



# Assessment of Solid Waste Management in Liberia

United Nations Environment Programme  
Post-Conflict and Disaster Management Branch  
in collaboration with the Environmental Protection Agency of Liberia

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# 1 Background

UNEP has been active in Liberia since 2003, initially undertaking a post conflict assessment and later, in 2005, establishing a field office for providing capacity building assistance. During one of the recently concluded capacity building workshops, it became evident that management of solid waste remains a key issue to be addressed in the country. With increasing population, changing consumption patterns and economic growth, it is likely that solid waste generation is going to increase significantly. Already, Liberia's waste management sector faces tremendous difficulties, due to various factors, including: unclear and over-lapping legal mandates and responsibilities; inadequate institutional framework; poor enforcement mechanisms; extremely weak technical and human capacity within the government sector; low level of public awareness on health-waste management linkages; and a complete absence of cost recovery mechanisms.

At the request of the Environmental Protection Agency of Liberia (EPA), UNEP conducted a technical mission to study both the technical and institutional issues associated with solid waste management in Liberia. The mission was hosted by the EPA and undertaken between 17–27 June 2007. This report summarizes its findings.

## 2 Mission Objectives

The primary task of this exercise was to undertake, in consultation with the EPA, a review of the Solid Waste Management Sector of Liberia, in particular:

- The roles, responsibilities and legal mandates of the key public sector actors throughout Liberia;
- The public institutional framework for waste management;
- Existing operational practices and facilities;
- Participation of local NGOs and CBOs within the waste management sector;
- Existing cost recovery mechanisms, if any;
- Public education initiatives and technologies;
- The capacity of the private sector to deliver waste management services;

- The management of hazardous healthcare waste (HHCW); and
- The identification of the necessary components for long-term, sustainable improvements within the waste management sector.
- Increase awareness by a one-day workshop was conducted for some forty (40) representatives of relevant public and private sector stakeholders within the waste management field.

## 3 Study Approach

The work was split into three segments:

**A) Pre-mission Data Gathering:** This included collection of all available information on issues associated with waste management in Liberia as well as similar countries around the world.

**B) During the Mission:** Throughout the ten day mission and the one day workshop, which was hosted by the EPA, stakeholders from the following organizations were met:

- **Government Departments:** Ministry of Transport; Ministry of Internal Affairs; Ministry of Lands, Mines & Energy; Ministry of Public Works; Ministry of Health and Social Welfare; Ministry of Labour; Grand Bassa County Superintendent.
- **Municipal administrations:** Monrovia City Corporation; Paynesville City Corporation; Buchanan City Corporation; Kakata City Corporation.
- **International Community:** The European Commission, The World Bank; UNICEF; UN-HABITAT; UNMIL; UNOPS; UNDP; UN Country Team.
- **Civil Society:** Genesis Ltd; Global Alliance Ltd; Sanitors & Services Ltd; Liberia Marketing Association (LMA); JKF Hospital; Liberia Government Hospital in Buchanan; DUCOR Ltd; International Rescue (IRC); Jurubbal (NGO, Kakata); MSF; Power TV; Clar TV; Real TV.

In addition, field visits were made to a number of locations with waste management problems, waste management sites, new community and private sector initiatives.

**C) Post -Mission:** The findings from the mission were consolidated and discussed with technical experts to arrive at useful and appropriate conclusions and recommendations

## 4 Findings

### 4.1 Legal and Institutional Setting

**Constitutional Provisions:** Liberia's environmental laws have a constitutional basis as per article 7<sup>1</sup> of the Constitution (1986), which advocates for the maximum feasible participation of all Liberians in the management of their natural resources, and as per article 20 (a)<sup>2</sup> promulgating the right to life which, by extension, provides for a right to a clean and healthy environment. This constitutional reference grants to the environment a particularly high status among the values defended by the Liberian people. Further, it binds the state organs – in particular the legislative and executive - to adopt an active environmental policy and to formulate national development plans that are environmentally sustainable.

However, despite the above, Liberia's development strategy is presently oriented primarily towards stimulating and accelerating economic growth. This will inevitably result in an expansion of urban, agricultural and industrial activities. The demands placed on the environment to provide resources for development and to absorb waste will consequently grow, presenting challenges to both the authorities and communities.

**Legal Framework:** The three main legal dispositions that grant authority in the field of environment, including the waste management sector, are the three acts creating the Environmental Protection Agency (EPA), and adopting the framework Environmental Protection and Management Law and Policy of the Republic of Liberia (all approved on 26 November 2002 and published on 30 April 2003).

These three authoritative documents all mention the waste management sector, taken from different angles. In the Act creating the EPA waste management is approached as a cross-cutting issue as this law deals more with institutional settings than with substantive sectoral activity. Whereas the Act Adopting the Environment

Protection and Management Law of the Republic of Liberia contains specific sections (37, 38 and 39) that specify the role of the EPA regarding waste management in Liberia as the coordinator and monitoring body for setting policies and guidelines<sup>3</sup>. Section 62 on the "*Prohibition of Solid Waste Pollution*" also penalizes "every person who discharges, discards, dumps or leaves any litter on any land, coastal zone, surface water (...) except in a container or at a place which has been specifically indicated, provided or set apart for such purpose". However, the Act Adopting the National Environmental Policy of the Republic of Liberia is the most extensive on the topic by reserving a whole sub-chapter (5.7) to waste management and sanitation. Numerous strategic policy measures are recommended, including:

- *Identify, designate and establish landfill sites for all urban areas;*
- *Set up a joint monitoring and coordinating unit between agencies and institutions responsible for waste management programmes and involve the local communities (which indirectly acknowledges the existing lack of clarity of the division of responsibilities);*
- *Design and instruct a waste sensitization programme at various levels, especially among women and the youth; and*
- *Empower local communities to dispose of their waste.*

So, clearly the policy document does contain the necessary components to cater for effective solid waste management, although to date they have not been effectively implemented.

**Institutional Arrangements:** The following section discusses the legal mandates of the key public institutions involved in waste management in Liberia, and identifies the main areas of overlapping roles and responsibilities.

1. **The Environmental Protection Agency (EPA)** is primarily in charge of setting up (develop and publish) national guidelines for solid waste management in Liberia, environmental quality standards (and related penalties and fines), and ensuring compliance for pollution control. It should also provide guidelines for

the preparation of environmental impact assessments (EIAs), audits/inspections and environmental licenses/permits for engineered landfill sites (as articulated in section 64 of the Act Adopting the National Environmental Policy of the Republic of Liberia). The Act creating the EPA also mentions, in section 34, the creation of an Environmental Administrative Court, which, as of today, is still not established.

2. **The Ministry of Health and Social Welfare (MHSW)** has, through its Division of Environmental and Occupational Health, the mandate to assess “*the environmental health of the population*”. This grants this Division the power to conduct sanitary inspections evaluate compliance with the Public Health Law. Nonetheless, as of today, no Hazardous Health Care Waste (HHCW) management guidelines or standards have been established by the Ministry.
3. **The Ministry of Lands, Mines and Energy (MLME)** hosts the Liberian Hydrological Service (LHS) whose responsibility is to evaluate urban sanitation projects, such as to provide guidance for the geotechnical investigation of engineered landfill sites.
4. **The Ministry of Public Works (MPW)** is in principle responsible for the installation of the entire infrastructure required for waste management delivery services, including waste collection and transfer stations, and the construction of engineered landfill sites.
5. **The Municipalities** have been granted, by the Public Health Law of 1975 (still valid), the responsibility of ensuring clean and sanitary environmental conditions on the territory under their respective jurisdictions. They are thus responsible for sanitation activities including the cleaning, collection and disposal of generated solid waste. In theory, they should receive their annual operating budget from the Government, through the Ministry of Internal Affairs, but discussions with various municipal officials in Grand Bassa, Montserrado or Margibi Counties confirmed that these financial transfers are currently non-existent, apparently partly due to the early stage of the decentralization reform process. Internal regulations of the Monrovia City Corporation

(MCC), MCC Ordinances’ Chapters 1 and 7 (1975), designate various departments of MCC as being in charge of municipal waste disposal sites, prohibition of the littering, and requiring residents to clean in front, and around, their properties up to the sidewalk. Furthermore, Chapter 7 of MCC’s Ordinances stipulates that all residents in Monrovia shall pay various monthly fees for solid waste collection and disposal. However, as the charges for the planning, development, operation and maintenance of the solid waste management systems and equipments are largely divided among various MCC departments, this, with other contributing factors discussed later, eventually results in the total paralysis of the waste management in Monrovia.

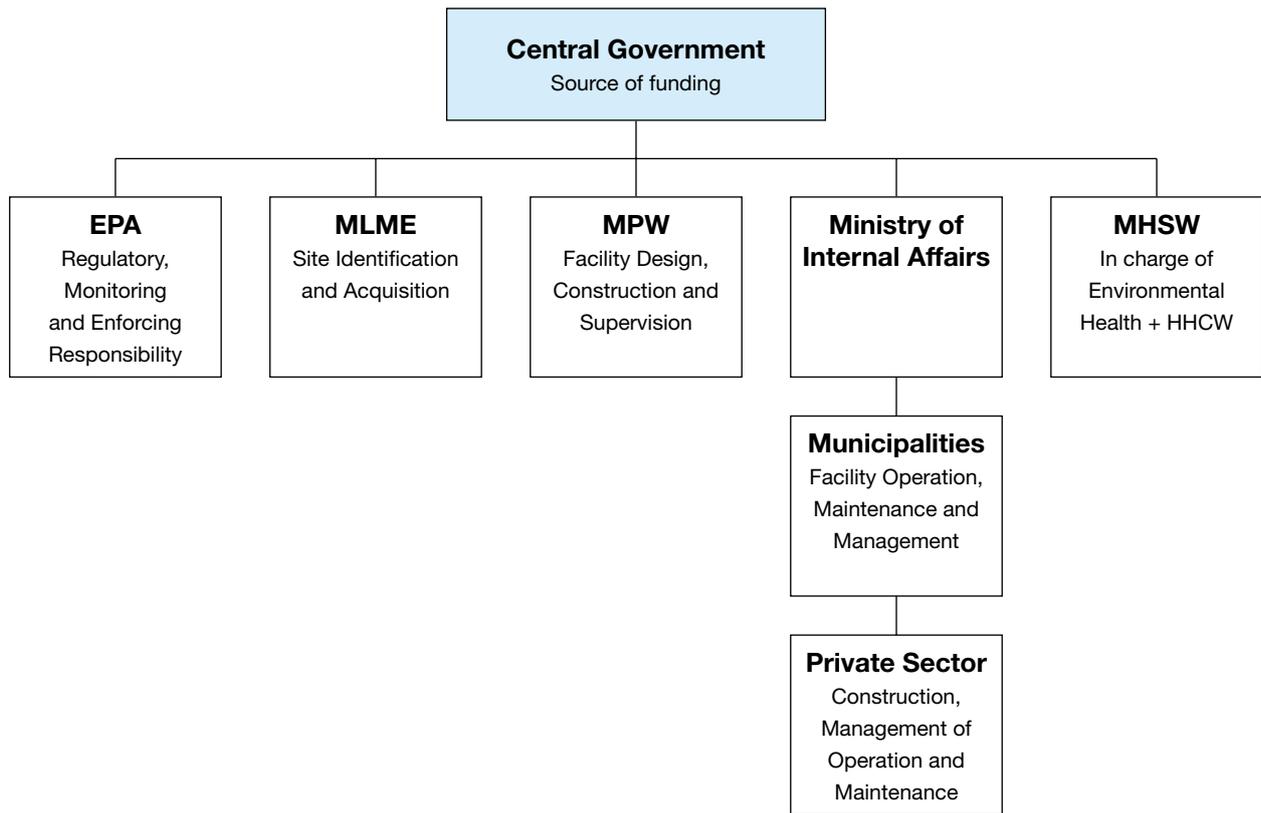
An overview of the above mentioned legal mandates demonstrates clearly the overlap and imprecise division of responsibilities between the various public authorities, as on the one hand between the EPA, the MHSW and the municipalities on the monitoring role, and on the other hand the MLME and the MPW on their respective responsibilities for preparing engineered landfill sites.

## 4.2 Institutional Capacity and Infrastructure

In terms of figures, the World Bank Technical Paper No 426, *Solid Waste Landfills in Middle and Low Income Countries*, gives a waste generation rate of 0.5kg/day/cap, plus a further 0.1kg/day/cap for commercial waste, which gives an overall figure of 0.7kg/day/cap<sup>4</sup>. Thus for Monrovia, with an estimated population of 1.3 million, the average generation rate is of some 780/tones/day.

Waste composition in Monrovia	
Component	% by weight
Paper	10.0
Glass, Ceramics	1.2
Metals	2.0
Plastics	13.0
Leather, Rubber	0.2
Wood, Bones, Straw	4.6
Textiles	6.0
Vegetable /Putrescible	43.0
Miscellaneous Items	20.0
<b>Total</b>	<b>100</b>
<b>Density</b>	<b>250 kg/m3</b>

*Waste Management Plan for Monrovia, UNICEF-DFID, August 2004*



Throughout the mission, the weak nature of institutional capacities and infrastructure within the government sector for waste management became very apparent. This inherent weakness is due, to a large extent, to shortages in both human and financial resources to operate a viable system. The human resources, the technical expertise of the various ministries, including the EPA, are collectively very low, or on occasions non-existent. In all of the government entities visited, there is a serious need for trained and experienced personnel. Failure to address this need will undermine any future waste management initiatives.

For instance, resources of the EPA, which in many respects is the key organization for waste management within Liberia, are particularly low. For example, its budget is only 115 000 USD for 2007, and only one staff member dedicated to waste management issues, on a part-time basis. Clearly, with these resources, EPA is completely unable to execute its legal mandate and presently there appears to be little interest to address this situation.

Further, both the municipalities of Buchanan or Kakata report that they receive between 10 and 12



The Environmental Protection Agency's (EPA) premises in Monrovia

USD/month from the Liberia Marketing Association (LMA) to provide the marketers with a daily waste collection service. Clearly, this is unrealistic.



UN Drive street of Monrovia. Limited waste collection services are provided by MCC via the manual loading of two tipper-trucks, which is time consuming and offers limited pay-loads

In terms of equipment, Monrovia City Corporation (MCC), for example, has only 2 functioning tipper-trucks for waste collection throughout the city of over 1.3 million people, while a further six vehicles have been off the road, on average for over one year, with minor problems. The real problem is MCC's lack of funds which results in an inability to purchase the required spare parts.

Nevertheless, it is reported that MCC does subcontract, with World Bank's funding, two private contractors to operate with 7 more vehicles. It is estimated, however, that this combined capacity results in only 20% of the solid waste generated in Monrovia being collected and disposed off at The *Fiamah* Site (4 kilometers from the city centre). The remainder of the waste is dumped by the road-side, within vacant lots, drains, or is randomly burnt.

The decentralization process, initiated by the Government of Liberia, is intended to give to municipalities the authority for raising, and directly accessing, waste management-user fee revenues. Decentralization is generally seen as the most relevant approach for dealing with waste management, however, if the decentralization process is not properly planned and implemented there is a risk that it will simply lead to additional bureaucracy.

Obviously the absence of any law enforcement mechanism results in a crucial lack of authority for the various public entities to exercise their respective mandates. Both the absence of any penalizing legislation (as gradual fines' rates for

deviant behaviors) and of any enforcement forum (court or judge) makes the "*polluter pays principle*" inapplicable within Liberia today.

As far as infrastructure for waste management is concerned, there is a complete absence of engineered landfill sites throughout the country. Consequently, waste disposal activities are focused on a small number of dump-sites, the majority of which are inappropriately located within wetlands and swamps, such as the *Fiamah* Site that services much of Monrovia, *The Boulevard* in Congo Town, and the dump-site located within the town of Kakata.

The anticipated "temporary" use of the *Fiamah* dump site in Monrovia for the next 18 months will most likely not be sufficient to cope with the amount of waste disposed off over that period. Of greater concern is the fact that no engineering designs, EIA or mitigation plan have yet been undertaken for the proposed new disposal site at *Mount Barclay*. This despite the fact that these essential development steps, in conjunction with site construction works, can be anticipated to take between two to three years. Thus, there is a real risk that, notwithstanding its inappropriate location and limited 'foot-print', the *Fiamah* Site may need to be operated for a considerable period of time yet.



Child scavenging solid waste at Fiamah dump site in Monrovia. Young children searching for recyclable material at the Fiamah Site are at serious risk from the hazardous healthcare waste

### 4.3 Role of the International Community

Various actors within the “international community” have initiated programmes, directly or indirectly, related to waste management in Liberia. The first significant contribution after the conflict dates back to 2003-2004 when UNICEF, with a DFID contribution, undertook a comprehensive review of the waste management sector and produced an improvement strategy and recommendations for a “*Waste Management Plan for Monrovia*”.

This study also covered a technical review of ten possible sites for selecting a new landfill facility site for Monrovia, and concluded by supporting the upgrading of *Fiamah* disposal site, seen as a temporary solution, until the engineering and construction of a new proper landfill site at of *Mont Barclay* be finalized. However, it is worth mentioning at this stage that the proposed *Mont Barclay* site has two significant drawbacks: its relative distance from the town (25 km), coupled with extreme traffic congestion, and potentially more worrying, the swampy nature of the site’s location.

In the absence of suitable alternatives being identified, the existing *Fiamah Site* and *Mont Barclay* remain the only two waste disposal options for Monrovia. Furthermore, no available funding has, as yet, been identified for the engineering design work, or construction for the proposed *Mont Barclay* Site. The World Bank (WB), which has a budget line for waste management related projects, could be a potential contributor, but is unable to commit to the construction of the landfill until such time as an EIA and mitigation plan are completed by the EPA or MCC. Even then, the WB is uncertain that it can find the necessary funding as it states that its budget for Liberia already over-stretched, and will remain so for the foreseeable future.

Another potentially major donor, the European Union (EU) Delegation in Liberia, reports that it has no more funding available for the period 2007, but might have some possibilities in its 2008-2013 package of work, although its primary focus will remain the water-treatment sector.

JICA, the Japanese aid agency, have been approached, informally, by UNMIL, but do not appear to be interested in funding this proposed project.



WB funded secondary-waste collection facilities at Barclay Training Centre beach, where waste generation is exceeding capacity

The apparent absence of viable donors for the construction of the proposed engineered landfill site places the onus on the responsible government agencies to redouble their efforts and actively engage the international donor community.

Other significant activities conducted in the waste management sector in Liberia are presently being implemented by UNDP and ILO, some being with World Bank (WB) funding. The USD 1 million UNDP-WB ongoing project (until October'07) aims to remove much of the accumulated waste within Monrovia through the installation of 120 skip-bins and the provision of eight skip-trucks to the MCC. Meanwhile, ILO, in partnership with the Ministry of Labour and MCC, is currently implementing a two-component project that comprises:

- The *Liberian Emergency Employment Programme* (LEEP; ILO project component I) which is an 18-month programme, aimed at maximizing local employment for the short-term clean-up of markets within Monrovia, within which substantial volumes of waste had accumulated over the years. This activity is nearing completion.

- The *Liberian Employment Action Plan* (LEAP; ILO project component II) that will focus on empowering community based organizations (CBOs) in order to enhance the sustainability of the previous clean-up activities. This project will run for approximately a further 2.5 years. Activities will include moving waste from the house-holds, possibly in wheelbarrows, to the collection points, and discouraging the dumping of waste into drainage channels and rivers.

These two on-going projects, WB-UNDP and ILO, are currently the two main initiatives supported by the international community in the waste management sector. However, a few concerns can be identified with these ongoing international approaches:

- First of all, they usually target exclusively the capital (except for a quick-impact project of UNMIL in Buchanan) and largely ignore communities outside of the capital. Further, out of necessity, they select certain communities within Monrovia (as 120 skip-bins and 8 trucks will only be able to cater for about 30% of the waste generated on a daily basis within Monrovia). Experience elsewhere in West Africa suggests that this may result in tension within communities who are beneficiaries of this project and those not catered for.
- Secondly, these projects can potentially disturb the emerging markets within the waste management sector, and as a consequence damage the fledgling private sector involvement. For example, at UNEP's recent workshop, a number of newly established private contractors complained that they are losing clients who will now benefit from the 'free' WB funded waste collection services within their neighbourhoods.
- Thirdly, the projects aim for 'quick-employment' and, as a consequence, are not able to address the components of sustainability within the waste management sector, such as cost-recovery, public education, and enforcement mechanisms.
- Fourthly, a crucial element that is missing into these programmes is a capacity-building component, whose beneficiaries among others should be the EPA and MCC in their monitoring and coordinating role. Nonetheless,

it is noted that the ILO project does include a capacity-building component for private sector operators and communities<sup>5</sup>.

Presently, as far as the international community's efforts are concerned, sanitation is not an area of focus in the 2007 joint programming exercise of the Liberia UN Country Team (see annex 10). Furthermore, UNEP should actively engage in joint programmes and seize the opportunity to raise the profile and catalyse intervention within the waste management sector.

#### 4.4 The Potential Role of the Private Sector

During meetings between the UNEP team and representatives of all of the key government ministries, the future role of the private sector within Liberia for the delivery of waste management services was endorsed and actively supported. This is in large part due to the chronic failure of the government sector throughout Liberia to provide reliable waste management services to the communities, particularly outside of Monrovia.

Indeed, in many countries of the world, including Africa, the privatization of waste management services is often seen as the only viable option, and potentially offers higher quality of service at competitive prices, allowing the government sector to focus on the roles of monitoring and enforcement of services. On this matter, the African Development Bank's guidelines for waste management state that private enterprises may play a role in vastly improving solid waste management services in Africa<sup>6</sup>. However, it should be noted that compared to developed-country models, the African models require greater involvement of the communities in the process. Community Based Organizations (CBOs) may play a role in providing solid waste management services from pre-collection to recycling and composting.

It is encouraging to note that in spite of the difficult conditions existing in Monrovia for the establishment of a private waste management sector, there are some very promising developments. It is noteworthy that a small, but significant, number of private contractors have commenced operations within Monrovia. Further, their participation in UNEP's

waste management workshop demonstrated their pragmatic approach to the potential waste management market.

Among these investors and private contractors can be listed: *N.C Sanitors & Services Inc*, *Libra Sanitation Inc.*, *Genesis Inc*, *Global Alliances Inc*. Also, a new contractor, *DUCOR Waste* is keen to get involved in the sector, focusing upon market waste, although at this preliminary stage, their legal status is not clear – are they an NGO or a private contractor.

Apart from those companies who have been contracted under the WB and ILO funded projects in Monrovia, others are looking for innovative and profitable ways to provide waste management services throughout Liberia. Particularly outside the capital, interesting enterprises are ongoing that do provide collection services to business entities, such as hotels, restaurants, large retailers and a higher income house-holds.

It is apparent that in all these cases the beneficiaries of these waste collection services are ready to pay for the services and are happy with the performance of the private-contractors, and the associated services. This positive outlook was strongly endorsed by numerous participants at UNEPS's waste management workshop in Monrovia.

The implementation of cost-recovery measures by municipalities through user-fees and local taxes, in parallel with the establishment of subcontracting partnerships with the private sector could be a promising solution for Liberia. However, this would require empowering the municipalities and the EPA in their monitoring and enforcement role, through appropriate training of staff and provision of appropriate resources.

To explore further the option of privatization of waste management services feasibility studies would need to be undertaken, including the review of possible cost-recovery mechanisms. Preliminary investigations by the UNEP team indicate that waste generators would generally be prepared to pay an appropriate fee for waste collection services.

On many occasions during the course of these discussions, the *Liberia Marketing Association (LMA)* was mentioned as a possible major contributor to the

expense of this service since they are theoretically in charge of waste management in the markets, and do raise taxes that are supposed to cover expenses for these services. Some calculations were carried out with various stakeholders, and have shown that LMA's revenues would be largely able to afford a proper solid waste management service, at least for the market places, entailing appropriate waste collection and disposal services, rather than what generally prevails now, involving waste being transported in wheelbarrows and dumped within the local community.

It is apparent, at this preliminary stage, that the *Liberia Marketing Association (LMA)* is the only established stakeholder that could have sufficient revenue to finance a proper waste management system. Not surprisingly, the LMA has difficult relationships with most of the municipalities that charge it of collecting taxes from the market traders that should go to the municipalities themselves. Conversely, representatives of LMA claim that in the past municipalities have been given fees for the provision of waste collection services that they have failed to deliver. Clearly, this is an extremely complex local issue, and has a large political dimension to it. There is a need for a legal clarification of each entities mandate, role and responsibility regarding municipal responsibilities and the collection of local fees and taxes.

#### **4.5 Raising Public Awareness and Community Involvement**

One of the key factors necessary to ensure the success of the sustainable waste management initiatives, as advocated by this paper, is the involvement of the civil society. This would mean enhancing the communities' contribution to the operational processes; strengthen educational programmes on waste-health related issues at school, and examining the proper role of women within the waste management sector. Such a large-scale public awareness campaign could go through multiple channels, including:

- To use the media and talk-show programmes to diffuse information on better waste management practices (as we experimented in four occasions during our mission);



Children “coming to toilets” on the site of Jallah’s Town waste disposal point

- To install information boards on roads (as UNICEF and other UN agencies have done);
- To conduct an education campaign on waste management and related health issues in school (best sanitary practices, safe handling of human and household domestic waste), similarly for women-CBOs which could be trained by Ministry of Health officials;
- To organize UN-sponsored public events such as a “waste management day” with street-theatre shows, informative meetings and forum for discussions, and distribution of flyers;
- To set up a course on waste management at the Faculty for Environmental Sciences of the University of Liberia;
- To provide extra professional technical training to the staff organizing and operating waste management systems from public authorities (EPA, Ministry of Health, MCC...).

Evidently, to be successful, such public awareness and capacity building exercises would require an “enabling” policy and administrative environment.

One particularly powerful argument that should be promoted throughout the public awareness programme is the hidden cost of poor waste management services – such as the cost related to ill-health and sickness (cost of visiting doctors, costs of medicines, loss of income due to absence

from work, and decreased productivity due to illness,...) are generally higher than the cost of a waste management service that would remove the conditions prejudicial to public health, such as the presence, accumulation and decomposition of garbage in close proximity to low-income housing, in which children often play and relieve themselves, and public markets.

This argument regarding the comparison of costs between two options being the existence, or the absence, of waste management services is particularly powerful and should be successfully employed in the course of future waste management public awareness campaigns.

To conclude, a sustainable approach to waste management within Liberia is one that must integrate sanitary as well as social objectives, ensure a profitable, reliable service and raise public awareness on health related concerns. Further, there is a need to bring together the public, private and community based actors, and to give them well defined responsibilities in the various fields from preliminary collection to recycling. One suggested way of strengthening institutional capacity for waste management in Liberia would be first of all to raise the “profile” and capacity of the public authorities in charge of this sector, in particular the Environmental Protection Agency. Finally, to give such an initiative a realistic chance of success, environment in general, and waste management specifically, needs to be embraced within the highest level of the political and legislative community within Liberia.



UNEP expert and Government officials at the at the Boulevard site

## 5 Recommendations

The following are the key recommendations resulting from the assessment conducted:

1. A significant degree of interest and positive momentum have been generated during this short mission, and this, along with the good will and trust of the numerous stakeholders and participants, needs to be built upon by UNEP and partner organizations, otherwise the opportunity for meaningful intervention will have been lost.
2. At the final workshop it was agreed that EPA should act as the focal point for all waste management issues within Liberia, and should commence with the formation of a National Solid Waste Task Force (NSWMTF), which should embrace representatives of all key stakeholders, both from the public and private sector.
3. A key task for the NSWMTF should be the development, over a twelve months timeframe, of a National Solid Waste Management Policy and Strategy, setting up adequate regulations and standards.
4. In support of the above task, EPA should engage other key stakeholders, such as the Ministry of Health, and through the sharing of resources and budgets, commence a public education programme promoting appropriate waste management practices, and highlighting the consequences upon public health and environmental quality of poor waste management and sanitation.
5. In the shorter term, the urgency of the issue of HHCW needs to be addressed. The EPA should, therefore, facilitate a number of actions:
  - Encourage the ongoing dialogue between hospitals and clinics about the appropriate management and treatment of HHCW;
  - Promote the ‘*polluter pays*’ principle through the provision of a HHCW disposal service within hospitals which possess functioning incinerators for other institutions which lack suitable facilities, for the payment of a service fee.
  - Inspect hospital facilities to determine the status of HHCW disposal facilities and management systems.
  - Promote public awareness about the significant dangers associated with the mismanagement of HHCW.
6. In recognition of EPA limited institutional capacity and operational budget, UNEP should, in conjunction with its colleagues within UNDP, and other international donors, continue to support the EPA logistically, operationally and with the development of its institutional capacity.

## Endnotes

1. Article 7 of the Liberia Constitution (6 January 1986): *“The Republic shall, consistent with the principles of individual freedom and social justice enshrined in this Constitution, manage the national economy and the natural resources of Liberia in such manner as shall ensure the maximum feasible participation of Liberian citizens under conditions of equality as to advance the general welfare of the Liberian people and the economic development of Liberia.”*
2. Article 20 of the Liberia Constitution (6 January 1986): *“a. No person shall be deprived of life...”*
3. Section 38 2) *“The Agency shall, in consultation with the relevant Line Ministry, issue guidelines for the handling, storage, transportation, segregation, disposal and treatment of hazardous waste.”*  
Section 39 1) *“The Agency (...) shall develop and publish national guidelines for solid waste management”.*
4. These figures have been confirmed by the ILO and UNICEF-DFID studies.
5. See in annex the programme of an ILO-MCC workshop called *“Start your Waste Collection Business”* and the project document of component 2 of the ILO project focusing on *“Employment Creation Through the Involvement of CBOs/micro enterprises in a PPP arrangement for solid waste management in Monrovia”.*
6. Study on Solid Waste Management Options for Africa, The African Development Bank-PSDU, July 2002.

## **Further information**

*Further technical information may be obtained from the UNEP Post-Conflict Assessment Unit website at:  
<http://postconflict.unep.ch/>*

