choice of materials to collect is in the first place determined by the value of the waste materials, and in the second place, by their ease of extraction, handling, and transport. Paper, metals and plastics, usually collected from more wealthy residential or industrial areas, tend to attract more attention than organic or biodegradable materials, even though these materials are present in much smaller percentages than organic waste or manures.

In general, the informal sector (municipality staff, individuals and families) consists of performing activities which provide them with subsistence, and small businesses, operating in much the same way as their larger, registered counterparts, but without the benefit of official registration. The organization and structure of these recovery activities is generally opaque to outsiders. This is true not only for waste pickers and itinerant waste buyers, but also for other groups such as small enterprises recycling metals or plastics. In general, waste workers are religious or ethnic minorities, low castes or rural immigrants who are looking for a way to generate subsistence income in an urban context. The importance of the role played by the informal private sector in waste management systems in general, and as partners for municipalities in particular, is slowly achieving international recognition.

While informal-sector activities vary according to socio-cultural, religious and economic circumstances, some generalization about gender roles are possible. The least sophisticated forms of labour, including collection of waste from

the streets and dumps and primary sorting of the material fall to the women and children, most of whom work right at the dumping places, collection points, transfer stations and dump yards or landfill sites by sorting and picking valuable items. The municipalities staff uses their authority for legal collection and pick valuable items from pick up trucks and sold to Scrap Dealers for personal gain. Men are more likely to be involved in the transportation, loading unloading the transport vehicles, processing or manufacturing of items, together with the selling of recovered items and materials.

66. Groups of citizens

Groups of citizens, including those from middle and high-income areas, may start CBOs aimed at improving the waste situation in their neighborhood: they may hire (informal or formal) waste collectors; they may make arrangements with local politicians for waste transfer points; they may start waste separation experiments, et cetera. Middle and high-income communities produce the more valuable waste and hence are attractive to low-income waste pickers, where watchmen and domestic servants often assist them. Solving service problems in poorer areas is more likely to require intervention, since the materials have less value. CBOs mainly participate in primary waste collection systems, separation at source experiments and implementation and so on.

67. CBOs as strong partners

CBOs may also take a role in the actual provision of services, including operations and maintenance, and even in the construction of facilities. Thus CBOs, speaking for the individuals or members involved, play an important role in waste management system development processes. Organized communities have a stronger voice than individuals and bring about improvements more easily. They can also be organized along lines of gender, age or religion. Community based organizations (CBOs) are either idealistically motivated or working for their own welfare (Refer Appendix-B). The community and its representatives have a direct interest in waste management, as residents, service users and tax payers. Communities in the low-income areas generally receive marginal or no services in terms of public transport, electricity, drinking water, sanitation, drainage, and also of waste removal. These communities will sometimes take the initiative to organize themselves into Community Based Organizations (CBOs), with the direct goal of self-help and improving their living conditions. Such CBOs may receive external assistance in the form of technical and/or financial aid from different agencies. Sometimes these activities may also take the form of direct participation in (their own) waste management, such as feeding organic material directly to their stock. Usable materials like bottles are often reused by the members of the low-income community themselves.

68. NGOs as intermediate organizations

The term NGO can refer to such diverse organizations as universities, labour organizations, professional associations, environmental organizations and lobbies (Refer Appendix-B). Sometimes even donor organizations can fall under this heading. Generally, Non-Governmental Organizations (NGOs) are intermediate organizations, which are not directly and continuously involved in community projects. NGOs not only advocate, they can also be involved in awareness raising, advocacy, and decision-making. NGOs can act as intermediaries between grassroots initiatives (CBOs) and municipal governments, or serve the ideological, political, or altruistic interests of international organizations. They can advocate interests on a larger scale than the single community and provide support and advice to CBOs, but also to marginal groups in the society, such as waste pickers at dumpsites and street children.

69. Role of NGOs as partner organizations

The role of NGOs as partner organizations in waste management systems ranges from serving as the umbrella organization under which CBOs operate, to providing a channel for donor financing. As partners, they can sometimes confer a degree of credibility and perspective on the informal sector in the eyes of the municipality.

70. Motivation Factors

The following are the typical motivation factors of CBOs and NGOs:

- Motivated by a wishful dream to improve circumstances or a combination of personal and very high motivation to improve quality of life in the community.
- Advocating activities, which in some manner serve the public interest.
- Bringing outside resources to bear on the situation.
- Outside of the formal decision making structures of municipal governments, but also not functioning as a private-sector business.

VI. Prospects of Partnership

71. Long Term Vision of Partnership

Strengthening of the inter-sectoral partnerships in support of a long-term vision of the goals of waste management would be the key subject for Urban Waste Management.

72. Goal

The goal is to achieve sustainable urban waste management systems which are stable over time, and which are beneficial to the society, the economy and the environment. At the foundation of the action programme is the understanding that the overarching responsibility and mandate of the central and municipal government for urban waste management remains central, irrespective of the extent to which it succeeds in referring its tasks onto other actors.

73. Objectives of Partnership

The major objectives of the inter-sectoral partnership in UWM would be to:

- Identify and recognize the stakeholders and partners currently involved in UWM, to explore the potential new partners and define a model of partnership to create synergy,
- Explore the capability and strength of the stakeholders involved in UWM and to utilize their strength in an optimum manner based on free competition,
- Define and consolidate the roles of each stakeholder partners in UWM based on the competitive environment,
- Explore the ways of economically and commercial sustainability of methodologies of Waste Management that protects human health and nature,
- Explore the methods of waste management that impose total disposal ban in public place and nature
- Motivate and mobilize the waste generators, polluters and communities in general to work for waste management at source with view to reduce waste management burden of local government, and
- Reduce the cost to the citizens and business houses for UWM.

74. Purpose of Partnership

The prime purpose of the Partnership would be to identify and implement in a pragmatic way the proposed activities that will lead to the achievement of the Objectives and finally the Goals.

75. Scope of Partnership

The broad scope of Partnership would be related to following activities and Tasks:

- **Investigation, research, documentation, and analysis** of the existing urban waste system in operation in the city, with emphasis on: economy, institutional set-up, organizational capacity, roles and impact of all actors, regulatory framework, industrial and commercial infrastructure, municipal and national policy goals.
- **Capacity building, enabling, and empowerment** of all current and potential partners in order to enhance their capacity to take on new partnership roles in sustainable urban waste management. Particularly, the role of Local Government, Formal and Informal Private Sector, Community Based Organisations and Non-Government Organisations, and communities shall be well defined.
- The **creation of infrastructure**, preconditions, instruments, and **an institutional context** in which all partners can perform their partnership functions in relation to the development of **new models** for sustainable urban waste management in an optimal manner.
- **Definition of Motivation, Incentives and Awards** for recognition of Best Practices and Innovativeness in UWM.

76. Proposed Activities

The proposed Activities would be related to:

- **Eliminate Legal and institutional constraints**, with the goal of creating a legal framework for enabling sustainable urban waste management,
- **Promote Education in sustainable urban waste management**, aiming at an increase in awareness of the complexity of urban waste management and enhancing participation of communities to create check and balance,
- **Inter-sectoral partnership development**, which seeks to enable the development of consultative and cooperative processes between all the actors in the urban waste management system, in order that their activities be coordinated to create an optimal sustainable urban waste management system,
- **Stimulating developments** in urban waste and recycling technology, with the aim of promoting and developing appropriate and affordable technical solutions, as well as to improve the health and safety of those working in waste management (predominantly in the informal sector),
- **Capacity building in the informal and formal private sector**, in support of the formal and informal private sector developing the capacity to serve as partners for municipal governments,
- **Strengthening the working relationship with the communities** so that the root cause of waste disposal could be addressed and bring change in behaviour of communities towards waste disposal,
- **Extending waste management services** to upper, middle and especially low-income areas,
- **Adapting the structure and effectiveness of activities of bilateral and multilateral lending and aid institutions**, in order to ensure that donor activities support and strengthen the development of stable cross-sectoral partnerships which in turn support sustainable waste management.

- **Financial management**, with the aim of introducing improvement of cost management (Reduction of WM Cost) of municipal solid waste management in the city and the enhancement of cost recovery in relation to an affordable sustainable urban waste system for all citizens,

77. Objectives of Urban Waste Management

The overall objectives of solid waste management in the Urban and rural areas are to:

- Prevent degradation of environment in air, water, and land in general,
- Prevent disposal of waste in public areas and nature,
- Identify alternative approach for urban waste management **that protects human health and environment**
- Enhance the Value of Waste materials so that they are not discarded as useless substance,
- Explore potential of Involvement of local communities, NGOs/CBOs, formal and informal sector and businesses as potential waste generators and polluters
- Explore social and corporate responsibility of Formal and Informal sectors for preservation of Environment,
- Identify the problems faced by Municipalities/DDC/VDC in understanding the genesis of overall Issues of solid waste management,
- Study and recommend suitable infrastructure for collection and disposal of solid waste,
- Analyse the solid waste management capability, and
- Initiate capacity building of local authorities by conducting workshop, training programs.

VII. Constraints of Partnership

78. Key Constraints

The key constraints in terms of the development of integrated, sustainable, partnership based urban waste management systems and the issues related to these constraints are discussed herewith. The discussion is primarily focused on the barriers to development of inter-sectoral partnerships. The constraints are discussed in sections as Institutional Development, Legislation and Regulations, Recognition, Involvement of Private Sector, Market and Technology, Finance, and External Influence.

79. Financial Constraints

The statistics of Solid Waste generation is one of the critically unreliable data. Equally true is the fact that the actual cost incurred for Solid Waste Management is not known. It makes very difficult to make a rational and objective judgment on Financial Constraints. The cost of Waste Management and benefits are attributed to various stakeholders. In Nepalese context, the income from solid waste export tax is collected by DDC without any responsibility for waste management whereas the Central and Municipal Governments have no explicit income stream for Solid Waste services. The magnitude of scrap tax collected and expenditure made by the municipalities and DDC, and potential expenditures are summarized in following Table VII-1 (Refer Appendix G).

Table VII-1: Scrap Tax collected and Expenditure on Waste Management

SN	Description	Unit	Average Amount	Max Amount
1	Annual Per Capita Scrap Tax collected by selected DDC	Rs/Capita/Annum	0.19	18.02
2	Per Capita Waste collection by selected Municipalities	Kg/capita/day	0.34	0.50
3	Per Capita Cost of Waste Collection and Transfer	Rs./capita/day	0.29	0.59
4	Per Ton cost of Waste collection and Transfer	Rs./ton	1354	2309

(1) CKV/JICA, 2004; (2) SEAM-N, 2003; (3) PEIP/PSM, 2000.

Table VII-2: Hypothetical Cost of Waste Management

SN	Description	Unit	Average Amount	Max Amount
1	Total Population in 2005 mid year	No.'000	27,677	27,677
2	Average Annual potential Waste Generation	Ton/day	9,014	13,838
3	Potential Scrap Tax collection	Million Rs/day	5.3	499
4	Potential Expenditure Waste collection and transfer Municipalities	Million Rs/Annum	2,930	5,960
5	Potential Business in Composting, Reuse and Recycling	Million Rs/Annum	5,745	7,772

80. Starvation for funds

The sources of financing used for solid waste management come either from the central government or from fees or charges for municipal services, or out of property taxes. The formal or informal private sector providing solid waste management services are practically starved of funding since they do not get the benefit for the services they provide and for saving made to municipalities and the Central Government.

81. Non-Sustainable fees

The small fees are collected by informal and formal sector for the service provided are not sustainable:

- People and Private businesses are willing to pay for solid waste removal, but Municipalities are reluctant to raise such fees
- Certain Sector of the population and business seek illegal or informal disposal as an alternative to paying for waste removal;
- The municipal government does not know what the true costs are, and so the actual fees often do not fully cover the costs (for example, capital depreciation is not included);
- When solid waste fees are calculated based on real estate assessments, there is no link between quantity generated and amount paid, and therefore no incentive to reduce the amount;
- The structure of donor financing secures resources for capital expenditures than for ongoing operations and maintenance;
- Financing involving commercial financial institutions as Banks has to demonstrate a high probability of success, with the promise of relatively high returns, and at the end the Urban waste Management does not get support from Banks since they cannot produce security and guarantee return on commercial terms;
- Financing from multilateral institutions usually has to have a clear goal, such as the purchase of equipment;
- Bilateral aid often requires the purchase of goods or services from the donor nation (Bhaktapur);
- A general lack of understanding of the real costs of waste management means that hidden costs, externalized and internalized costs and opportunity costs are frequently left out of the analysis;
- The economic and logistical contribution of informal sector activities is often completely ignored.

82. Sources of Funding

The sources of municipal governments for financing of solid waste operations are:

- Grant Aids of the Central Government to Municipalities
- Grant Aid of Donor agencies (Bhaktapur, Kathmandu and Lalitpur)
- Property taxes
- Partial Levy of fees for municipal services

83. Franchise Constraint

A municipality which proposes to contract or franchise certain waste operations to the formal and informal sector has to justify its decision, generally on the basis of efficiency or lower cost. If it can show that the private operator is financially sound and has a track record and good credit rating, it does not run into resistance from its sources of financing. This can be a barrier to contracting both with new entries into the formal private sector and with the informal sector, both of which may lack the track record and credit history.

84. Unwillingness of Municipalities to raise fees

Although many residents of both low and middle to upper-income areas are willing to pay fees directly to private formal or informal waste collection services to be sure their waste will be collected, they are often unwilling to pay the city for these services, because of fears that there is less accountability.

85. Finances of the Formal Private Sector

The finances of the formal private sector present fewer although significant barriers to the setting up of partnerships. These barriers fall into the following categories:

- Credibility barriers: the private sector may not be able to show that it has a good track record, or it may not have the requisite years of financial reporting to allow it to receive municipal contracts.
- Capital formation barriers: private businesses, unlike municipal governments, may have difficulty raising capital for equipment and/or land purchase.
- Insurance barriers: private contractors may have difficulty achieving the levels of insurance needed.
- Market guarantees: unlike a municipality, a private business operates in the 'free' market, and is subject to fluctuations in supply and demand. A business may thus be unable to guarantee that collected recyclable materials can be sold into the commodities market at a guaranteed price.
- Problems with the collection of fees: either unwillingness to pay for waste disposal or too few subscribers to enable a reasonable economy of scale for cost-effective collection.

- Cash flow: the tendency of municipal governments to pay their bills very slowly can cause financial hardship for contractors.

86. Finances of the Informal Private and Community Sector

Almost by definition, the informal private sector entrepreneurs and community groups (especially low-income) have extremely limited access to financing. Entrepreneurs have no access to funds for equipment or to capitalize their businesses. This makes it very difficult and restricts the potential for improving products, broadening markets, improving working conditions, and the like. Community groups often rely on outside donors for basic equipment (carts, tri-cycles, brooms) to run a cleansing service in their area or to employ a community member to earn some income through this service.

87. Lack of Investment Sources

Banks and other formal credit facilities are reluctant to provide loans to private informal enterprises, due to the absence of assets and securities. This in turn can make it difficult for a municipal government to justify contracting new tasks or institutionalizing ongoing operations.

88. Constraints on Critical Thinking and Will

The general lack of critical thinking in relation to solid waste systems is often a barrier to innovative solutions. The intellectual framework for understanding the relationships between consumption, waste generation, disposal, recycling, industrial activity and natural resource exploitation is not considered in totality. Solid Waste management is often a “dumping of their tradition ideas” and reluctance to implement innovative ideas and bring changes. They discard any innovative ideas or skill as “Long Term solution” or “Not for Us Idea”.

89. Lack of Political Will

The lack of political will to make Urban Waste Management a priority subject means that it is usually lacking both talented personnel, adequate facilities, and the commitment of decision makers. The traditional organization of central and municipal governments are often inherited from historic times and do not lend themselves well to innovative problem solving or to the needs of large cities for development of partnership outside their institutional framework.

90. Constraints on Local Systems

The waste management plans mostly characterize the solid waste problem as one of ‘technology’. The plans failed to take unique features of the local system adequately into account, and imply that the solution to the problems can be achieved through the acquisition of large facilities. The SWMRMP when started with the assistance of the GOG raised the bureaucratic claims and privileges, and it became impossible to introduce innovative proposals in relation to current or potential activities of the community and the private formal or informal sector. The contract signed by SWMRMC with formal private sector three years back could not be executed.

91. Constraint on Monitoring of Performance of Central and Municipal Governments

The monitoring of performance of the central and municipal governments in Solid Waste Management is a big constraint. There is no practical way for making them responsible and accountable.

92. Constraints of Waste Management Personnel

Staff incompetence and lack of knowledge, experience and interests are often a big constraint. Solid waste is a ‘dumping-ground’ for political patronage, and in the absence of necessary skills and capability to manage the project that is responsible for Solid Waste Management and the environmental health of the city population. The SWRMC often is overstaffed with workers with low qualifications, and lack adequate training. The lack of recognition that it qualified and trained personnel is the key to successful operations of the project.

93. Lack of willingness to involve informal sectors

The authorities with good positions though have low salaries and fringe benefits, ranging from free service to their own homes to profitable contacts with equipment suppliers, they are unwilling to risk their advantages through consideration of alternative solutions, such as the involvement of the private informal entrepreneurs.

94. Constraints on Legislation and Regulations

The current legislative and regulatory context for urban waste management is developed for particular conditions. It is unfocused, fragmented, incomplete, and so does not tend to facilitate the formation of cross-sectoral partnerships. In fact, they have no provisions for Public Private Partnership as such. If such partnerships, nevertheless, come into being, the existing legislation normally provides few tools for coordinating or managing them and is often difficult to adapt to new circumstances.

The following are specific examples of the kinds of legislative barriers that may frustrate the formation of cross-sectoral partnerships:

- Existing Laws and Financial Administration Regulation requires any services to be contracted out based on free competition and does not recognise the advantage of partnership with Formal or Informal Private Sector;
- Existing public contract laws may explicitly or implicitly require contractors to have achieved a level of institutional or financial stability, which would exclude both smaller formal private sector firms and informal sector entrepreneurs;
- Mandates for public delivery of services may make it difficult or impossible to contract out the services to private sector actors;
- Appropriate procedures for establishing PPP do not exist;
- Lack of legislative and regulatory infrastructure for the management of contracting risks, insufficient monitoring and/or control by contractors, and no recourse measures available if contractors fail to perform in the ways they have agreed;
- Health and sanitation regulations governing waste procedures conflict with informal recovery activities;
- Waste pickers and informal-sector entrepreneurs are not subject to any health consideration
- Formal and Informal Sector Initiatives are not.

95. Public and Private Formal Sector Resistance to Informal Private Sector Involvement

The following barriers are specific to the formation of cross-sectoral partnerships between municipal governments and informal sector entrepreneurs:

- The reactive and ad hoc character of informal sector enterprises may in theory or in practice make it difficult for them to provide a regular and reliable service to customers;
- Lack of applicable legislation and infrastructure, while it may provide a 'window of opportunity' for informal sector activities to fill the gap, may make the procedures required to effect an arrangement with the formal sector or the municipality impossible to determine.
- Legislative and regulatory gaps may also open the field for political patronage, graft, and arbitrary policy making. Small informal enterprises have limited ability to operate under these conditions, and generally lack political influence.
- The time schedules of Municipal government for decision-making, contracting and payments are beyond the tolerance of most informal sector that needs specific immediate actions for daily survival.
- Complying with commercial registration requirements, labour union rules, and labour laws is not within the capability of most informal sector enterprises. While the potential for contracting may stimulate some enterprises to attempt compliance, and thus improve working conditions for the workers, it can also cause certain private informal enterprises to disappear when they are unable to attain certain standards.
- Lack of default or bankruptcy protection or insurance for informal enterprises may make it unattractively risky for municipal governments or formal enterprises to engage with them.

96. Public Sector Resistance to Formal Private Sector Involvement

Even without specific impediments, government personnel may resist private sector involvement in their areas of responsibility, either in principal or in practice. The main sources of resistance are:

- Security of employment in the public sector, together with generous fringe benefits, tends to lead to expansion in the civil service. Civil servants resist contracting, both on principal and when it threatens their jobs.
- Actual or threatened competition from private-sector operators may impose new work requirements on civil servants, putting new and stringent performance requirements on jobs;
- Entry of new parties into waste operations may diminish or otherwise threaten benefits of the job, such as revenues from sale of materials recovered 'on the side'.
- A shift to private sector operators may shift the structure of privilege for highly placed civil servants and elected officials. Where these people have been receiving a higher level of service for no or little cost, there is a natural resistance to a change that risk a loss of privilege.

97. Private Informal Sector Resistance to Contracting and Cross-Sector Partnerships

Resistance to changes in the status quo are not exclusively the province of municipal officials. Other actors from the formal and informal private sector may also see change as a threat. In particular, there may be resistance in the areas described below:

- The official aspect of contracting may appear threatening to informal sector workers, who almost by definition are used to working under informal conditions, where decisions are made on a daily basis.
- Municipal contracting to the formal private waste sector may displace the profit potential of private informal waste collectors. Not only do they risk losing access to certain areas and service fees, but private collectors are likely to 'skim' the recoverable materials, taking the most valuable items out of the waste stream for their own gain.

- The introduction of compactor trucks and other high-tech equipment may reduce access to recoverable materials and/or contaminate them beyond recovery. Such equipment and procedures often lead to the decrease of informal recycling activities, or a shift from the relatively safer process of street collection to the relatively more dangerous practice of dump picking.
- A shift to private disposal facilities may put dump pickers out of business. Even if the new facility is accessible, it may be farther away, and the pickers may also have to share profits with the owners.
- Contracting to the formal private sector may disrupt informal service arrangements for marginal, low-income, inaccessible, or squatter communities. New arrangements may deprive informal collectors of their rights without providing effective formal collection.

98. Informal Sector Resistance to Involvement of Communities and Community Organization

Every new change is a threat to the current business. The involvement of communities and community organisations in solid waste management is a big threat to the formal and informal private sector that are enjoying the waste business and is a threat to the municipal government since the most valuable waste items would be diverted by the communities and community organisations as they introduce new system of waste management with segregation of waste at the source.

99. Issues Surrounding Recognition of the Informal Sector

The issue is related to the fact that involvement of the informal sector will achieve some degree of formal status and recognition, and some degree of institutionalisation of function. The specific barriers to attaining recognition of informal sector activities and their institutionalisation within the formal waste management system could be:

- Waste work is regarded as dirty and low-status. The recognition of people doing this work runs into taboos surrounding filth and dirt, and prejudice against foul functions;
- Informal sector waste workers are frequently from disadvantaged and minority ethnic and social groups. Recognition must cope with race, class, and ethnic prejudices;
- Informal sector workers hope for upward mobility, and leaving the unattractive and degrading profession;
- Recognition may be resented by those higher up in the formal and informal waste management hierarchy. The more established processors and brokers might feel socially or economically threatened by formal recognition of their suppliers and those 'beneath them'.
- Recognition may formally acknowledge people and circumstances that detract from a city's prestige and self-image. Those supporting 'development' may feel that recognizing waste pickers and other informal waste workers gives the informal sector a kind of legitimacy incompatible with the image of modern 'developed' life.
- Recognition may risk institutionalising technical approaches considered to be outdated and anachronistic (even when they are the most appropriate approaches under the circumstances). The use of handcarts, rickshaw or animal-drawn vehicles, for example, may be disturbing to the modern urban setting.
- Informal activities are often associated (justly or unjustly) with criminal activities. Fears of semi-legality may discourage officials from associating with 'tainted' sectors and individuals.
- Informal activities are often associated with precarious and unregistered waste pickers who do not belong to the locality and particularly in Nepal where identity of people not known.
- Informal Activities are associated with lack of dignity of labour though the informal sector waste pickers contribute significantly for waste reduction at no cost to the Municipality.
- Informal Activities are associated with considerable health hazards reporting about unnoticed death of waste pickers and associated with unreported health problems.

100. Informal Sector Markets and Technologies

Informal sector waste entrepreneurs and individuals are connected to the international commodities marketplace through the materials they collect. Ultimately, the economic value and profit potential of the waste materials is connected to international commodity prices, global trade, industrial policy and domestic tax policy.

101. Marketing Constraints

Partnerships involving informal sector operators depend on their ability either to use the collected materials for their own manufacturing, or to prepare materials for commercial use. The key constraints discussed below relate to marketing, or 'closing the loop' for recovered materials. They are:

- Any change in circumstances puts established supply routes into jeopardy. A shift in type of materials, in their quality (for example, due to the introduction of compaction), or in their volume, may give brokers and other purchasers of material grounds for rejection or refusal.
- Low or inconsistent quality of the materials processed in the private informal sector is often a detriment to the acceptance in formal markets. Partnerships, which depend on a consistent level of quality of recovered materials, may not have sufficient tolerance for the variation that occurs in practice;

- Changes resulting in new locations or routes may disrupt existing transport arrangements. The informal enterprises collecting waste for recycling purposes usually collect in middle and high-income areas or in industrial areas, using hand or animal-drawn vehicles. Adjustments in access may put them out of range of their buyers.
- Contracting may result in deliberate or accidental alteration of facilities. If contracts call for work on public premises, existing facilities for storage, sorting, bundling and, when appropriate, processing, may be out of reach.

102.Donor Influence

Donor preferences towards particular technical approaches or insistence on supplying equipment, which supports their own export industries, is a constraint since the sustainability of such Donor support is questionable. The collapse of SWMP after the withdrawal of the German Support is a good example. The support of JICA for Sisdol landfill site operation and Clean Kathmandu Valley Project should be looked with critical view since the sustainability after their support could be jeopardized and also result in a situation where new arrangements disrupt existing informal sector waste handling systems. Donor interventions may also be motivated by the goals and/or bureaucratic procedures of the head office, rather than on a full understanding and appreciation of local nuances.

103.Magnitude of Intervention

It is easier to understand, finance and monitor large, technology-oriented interventions than to develop a small-scale, context-sensitive approach. Generally, appropriate interventions require patience, investment in understanding the specifics of the local context, respect for the actors, and a willingness to modify grand principles to produce locally appropriate results; donors often do not have either the time nor the political will to take these steps.

104.Donor actions frequently lack central coordination

This is true both between donor nations, some of whose industries may be competing for contracts, and within a donor nation, where development organizations or agencies may be working at cross-purposes. The scale on which donors intervene may be inappropriate: either larger than the situation merits, or too focused on micro-circumstances without sufficient reference to the larger financial and institutional context. The CKV project assisted by JICA is focused on the immediate solution as “Collection, Transfer and Dumping of Waste away from Kathmandu Valley to the Landfill Site without consideration of Social and Environmental Issues. It is more focused on employment to Japanese exports through application of undesirable and unnecessary experiments. All negative results of the experiment carried out will be a burden to the recipient country of the assistance from JICA.

105.Gender Influence

The gender factor has significant influence in UWM from a number of points of view:

- The very significance of waste and discarded materials may be influenced by the gender of the person making the judgement. What looks like “junk” to women may be motorcycle parts to men; what looks like “dirt” to men may be compost or fertilizer to women; the piece of paper valued by men may be just useless to women; the examples are legion of different sexes “seeing” things differently (Appendix-H).
- The role of men and women in managing waste within the household, their relationship to discarded materials may depend on who they are. In particular, the subordinate status of women or their unwillingness to bring change to their status may affect their general access to and control of resources. So the women may more responsible for handling waste at household level including responsibility for disposal. These activities might concern buying and selling household garbage, re-using and recycling waste materials, collecting and disposing of human and solid wastes in a safe manner, and keeping the courtyards and streets clean.
- Men and women may differ in their attitudes towards public health and community cleanliness, and have markedly different preferences for how to address public health and environmental problems. These differences, at the most local level, affect the type of services women and men would like to see developed in their communities, how much they are willing to pay for these services, and who is responsible for finding the money to pay from within their part of the family budget. Such differences may also carry through to preferences for policies, technologies, or approaches which affect decisions made by women and men leaders, entrepreneurs, managers, and public authorities that affect communities, regions, companies, or municipalities.

VIII. Rationale of Partnership

106.Participation of various partners

The participation of various stakeholders and partners in the waste management is a means to achieve the general improvement of waste management systems operating or being planned in an urban or rural area. Private sector participation in waste management systems should occur when it can contribute to making those systems more responsive, more efficient, more economical, more equitable, or more environmentally responsive.

107. Advantages of involvement of the various actors

Some advantages of involvement of the various actors in solid waste management systems is discussed herewith. The benefits of Formal Sector Involvement in Urban Waste Management are described herewith in Table VIII-1.

Table VIII-1: Benefits of Formal Sector Involvement

Sector	Benefit	Underlying Principles	Organizational Strength	Risks
Formal Private Sector	Greater efficiency and enhanced performance	Flexible management Employee compensation procedures	Leaner private-sector organization	Loss of Profits
	Better management and accountability	Functions as a contractor		Lose the contract
	Faster response to raise capital, decision making and Procurement	Time is accounted as monetary factor	Flexibility in Partnership Extension	Loss of opportunity
	Higher service ethics	Business image is established	Ability to attract new clients	Loss of profits
	Greater flexibility for Project Execution			
	Greater access to experience and technology	Potential to create partnerships with experienced private businesses	Flexibility to mobilise outside resources	
	Risk reduction	Transfer of unpredictable costs or unreliable revenues onto the private operator		
	- Creation of a more robust commercial sector - Generation of sustainable employment - Recovery of valuable materials from recycling activities - Saving of foreign currency	Basis of Profit making and Employment Generation		
	Reduction in environmental damage	Monitoring by Authorities		

108. Advantage of involvement of informal private sector

The participation of the informal private sector, including both that of small entrepreneurs and individuals and families, also has substantial benefits, which are presented here. Although small-scale in itself, the informal sector is operating on a large scale. The importance of the informal sector is described in following Table VIII-2: Benefits of Informal Sector Involvement.

Table VIII-2: Benefits of Informal Sector Involvement

Sector	Benefit	Underlying Principles	Organizational Strength	Risks
Informal sector	Handling of large volumes of materials	No or marginal cost to the municipal government.		
	Reduction of the amount of waste materials requiring collection and transport.			
	Successful recovery and return to productive use of materials.	Reduction of waste that would otherwise end up in the waste stream		
	Risk reduction	Transfer of marginal activities, unpredictable costs or unreliable revenues to the private operator		
	Extension of the lifetime of capital investments such as sanitary landfills or composting facilities,	Reduction of Throw Away Waste		
	Provision of waste removal and sanitary services to otherwise unserved (generally poor) sectors of the city.	Informal service extension		
	Provision of service at no-cost to the municipality.			
	Availability of series of products for poor people, such as containers made from recycled materials,	Improves the living standard of poor people at a price that they can afford.		
	Providing of employment and income-generating activity for a large number of people	Reduction of unemployment		
	Supplying of raw materials to the local manufacturing sector	Recourse to foreign exchange or import is saved.		
	Improvement of health and safety conditions.	Informal activities are recognized and supported		

109. Advantages of participation of CBO and NGO

The benefits and advantages resulting from CBO and NGO participation are listed below in Table VIII-3: Benefits of NGO/CBO Involvement.

Table VIII-3: Benefits of NGO/CBO Involvement.

Sector	Benefit	Underlying Principles
CBO/NGO Sector	Contribution to setting up and supporting primary waste collection schemes.	Participation of Waste Generators
	Experimentation with innovations at neighbourhood level and within the informal sector.	
	Mobilization of citizens and enhancing their participation	
	Promotion of environmental awareness.	
	Provision of environmental health education.	
	Provision of waste removal services to underserved, marginalized, or hardly accessible areas.	
	Support for the poorer groups in the society, the low-income communities as well as the waste pickers,	Availability of Technical assistance, advisory and advocacy services
	The stimulation of income-generating activities among the urban poor.	
	The strengthening of organizational capacities of communities and informal individuals and entrepreneurs.	

IX. Alternative Systems of Sustainable Waste Management

110. Various alternative Solid Waste Management systems

The various alternative Solid Waste Management systems popularly practiced worldwide are summarized in following Table IX-1.

Table IX-1: Hazards of Alternative Disposal methods

Disposal Methods	Hazards on							Technology Demand	Community Participation	Costs Implication
	Water	Land	Air	Land slide	Gas Burst	Health of Waste Workers	Environment of Neighborhood			
Throw Away and Dump	High	High	High	High	High	Very High	High	Very High	Very Low	Very High
Throw Away and Landfill	Medium	Medium	Medium	Medium	High	Very High	High	Very High	Very Low	Very High
Incineration	High	High	High	High	-	Low	Very High	Very High	Very Low	Very High
Waste Reduction at Source	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very Low	High	Low
Waste Management at Source	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very High	Very Low

Source: Zero Waste Nepal

111. Dimensions of Waste Management

Generally, waste management have two very distinct dimensions: Intensity of Technology applied and involvement of stakeholders and institutions. Following Diagram illustrates the relationship of Technology Application and Public-Private participation. Most of the waste management system is based on the municipalities using high technology, transportation and indiscriminate disposal. The move towards “Future” would demand for “Waste Management at Source” with community participation, care for Human Dignity and Nature. Ideally, nothing will be discarded into nature and “No Landfill” will be permitted except for very specific and inert materials.

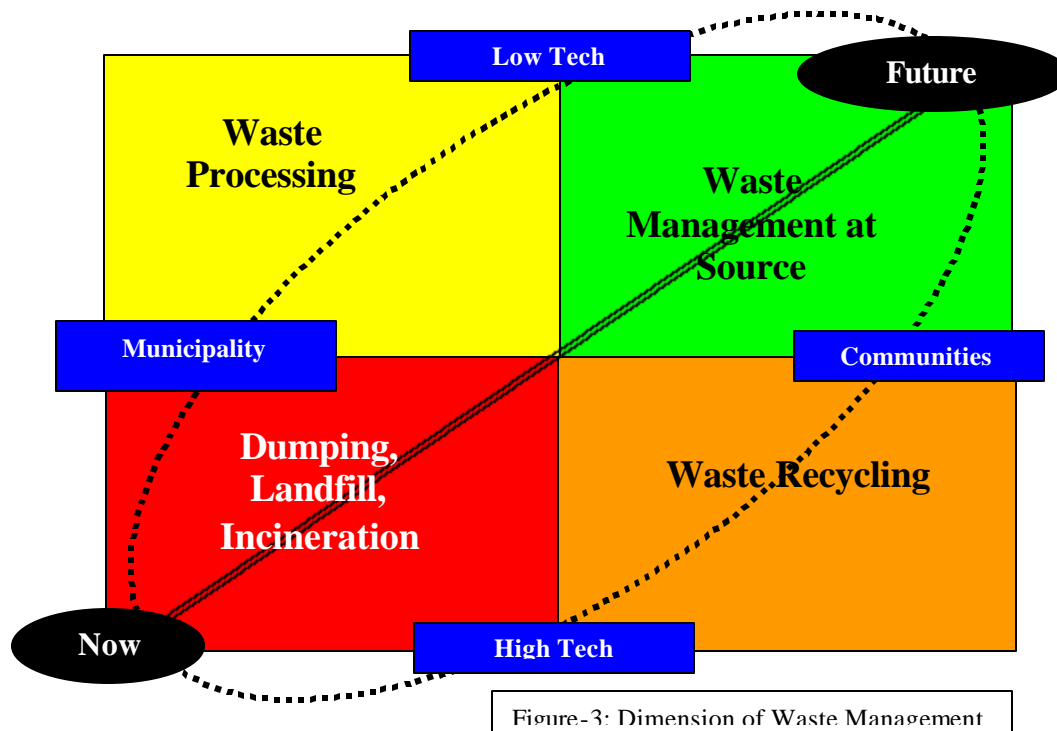


Figure-3: Dimension of Waste Management

112. Advantages of the various Options

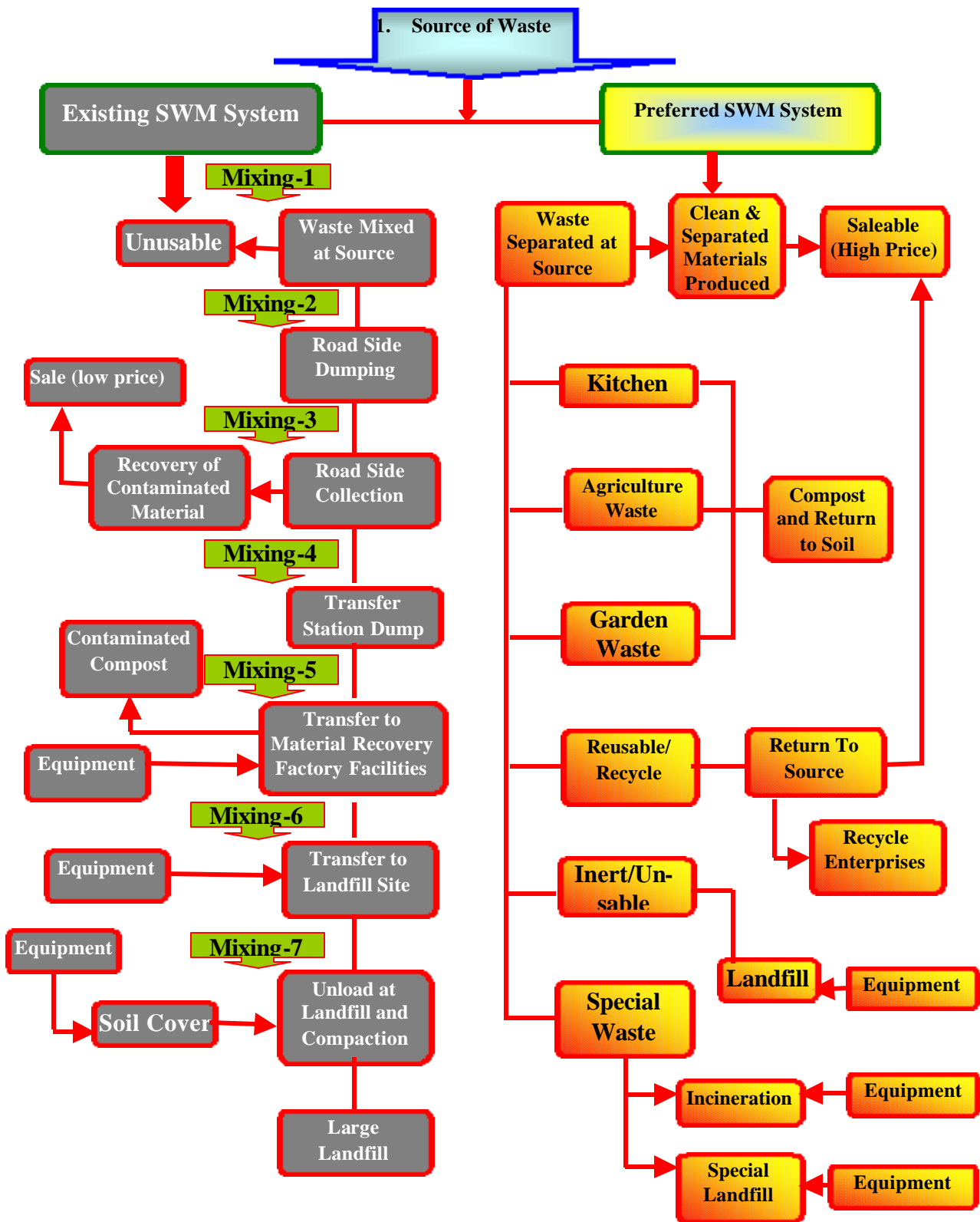
The merits of various methods of SWM are indicated in the following flow chart of the activities observed from various stages of waste handling as waste generation, collection, transfer, sorting, screening, recycling reuse and final disposal. The flow Chart (Fig. 1) prepared for conventional option and waste reduction option. The qualitative analysis of inputs and outputs of the methods of SWM options are summarized in the following Table IX-2. The comparative chart obviously suggests the “Waste Management at Source” method and is considered as preferred ones.

Table IX-2: Qualitative analysis of Inputs and Outputs of SWM Options

SWM Options	Prime Responsibility	Demand for LFS	Handling of Mixed Waste, Times	Transportation cost	Reuse and Recycling	Hazard on Health and Nature	Contamination of Quality of Compost	Contamination of Quality of Recycled Materials	Contamination of Quality of Inert Material at LFS	Generation of Green House Gas emissions	Burden on Government and Municipality
Throw Away and Dump	Municipality	Very Large	7	Very High	Low	Very High	High	High	High	Very High	Very High
Throw Away and Landfill	Municipality	Large	7	Very High	Low	Very High	High	High	High	Very High	Very High
Incineration	Municipality	Small	6	Very High	Low	Very High	NA	NA	High	Very High	Very High
Waste Reduction at Source	Community+ Municipality	Small	-	Low	High	Low	Low (Clean)	Low (Clean)	Low (Clean)	Low	High
Waste Management at Source	Community	Very Small	-	Low	High	Low	Low (Clean)	Low (Clean)	Low (Clean)	Low	Low

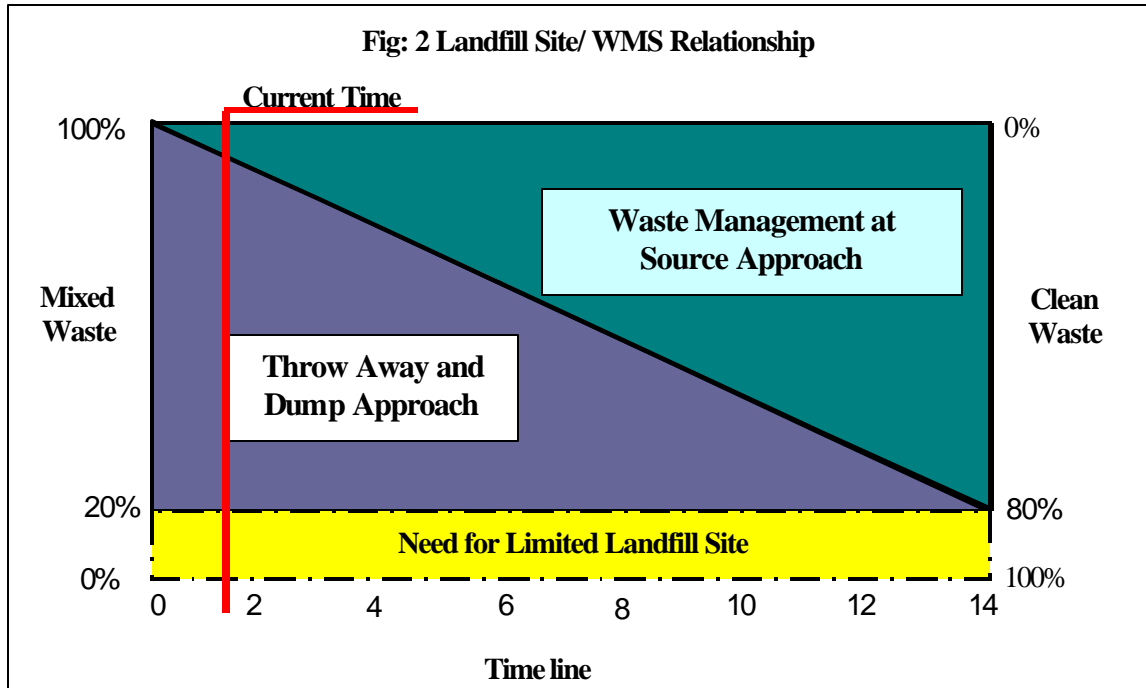
Source: Zero Waste Nepal

Figure 1 : Comparative Chart of SWM Systems



113. Demand for landfill site

The demand for landfill site in relation to the landfill operation and gradual application of Zero Waste Approach is indicated in following chart. In due course of time, the traditional system of waste management based on “Throw Away” culture will be gradually diminished and the need for Landfill site will be reduced. The ZWA based on Community Based WMS will take over. The need for landfill system will be limited to the disposal of inert materials and specific waste that cannot be disposed of by other methods.



114. Preferred Option

With consideration of above relationship and long-term solution, the preferred option for sustainable SWM could be “Waste Management at Source (WMS)” along with regard to “Human Dignity” and “Care for Nature and Environment”. In general, this option fully considers the Public Private Partnership with Government and Municipalities working as a facilitator, catalyser, motivator and mentor providing adequate opportunities for the communities, formal and informal private sector.

115. Waste Management at Source

In practical terms, the ZWA will be the continuation of the current practice with gradual introduction of the concept of Waste Management at Source including source separation, clean waste production of recyclable and reusable items, clean production of biodegradable and compost, and production of uncontaminated inert material or special waste that go to the landfill site, disposal ban in Nature or Public Place, mobilizing community participation and sending back the waste to its source of generation.

116. Outline of Preferred option

An outline of Preferred option for SWM based on Waste Management at Source (WMS) is provided in Appendix-C and summarized herewith. The major steps are as follows:

- Conduct Community Education and Awareness Campaign
- Introduce Household or Corporate Policy on Waste Management
- Reducing Take home Waste
- Encourage Composting Practice
- Clean Waste Production through separation
- Creating Facilities for purchase, sales and collection of separated waste
- Disposal Ban on public places
- Sending Back to Source of Generation
- Community Mobilization and PP partnership
- Proper Management of Hazardous and Medical Waste
- Maintain and Operate Landfill site for disposal of inert and special waste

- Motivation, Incentives and Awards

X. Sustainability

117. Question of Sustainability

The question of sustainability of the various methods of Waste Management described above is reviewed herewith. There are several constraints facing Urban Waste Management and compounded by the limited vision, limited purpose and resources available to the partners in SWM. There is no simple measures to loosen or remove these constraints. One of the reasons for the difficulty of felt resistance to changes is the characteristic of the partners to protect themselves from external influence and felt risk to their secured jobs and benefits they enjoy with current settings.

118. Methods for Enhancing Sustainability

Some of the proposed measures to produce successful UWM may comprise of a set of reforms as:

- Institutional Arrangement and Legislation
- Public Private Partnership Modality
- Enhancing Social Responsibility
- Financial Resource Management
- Motivation, Incentives, and Rewards

XI. Proposed Institutional Arrangement and Legislation

119. Scope of Works

The detailed scope would comprise of:

- Developing Institutional Model at the National, Regional and Local Government level with representation of various stakeholders and partners;
- Define the roles and responsibilities of Public and Private Partners;
- Define methods of empowerment of Formal and Informal Private sector;
- Define involvement of NGOs, CBOs and private sector organizations to deliver various tasks from policy implementation, monitoring of activities of various institutions, community education, awareness campaign, facilitation, monitoring and evaluation, technology transfer, surveillance of activities, and various other activities,
- Develop specific manuals and bylaws for performance of institutions at various levels, licensing and regulating of activities of formal and informal private sector institutions as community-based organizations, NGOs, private sectors, individual households, businesses and institutions, individual solid waste workers as scavengers, scrap dealers/collectors,
- Develop mechanism to implement the policies, laws, programmes and by-laws by both the Public and Private Partners,
- Developing mechanism to empower the partners to enable them to resume their respective roles and responsibilities
- Developing mechanism to enhance transparency in the performance through information dissemination and feedback system
- Developing mechanism to encourage surveillance, monitoring and evaluation procedure.
- Develop appropriate Acts, Law, Rules and Regulation or update existing legislation to accommodate the new demand for reforms.

120. No defined institutional structure

As such, there is no defined institutional structure at the national level responsible for overall UWM. However, the Ministry of Local Development is undertaking the initiatives by forming a separate department. The function of this department is to develop policy, rules, regulations and guidelines for practical and efficient management of the solid waste with the aims to minimize the waste induced problems as pollution and other socio-economic and environmental issues, and enhance the aesthetics of municipalities and the country at large. The direct operational responsibility is handed-over to the respective municipalities or the Local Governments without provision for proper surveillance or monitoring mechanism.

121. National Council for Solid Waste Management

The government has formed National Council for Solid Waste Management under the chairmanship of Minister of Local Development and comprise mostly of government officials (10 members), Municipality representatives (2), and Private Sector (2). None of the partners from Formal and Informal Private Sector is involved in the council. The existing structure of the council is illustrated in Appendix–D. A typical organisational structure of the Municipal Government is illustrated in Appendix-E.

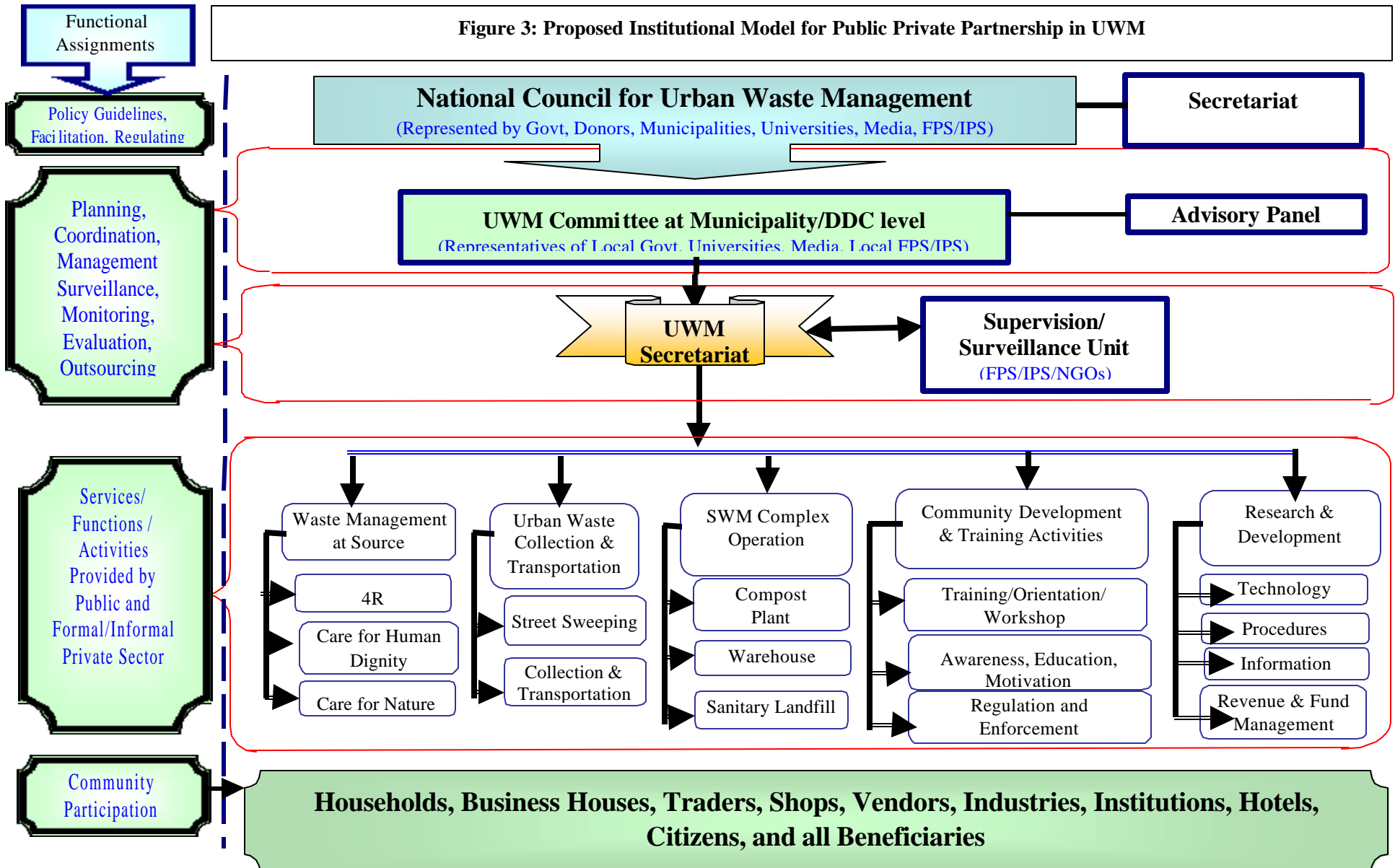
122. Proposed Organigram

The proposed organization structure is developed in a way that would encourage Public Private Partnership and community participation based on the level of institutional arrangement with a view to fulfill the functional objectives of each institutional level. The entire structure is developed for achieving five main functions:

- i) Reforms in policy guidelines
- ii) Coordination, management, developing technical approach of UWM, surveillance, monitoring and evaluation
- iii) Providing service functions/ activities, and
- iv) Encouraging community participation,
- v) Caring for Nature and Human Dignity.

Every function has specific roles and responsibilities. A typical institutional model is illustrated below with the Roles and Responsibilities summarized in Appendix-F.

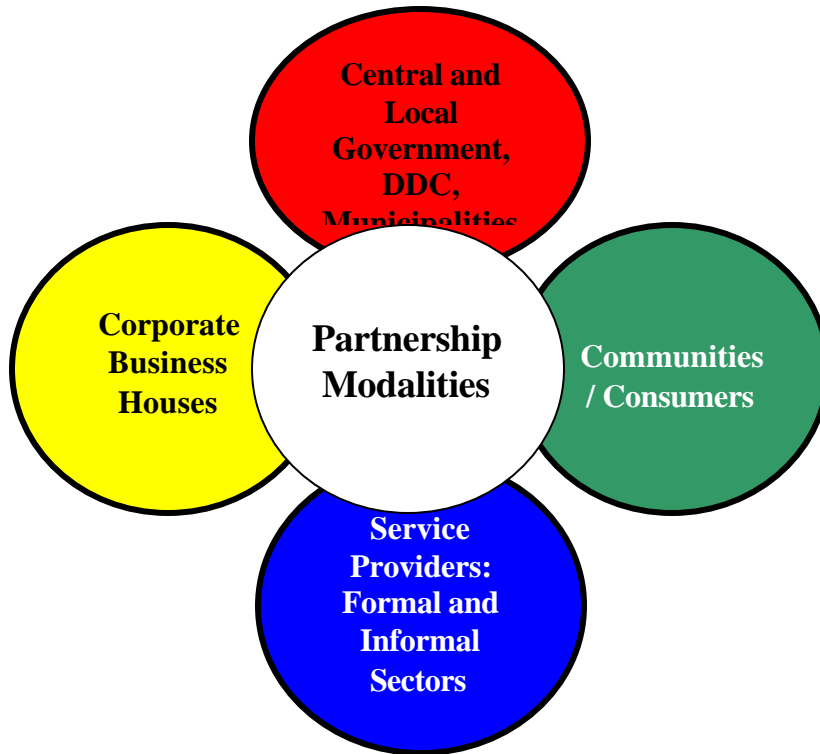
Figure 3: Proposed Institutional Model for Public Private Partnership in UWM



XII Public Private Partnership Modality

123.Partnership modality

The Partnership modality comes from the possible linkages among the stakeholders involved in the Urban Waste Management System. The modality relationship could be illustrated by following Chart. The partnership modalities will depend on the characteristics of the cooperating entities as G2G, G2B, G2C, B2B, B2C, C2C, G, All.



124.Enhancing Social and Corporate Responsibility

Enhancing Social and Corporate Responsibility is another important aspect for both communities and Business. The Communities and the Business that are the prime source of waste generation and environmental and health hazard created by the “Throw Away Culture” they have adopted for waste management. And they are the ultimate cause of loss of urban aesthetics, loss of living environment and loss of business (tourism in Nepal for example).

125. New slogans

In Communities, thrown away waste often means uncivilised manner and loss of resources that can add to the direct income of the communities. In Kathmandu streets, several kinds of slogans could be seen e.g. “**Phohar ko mohar**”, **Phohar jathabhavi na phalaun, sabhyata ko parichaya deun**”.

126.Need for re-engineering processes

In business, waste often represents inefficiency and lost profits. As a result, waste reduction and resource productivity (maximizing the value added per unit of resource output; that is, doing more with less) often yields tangible business benefits as well as environmental benefits. By re-engineering processes, redesigning products (e.g. Packaging in bulk reduces packaging cost and reduce waste and enhances the profits of the business and reduce price to the consumers) and refining services, companies can often prevent waste from being generated in the first place, find uses for by products in other processes, and recycle most other residual materials.

127.Waste Reduction Initiatives

Waste Reduction Initiatives (e.g. Corporate Goals for Zero Waste) can yield significant savings in avoided materials and disposal costs, and can sometimes offer new revenue streams from the sale, exchange, or recycling of production by

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products that would otherwise need to be disposed. In addition, strategically designed waste reduction initiatives can enhance workplace productivity, reduce production-cycle times, leverage lean manufacturing or quality goals, and reduce regulatory compliance burdens, all of which can help companies be more competitive and profitable. (Refer Appendix-J; Generated Profits).

XIII. Financial Resources

128.Finance Sustainability

The financial sustainability comprising of sharing of costs incurred in the WM by all partners and rational utilization of the resources. Some of the Approach could be described as:

- Taxes collected by authorities
- Saving of Expenditures of Municipalities and Government from Reforms
- Government Grants and Incentives
- Polluters must pay
- Waste Generators must pay
- Beneficiaries must pay

Brief information on the currently available resources is provided below and summarized in Appendix-H.

129.Taxes collected by DDC

The taxes collected by .the DDCs comprise a substantial amount (Appendix-G). This amount is used for expenditures on salaries and administration without any contribution to UWM. This amount shall be available for UWM.

130.Saving of Expenditures from Reforms

The Public Private partnership based on WMS, if applied in a proper way, would bring a lot of reforms and save a lot of resources currently used by municipalities for “Throw way and Dumping” and damage done to the nature, environment and human life. The resources saved from the proposed approach with WMS system, particularly for collection, transportation and wages of waste workers, should be utilized for the sector and encouraging and motivating the communities, formal and informal sectors. The indicative resources used by Municipalities are provided in Appendix-G.

131.Polluters must pay

The municipal waste generated, particularly the market waste, comprises of various components for which the community has already paid for along with the purchase of commodities. It should be the responsibility of the producers of the waste and the community itself that “Throw Away” the waste in the public area or nature should be responsible and pay for pollution they make. Several of he waste management organization dispose the waste they collect in an unauthorized manner. Application of a fee system for the pollution created by the formal and informal sector as industries, business, waste management organizations, and communities for any branded waste thrown away in the public place or nature will encourage for enhancing design of recycle friendly products and decrease waste generation.

132.Waste Generators must pay

The waste generators that are interested to dispose off the waste using the Municipal Waste Management system shall pay appropriate fees as a municipal levy based on the quantity, category and schedule of generation. More preferably, the Waste generators should be encouraged to apply the WMS approach. All consumers including households, public offices, educational establishments, businesses and industries shall produce a plan for waste management similar to the water supply, sanitation, drainage, access road, electricity, telephone, and any other infrastructure. Urban waste management shall be a part of household and corporate management.

133.Beneficiaries must pay

The improved urban and rural environment brings positive benefits to a number of business and industries as Municipalities (recovery of clean market waste and composting materials), Government (enhanced Image and saving on environmental recovery), Tourism Industry (Increased Business) and communities (Improved Health and enhanced quality of life). The situation enhances the business as a whole. Certain part of their incremental benefits shall be shared for Urban Waste Management programme. A brief account of cost recovery from clean waste production and recycling is provided in Appendix-G.

134. Government Grants and Incentives

The Government Grants and Incentives provided to the Municipalities, DDC and VDC should be made available for the Sectoral Programme and providing incentives under Public-Private partnership Programmes.

XIV. Motivation, Incentives and Awards

135. International Experience

Several countries have adopted various methods to motivate and encourage the communities, formal and informal sectors for taking initiatives in Urban Waste Management. This kind of incentives certainly reduce the burden on the government and Municipalities and help to achieve the objects and help to implement Urban Waste Management System in a successful manner.

136. Double Earning

In many countries, it was observed that waste workers and enterprises working in waste management earn double of the monthly minimum wages. So, the competition in the field is fierce and many times protective. New entries or changes in the waste business may be very difficult and resistive.

137. Motivation to the enthusiasts

The creation of motivation to the enthusiasts, employees and Waste Management Partners would be the key approach for developing sustainable partnership among the stakeholders in Urban Waste Management. Some of the cases of motivation factors are presented herewith:

- Gaining employee enthusiasm and involvement is a strong way in generating waste reduction ideas. Employee involvement and enthusiasm can be encouraged in several ways such as cash awards, profit or gain sharing, public recognition and rewards, and salary raises tied to waste reduction performance metrics. Articles in company newsletters and awards given at company meetings with gifts such as appreciation certificates and gift, etc. are specific ways to increase involvement and enthusiasm.
- The Waste Generation at the households, business and Industry level is directly based on the fact that municipalities accept the Throw Away Waste at free of cost. The citizens and the business are encouraged to generate more waste and add burden to the Municipalities. In the contrast, a motivation factor for of Waste Management at Source or Source Reduction requires applying a fee based on “Pay As You Throw Away (PAYTA)”. In the local context, the Municipality Waste collection tippers shall charge a fee for every bagful of waste thrown away.
- The municipalities may motivate the stakeholders to generate clean and separated waste as Paper, Plastic, glass, metal and collected them at the doorsteps at a price based on quality of waste. The citizens will be highly motivated to get cash benefits and deliver high quality clean waste.
- Funding for developing sustainable partnership among the stakeholders for Waste Management at Source and Source Reduction and reducing disposal at landfill site, encouraging reuse and recycling. These funding may be applied with establishment of Grant financing under NCSWM.
- Tax Waiver Incentives to the Business and Industries may be a good motivation factor for research and design for enhancing waste reduction e.g. reduction of import tax or customs duty for producing Waste Free Products or Take Back systems of used products.

161 Some of the categories of awards

Some of the categories of awards practiced by various countries are described herewith:

- One of the ways to encourage Waste Management at Source including source reduction and recycling is by recognizing, supporting and honouring the formal and informal sectors that are setting good examples. For this reason, the “**Excellence in Recycling Awards**” program may be established. The Excellence in Recycling Awards may comprise of “**3R Award**”, “**Closing Loop Award**”, and “**Partnership Award**”.
- Some of other very recognized awards are: “**Waste Management Initiatives Awards**”, “**Keep Beautiful National Awards**”, “**National Pollution Prevention Awards**”, “**National Recycling Coalition Annual Awards**”, “**Award for Environmental Achievement in Business**”, “**Environmental Protection Agency's Waste wise Program Awards**”, “**Business Waste Reduction Awards**”.

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- **Outstanding Waste Reduction & Recycling Public School Awards** -Public schools recognition for their efforts to educate students about waste-prevention, waste-reduction, recycling and exceptional recycling programs, as well as for actively carrying out the programs. The award categories are best waste reduction, best recycling, and outstanding waste reduction & recycling.
- Republic of Maldives – President’s award for “**Green Leaf award for Schools**”, “**Green Resort Award for Resorts**”, “**Green Tourist Award for Tourism Industry**”, “**Home Garden and Kitchen Waste Management for Women**”, and “**Clean Maldives**”. These awards are given annually on competitive basis and the information and experience is shared globally through Internet.

XV. Proposed Action Plan

162 Methods of implementation of proposed action plan

There are basically ways of implementation of proposed action plan two, namely using **Economic Instruments (EI) as Incentives and Awards or Command and Control (CAC)** or systematic application of both of them in a balanced manner. Benefits of Economic Instruments (EI), and Command and Control (CAC) methods are summarised herewith in Table XV-1:

Table XV-1: Comparative benefits of implementation methods

SN	Benefit Parameters	Economic Instruments (EI)	Command and Control (COC)
1	Flexibility	High	Low
2	Efficiency and Cost Effectiveness	High	Low
3	Stimulate Pollution Control	High	Low
4	Support with a source of revenue	Flexible	Fixed
5	Reduce Waste Generated	Yes	No
6	Segregate Waste at Source	Yes	Partial
7	Encourage Reuse, Recycle, Recover	Yes	Partial
8	Rethink on Waste Reduction	Yes	No
9	Support Cost Effective Systems	Yes	No
10	Minimise adverse environmental impact	Yes	No
11	Direct Regulation with monitoring	Not Required	Required
12	Formulate Standards, Procedures, Schedules	Not Required	Required
13	Establish non-compliance penalties	Not Required	Required
14	Predictability	Low	High
15	Procurement of services and waste materials	Competitive and attractive	Rigid
16	Quality of Waste materials and services	Continuously improved	unwarranted

163 Major Activities

The proposed action plan comprises of the major activities related to the steps of implementation of the proposed Urban Waste Management programme. The proposed actions are divided into immediate/ short- term and long-term actions. The general characteristics are described herewith.

164 Immediate Actions

The immediate actions categorically include: 1) Preparatory phase, 2) Institutional set-up Phase, 3) Design of Procedures of Waste Management, 4) Development of Public Private Partnership Programme, 5) Development of awareness Building and Education program, 6) Development of Economic Instruments and Resource Management, 7) Development of Command and Control System, 8) Development of Transparency Instruments, 9) Development of Surveillance, monitoring and evaluation, and 10) Development of Feedback, Review and Reform Procedures

- 1) **Preparatory Phase:** The Preparatory Phase comprises of activities as:
 - a. Nomination of a Task Force for nomination of Ad Hoc NCSWM
 - b. Review of Policy Documents and National Commitments,
 - c. Define institutional structure of proposed National and Municipal Councils for UWM, roles and responsibilities, by-laws, task assignments, job description,

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- d. Identification of modalities of implementation of recommended immediate actions,
 - e. Identification of resources, and legal arrangement,
 - f. Consensus Building among the Stakeholders through organisation of National Seminars,
 - g. Preparation of detailed programmes for encouraging motivation, providing incentives and rewards,
 - h. Preparation of TOR and identification of resources for Task Force and Working Committees for detailed studies and implementation of Action Plan.
 - i. Nominate Independent Entities for surveillance, monitoring and performance evaluation
- 2) Nomination of NCUWM: The institutional arrangement of independent UWM Council is conceived. The idea behind setting-up the Council is to transfer the responsibility of urban waste management gradually onto the partners of public sector, private formal and informal sectors, and to mobilize the participation of all stakeholder-organizations. The role of the Council will be more like a motivator, facilitator, policy maker and regulator (MFPR). Upon nomination, NCUWM will prepare and adopt its management policy. Appropriate staff for the secretariat will be arranged based on the outsourcing of most of the tasks; Business Plan and personnel policies will be prepared.
- 3) **Design of Procedures of Waste Management:** The design of procedures of preferred and other options of waste management would be prepared through a detailed study. The study will include detailed procedures, guidelines, and operational manuals. This activity will be carried out through outsourcing and review through consensus building seminars.
- 4) **Development of Public Private Partnership Programme:** The programme would focus on the modalities of public private partnership encompassing most of activities related to the waste management from policy development, strategy formulation, information dissemination, knowledge management, community development, awareness and motivation, waste management service delivery, Waste management at Source, Waste reduction, market development, Recycling, Reuse, Landfill of Inert materials, Electronic Waste, Composting, medical waste, surveillance, monitoring and evaluation, motivation, incentive, and rewards.
- 5) **Procedures, guidelines and operational manuals shall be developed for various forms of public private partnership.**

138. Procurement and Outsourcing

Standard procedures for the procurement and outsourcing of services to formal and informal sector shall be prepared including RFP, TOR, Bidding Documents and limit of resources. The selection of service providers, suppliers and contractors will be based on competitiveness and qualification. Contract documents will be based on performance evaluation and monitoring criteria. The Waste Management Council will review and monitor the quality and performance of the contracts.

139. Pilot Programs and activities

As it is essential to raise public confidence in the process of preparing a practical waste management plan, the implementation of pilot program will address critical problems and bring about immediate visible improvements in the waste management system. The pilot program will provide an opportunity for involving the stakeholders in all aspects of project planning and management, including program formulation, design, community participation, implementation, finally monitoring and evaluation. The pilot program shall include following activities:

- Encouragement to Communities, Households, Business and Industries for Waste Management at Source,
- Awareness program and Training of Stakeholders
- Composting of Organic Waste at Domestic Level
- Source Management of waste including segregation and Production of Clean Waste
- Promoting Reuse
- Promoting Recycling
- Inert waste collection, transport and disposal in Landfill site or in Land Reclamation Areas
- Marketing and use of compost products
- Marketing of Clean Waste, Reuse and recycling of clean products
- Establishing waste market centres through outsourcing to private sector shall be explored
- Encouraging innovative actions and Rethinking on what has been done
- Benchmark survey to monitor and evaluate the pilot test program
- Developing Motivation, Incentives and Rewards Systems.

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140.Long Term Actions

The long-term strategic plan for waste management includes the followings:

- 1) **Legislative and Regulatory Framework for Urban Waste Management:** Develop Legislative and regulatory framework for urban waste management based on community participation and privatisation. Procedures for review of urban waste management policy, environmental guidelines, community rules and regulations, tax and incentive structure on solid waste management shall be included in the framework.
- 2) **Awareness to Policy Makers, Legislature:** Wide discussion with policy makers and legislature shall be carried out based on Long-term urban waste management concept and approach. Participation of the Policy makers in important meetings, seminars and conferences shall be encouraged.
- 3) **Build Implementation Capacity:** The Implementation capacity of authorities at various levels shall be developed through appropriate training and sharing of knowledge. Implementation capacity is largely dependent on the Policy of selection of Right Person in Right Place. This will require a radical change in the current policy of recruitment of authorities based on merit and transparency approach.
- 4) **Develop Marketing Strategy for Services and Products:** The marketing strategy for UWM Services and Products will be developed with application of the economic instruments to encourage the communities, formal and informal sectors to provide efficient services and for producing clean waste and to prevent waste disposal at public places and Nature.
- 5) *Promotion of Waste Environmental Education: Waste Management education and awareness programs and campaigns needs to be promoted through the local level organizations. The Waste Management Centres could be utilized as knowledge and information dissemination centers.*
- 6) **Support to Research and Development:** The research and development of Waste Management Issue shall be a continuous activity and shall be supported with specific objectives. The activity may be best promoted through outsourcing to the knowledgeable and experienced entities or individuals.

141.Development of Awareness Building materials

Development of Awareness Building materials, Education and Community Rules: During the process of development of awareness building materials and community participation program, discussions shall be held on the appropriate and preferred system of waste management for the particular community. The goal and target of the waste management shall be discussed and finalized. The market for the recycling and compost products will be identified. The operational manual of the waste management systems and approach of implementation will be discussed. Attention shall be given for preparation of community's own rules and regulation, and development of community action plan. The consensus building and acceptance of the rules and regulations will be achieved through cluster community interaction, general meetings and assembly of the community groups participated by the stakeholder organizations. The waste management education for the community participation will be a very important aspect. The education on waste management shall be extended to larger forum of formal and informal sector and academic sector as schools and campuses.

142.Development of Economic Instruments

The economic indicators have very positive role in waste management and create enthusiasm within the communities and private sector because of the financial benefits. Various indicators based on the situation, location and approach may be developed and agreed with the community and other stakeholders of PPP. The system shall provide basic guidelines for outsourcing of waste management services, promotion of waste free products, production of clean waste and Waste Management at Source.

143.Development of Transparency Instruments

Transparency instruments will provide methods for Information dissemination to the communities and stakeholders. The system will be developed for improving all aspects of information management, including systems for gathering, storing, using and disseminating. Platform for information dissemination as newsletters and websites shall be developed. The plans & programs, progress, methodology, technology, policy, strategy, rules and regulations, revenue, incentive, rewards, job outsourcing, procurement, tenders and bids, legal framework, and accounts shall be published and disseminated. Discussion forums shall be initiated. Promotional materials as documentary, video clips, advertisements, photo series, poster and painting shall be developed.

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144. Development of Surveillance, Monitoring and Evaluation

Work plan and procedures for monitoring of progress and quality management shall be prepared including procedures for monthly progress review. Manual for Periodic review, Program reporting, and Performance monitoring and evaluation shall be developed. The actual job for surveillance, monitoring and evaluation may be obtained utilizing the formal and informal sector.

145. Development of Feedback, Review and Reform Procedures

The feedback, periodic review and reform procedures will make the Urban Waste management sector dynamic and enhance the capability of the sector to address the new emerging challenges and adopt procedures and approach as practically required to address the particular issue.

XVI-Resource Management

146. Human Resources

As waste management system will undergo major changes, there is a need for the public and private (Formal and Informal) sectors to understand the changes and be prepared to handle them. The project will introduce a human resource development program for waste management. The main objective of this program will be to provide essential knowledge and skills to the stakeholder organizations and motivate, and enable them to improve their performance.

147. Financial Resources

The financial resources are primarily based on the following sources:

- Resources saved by the Government and local authorities due to application of the UWM Policy
- Transfer of local taxes raised from waste management activities by DDC and Municipalities
- Revenue collected from the waste generators and polluters
- Levy of fees from beneficiaries and citizens for providing enhanced waste management services.

148. Capital Resources

The capital resource required for management of Urban Waste Management will be possible to raise from the formal and informal private sector provided attractive and pragmatic motivational and incentive schemes are developed. The problem raised due to starvation of capital resources for the formal and informal sector will be solved in many ways. The capital inflow and support of the banking sector may be possible if economically viable combination of resource mobilisation approach could be derived.

149. Proposal for creating Urban Waste Management Fund

It is proposed to create a special fund for Urban Waste Management by transfer of Resources saved due to the application of UWM Policy and additional resources generated from various activities related to urban waste management. The funds shall be utilise to facilitate, motivate and outsourcing of services, research and development and supporting the municipal activities.

XVII- Conclusion and Recommendation

150. Damage to Environment and National Image

Out of the four methods of waste disposal, dumping is the most popular method in Nepal. Dumping of urban waste in river system of Kathmandu is the glaring example (see Section 1.2 above). The method has been very damaging to the environment, human health, the economy and the image of the country.

151. Failure of Solid Waste Management Project

Scientific landfill that was initiated in late '80s in Gokarna landfill site collapsed with the interference of politics in the implementation procedures and failure of SWMRMC. One of the reasons of its failure was the environmental damage done by poor management, operation, inadequate technology application, and innovative approach. These methods are basically practiced in agency managed management systems without much of community partnership and motivation.

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The failure of the composting system is associated with a number of reasons as Failure to secure good quality waste (most of waste is mixed waste from garbage containing high quantity of sand, silt, glass, metal and plastic particles), Marketing failure, Technical failure (decomposition process, mechanical systems), Failure of adequate organic content, Failure of biological processes, High contamination of compost produced, and contamination of ground water and natural surface water with leachate.

152. Incineration of Waste

A lot of solid waste material is burned out in open air. No engineered incinerators and energy recovery practice was done. The failure of Incineration is closely associated with failure to eliminate the generation of hazardous gases as dioxine, furon and ash containing heavy metals that is objectionable for disposal. The waste to energy method converting waste to energy by incineration remains unattractive to the business because of diversion of high energy containing waste for recycling and reuse. Several Incineration plants were closed down during last decade. In Nepalese context, Hydro-electricity and other renewable energy options considered more attractive and effective compared to Waste to Energy option.

153. Next logic step beyond dumping, landfill and incineration

The next logic step beyond dumping, landfill and incineration would be Waste Management at Source with Zero Waste Approach. It is the continuation of the success stories of last decade in composting, 4R approach (rethinking, reduction, recycling and reuse of waste) that is helpful for protecting human life and the environment, and reduces the complications of landfill and incineration systems. Zero Waste Approach is associated with basic five legs: Managing Waste at Source, producing clean waste, recycling back to its source of generation, disposal ban on public place and community participation. Zero Waste in the sense is a new approach towards handling the waste and largely depends upon the acceptability of its process to the community. Basic complexity is the process in the need for working with the community to change its culture, manner, behaviour of handling the waste from “Through Away” Culture to “Don’t Throw Away, Don’t Burn, Don’t Burn and Send Back” Culture. The separation of biodegradable waste from reusable and recyclable waste has added advantage of high quality clean products.

154. Implementation of Proposed Urban Waste Management Programme

The steps involved are as follows:

- 1) **Create and Implement a Formal Policy and Program** – Establish National, Regional and Local level Councils for Urban Waste Management supported with a well-defined waste management policy that includes challenging but realistic goals, measurement criteria and reporting requirements. Designate a responsive and committed team that includes all stakeholders, not just those directly related to waste management functions, to ensure that efforts are implemented. Continuously evaluate progress in order to the program's effectiveness.
- 2) **Encourage Community Involvement** - Carry out Awareness Campaigns, Interactions with communities and provide training and education related to how waste reduction efforts apply to each resident's social responsibility, and reward residents and stakeholders for outstanding contributions to waste reduction and resource productivity efforts. Encourage Community involvement in Policy Formulation, drafting rules and regulations, determining goals and performance criteria.
- 3) **Encourage “Don’t Throw Away” Approach** – Encourage the community to adopt approach for Waste Management at Source that include “Don’t Throw Away” practice, eliminate mixing of waste, reducing of waste at sources, disposal ban of waste outside from stakeholders' premise and send back to the sources of waste generation.
- 4) **Establish Measurable Goals:** Establish measurable goals that assess progress in service provided. These goals could include waste management at the source, reducing waste at source, reducing scrap generation in the manufacturing facility and at the customer site, utilizing by-products or waste-streams, reducing water and energy consumption, designing products that require less volume per performance at customer site, designing products for extended life, bulk packaging, and recovering and reusing material components.
- 5) **Determine Performance Metrics:** Create an evaluation system for waste management at source, reduction and resource productivity projects that includes a financial analysis to ensure the return on investment is reasonable when weighed against other strategic investment decisions. Benchmark current activities using measurements such as amount of waste per person or unit of finished product, and energy and water use per unit produced. Continuously assess progress in meeting goals and performance compared to known best practices.

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- 6) **Rethink and Identify Opportunities:** Encourage rethinking of the approach applied for waste management at Source and look for ways to identify waste reduction opportunities. Return back the waste materials that are not useful for the community and households.
- 7) **Review and Analyse Progress towards Waste Reduction:** Using selected metrics, measure performance against the goals of the Waste Management at Source and reduction program. Analyse the results to judge effectiveness of the program and help identify areas for improvement. As goals are attained, set new waste reduction targets to ensure continuous improvement.

155. Functions of Local authorities

Local authorities shall be empowered for implementation of the UWM Policy and assume basic functions of facilitating, motivating, regulating, and monitoring and guided to develop with establishing measurable indicators.

156. Managing External Support

Many Donors are interested in supporting the Urban Waste Management to bring change and improve the situation. However, their approaches to solving urban waste management problems have been piece-meal and not well coordinated. A number of external support agencies recognize urban waste management as a priority issue and limited to the supply of equipment and services from the donor countries and limited to quick fix short-term solutions. The effectiveness of external support will largely depend on the ability to coordinate and streamline the support with local needs. This would require a strong National policy and dedicated agencies and involvement of stakeholders. Better coordination, better communication among the external support agencies, development of partnership among them, removing the organizational egos, sharing, and contributing their resources to the benefits of the recipient country would be the essential components for mutual cooperation..

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