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Note on

Urbanisation Challenges, Waste Management, and Development

Background

Sub-Saharan Africa today is in the midst of a dramatic urban transition that will persist well into the 21st century. Between 2010 and 2035, the urban population is expected to more than double from approximately 298 million to 697 million. By mid-century, it is estimated that over 1 billion people will live in urban areas.¹ While urbanization has the potential to act as an engine of economic growth and human development—when properly planned for—it also brings with it enormous challenges. Not least among these is the challenge of improving waste management services.

As cities rapidly grow, so does the amount of waste that they generate. Changing human consumption patterns and the changing structure of economic activity generate various types of waste that must be appropriately managed to ensure sustainable development and a decent standard of living for all urban residents. In low-income countries, in particular, rapid urban growth is putting extraordinary pressure on limited urban resources for the provision of these essential basic services, further straining capacity in urban management. Furthermore, inappropriate policies have contributed to the growth of life- and health-threatening slums, where urban waste management services are often woefully inadequate.

Indeed, there is perhaps no area where the capacity to manage urban change is more urgent and more challenging than in informal settlements and slums. Poverty, social and economic exclusion, and the lack of affordable housing constrain the habitat choices of hundreds of millions of people in Africa. Policy makers have not responded appropriately, often denying service provision to these settlements. As a result, 62% of urban populations in Sub-Saharan Africa live in slum areas dominated by uncontrolled informal spatial developments, most often located in environmentally fragile areas, and without access to basic services such as water, sanitation, energy and transport and waste management systems.

These and related issues concerning sustainable urbanisation in ACP countries were discussed during the 2nd ACP/EC/UN-Habitat Tripartite Conference on *Sustainable Urbanisation as a Response to Urban Poverty Alleviation* among technical experts, ministers, mayors, and public authorities. The improvements of waste management services and, more broadly, urban slums, was identified as a core challenge to be addressed in the coming decades. Culminating in the endorsement of the Kigali Declaration, ACP countries declared the need to confront these urban challenges and called for assistance of international agencies in their fight for a better urban future.

Approaches to addressing waste generation in urban areas and management

Urban environments generate various types of waste, with serious implications for human health and environmental sustainability. The types of waste generated include municipal solid waste,

¹ United Nations (2013) *World Urbanization Prospects, 2011*

wastewater from various sources (including households and industries), and sludge from human excreta.

A key indicator of the challenge to manage some of these waste streams is reflected in the difficulty by most Africa countries to meet the Millennium Development Goals, especially that on sanitation and slums. Indeed, efforts to improve the situation have been outpaced by rapid population growth and urbanization.

Public authorities are ultimately responsible for ensuring the provision of adequate waste management services. However, the private sector's role is vital in complementing the efforts of Government. The waste management "value chain", which includes the collection, treatment, reuse, disposal and recycling of various waste streams, provides economic incentives that allow for the private sector to be an effective partner in environmental management, given an enabling environment for private sector investment in waste management activities.

Furthermore, the importance of micro, small and medium enterprises (SMEs) in waste management is also vital. An estimated 90% of all enterprises in the world are SMEs, accounting for 50-60% of employment in developing countries. A major challenge public authorities face is to create an enabling environment for SMEs to enter into the waste management industry and to increase employment potential and productivity. This includes the facilitation of business related information, technical support services, financial resources from national and international capital markets.

When appropriately supported, SMEs and small scale entrepreneurs can play an important role in solid waste management. While harmful wastes in dump sites can be managed through appropriate incineration, small scale entrepreneurs can play a role in the recycling of less harmful wastes, including composting of the organic materials. Currently, this activity is mostly taking place by small scale "scavenging" but with appropriate assistance, these activities can be scaled-up and better managed at the neighborhood level. Such efforts can improve urban environments while simultaneously generating income opportunities and improved livelihoods.

Similarly, the management of sludge from human and animal waste, public private partnerships can be established with the adoption of sludge exhaustion technologies and/or "waste to energy systems". For example, Bio Gas System involves anaerobic waste treatment to produce bio-gas to supplement energy requirements for various purposes. This has dual effect of providing supplemental energy to the population, while reducing the release of hazardous gases resulting from the disposal of such wastes into the atmosphere. Such measures should fully consider designs that are easily adapted to the realities of slum and informal areas.

UN-Habitat Response to the Urban Waste Management Challenge

UN-Habitat's response to the urban waste management challenge in Sub-Saharan Africa aims at tackling the multi-dimensional nature of the challenge. UN-Habitat has also been working with local governments and communities on waste management approaches that are: participatory and all inclusive; tailor made to local conditions; innovatively designed and low cost equipment that are preferably developed locally in order to ensure availability of after sales services within the targeted region; incorporates income generation; and encourages the full involvement of local communities for job creation.

Knowledge generation and global advocacy

Through a collaborative and participatory approach, UN-Habitat has actively engaged multiple relevant stakeholders in the waste management profession in the preparation and production of a number of publications relevant to the dialogue on waste management. These include: *Global Atlas of Excreta, Wastewater Sludge and Biosolids Management* in collaboration with the Moncton Commission; *Rapid Assessment Report on Wastewater Management (Sick Water)* in collaboration

with UNEP and launched during the 2010 World Water Day in Nairobi, Kenya; and *Rapid Assessment Report on Green Hills, Blue Cities* in collaboration with UNEP and launched during the 2011 World Water Day Celebrations in Cape Town, South Africa.

Innovative and appropriate technologies

Solid Waste UN-Habitat is promoting enhanced local capacity and equipment for low cost waste collection and disposal systems with clearly defined roles for local communities; and the development of processes and technologies to facilitate low cost solid waste management in secondary towns (e.g. the “Land Raise” for managing the disposal of wastes in areas preferably located where there is high water table conditions).

Faecal Sludge Management UN-Habitat approach to the issue of faecal sludge management has focused mainly on the *UN-Habitat Vacutug Project*. The *Vacutug* emerged out of the need for sustainable sanitation in high-density low-income areas. This need prompted the development of a mechanical device that hygienically and efficiently could exhaust and transport latrine sludge to a place for temporary storage and/or transport to a suitable disposal or treatment site. A pilot phase with the *Vacutug* was undertaken in the Kibera slums of Nairobi in Kenya. Since then, it has been utilized in 7 countries in Asia and Africa and designed to target CBOs with opportunities for income generation. Currently, six versions are in operation to meet demands from varied contexts of geographical locations. An evaluation of the *Vacutug* project was concluded in 2013 through funding support from the Bill and Melinda Gates Foundation.

Waste to Energy Energy recovery from wastes is another area of focus for UN-Habitat. This is the best practicable environmental option for managing wastes, and involves 2 energy recovery technologies namely combustion of waste and anaerobic digestion. In this regard, UN-Habitat has been involved with:

- The *Cows to Kilowatts* project in Ibadan, where the plant generates the equivalent of 0.5MW of electricity daily and became the first plant in the world to simultaneously treat abattoir waste and provide domestic energy and organic fertilizer; and the eThekweni Landfill Gas to Electricity project in Durban which generates 7.5MW of electricity from 2 landfill sites.
- Waste to Biogas projects in prisons in Kisi and Homa Bay in Kenya, Bamako in Mali, and a tourist location on the beaches of Dakar for instance.

In addition to the above, UN-Habitat is involved in the production of briquettes from the organic waste fraction of wastes as a substitute for wood charcoal, while providing a source of income for small businesses. Multifunctional Clean Energy Centres (MCECs) have been established in informal settlements in select African cities.

Programmatic and holistic responses to improving waste management services in slums through the Participatory Slum Upgrading Programme (PSUP)

Waste management challenges in underserved urban slums are some of the most pressing challenges in slums today. Inadequate access to sanitation services or solid waste management adversely affects the health of slum dwellers and dramatically reduces human capital. Acknowledging that in order to improve waste management services in slums, they must be incorporated within a programmatic approach to multi-sectorial citywide slum upgrading, UN-Habitat, the ACP Secretariat and the European Commission have launched the Participatory Slum Upgrading Programme (PSUP). Aimed at significantly improve the lives of slum dwellers, PSUP approaches waste management at multiple levels and within a holistic, participatory and rights-based framework. In Phase 1, ACP countries assess their urban situation as it relates to the challenge of slums. In Phase 2, implementing countries devise a citywide slum upgrading strategy; and in phase 3, they implement a pilot slum upgrading, allocating at least 10 per cent of the budget to community driven projects, many of which are focused on waste management.

Opportunities for a Global Agenda on Waste Management:

The examples above on contributions from UN-Habitat and that from other partners may not suffice in solving the waste problem in its entirety, if it is not accompanied at the regional and national levels by adequate legislation, policies, strategies, and appropriate resources and instruments to facilitate enforcement. This should be accompanied by capacity enhancement programmes for institutions responsible for waste management and their staff, as well as education and awareness campaigns for the populace as a whole on the inherent benefits to the economies of African countries of proper waste management. This could provide the necessary encouragement for all to contribute their quota to the waste management problem and help achieve greater levels of environmental protection.

Three main opportunities for furthering work on a Global Agenda on waste Management are:

Habitat III Conference in 2016: The third United Nations Conference on Housing and Sustainable Development (Habitat III) will outline a new Urban Agenda for sustainable urban development. All efforts must be made to ensure that the outcomes of the conference capture the need for effective management that considers the overall “Waste Value Chain” leading to the conversion into useful products

Post-2015 Development Agenda and the formulation of the Sustainable Development Goals (SDG)

In formulating the SDGs, ensure that improvements in environmental sustainability in the urban environment is promoted, including a goal that seeks to improve water and sanitation services, as well as improve the lives of slum dwellers.

Expanding and Strengthening the PSUP

As recommended in the Nairobi and Kigali Declarations, endorsed by participants of the first and second International Tripartite Conferences in 2010 and 2013, respectively, the PSUP should be expanded and strengthened in order to improve the living conditions of slums for slum dwellers, of which improving waste management services is a key priority.