Solid Waste Management City Assessment Cotonou

Gevalor
September 2015
Plan

1. Initial data
   • Assessment’s boundaries
   • General framework
   • Institutional and legal frameworks
   • City scale projects and planning
2. Operating aspects
   • Waste production
   • Waste pre-collection / transfer center / collection
   • Dumpsite
3. Funding
4. Action plan proposed
1. Framework and context
City assessment framework:

• Territory: Cotonou
• Considered waste: Municipal solid waste and assimilated (MSW)
  Non dangerous waste coming from households, public garbages, street sweeping, markets, shops, administrations, handcrafters and health centers.
1. Framework and context

General context: Benin and Cotonou

- Benins economical center (capital: Porto Novo)
- Pop. 2013, Bénin: 10 millions inhabitants.
- Pop. 2013, Cotonou: 678 millions inhabitants
- Pop 2013, Cotonou daytime: ca 1,2 millions inhabitants
- Seaside city
- East and West separated by a laguna
- 79km² inextensible (cf map)
- GDP per capita: 752$ (2012)
- Minimum wage ca 90$
Institutionnal and regulation context

• Decentralisation started in 1999 (law: 15 jan 1999).

• Local authorities are in charge of waste management (environmental law).

• Solid waste management Planification and implementation: municipal mandatory capacity.

• Before 1999 waste management was directly done by the municipality
1. Framework and context

Institutionnal and regulation context

Environment general direction

- Regulation framework on waste management

City of Cotonou

- In charge of solid waste management from households through final disposal.
1. Framework and context

**2000 - 2010**
- PGDSM (municipal solid waste management project)
- Funded by the Canadian cooperation (ACDI)
- Implemented by Oxfam

**2009-2011**
- AQICO (preventing flooding in Cotonou)
- Funded by EU

**2012-2016**
- PUGEMU (urban environmental management emergency project)
- Funded by World Bank
- Implemented by AGETUR
2. Operationnal aspects
2. Operationnal aspects

Production:

- 0.6 kg / inhab / day (daytime population)
- 700 to 750 tons /day

Municipality manages only MSW and assimilated..

Municipal solid waste production estimation

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>MSW production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>665 100 hab</td>
<td>240 000 T/yr</td>
</tr>
<tr>
<td>2013</td>
<td>678 874 hab</td>
<td>260 000 T/yr</td>
</tr>
<tr>
<td>2020</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
Production:

Existing characterization:

- By Dessau Soprin in 1997 / representative of Cotonou (report got lost)

- By Bethesda: to be confirmed ??
2. Operationnal aspect

Production:

- **Dessau Soprin results**
  - Main parts
    - Sand (45%)
    - Organics (45%)
Solid waste management organisation

2. Operationnal aspects

Waste production → Pre collection → Transit → Collection → Final disposal
2. Operationnal aspects

Pre-collection

- Pre collection structuration in the PUGEMU project
- Pre-collectors paid by households
- Pre-collection subscription is mandatory by law.
- Mainly non motorized pre-collection.
- 95 sectors covered by 77 NGO’s
- Pre collection NGO’s coordination: COGEDA
- Contract between NGO’s and Municipality signed in 2007 and yearly tacitly reconduted
- In 2007 consultation framework between NGO’s and Municipality with semestriel meetings.
- Collection of mixed waste – informal recuperation of recyclables by pre-collectors.
- Around 2000 « formal » jobs + unformal jobs not quantified.
2. Operationnal aspects

**Waste transit between pre-collection and collection— ongoing reorganization**

- Grouping centers existed but were not or slightly builded
- Remodelling work → precollection and collection problems between june and august 2015
2. Operationnel aspects

Collection

- Service provision for collection
- New system since April 2015
- Before: several entreprises for collection only
- Now: two entreprises (Eastern Cotonou / Western Cotonou) selected by call for tender. Are in charge of sanitation in general (liquid / solid) evaluation in 2016
- In general goes 6 times / day to the dumpsite
- 1 to 2 days to fill up an 18-20 m³ per container
- 8 carry – containers / 5 trailers / 4 tractors
2. Operationnal aspects

**Collection transhipments**

- Under construction: transit center collection transhipment
- No feasibility study or economical analysis founded
- Was supposed to include some sorting out station – but not included in the plans.
2. Operationnal aspects

Valorization (out of city frame):

- Plastic bottles
  - Informal recycling
- Organic matter
  - Bio waste composting attempt in within Cotonou
  - Small quantities / compost quality to be checked.
2. Operationnal aspects

Final disposal: burrial

- Ouesse’s sanitary landfill
  - Controled dump – studies by Dessau Soprin
  - Opened since September 6th 2006 - 3,5 ha
  - First cell closed in May 2015 – Funded by ACDI Accueil des déchets non dangereux de Cotonou
  - Landill gas recuperation to be implemented in 1st cell
  - 2nd cell funded by World Bank
  - 40km away from Cotonou
  - Cell capacity : 550 000 tons waste
  - Space for 8 cells available
  - Ongoing negociation to open the dump to other cities.
2. Operationnal aspects

**Operationnal aspects: main problems**

- Concertation framework to reimplement (existed in 2007)
- Communication difficult between the different actors.
- Different objectives depending on the parties – need to be worked together.
- Grouping center far for some precollectors. (several kms, walking)

- No strategic plan / no vision
- Lack of employees thus of control.
3. Servie funding
3. Service funding

Waste management cost for the city

**Budget 2013 for sanitation in general**

2 billions FCFA of which:

- 36% Collection
- 36% Treatment
3. Service funding

Waste management tax, collected on property tax around 6000 F/yr

Household ➔ Pre-collectors
Pay subscription 500 to 2000F / month

Benin tax office

Municipality of Cotonou

Collectors
Landfill operator

Payment per ton
270F / ton one way
35F / ton return
12000F /ton buried

28/09/2015 City assessment Cotonou
4. Proposed action plan
4. Proposed action plan

<table>
<thead>
<tr>
<th>Priority 1</th>
<th>Institutionnel / strategic: Lack of strategy / waste management masterplan <em>Global impact</em></th>
<th>Technical support: Writing of a strategic masterplan, in collaboration with the municipality.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority 1</td>
<td>Landfill/ methane recuperation: The landfills first cell is closed. There is high uncertainty on its GHG emission potential – as well as uncertainty on the presence of installation to capture gases. <em>Impact methane landfill</em></td>
<td>Technical support: Feasibility study– capacity building of technical services team on the subject. Technical support on implementing the project or writing the project and looking for funds.</td>
</tr>
<tr>
<td>Priority 1</td>
<td>Organic waste valorization: Organic waste valorization close to the city would avoid transportation / landfill filling / compost production for agriculture. <em>Impact methane and black carbon</em></td>
<td>Technical support: Réaliser Carry out a waste characterization – Feasibility and implementation economical, environmental and social study for a composting platform.</td>
</tr>
</tbody>
</table>
4. Plan d’actions proposé

| Priority 2 | Public awareness rising :  
Population is not sufficiently aware to adopt the right behaviours  
*Global impact* | Technical support: Support to implement publice awareness rising (tools, training etc) |
|---|---|---|
| Priority 2 | Pre-collection :  
Pre-collection zones need an update.  
Recovery rates very low  
*Impact global* | Technical support: Pre collection reinforcement  
Support to pre-collectors for restructuration / Support to municipality on managing the relationship. |
| Priority 2 | Financing waste management  
Work on type of management  
State insufficiently implicated  
*Impact global* | Technical support: Work on waste fiscality |
References

Recensement général de la population et de l’habitat de 2013, résultats provisoires, République Beninoise
PUGEMU / Etude d’évaluation, d’identification des actions de renforcement des capacités des ONG de la pré-collecte des déchets solides ménagers du Grand Nokoué. CPP SKE / SERHAU SA Décembre 2013 –
PUGEMU / Travaux de pavage de la voie d’accès et d’ouverture d’une nouvelle cellule au LES de Ouesse – etude technique et surveillance et contrôle des travaux. Avril 2013 Burgeap / IGIP Afrique
Valorisation des DSM au Benin CISE Octobre 2007
PUGEMU / Etudes techniques de réhabilitation et de construction de points de regroupement et de CT dans le grand nokoue avant projet sommaire février 2014 EDESSA G.E. international
PUGEMU / Etude de faisabilité technico – économique transversale de la filière DSM du grand nokoue / Dec 2012 / Carrefour environnement / GEO environnement
PGDSM / Plan de mise en œuvre du projet / Juin 2004 / Dessau Soprin
Guide pratique de gestion des DSM de la ville de Cotonou / 2010
PGDSM / Sommaire / Dessau Soprin Janvier 2003
Meetings and interviews:

Division propreté de la direction des services techniques de la ville de Cotonou
Direction administrative et financière de la ville de Cotonou
Police municipale
Service d’appui aux initiatives communautaires
Ministère de l’environnement
Ministère de l’urbanisme de l’habitat et de l’assainissement
9 structures de pré-collecte (COGEDA)
1 structure de collecte
AGETUR gestionnaire de la décharge et MOE du projet PUGEMU