



CC&E Observatory briefs

Innovative approaches to tackle the waste challenge

Webinar 27th October 2016

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CC&E Observatory briefs

Focus of this observatory brief

- Urban **Municipal Solid Waste** (MSW)
- Lower Income and Lower Middle Income countries
- Cities of priority countries of SDC

The waste challenge



Picture: M. Sommerhalder/R.Pfammatter

A photograph of a waste management site. In the center, a yellow tractor is working on a large pile of garbage. In the foreground, a young child stands amidst the trash, carrying a large white sack over their shoulder. The background shows some buildings and utility poles under a hazy sky. The overall scene depicts the challenges of waste management in an urban or semi-urban area.

The waste challenge



Today's Main Challenges

- MSW quantity is increasing
- MSW is often dumped or landfilled (uncontrolled)
- Affects “informal sector” and people living near the waste dump or landfill site
- Health (disease, injury), environmental pollution, GHG-emissions
- GHG emissions increased in many countries significantly
- Main GHG Source waste sector is methane from disposal sites

The waste challenge





The importance of the organic, biodegradable part of MSW

- Major fraction of MSW (often >50% of volume)
- Open decomposition responsible for diseases, odour nuisance, air and water pollution and GHG emissions (primary methane)

The waste challenge



Picture: M. Sommerhalder/R.Pfammatter



Pictures: R. Steiner



Innovative approaches

Principles and technology aspects

- Principle of the 3 R's, Waste segregation at source, Restricted landfilling (non-biodegradable, inert waste, non recyclable)
- High-tech solutions generally not appropriate and economically financeable in LI and LMI countries
- Implementation of decentralized systems → less technology dependent, application of low-tech



Innovative approaches

MSW Composting (Example: compost facility in Bali)

- Community empowerment project, Composting of 60 t/d
- Reduced waste to landfill, air + water pollution, pests, GHG emissions
- Capacity building in community, poverty alleviation
- Swiss institutions involved (SANDEC, myclimate, Kuoni)





Innovative approaches

Community or Neighbourhood Composting

- Good option for apartments, offices and residential areas to deal with the high amount of organic waste
- Requires source-separation at household level
- A lot of experience in Switzerland
- Community composting in Bangalore, India: “The garbage story”



Innovative approaches

Anaerobic digestion of organic solid waste

- Converts biomass wastes into biogas and fertilizer and reducing CH₄ emissions
- Widely applied in Switzerland and Europe. Swiss projects and pilot plants in: China, Ghana, Vietnam, Ecuador...
- Feasible also in urban environment if enough organic waste & right mix, use of the products, good maintenance





Empowering the informal sector: donate dry waste / hire recycling manager

- Waste-pickers collect waste directly at source (waste producer)
- Provide well sorted waste to recycling companies
- Get access to structured work, continuous income, dignified livelihood → poverty reduction
- Initiative reduce amount of organic waste too, due to composting or digestion.

Other innovative approaches



Picture: M. Sommerhalder/R.Pfammatter



Success factors

- Regulation and enforcement to reuse materials
- Availability of biomass waste /right mix, proper source separation
- Acceptance + use of products -> demand side and market development, feed in tariff
- Community based, awareness rising, population involvement to get acceptance and participation
- Use low-cost technology and create job opportunities
- Focus on city district, specific waste fraction. Start with small (pilot) facility, expand later to full-scale facility
- Additional financing through GHG market mechanisms

Conclusion



Picture: M. Sommerhalder/R.Pfammatter