Innovation in services related to public policies to reduce greenhouse gases: The clean development mechanism on landfills

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Structure

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1.1 The Kyoto Protocol

- Adopted in 1997 under the UNFCCC
- Emission reduction targets for developed countries – average of 5% below 1990 levels by 2008-2012
- At COP-18, 2012: extends the Kyoto Protocol to 2020.
- “Flexible Mechanisms” - To assist the developed countries in attaining their GHG emission reduction targets
  - **Clean Development Mechanism (CDM)**
  CDM entails the implementation (in emerging and developing countries) of GHG emissions reductions projects
1.2 CDM Landfill Projects

Garbage is delivered to landfill

Anaerobic decomposition produces methane

The waste decomposes and produces landfill gas

Brazil: Out of the 300 Brazilian CDM projects, 43 are developed on landfills, 22 are located in the State of São Paulo (UNEP RISOe, August, 2013)
1.3 CDM: Twofold Objective

1) Assist developed countries to achieve KP targets

Methodologies to measure GHG emission reduction

Carbon credits

2) Assist emerging and developing countries to achieve sustainable development

Methodologies to measure sustainable development

Brazilian projects: Terms of resolution Nº1 of the Annex III of CIMGC
Development of working conditions; Generation of jobs; Environmental Sustainability; Technological development; Income Distribution; Regional integration; Links with other sectors
2. Objective

This paper aims to advance the development of indicators to evaluate the social and environmental outcomes that can be generated from clean development mechanism (CDM) landfills projects.
3. METHODOLOGY
3.1 The landfills selected for empirical research

Bandeirantes Landfill

São João Landfill

<table>
<thead>
<tr>
<th>São Paulo City</th>
<th>Population</th>
<th>11 million inhabitants</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Waste per day</td>
<td>17,000 tons</td>
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</table>

These landfills, from 1979 to 2007, received almost the entirety of the municipal solid waste collected in São Paulo. 50% of the carbon credits revenues are allocated to the municipal City Hall.
The SOCIALCARBON Standard is an additional certification which proposes the use of sustainability indicators to be applied to carbon market projects to evaluate social and environmental co-benefits.

CDM defines methodologies to measure contributions to GHG emissions reductions.

SOCIALCARBON defines methodologies to measure contributions to sustainable development.
### 3.3 Proposed Indicators - Social Carbon Methodology Adjustment

<table>
<thead>
<tr>
<th>Resource</th>
<th>Topic</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Natural</strong>&lt;br&gt;<strong>(8 indicators)</strong></td>
<td>Environmental quality monitoring, gas emissions monitoring, landfill closure plan</td>
<td>Surface and underground water monitoring; Biogas capture; Fugitive gas emissions; Compliance with landfill closure plan...</td>
</tr>
<tr>
<td><strong>Social</strong>&lt;br&gt;<strong>(13 indicators)</strong></td>
<td>Access to CDM projects, relationship between stakeholders, and contribution of CDM projects` resources to the management of solid waste</td>
<td>Stakeholders participation; Disclosure of the Annex III activities; Articulation between municipal departments ; Cooperatives benefiting from CDM revenues...</td>
</tr>
</tbody>
</table>
### 3.4 Agents involved in the Bandeirantes and São João CDM landfill projects

<table>
<thead>
<tr>
<th>São João</th>
<th>Bandeirantes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES – Municipal Services Department</td>
<td>SES – Municipal Services Department</td>
</tr>
<tr>
<td>private concession-holder responsible for the landfill management</td>
<td>private concession-holder responsible for the landfill management + private concession-holder responsible for biogas recovery</td>
</tr>
<tr>
<td>SVMA - Municipal Department of Green Areas and the Environment</td>
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**Before CDM**
- Public
- Private

**After CDM**
- Public
- Private
- Users

**More Life, Less Rubbish campaign (Campanha “Mais Vida, Menos Lixo”)**

**Perus-Anhanguera Development Forum**
3.5 Public-private innovation networks in service sectors (ServPPINs) concept

**CDM landfill projects under the ServPPIN concept:**
assists in the identification of important elements for innovation promotion in public services

**Mainly: relational and organizational aspects**

Based on the ServPPINs concept, from the adaptation of the multiagent model of Windrum and García-Goñi (2008) and Windrum (2013) (inspired by Gallouj and Weinstein, 1997)
4. Results
## 4. Limitations on the interaction among the stakeholders

<table>
<thead>
<tr>
<th>Interaction between...</th>
<th>Key points identified</th>
</tr>
</thead>
</table>
| **a)** representatives of associations from the communities surrounding the landfills and municipal departments and private concession-holders | - the need to develop a common language  
- the need to publicize activities related to CDM projects  
- the need to open up a communication channel |
| **b)** concession-holders: private concession holder managing the landfills and private concession holders responsible for LFG recovery and power generation | - coordination issues between concession-holders at the landfills |
| **c)** municipal departments and representatives of associations from the communities surrounding the landfills | - problems of access to revenue from the sale of Certified Emission Reductions |
| **d)** municipal departments and private concession-holders managing the landfills | - lack of communication  
- lack of characterization of the municipal waste  
- absence of empirical data on local climate and humidity conditions |
| **e)** municipal departments and the private concession holders responsible for LFG recovery and power generation | - absence of local regulatory standards for fugitive gas monitoring, as well as regarding the establishment of criteria for the surface waterproofing system that enables LFG recovery  
- ongoing implementation of legal requirements regarding the solid waste inventory in the municipality |
5. Conclusion

• CDM = twofold goal: GHG emission reduction and sustainable development promotion

• Becomes essential the construction of **sustainability indicators** to evaluate environmental and social local co-benefits

• CDM landfill projects studied under the ServPPINs concept, shows: lack of access of citizens/service users; and the lack of synergy between the public and private sectors

• To obtain positive impacts of this new conformation: mainly, the relational and organizational aspects needs to be improved
References