
Decentralized Solid Waste Management in Small Towns and Cities

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Addressing organic wastes

- ◆ 60% to 80% of municipal solid wastes are organic
- ◆ Every year untreated organic wastes, crude dumpsites and landfills generate an estimated 75 to 100 million tons of CO₂ (equivalent) (equal to driving 15 to 20 million mid-sized cars)
- ◆ By 2020 CO₂ (equivalent) emissions would be 113-120 million tons

Four ways of reducing methane

- ◆ Four approaches to treating municipal solid wastes that have been approved by CDM Board
 - ◆ Landfill gas recovery
 - ◆ Bio-methanization (Bio digestion)
 - ◆ Incineration
 - ◆ Composting

Decentralized solid waste management

- ◆ Operational in Matale, Sri Lanka and Quy Nhon, Vietnam
- ◆ Provide door-to-door service to 1,000 houses
- ◆ Treat 2-3 MT of wastes/day
 - ◆ Organic waste: composted
 - ◆ Recyclables: sold
 - ◆ Rejects: sent to dump site
- ◆ Employ waste pickers



Profit making PPPs

- ◆ Revenues generated from:
 - ◆ Collection fees
 - ◆ Sale of compost
 - ◆ Sale of recyclables (bonus)
- ◆ Both plants breaking even on operational costs



Crises in agriculture

- ◆ Organic matter depleting due to intensive cultivation
- ◆ More chemical fertilizer needed to maintain productivity
- ◆ 90% of fertilizer is wasted
 - ◆ Pollutes water
 - ◆ Produces N_2O (300>GHG)
- ◆ Less organic matter less water retention in soil



Contributing to climate change adaptation

- ◆ Chemical fertilizers needed
 - ◆ Nutritional value of compost is low
 - ◆ Hybrid seeds need chemical fertilizer
- ◆ Solution: Designer organic fertilizer:
 - ◆ Add N,P,K, minerals and other nutrients depending on crop and soil type
 - ◆ Possible because of small volumes

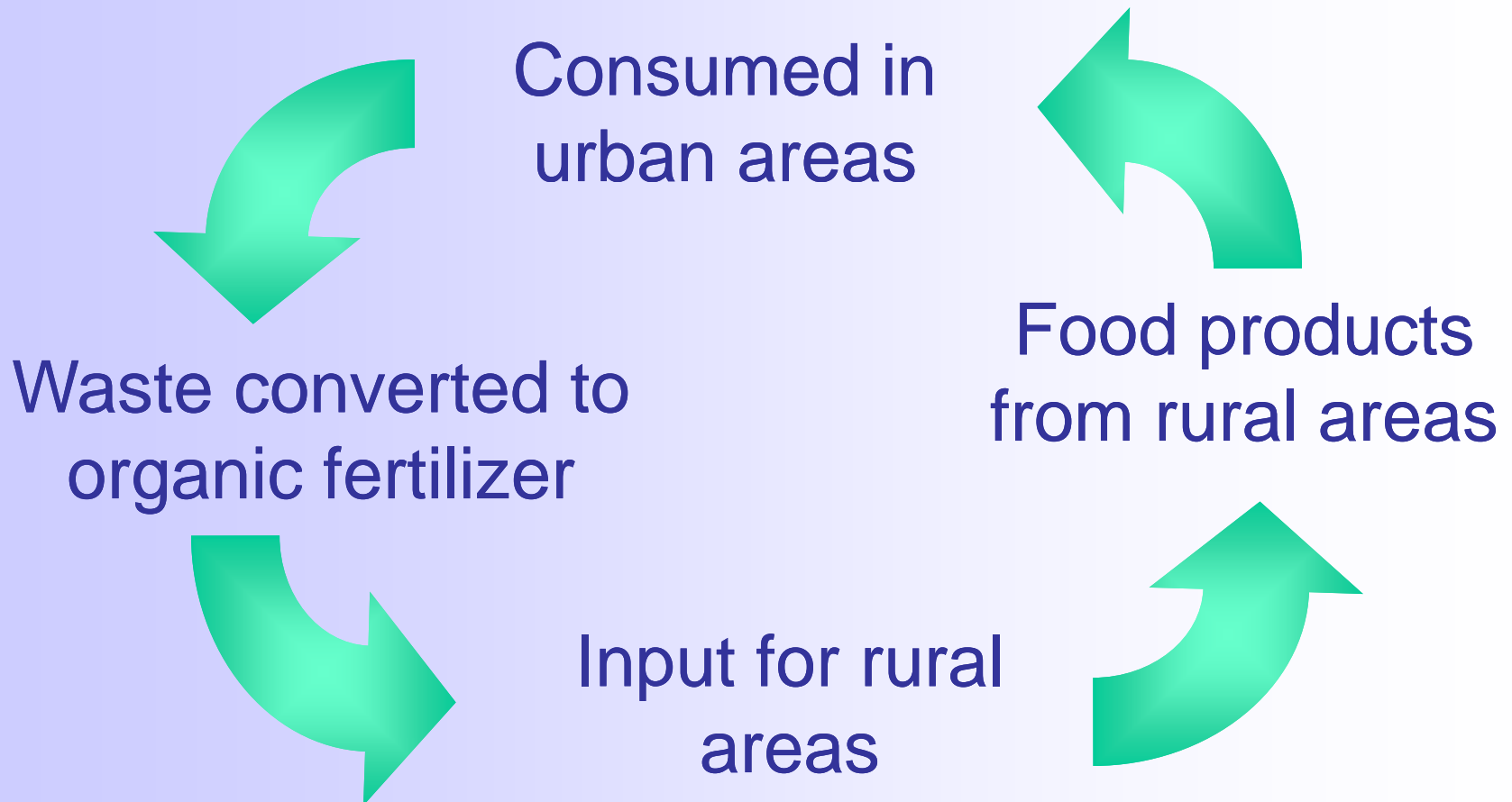


Contributing to climate change adaptation

- ◆ Increases yields by 30 %
- ◆ Increases profits by 15%-25 % (BGD, VNM)
- ◆ Increases organic matter in the soil
- ◆ Improves water retention
- ◆ Reduces N₂O emissions
- ◆ Directly contributes to food security



Complete benefit cycle



Ongoing work...

- ◆ Develop Integrated Resource Recovery Centres that:
 - ◆ Convert organic wastes to designer organic fertilizer
 - ◆ Process and on-sell recyclable materials
 - ◆ Bio-digests meat waste and septic tank sludge and sell cooking gas
 - ◆ Converts cooking oil waste into bio-diesel
- ◆ Using CERs and VERs to finance capital costs needed for up-scaling to city-wide level