



# **URBAN SOLID WASTE MANAGEMENT AND THE COMMUNITY**

## **THE CASE OF BISHOFTU CITY, OROMIA REGIONAL STATE, ETHIOPIA**

**BY**

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# PRESENTATION OUTLINE


1. INTRODUCTION
2. CITY PROFILE
3. SOLID WASTE MANAGEMENT
4. LESSONS LEARNED



# 1. INTRODUCTION

The rapid pace of increase in population, economic growth, urbanization and industrialization is coupled with accelerated solid waste generation

Improperly managed solid waste poses a risk to human health and the environment



Uncontrolled  
dumping and  
improper  
waste  
handling  
causes a  
variety of  
problems

- contaminating water
- attracting insects and rodents
- increasing flooding due to blocked drainage facilities
- increases Green House Gas (GHG) emissions



## If properly managed

- employment generation as well as soil health improvement
- Contributes to green areas and open spaces that enhance
  - the physical character of an area
  - noise reduction, control of airborne pollutants
- sustain food security, raise property values, and urban regeneration



This is demanding a well organized solid waste management system

The role of stakeholders, communities and organizations is very mandatory in this respect and every development agenda

Thus implementation of any development work in the city is through the involvement of the general public

In this presentation, it is tried to see solid waste management, employment creation, community participation and practices on solid waste management of Bishoftu City



## 2. CITY PROFILE

Founded in 1917 with the coming of Ethio-Djibouti railway

Located in East Shewa Zone of Oromia Regional State, 47 km south-east of Addis Ababa, the capital city

The AA-Adama express way and the Ehtio-Djibouti railway bisects the city

Population 201, 432 (47.7% male, %52.3% Male); 68% working age population



Location:  $8^{\circ}45^1$ -  $8^{\circ}47^1$  North latitude and  $38^{\circ}56^1$ - $39^{\circ}$  longitude

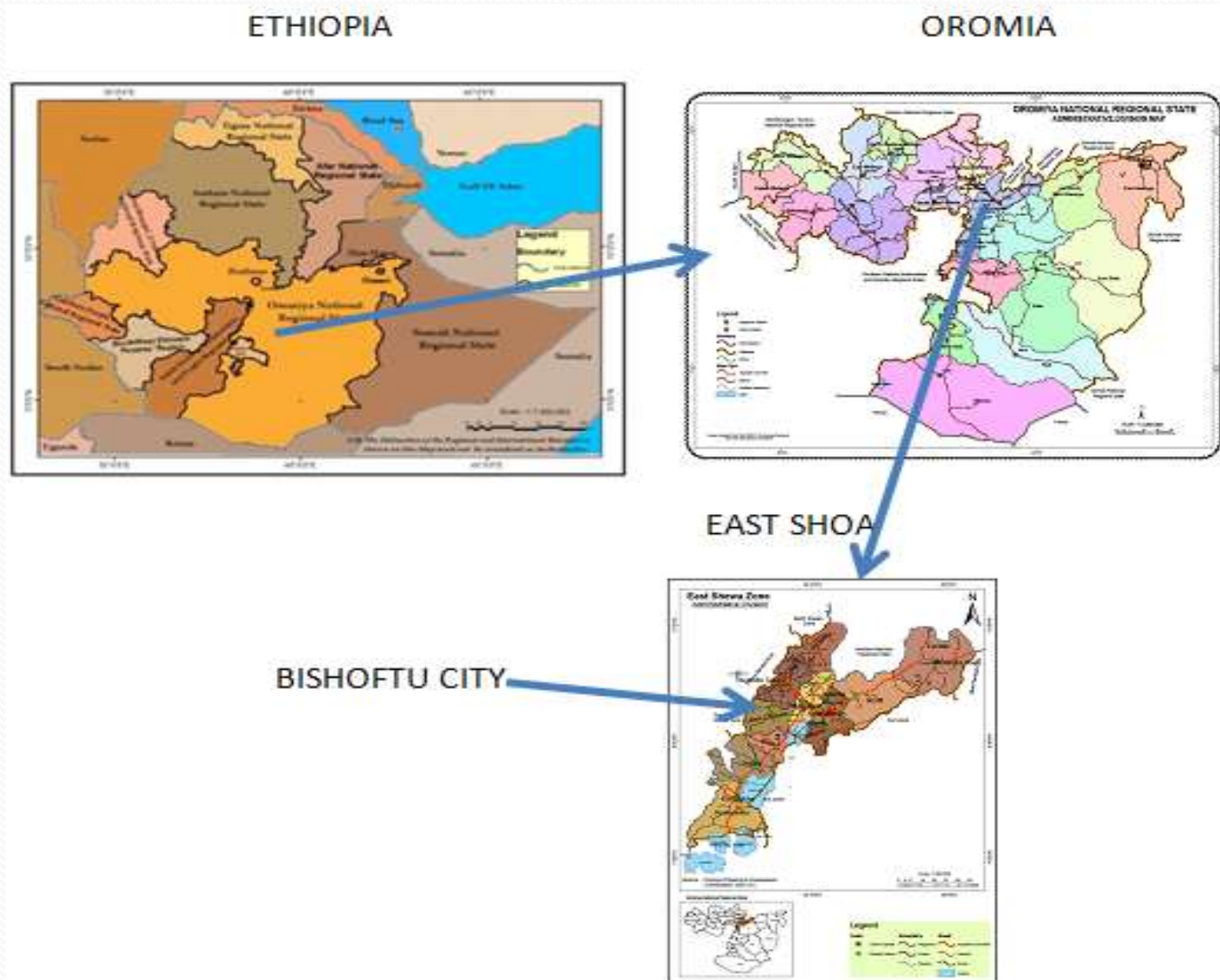
Altitude: 1748m-1955m asl (temperate agro-climatic zone)

Mean monthly maximum temperature from  $29.1^{\circ}\text{C}$  (February) to  $32.6^{\circ}\text{C}$  (May) and the mean monthly minimum temperature ranges from  $5.4^{\circ}\text{C}$  (October) to  $3.77^{\circ}\text{C}$  (December)

Total annual rainfall of the city is 702.1 mm



# Location of Bishoftu City



The name Bishoftu came from the Afan Oromo language called “Bishaan” which refers to “water”

The city is  
endowed with  
volcanic  
crater lakes

- Hora Arsade
- Babogaya
- Bishoftu
- Cheleleka
- Kilole,
- Kuriftu, and
- Green Lake



The city has a great tourism potential due to Seven creator Lakes that found in the city



**7 Bishoftu's Natural Crater Lakes**





### 3. SOLID WASTE MANAGEMENT

#### 3.1. Policies, proclamations and regulations

- It is to provide a comprehensive review of the policies, proclamations and regulations that is of particular relevance to environment, solid waste management, practices on compost preparation and utilization as well as community participation in this respect
- National policies are directly applicable/customized to local situation

## **The FDRE Constitution, 1994**

- citizen has the right to live in clean and healthy environment
- people have the right to full consultation and to the expression of views in the planning and implementations of environmental policies and projects that affect them directly.
- It is also the duty and responsibility of government and citizens to protect the environment

## **Environmental Policy of Ethiopia**

- conservation and sustainable utilization of the natural, man-made and cultural resources and the environment at large without compromising needs and ability of future generation

## **Environmental Impact Assessment Proclamation No. 299/2002**

- major development programs, plans and projects of the private or public enterprises shall be subjected to Environmental Impact Assessment study before their approval for implementation



## **Public Health Proclamation No 200/2000**

- collection of waste should be in a designated place which does not affect the health of the public and disposition of waste shall be made in a manner that will not affect the environment or human health

## **Proclamation on Environmental Pollution Control (NO 300/2002)**

- the “polluter pays” principle will be applied to all persons. There are also penalties for offences in environmental pollution

## **Solid Waste Management Proclamation (No. 513/2007)**

- defines solid waste management as the collection, transportation, storage, recycling or disposal of solid waste.
- solid waste management action plans designed by, and implemented at, the lowest administrative units of urban administrations can ensure community participation
- it is essential to promote community participation in order to prevent the adverse effects and enhance the benefits resulting from solid waste

## **Compost Preparation Standard, MUDH November 2017**

- specifies requirements, sampling & testing methods, selection of composting site & technology, land use & composting process and composting site management system which is applicable on organic municipal solid waste

## 3.2. SOLID WASTE MANAGEMENT

Solid Waste Management refers to the strategic approach to sustainable management of solid wastes covering all sources and all aspects, including waste generation, collection, segregation, transfer, sorting, recovery and disposal in an integrated manner, with an emphasis on maximizing resource use efficiency

It considers how to reduce, reuse, recycle and manage waste to protect human health and the natural environment



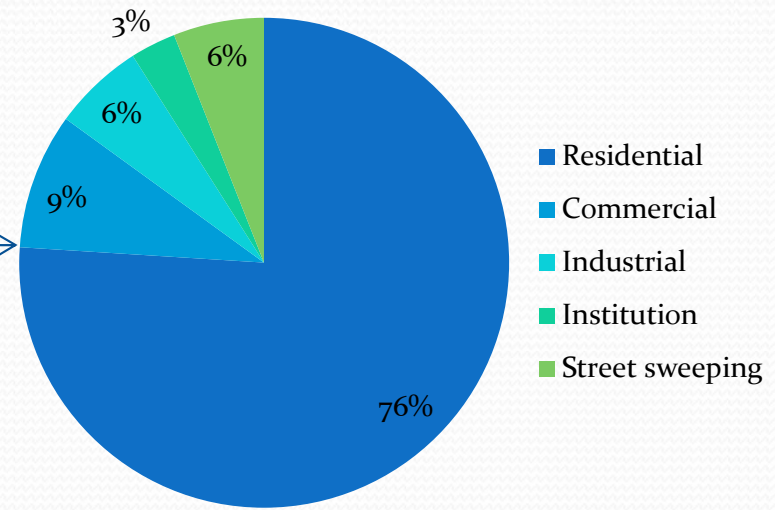
The work is inclusive and implemented with partnerships developed between donors, regional, district and 'kebele' government agencies and with city administration and MSEs at the local level.

### Bishoftu city waste generation

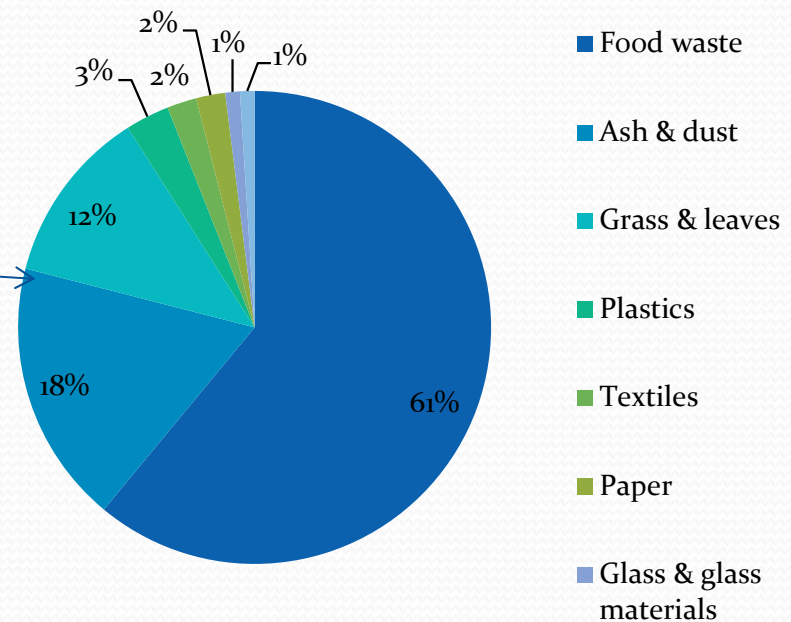
- 342m<sup>3</sup> per day
- 123,248m<sup>3</sup> solid waste generated for the year 2022
- 0.48 kg per capita/day.

# SHARE OF WASTE GENERATED

## By Source



## Composition of solid waste by weight



The city has  
applied a  
comprehensive  
process

- waste identification at sources
- waste collection
- transfer of solid waste of all kinds generated by different group of city residents
- sorting
- transportation
- recycling and
- reusing
- composting and
- final disposals to landfill

The process are  
operated by

- MSEs and
- private firms



### 3.2.1. Reduction at source

- Awareness raising activities through
  - door-to-door communication
  - school outreach programs
  - using posters
  - community sensitization workshops
  - national and local print and non-print media such as radio and television on waste handling in general and waste segregation in particular was made
- Primary waste collecting MSEs are also made responsible to teach and lobby the community to segregate waste at source

### 3.2.1...

- Each household reduced and sorted out their wastes into organic and inorganic waste categories
- The City experts regularly follow the day-to-day performances of MSEs

### **3.2.2. . Waste collection and transportation**

- The service is given through Door-to-door collection service method with minimum monthly payment as per the regulation
- People engaged in Solid Waste Collection and Transportation has to pass through Certificate of Competency (from level 1 to level 3) and resulted in knowledge-based operation



## 3.2.2...

- Training on Occupational Health and Safety procedures and distributed safety materials is undertaken
- The city ensures all urban residents are provided with regular and reliable waste collection services
  - to protect public health
  - that collected waste is managed properly regardless of whether it is destined for recycling, treatment or disposal
- The city waste collection coverage has been increased from 68% in 2015 to 89 % in 2022



-onsite handling,  
storage, and  
processing  
-collection, transfer  
and transport





### **3.2.3. Establishment of waste Management Facilities**

- The city has
  - operational sanitary landfill
  - compost shade (production) facility and
  - compost demonstration site within the compound of the landfill

#### **A. Landfill site and transfer station facilities**

- The city has a land fill site with an area of **111,721.92 m<sup>2</sup>**
- Currently, MSEs recyclers segregate and store wastes in different compartment, namely; Plastic, Metal, Bone, Paper, Organic wastes and dumping waste.
- Inorganic wastes to recycling and organic wastes to compost making



## Landfill site





## Solid Waste recycling and raw material input for cycling factories



After 3 to 6 month organic waste decomposed to =   
Natural fertile /compost/



## **B. Compost production facility**

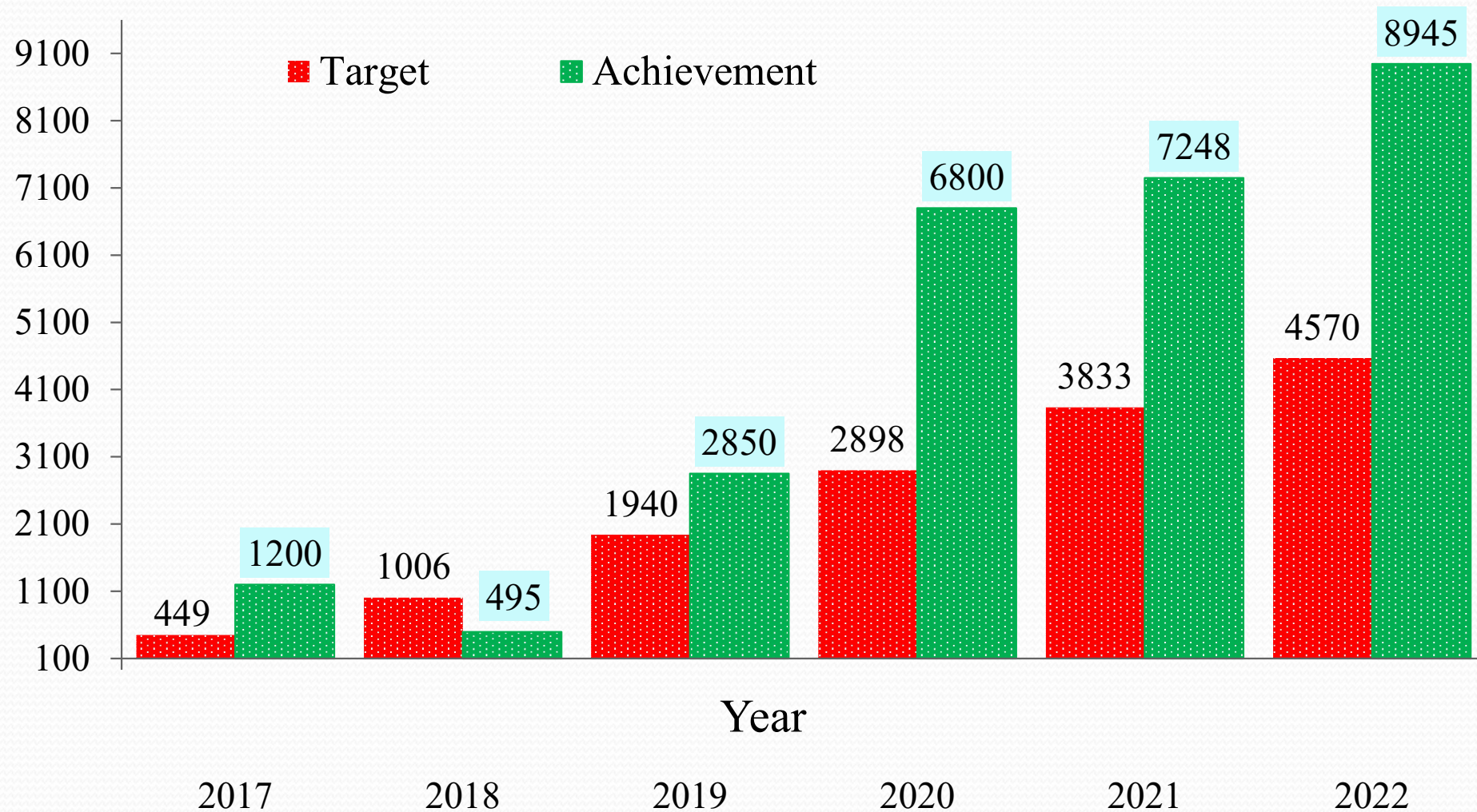
- Composting is the process of decomposition of organic waste by the bacteriological action of the microorganisms contained in the waste itself.
- Three MSEs at sanitary landfill site by using biodegradable solid waste segregated at transfer site, using both aerobic biological decomposition and effective micro-organism (EM)
- All members of MSE received professional training and have COC level III



## B. comp...

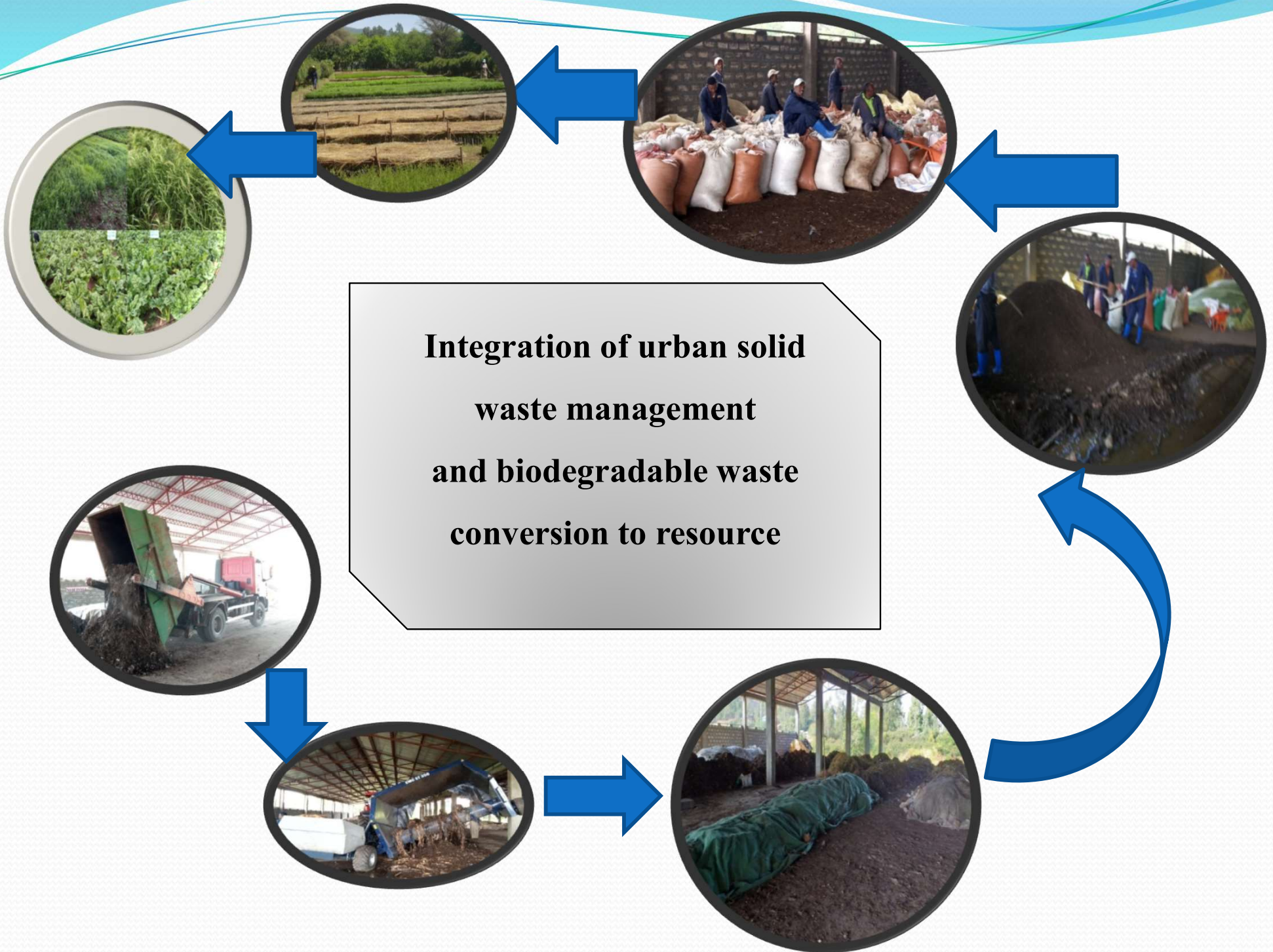
- The compost quality always tested in soil laboratory of Agricultural Research Center found in the city at every three months interval
- MSEs distribute produced compost fertilizers to
  - municipality nursery sites,
  - private gardens,
  - other greenery MSE and
  - city residents
- The three compost producing MSE's produce above 6,500 tons of compost per year on average

## Amount of compost produced in ton





**Integration of urban solid  
waste management  
and biodegradable waste  
conversion to resource**



### **C. Compost demonstration facility**

- About 2000m<sup>2</sup> land is delineated and fenced for compost demonstration site
- Each plot on the site has performed with different replication of crop and vegetable demonstration experiments
- Chemical fertilizer with compost yields best, followed by yields with compost then chemical fertilizer



# Compost demonstration experiments





## 4. LESSONS LEARNED

Regulatory and legal framework, institutional and coordination mechanisms, and tools are established for supporting

Creating model village at each 'kebele' level on waste handling and management

Container system left and pulled at transfer site and landfill site unless allowable rare institution

Increased awareness among city residents on solid waste management and enhanced commitment of local communities to clean up and protect sanitation of their immediate surroundings



There are a **reduced waste disposal costs and environmental impacts**, since most wastes generated in the city have been recycled, reused and converted into compost before being transporting to the final disposal site

The notion ...*waste is a resource or money*... is realized as conversion of urban waste in to resource by compost fertilizer production and inorganic waste recycle, reuse for sale purpose

Improved local economic development (LED), urban resilience, and enhanced gender equity in the ULG operations

Shared-responsibility and practical ownership is established among residents of the city with regards to managing wastes at sources, clean and green their vicinity on regular basis

Transportation truck is standardized for solid waste transportation purposes .

Door-to-door collection system is operated by MSEs as per the standard

The polluter pays principle has been implemented in the city

Enhanced citizen participation and engagement in ULG planning and implementation

Solid waste management and UGI guidelines, manuals and model villages have been developed and the city has been supported in mainstreaming them to the local contexts





*THANK YOU  
FOR YOUR  
ATTENTION/*