

Athens 2014

2ND INTERNATIONAL CONFERENCE
on Sustainable Solid Waste Management

AGENDA

12TH-14TH JUNE 2014

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2nd International Conference on Sustainable SW Bio-waste separate collection in São Tomé and Príncipe, West Africa

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Keywords: bio-waste, municipal solid waste (MSW), São Tomé

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São Tomé e Príncipe Islands, West Africa,
Pop.: 178.739 hab.
GDP per capita: 1.222 USD



Overview

Waste Management in São Tomé

- MSW generation: 127 kg.hab.year-1
- Approx. 70% of waste is biodegradable
- Waste management requires donor countries support (e.g. EU Aid)
- One central “Dump/ Landfill”



Since 2009

- First waste treatment Composting Plant started to operate in July 2013
- Door-to-door collection in the capital – ongoing from December 2013



São Tomé e Príncipe

**2009- Communitarian Collection
through 1000 l containers**

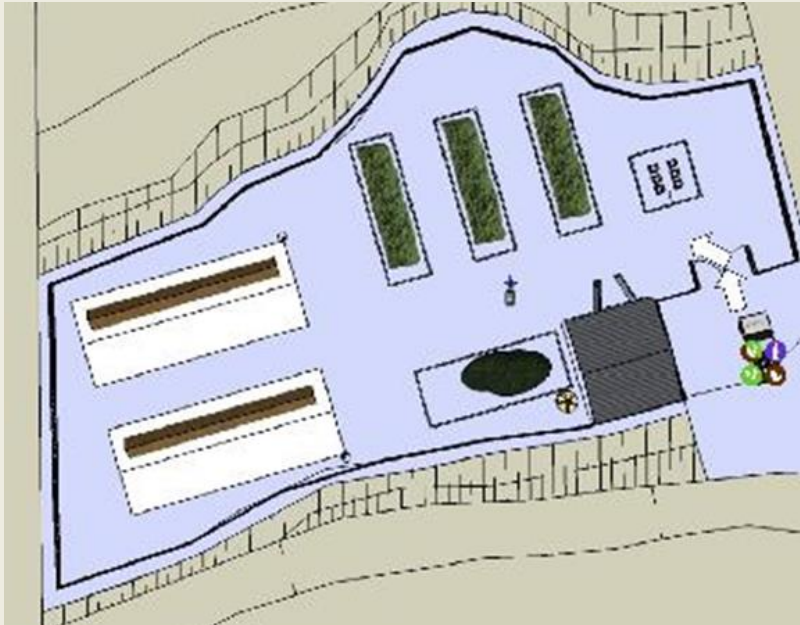


**2014 – Increase of Door-to-Door
Personalized Collection**



Biowaste Treatment

- Small Size Composting Plant -



Investment:

30.000 Euro (without terrain)

Treatment Capacity:

500 to 1000 Mg a year

Output expected in 2015:

50 Mg of high quality compost

Biowaste Collection in São Tomé

- Sources:
 - Green Waste from Parks and Streets
 - Biowaste* separate collection from Private Non Domestic (Municipal Markets, Canteen, Supermarket, Restaurant)
- Containers/Bins/ Buckets
 - 120 l wheelie bins : 18 units x 3 week
 - 20 l buckets : 30 units



Total Biowaste collected: 30 to 45 Mg/month
(May 2014)

Biowaste Collection in São Tomé (2)

- **Vehicle:** antiquated without compaction
- **Frequency and Schedule:**
 - Monday, Wednesday, Friday (14-17h)
- **Objectives:**
 - Test period in order to evaluate participation levels
 - Ensure good quality waste to produce compost
 - Evaluate equipment durability and efficiency





Biowaste from Municipal Markets

Contaminants



- Plastics – Bags, bottles, nylon ropes and other small items
- Metals – bottle caps, cans
- Glass - bottles

Compost Results

Parâmetros		Nº Laboratório	O 1372	O 1373
		Normas	Pilha 3	Pilha 4/9/10
Massa volúmica aparente compactada (MVAC)	(g L ⁻¹)	(FCQAO, 1994)	457	573
Humidade	(%)	EN 13040:1999 E	16,12	40,64
pH (1:5, v/v)		EN 13037: 1999 E	9,0	9,3
C. Eléctrica (1:5, v/v)	(mS cm ⁻¹ , 25°C)	EN 13038: 1999 E	4,15	1,88
Matéria orgânica	(%)	EN 13039: 1999 E	45,45	36,05
Azoto nítrico	(mg N-NO ₃ ⁻ kg ⁻¹)	Extracção c/ H ₂ O, analisador de fluxo segmentado	-	-
Azoto amoniacal	(mg N-NH ₄ ⁺ kg ⁻¹)		-	-
Enxofre total	(%)	Combustão a 1350°C (LECO®, 1997)	0,33	0,23
Carbono total	(%)	Combustão a 1350°C (LECO®, 1997)	22,98	18,11
Carbono orgânico	(%)	Combustão a 590°C e detecção por IV (LECO®, 1997)	22,46	16,92
Azoto Kj.	(% N)	Método Kjeldahl	1,81	1,24
C/N	-	Valor calculado	12,4	13,6

Discussion

Biowaste Collection in ST

Threats/ Weaknesses

- Irregular service
- Low salaries, unmotivated workers
- Vehicles poor condition and low capacity
- It depends financially on external support
- Lack of Political Leadership
- Municipal Market – how to further avoid contamination

Opportunities/ Strengths

- Good acceptance
- Low contamination level from Private Producers
- Extension and Dual System Introduction (Wet+Dry) at households
- Buckets to be further distributed in Municipal Markets as support to separate collection

Conclusions and Perspectives

- 1) Biowaste separate collection is feasible even in poor countries
- 2) Quality is easier to ensured if each biowaste producer has its own bin/bucket
- 3) Compost produce during the *Test Period* shows good quality
- 4) Compost Market exists and is growing
- 5) Wet / Dry Bucket Collection System for Domestic Sector is a good solution for São Tomé and Príncipe
- 6) Door-to-door biowaste collection is effective (in canteens and supermarkets >95%* of biowaste is diverted)
- 7) Local Political Leadership and Engagement are crucial to keep and extend Biowaste Collection and Treatment

*.- Value obtained through visual inspection

Obrigado !



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