Waste Management Co-benefits in Asia

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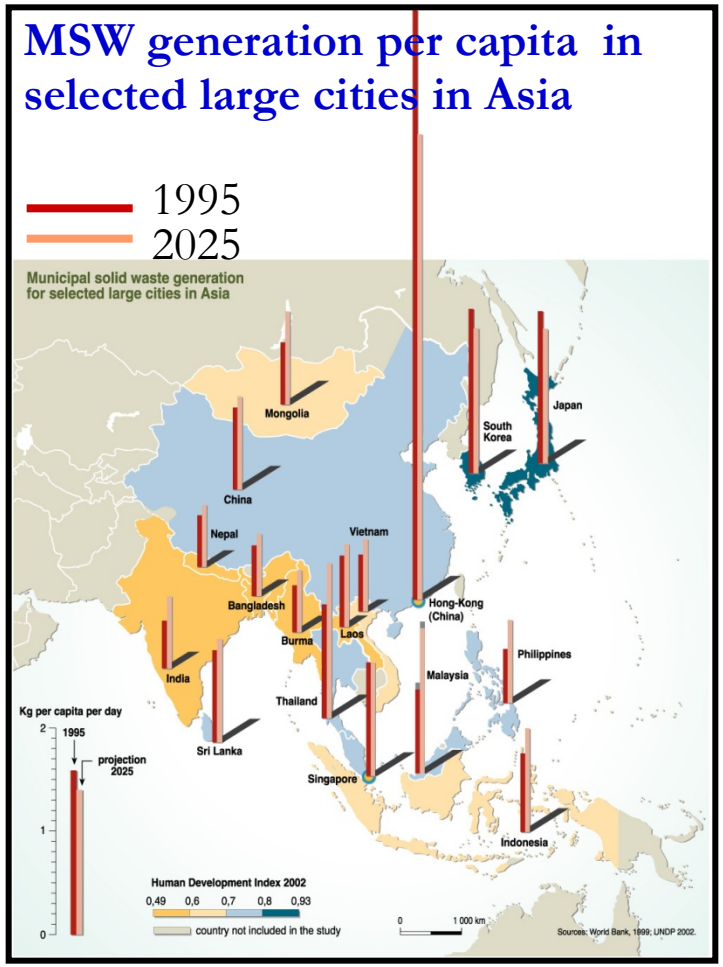
Situation of Waste Management in Asia

- Municipal Solid Waste (MSW) management in Asia is becoming an increasingly complex matter
- MSW generation in Asia surpasses 1 million tonnes/day



Source: UNDP, 2011

Problems associated with MSW management in developing Asia

-Inadequate institutional facilities and sound policies

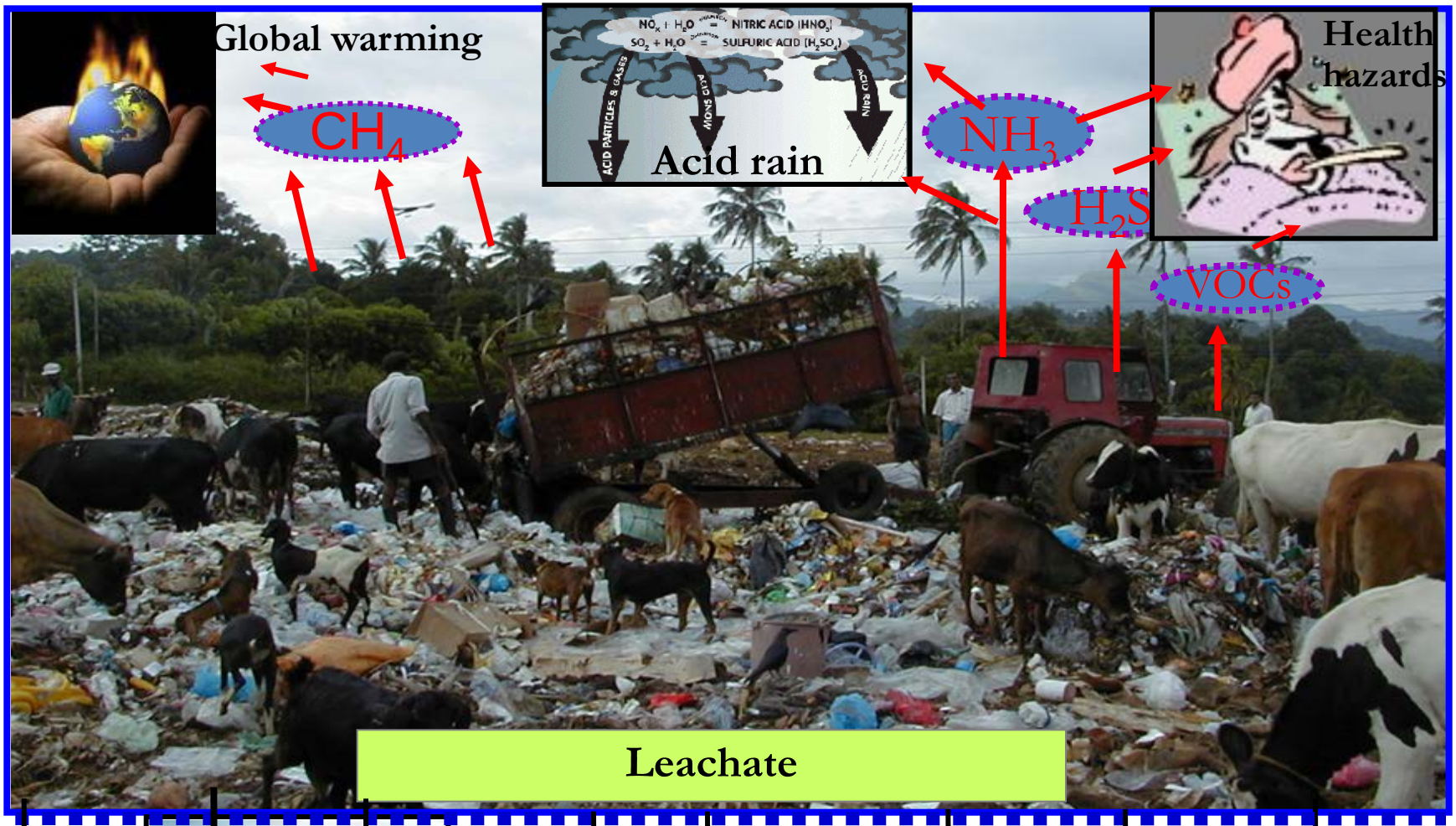
-Lack of low-cost technologies and their effective integration

-Lack of financial resources

- Lack of public awareness

Situation of Waste Management in Developing Asia

•Open dumping and non engineered landfilling are the main disposal route



Waste Management and Co-benefits

•Co-benefits can be achieved by selecting and adapting the best suited waste management technologies

Sustainable waste management

Social benefits

Improve the well-being of the local community
-Creation of jobs
- Improving the indirect income generation ways

Environmental benefits

Improve the efficiency waste management and reduce the emissions to air, water, soil
e.g. GHG

Economic benefits

Creation of ways of revenue generation to all the stakeholders in waste management process chain

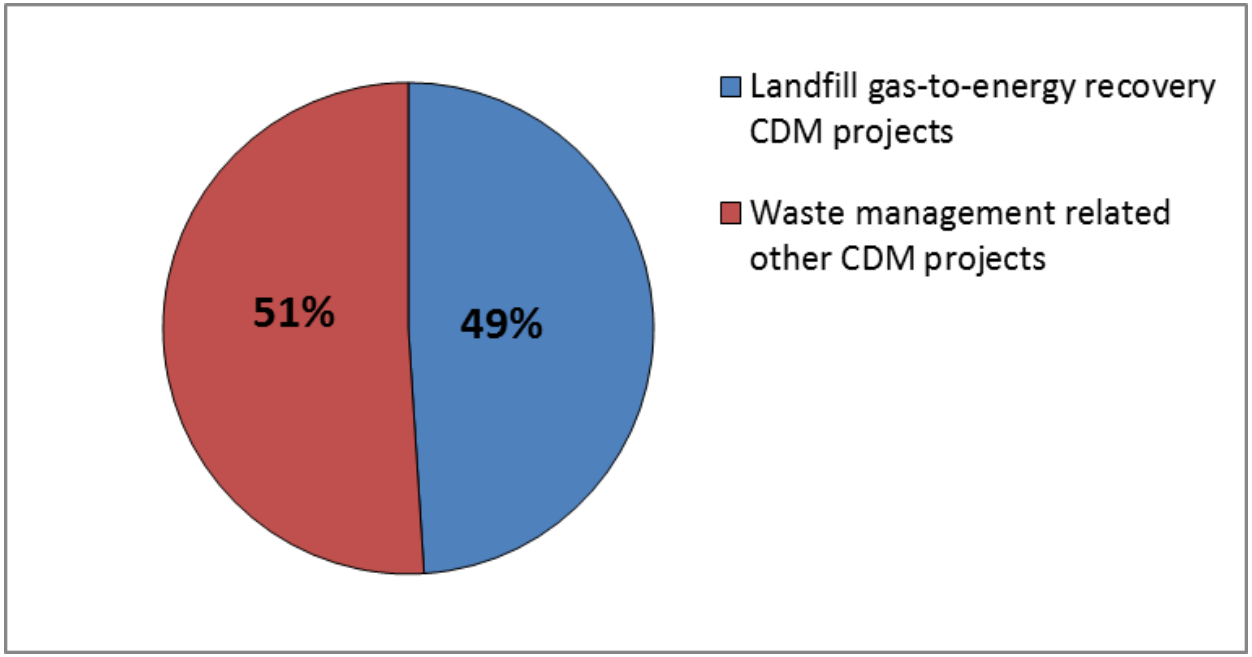
Environmental benefits

Recovery of materials and energy from waste and replace the conventional production processes

Waste Management and Climate Co-benefits

Sanitary landfilling with gas recovery – an option ?

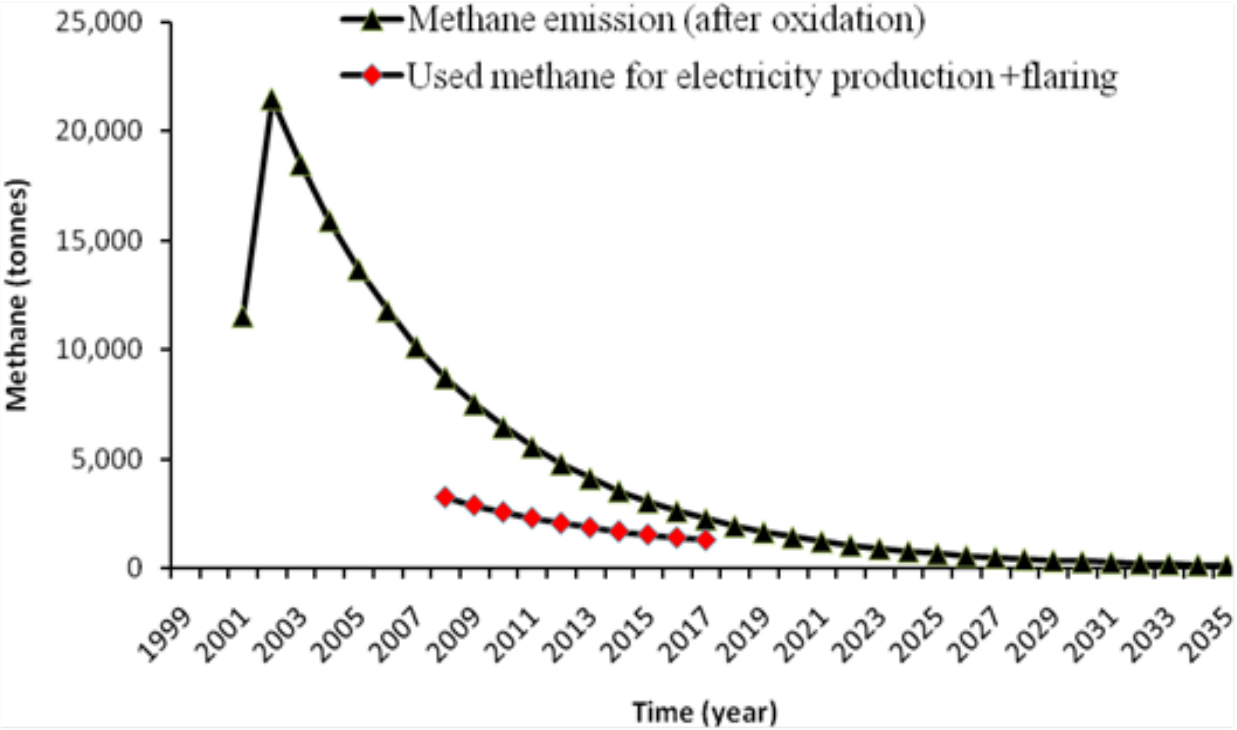
- There is a growing interest in Asia in moving towards properly designed, constructed and managed sanitary landfills



- In Asia, 147 waste-related projects have been registered under the Clean Development Mechanism
- About half of these projects are on landfill gas recovery

Climate Co-benefits from Landfill Gas to Energy Recovery Systems

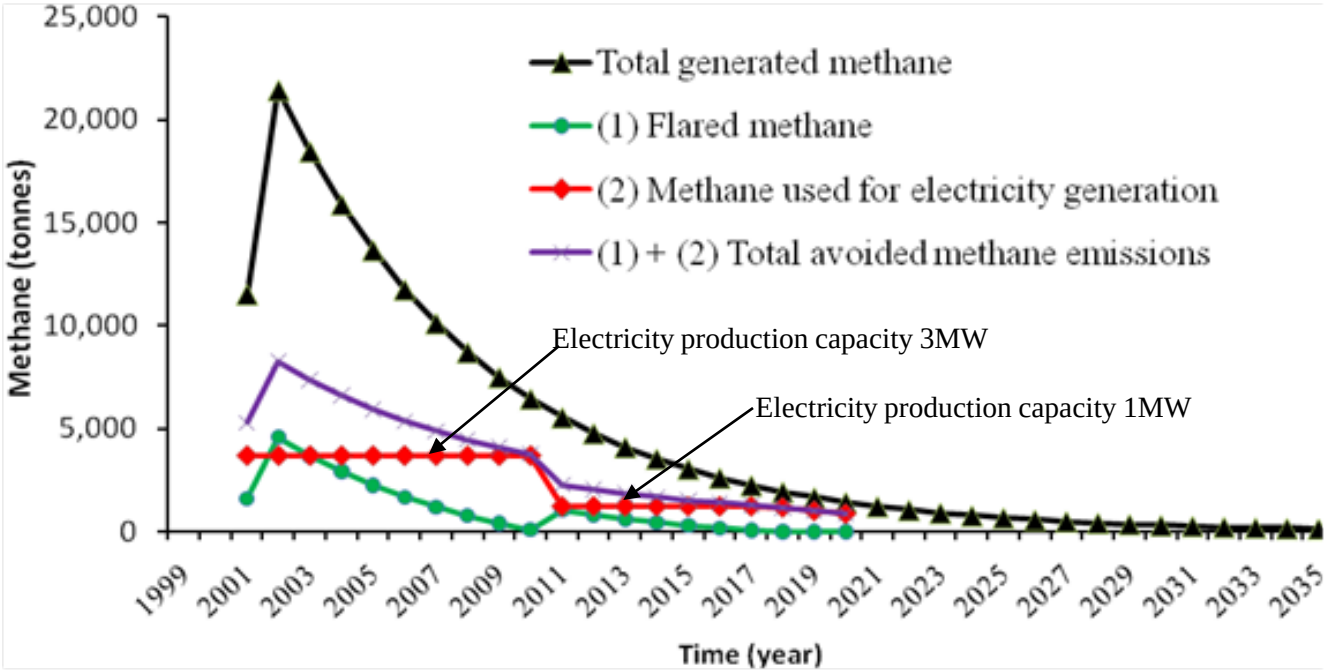
A case study in Bangkok Metropolitan Administration (BMA)



- Project start: 7 years after the closure of the landfill
- Duration: 10 years
- Total recovery: 12%

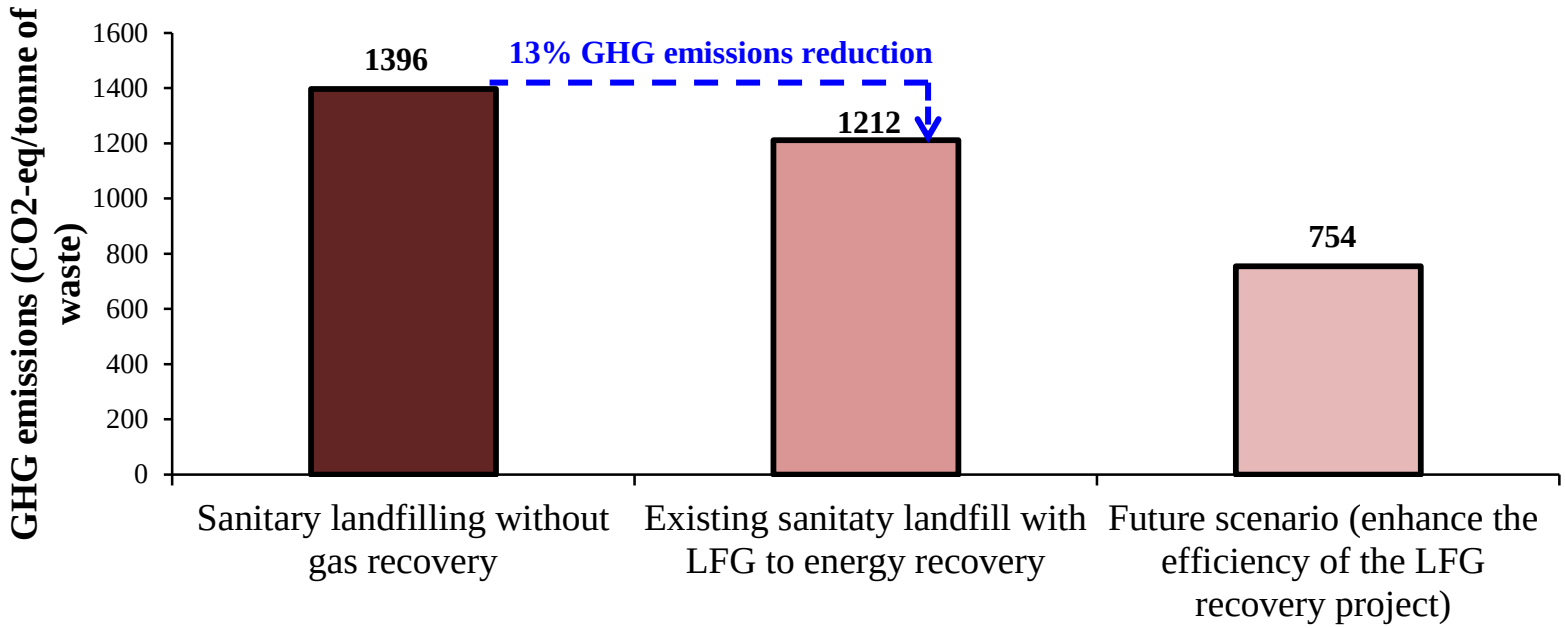
Potential Improvements of Climate Co-benefit

A case study in Bangkok Metropolitan Administration (BMA)



- Project start: at the closure of the landfill
- Duration: 20 years
- Total recovery of methane: 43%

Climate Co-benefits from Landfill Gas to Energy Recovery in Comparison to BAU Practice



- To continue sanitary landfill disposal with gas recovery, it is necessary to greatly enhance the efficiency of LFG recovery systems to improve both the climate co-benefits and economic benefits.

Climate Co-benefits from Mechanical Biological Treatment (MBT)

A case study in Phitsanulok Municipality, Thailand

- MBT plant in Phitsanulok Municipality is one of the biggest pilot-scale plants in developing countries
- Running capacity: 100 tonnes/day
- Objectives of commencement of this plant: minimize the waste volume, minimize the GHGs emissions (methane) from the landfill, separate valuable materials

homogenisation, piling, aeration → Sieving and separation of compost-like materials and plastic waste

50 % mass loss during degradation

Period for biological stabilisation and degradation – 9 months

MBT piles

Screening

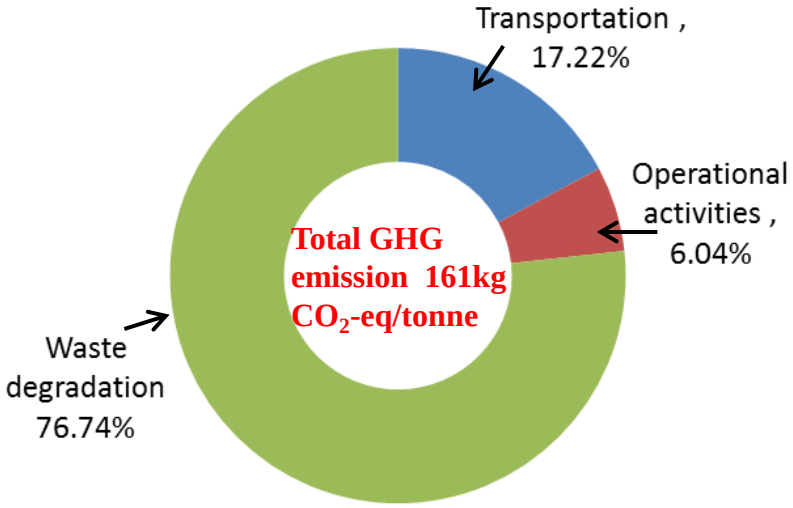
43%

37%

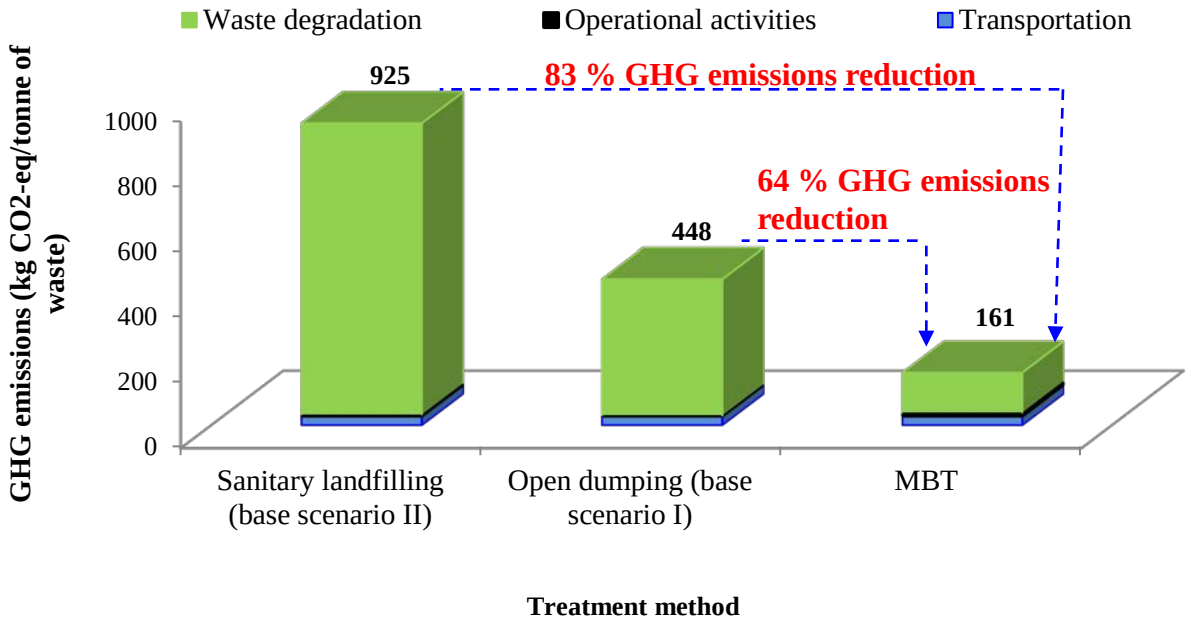
20%

Inert

Total GHG Emissions from MBT Facility in Phitsanulok



Comparison to "Business as Usual" Waste Treatment

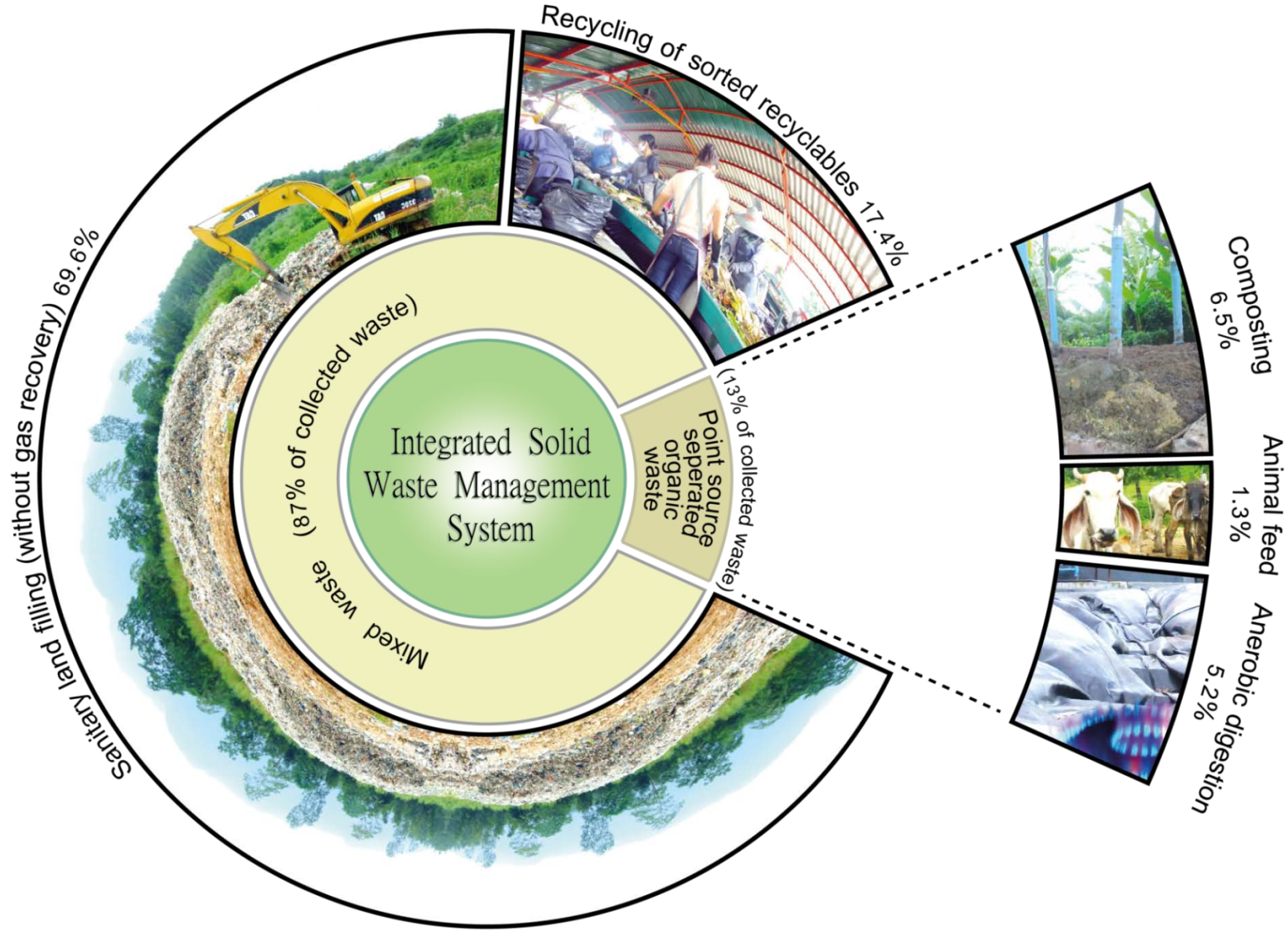


Integrated Waste Management for Optimizing Co-benefits

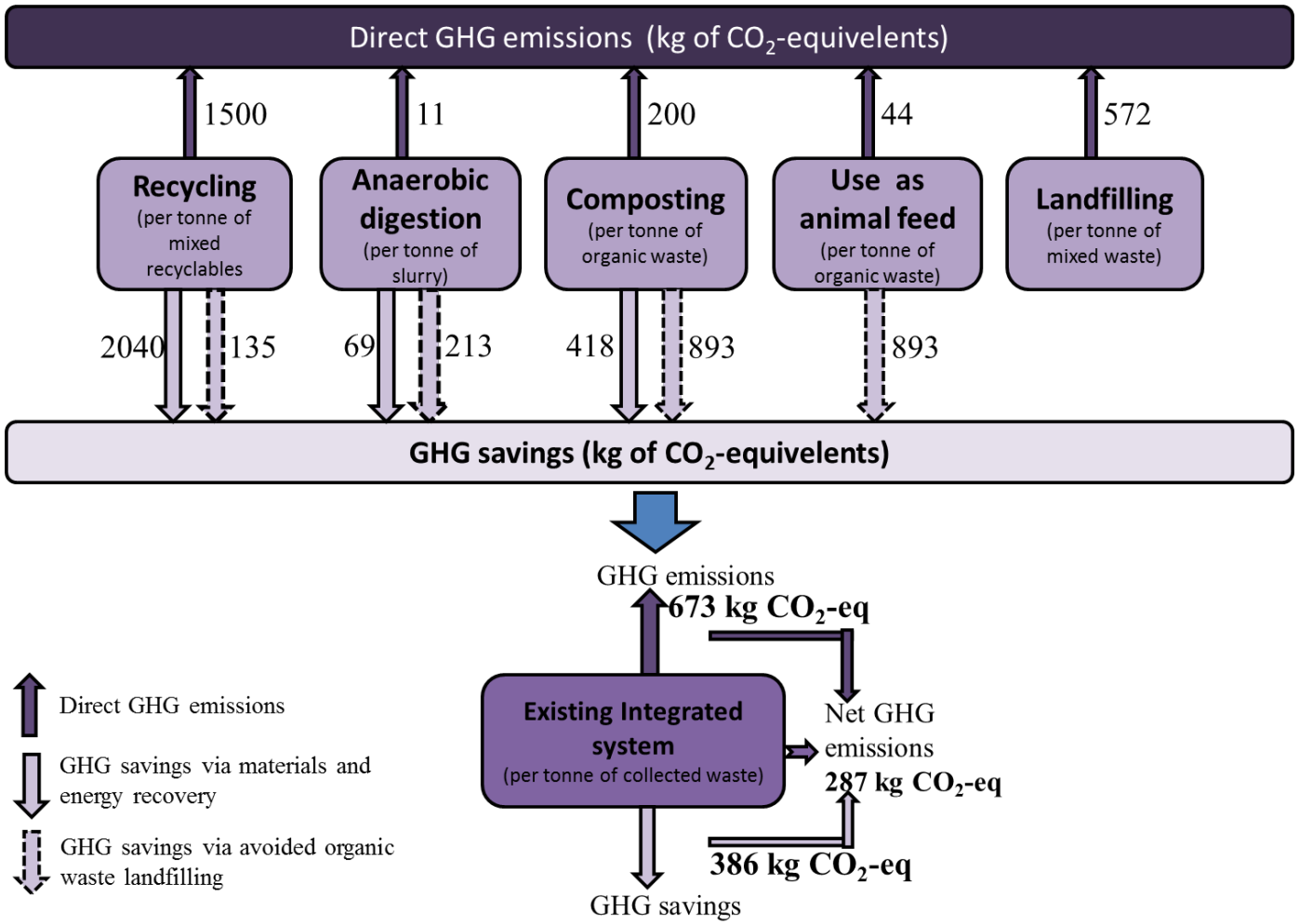
A case study Muangklang Municipality

- The Muangklang Municipality is located in Rayong Province (190 km from East Bangkok)
- It has a total of 13 communities and covers 14.5 km^2
- The registered population within the Municipality -17,200 (Dec 2010)
- This municipality has initiated an integrated waste management system as a sustainable solution by incorporating effective waste collection and transportation service, waste sorting facility for recovery of recyclables, anaerobic digestion facility, composting facility, raising some farm animals to feed organic waste and so on

Existing Integrated System in Mungklang Municipality, Thailand

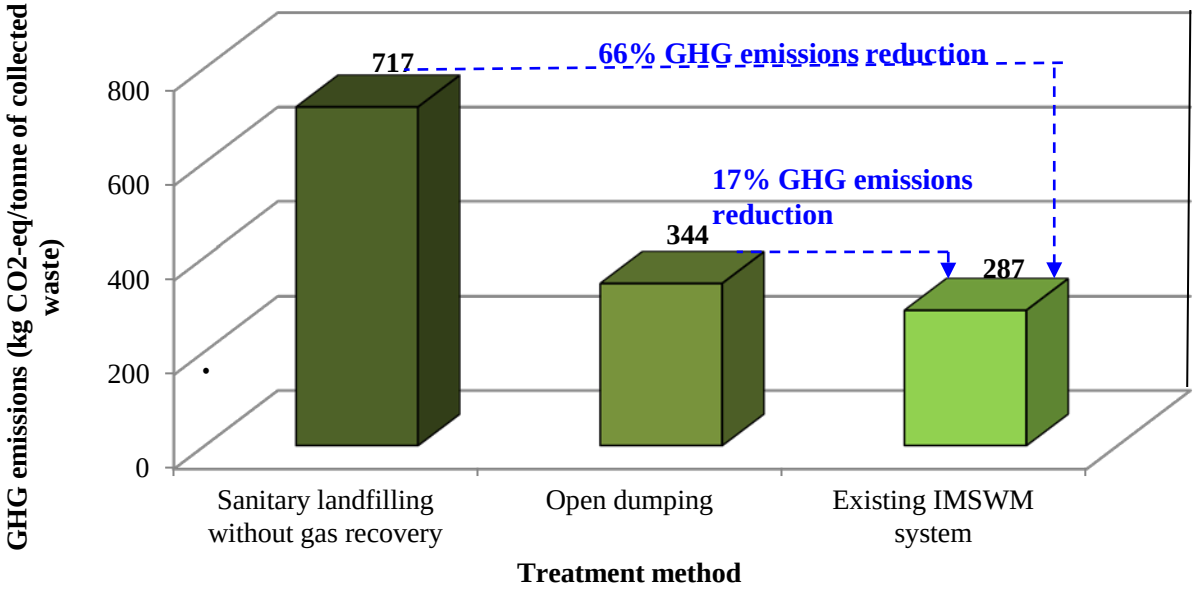


GHG Emissions and Savings Potential from Individual Technologies and Integrated System



- Net GHG emission from the integrated system is still positive due to high fraction of waste landfilling (69.6%)

GHG Emission Reduction from Existing Integrated System as Compared to the BAU Practice



- This integrated system achieved a considerable reduction in GHG emissions by utilising only 30% of collected waste for resource recovery
- Development of integrated systems would be a local initiative that could make meaningful contributions to global climate-change mitigation
- In addition there is a high potential for obtaining socio-economic benefits via integrated waste management

Opportunities/challenges to Scaling up and Replicating Good Practices

- More widespread adoption appropriate technologies e.g. MBT and integrated systems, could make meaningful contributions to global climate-change mitigation
- At the local authority, there is very limited knowledge about integrated systems, including their contribution to climate co-benefits
- Local authorities need to play a key role in formulating and implementing the integrated waste management systems e.g.

  -target setting and institutional setup
  -awareness raising and capacity building
  -selection of simple low-cost technologies and their effective integration
  -creation of multiple benefits to the local community

Conclusion

- Poor waste management in developing Asia has caused severe deterioration of environment, economic losses and social burdens
- Co-benefits can be achieved by selecting and adapting the best suited waste management technologies to the local conditions e.g. integrated system
- Maximum resource recovery from waste would be the key driving force towards achieving climate co-benefits
- Local government should play a key role in formulating and implementing appropriate policies and legislation in support sustainable waste management

THANK YOU VERY MUCH FOR YOUR ATTENTION

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