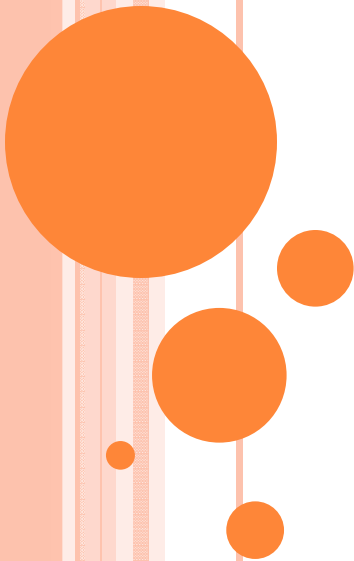




OVERVIEW OF ADDIS ABABA CITY SOLID WASTE MANAGEMENT SYSTEM



**February/ 2010
Addis Ababa
Ethiopia**

PRESENTAION OUTLINE

- **BACKGROUND**
- **SOLID WASTE GENERATION & COMPOSITION**
- **SOLID WASTE MANAGEMENT PRACTICES**
- **IDENTIFIED PROBLEMS & GAPS /CHALLENGES**
- **ADISS ABABA INTEGEATED SWM MODEL**
- **THE WAY FOWARD**



AFRICA, ETHIOPIA, ADDIS ABABA





BACKGROUND

○ Major City Profile

- Capital city of Ethiopia**
- Seat of the African Union and the United Nations Economic Commissions for Africa**
- Gate-way for diplomats and tourists**
- Population about 3 million**
- Area 540 square kilometer (54000 hectare)**
- Average Elevation is 2500m asl**
- Three layers of government: City Government at the top, 10 sub-city Administrations in the middle, and 99 kebele at the bottom**



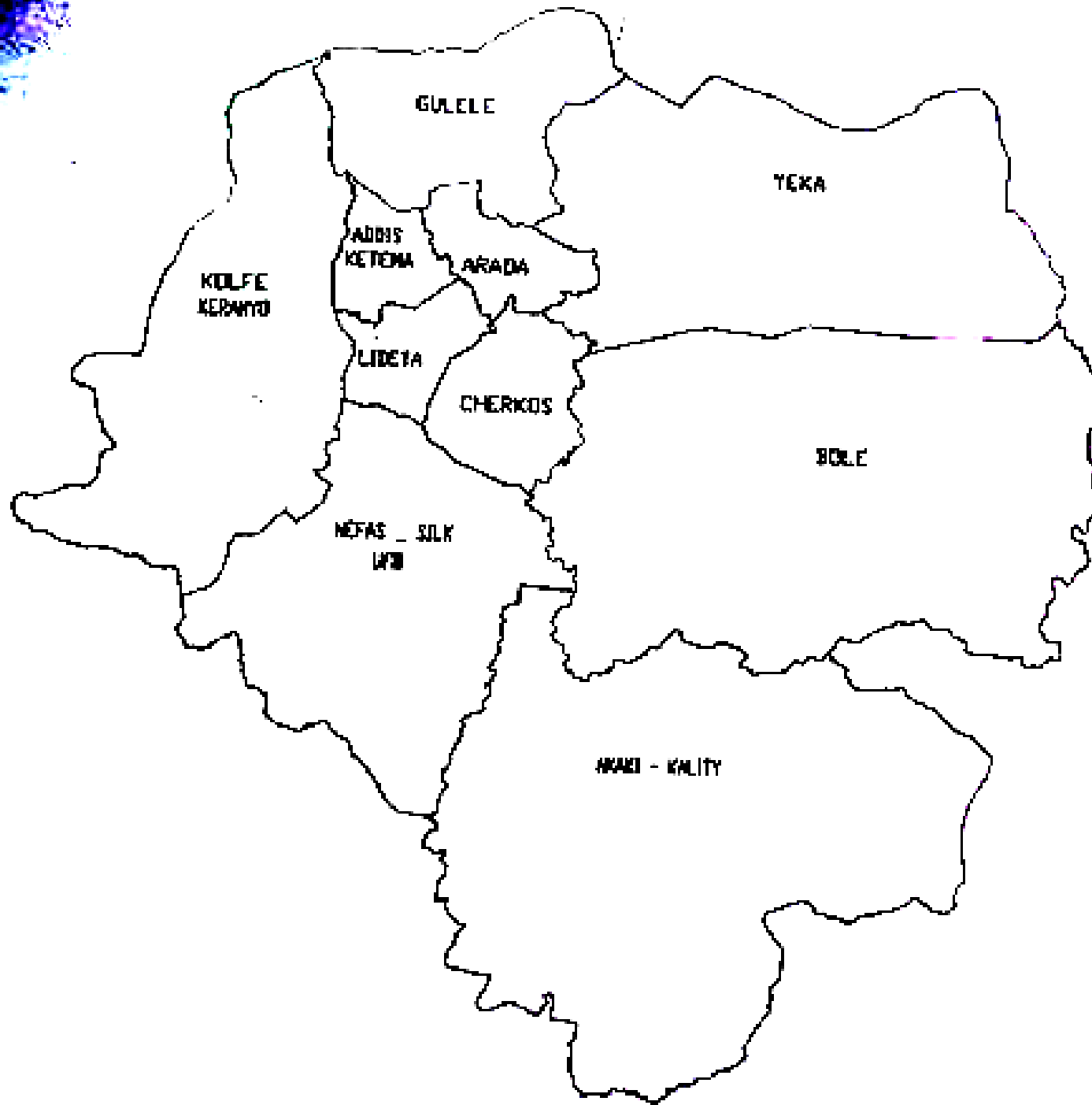
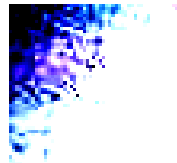
ADDIS ABABA

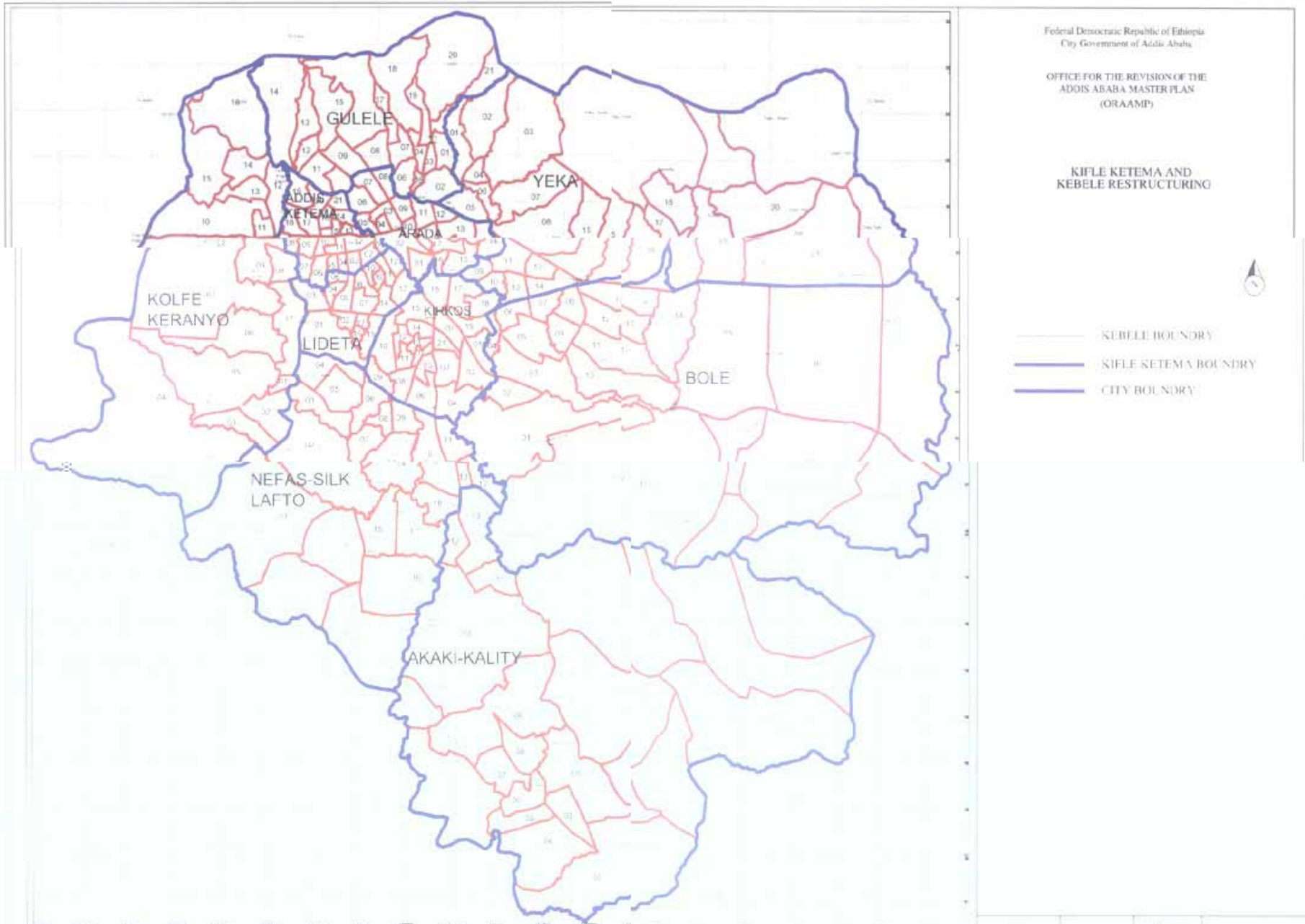
City Government of Addis Ababa:
Population \approx 3 Million

Sub-City Administrations:
Sub-cities:- 10
Population \approx 300,000

Kebeles Administrations:
99 Kebeles
A/Population \approx 30,000







City Map of Addis Ababa (Source: ORAAMP)

SOLID WASTE GENERATION

- **Per Capita Generation Rate**
- **City of Addis Ababa generates a solid waste of 0.4kg/c/day**
- **More than 200,000t are collected each year**
- **About 550t/day , 80% of the total waste collected**
- **The municipality increased the collection rate from 60% to 80%**
- **Sources of Waste Generated**
 - **76% households,**
 - **18% institutions ,commercial, factories, hotels,**
 - **6% is street sweeping.**



PHYSICAL COMPOSITION

Organic 60%, Recyclables 15 % , Others 25%

- **Vegetable** 4.2 %,
- **Paper** 2.5%,
- **rubber/plastics** 2.9%,
- **Wood** 2.3%,
- **Bone** 1.1%,
- **Textiles** 2.4 %,
- **Metals** 0.9%,
- **Glass** 0.5%,
- **combustible leaves** 15.1%,
- **Non-combustible stone** 2.5%,
- **All fine** 65%



SWM PRACTICES

COLLECTION OF SOLID WASTE

- The Municipality Spends large proportion of its budget on collection, transport, and disposal of solid waste**
- Solid waste collection services divided in to two sub-systems : primary and secondary collection**
- Primary collection is done by micro and small enterprises**
- Payment is Volume based rate(30 birr Per m³)**



Contd,

- **Residents are divided in to Zones**
- **One Zone Constitutes 800-1000 residents**
- **In each zone one MSE is assigned to work**
- **The city is divided in to 549 zones each zone comprising 800-1000households**
- **The number of enterprises organized to work on solid waste collection is 520 with a total number of 5815 operators**
- **Most residents are willing to cooperate with the government in financing SWM**



Contd,

- **Service Charges are collected with water consumption rate**
- **Services charges are fixed according the amount of water consumed in terms of the ability and willingness to pay**
- **Residential houses 20%, Commercial houses 42.5% of the total water consumed**
- **Collection is regular and full coverage**
- **The municipality has placed several garbage containers**



Separation, Reuse and recycling

- **Sorting of waste takes place at various levels in the waste management process**
- **The first level of source separation is at household: plastic materials, glass, bottles, are considered as valuable and usually sorted out for reuse**
- **Several collectors represent the second stage: Street boys, private sector enterprises, scavengers at municipal landfill, and the korales**
- **Recyclable materials include: metal, wood, tyres, electricity products, old shoes and plastic.**



Contd.

- The municipality role in recycling is absent and mainly focus on collection, storage, transportation and disposal of solid waste.**
- Most of the collection of recyclable wastes in the city is performed by the informal sector**
- Recyclable materials are used by local plastic, shoe, and metal factories**



Transport and disposal

- Municipality transports from garbage containers (Secondary collection) to the final dumping site**
- The highest level in the transportation system is represented by municipality**
- The role of private sector on transportation of solid waste is highly limited**





Primary Collection



Primary Collection




Secondary Storage


DUST BINS



DISPOSAL OF SOLID WASTE

- There is currently one open dumpsite where all collected waste is disposed off.**
 - It has been established 47 years ago.**
 - The site is known as "Rappi" or "Koshe" which is South West part of the city**
 - Located 13 km away from the city center.**
 - It has a surface area of 25 hectares.**
 - The present method of disposal is crude open dumping: hauling the wastes by truck, spreading and leveling by bulldozer and compacting by compactor or bulldozer.**
- 

DISPOSAL OF SOLID WASTE

- **The major problems associated with the disposal site are:**
 - **The site is getting full**
 - **Surrounded by housing areas and institutions**
 - **Nuisance and health hazard for people living nearby**
 - **More than 200 - 300 waste pickers per day, work continuously and obviously living nearby the site and interfering the operation of the work for collection of salvageable materials such as wood, scrap metals and discarded food.**
 - **No daily cover with soil**
 - **No leachate containment or treatment**
 - **No rainwater drain-off**
 - **No odor or vector control**
 - **No fence**
 - **No weigh bridge, inaccurate weighing of waste**
- 



Aerial View of Reppi /Koshe Solid Waste Disposal Site, Addis Ababa, Ethiopia



Reppi Solid Waste Disposal Site, Addis Ababa, Ethiopia



Reppi Solid Waste Disposal Site, Addis Ababa, Ethiopia

BEST PRACTICES ON SWM

- Decentralization of SWM Services to the lower tier of Administration**
- Creating employment opportunities for Micro and small enterprises (Generates income for the poor)**
- Primary collection from each household is done by Micro and small enterprises**
- Efficient and equitable service charge collection system established(With water Consumption rate)**



Contd,

- **Community participation**
 - Sanitation activities-Campaigns**
 - Supply of dust bins**
 - Willingness to pay**
 - Associations- Addis Ababa Clean initiative**
- **Developing transfer stations and new sanitary land fill**



MAJOR IDENTIFIED PROBLEMS & GAPS /CHALLENGES

❖ Low service coverage

- Collection,**
- Street Cleaning,**
- Reuse/Recycling**

❖ High Operational cost

❖ Poor Quality of Services

❖ Very low customer Satisfaction

❖ Lack of Environmentally Sound, effective & efficient System

Solid Waste Management Hierarchy

Source Reduction

Most Preferred

Recycling/Reuse

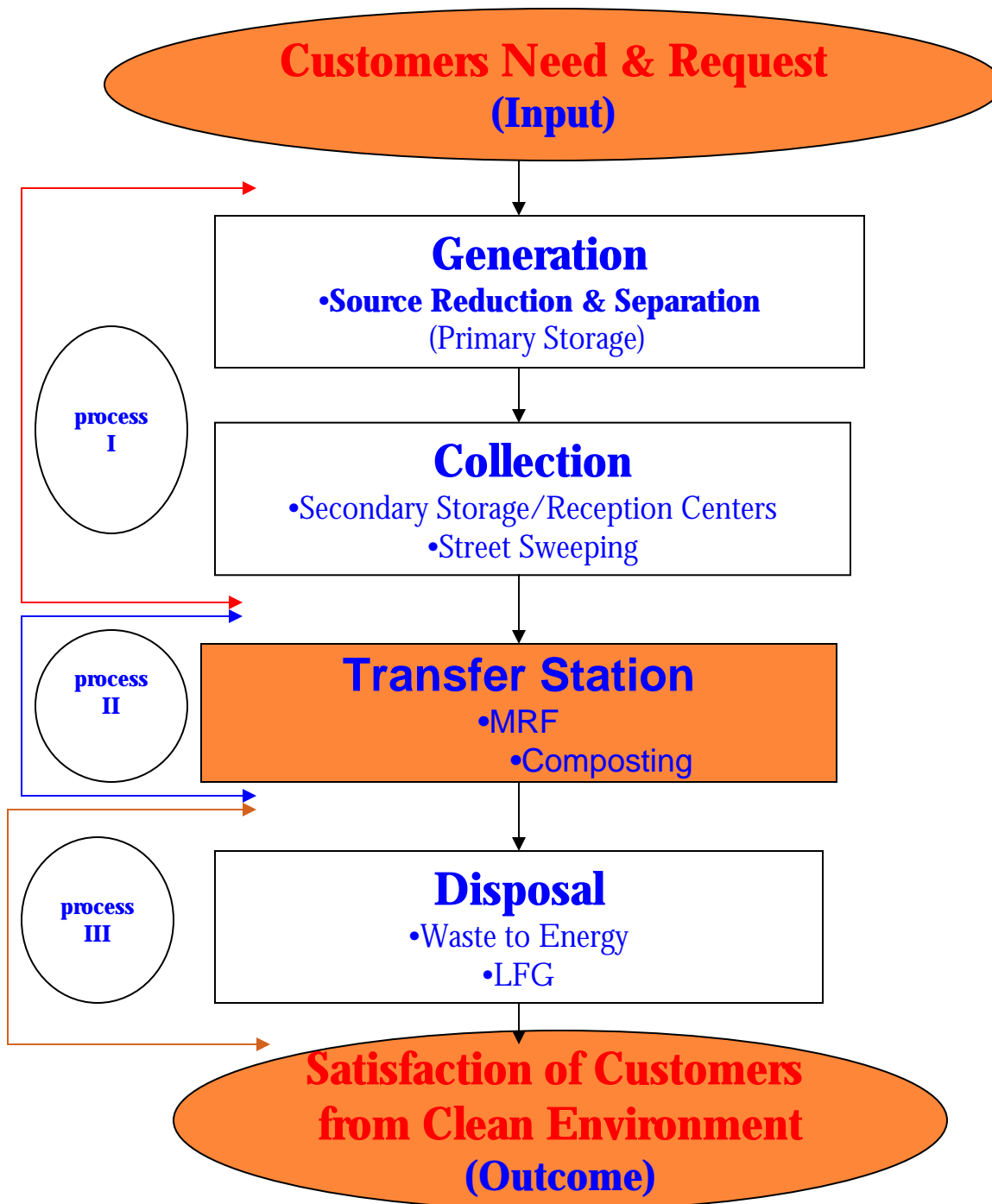
Composting

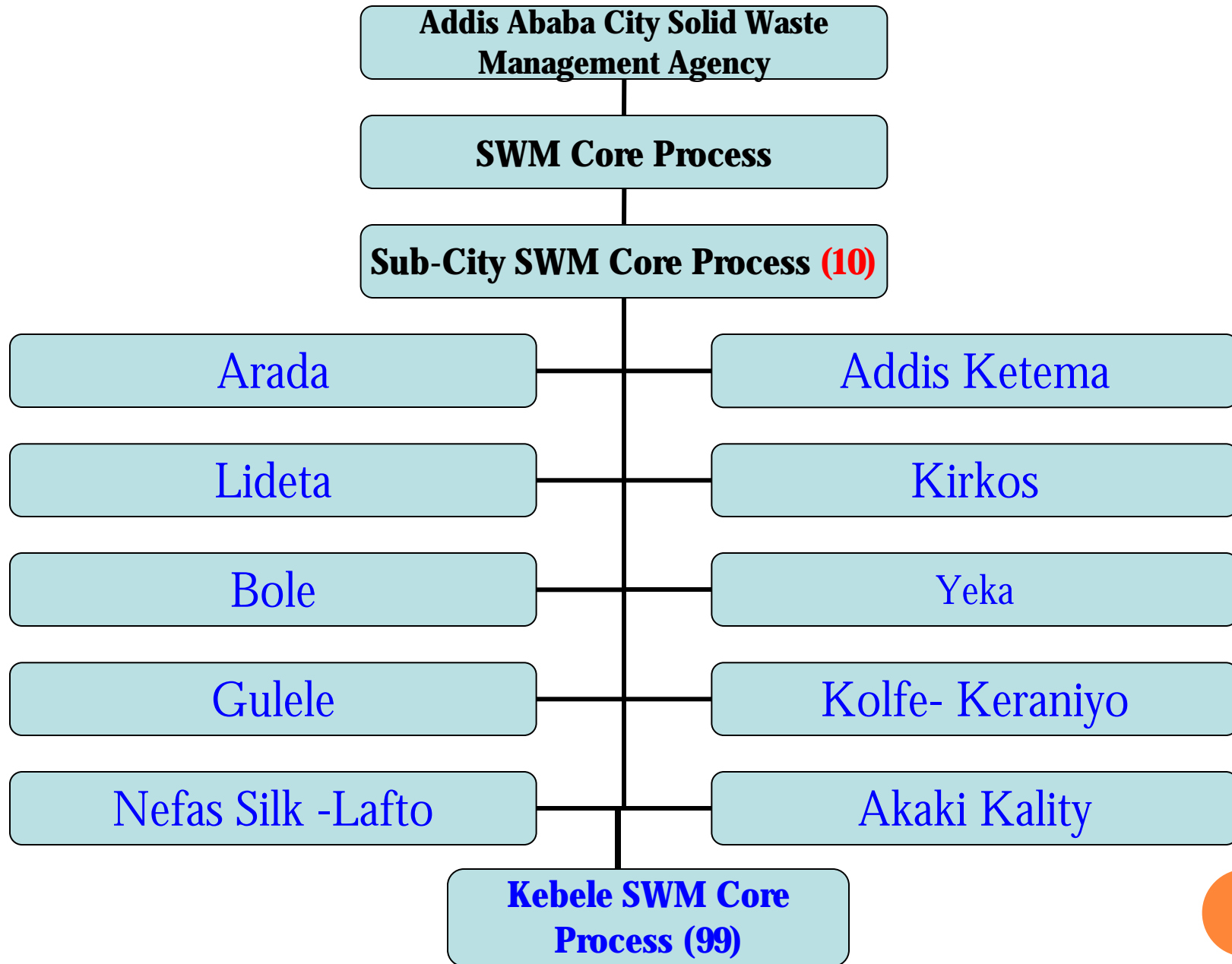
Incineration

Landfilling

Least Preferred







THE WAY FORWARD

1. Collection

- ✚ **Develop SME'S into viable companies.**
 - ▶ **Capacity building in business Management.**
 - ▶ **Improve push-cart to power driven technology**
 - ▶ **Introduce easy to handle waste containers**
 - ▶ **Develop SMSE's Awareness and Accountability**
 - ▶ **Enable SME'S own waste collection & transport vehicles**



THE WAY FORWARD

2. Close Existing Disposal Site and develop New Sanitary landfill and Transfer Stations

+ Close Existing Disposal Site

- ▶ Undertake closure strategy and design study.
- ▶ Implement Closure.
- ▶ Exploit Potential gas to energy projects.
- ▶ Remediation, land re-use

+ Develop New Sanitary Landfill

- ▶ Site selection.
- ▶ Conduct pre feasibility study.
- ▶ Conduct feasibility and design study.
- ▶ Construction



THE WAY FORWARD

+ Develop Transfer Stations

- ▶ **Site selection**
- ▶ **Conduct feasibility and design study**
- ▶ **Construction**

3. Upgrade collection, transportation & landfill machineries

- ▶ **Collection vehicles**
- ▶ **Landfill dozers, compactors**



THE WAY FORWARD

4. Implement Re-engineered Processes and Strengthen Institutional Capability

✦ Staff Skill Development

- ▶ Training
- ▶ Experience sharing
- ▶ Equipment supply



POLICY & LEGAL ISSUES

- National Environmental Policy**
- National SWM Proclamation**
- AA city Charter**
- AA SWM Policy**
- AA SW Regulation**



MAJOR AREAS OF INTEREST

- **Transfer Station**
- **Composting Plant**
- **Recycling Center**
- **Sanitary Landfill**
- **Capacity Building**





Gotera Interchange Ring Road , Addis Ababa, Ethiopia



THANK YOU!!

