CDM, Waste and Wastepickers

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Public Interest Consultants

Practitioners Workshop on Standards
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gaia
global anti-incinerator alliance
global alliance for incinerator alternatives

Key Issues

Methodologies

1. ACM0001 - landfill gas

1. AM0025 - alternative waste treatment processes

Recycling

3. No large scale methodology for recycling or proper consideration of impacts on recycling, recyclers or their communities

Promising progress with:

AMS-III.AJ Recovery and recycling of materials from solid wastes

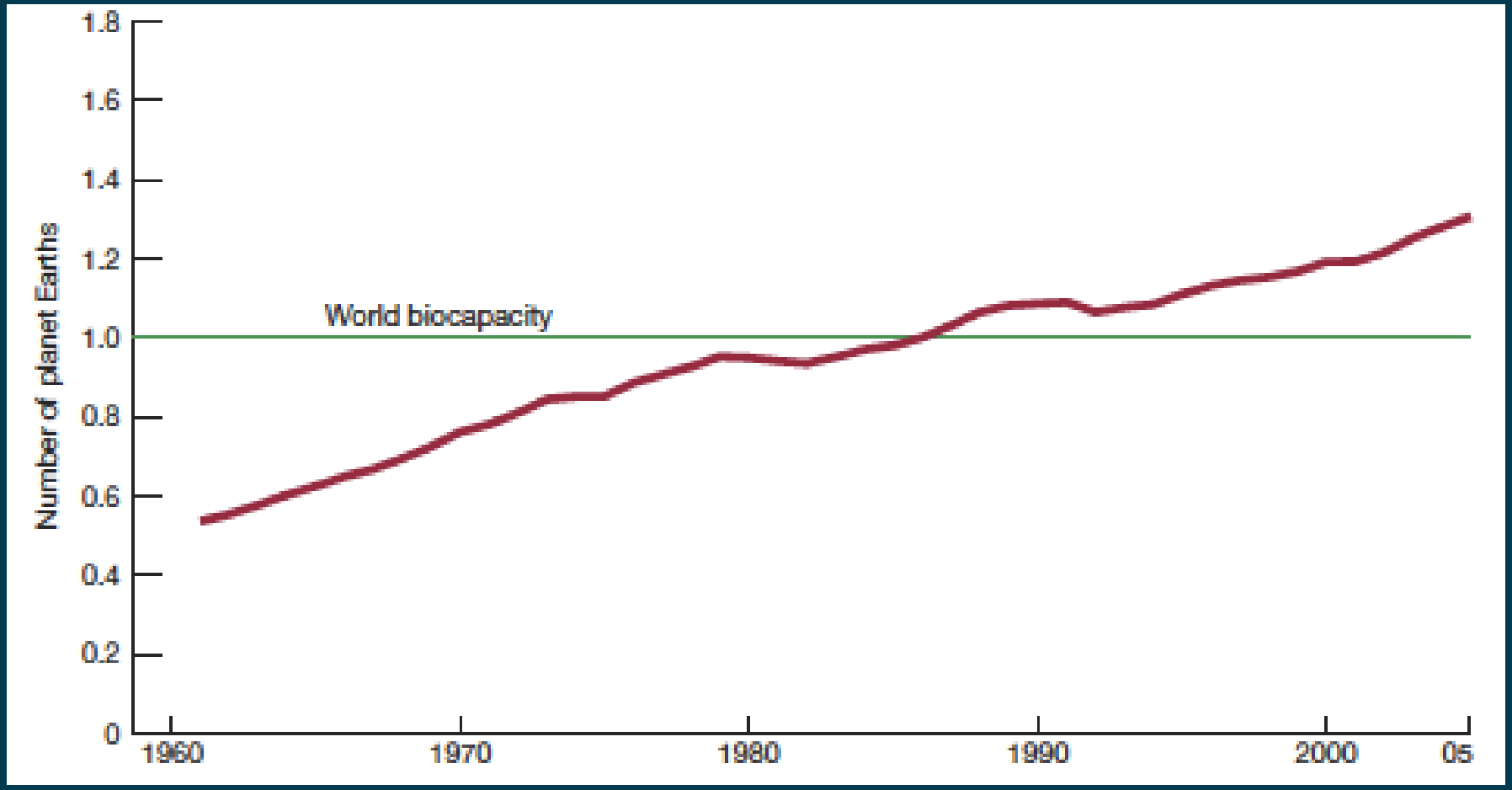
Recycling and Climate Change

Nicholas Stern:

"Recycling is already making a major contribution to keeping down emissions. Indeed, its scale is so little appreciated that it might be described as one of the 'best kept secrets' in energy and climate change....New technologies for separating out forms of waste could also have a great impact"

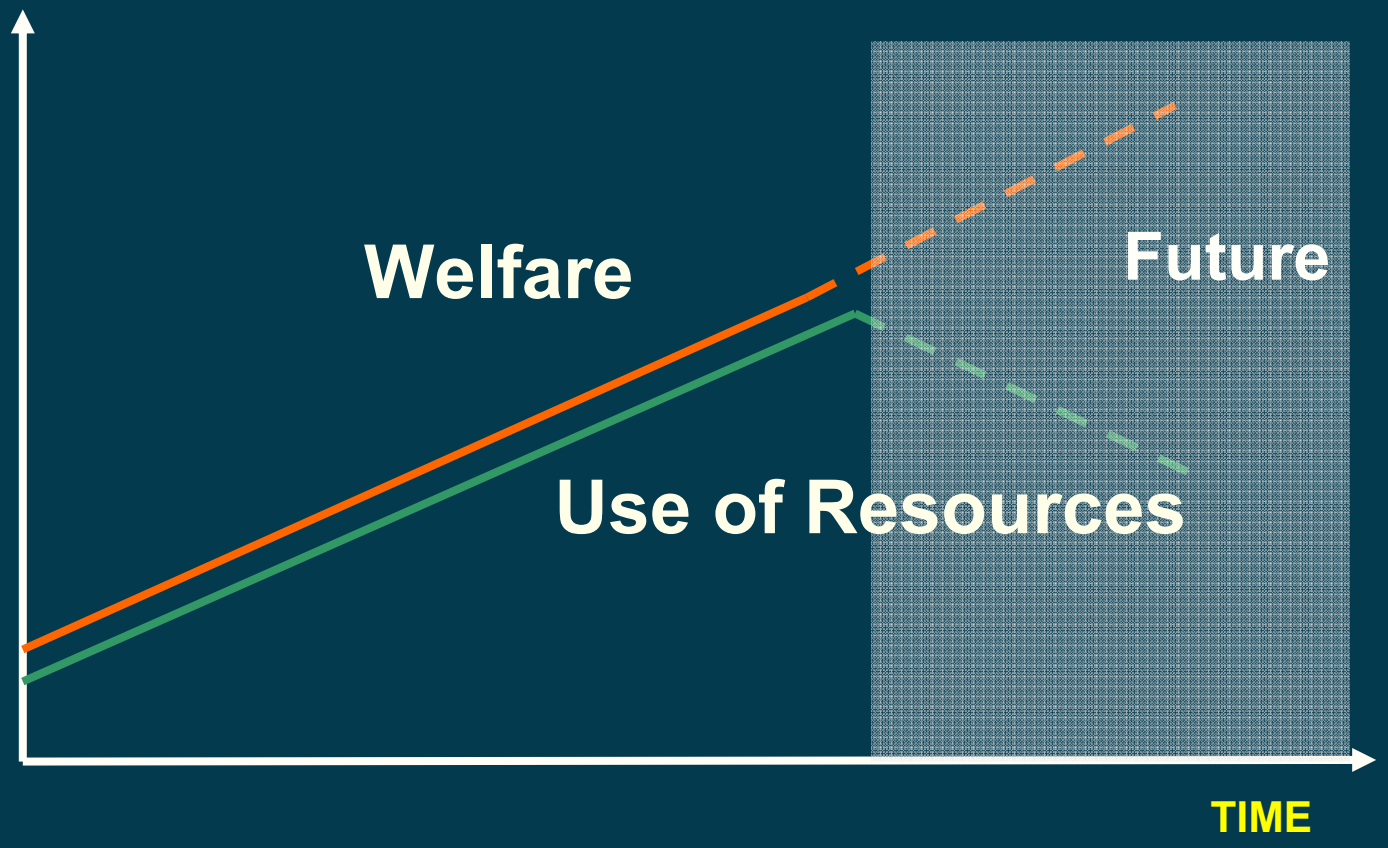
Stern, N. (2009). Blueprint for a Safer Planet, The Bodley Head.

BioCapacity



WWF, LIVING PLANET REPORT (2008)
http://www.panda.org/about_our_earth/all_publications/living_planet_report/lpr_2008/

Sustainable Development



Baseline scenario of ACM001 and AM0025

- Baseline scenario systematically ignores recycling rates and recycling communities.

- Calculations of avoided emissions do not take into account:
  - The fact that emissions increase due to avoided recycling.
    - Incinerators produce more CO_2 per unit of electricity than coal burners if we take into account biogenic emissions.
    - Landfill gas capture to electricity does not save as many emissions as recycling and composting does (Couth and Trois, 2010).

- The fact that costs increase due to costlier technologies.
- The fact that recyclers are displaced.

Product Life Cycles

At each life cycle stage there is resource and energy consumption

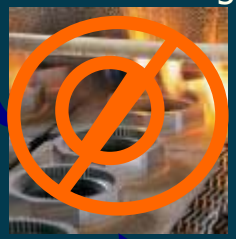
Packaging & Distribution

Product Use

REUSE

End of Life

Manufacturing



Pre-manufacturing

RECYCLING

Raw Materials Extraction

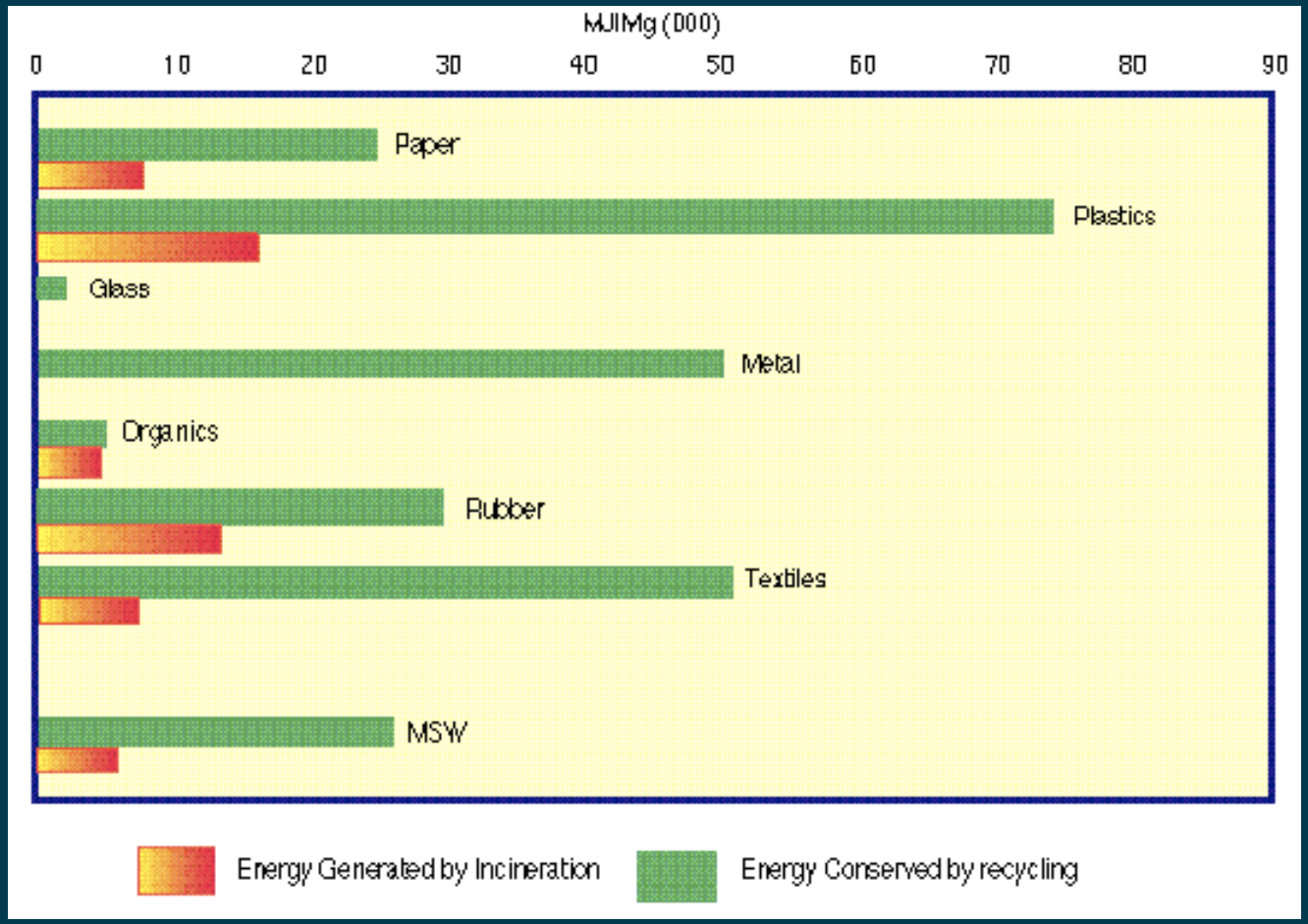
Emission factors

Table A.28: Emission factors for waste treatment processes (kg carbon dioxide equivalents/tonne of waste processed)

Waste fraction	kg CO_2 saved per tonne of waste treated[a]					Embodied fossil energy (kg CO_2 saved per tonne waste prevented)
	Recycling	Eɱw	AD	Composting	Landfill	
Paper and Card	713	93	121	–57	–687	2,556
Kitchen/food waste		89	65	–35	–258	2,428
Garden/plant waste		121	70	–57	–135	89
Other organic	–44	271	330	–34	–230	
Wood	5	577			–298	256
Textiles	1,284	–245			–233	19,294
Plastic (dense)	1,012	–1,139			–10	12,778
Plastic (film)	782	–1,012			–10	10,222
Ferrous metal	1,340	786			–10	1,917
Non-ferrous metal	11,026	–23			–10	16,100
Silt/soil	–16	–35			–10	4
Aggregate materials	4	–35			–10	102
Misc combustibles	–58	–242			–305	102
Glass	574	–45			–10	1,406
Estimated impact of materials not covered in ERM study (municipal and C&I)	259	–97	13	–7	–81	2,860

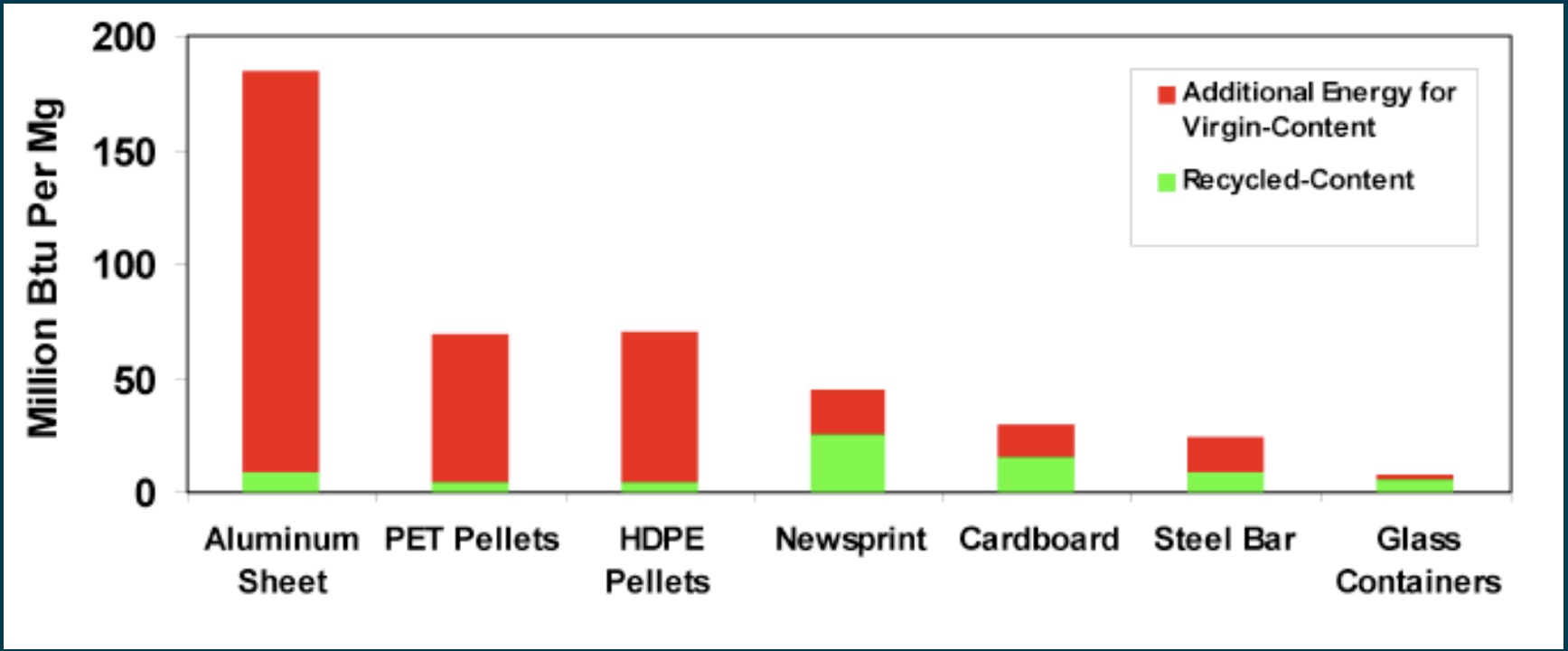
[a] Impact of other treatments as in pRIA – http://www.defra.gov.uk/corporate/consult/wastestratreview/partialRIA.pdf – p.58.

‘Energy Recovery’ Wastes Energy…



Morris, J. (1996). "Recycling versus incineration: an energy conservation analysis." Journal of Hazardous Materials 47(1-3): 277-293.

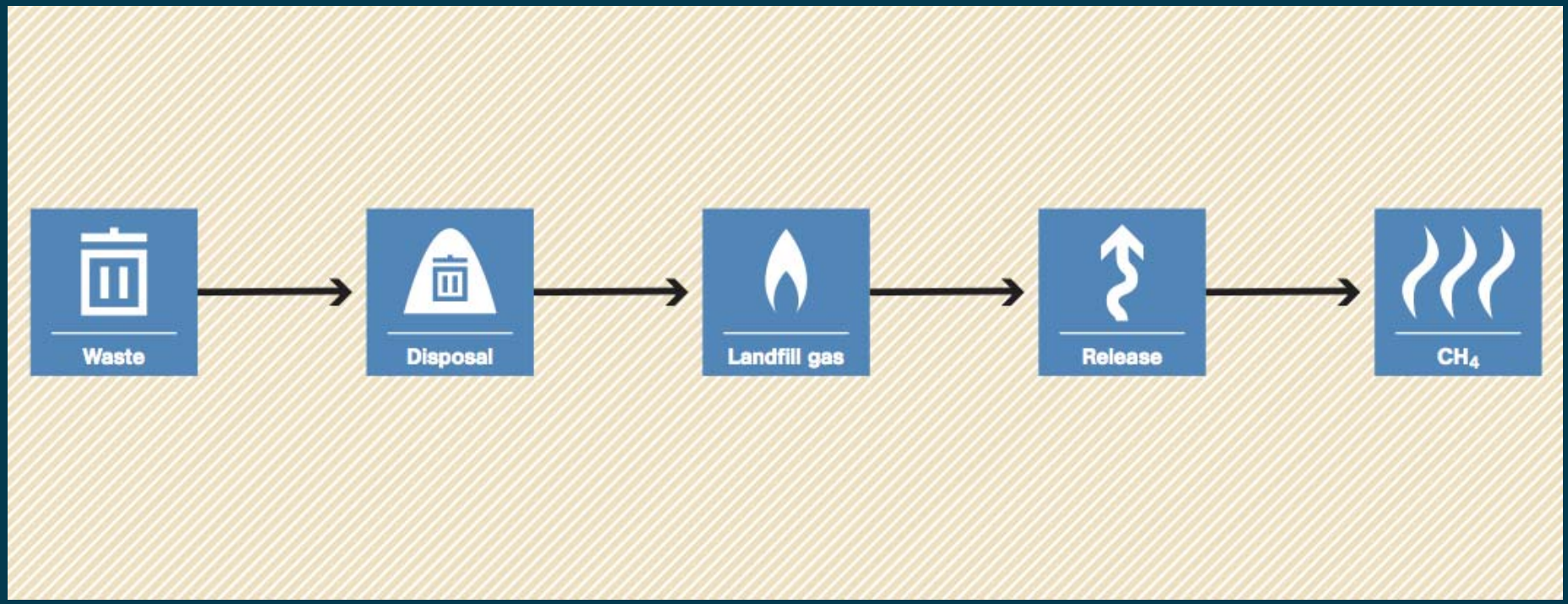
Additional Energy needed for virgin material



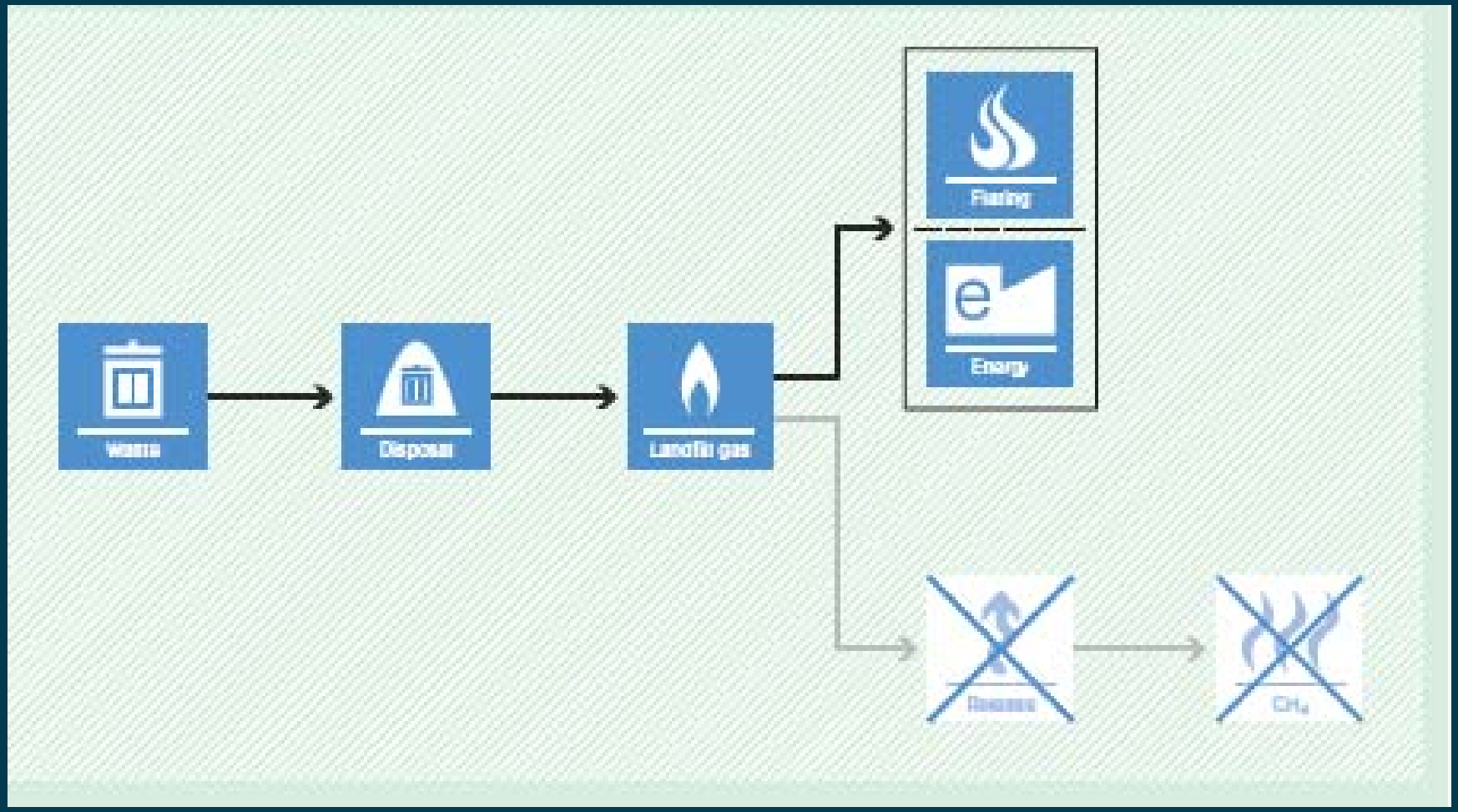
Morris, J. (2005). "Comparative LCAs for Curbside Recycling Versus Either Landfilling or Incineration with Energy Recovery (12 pp)." The International Journal of Life Cycle Assessment **10**(4): 273-284.

‘Primum non nocere’ to the Environment

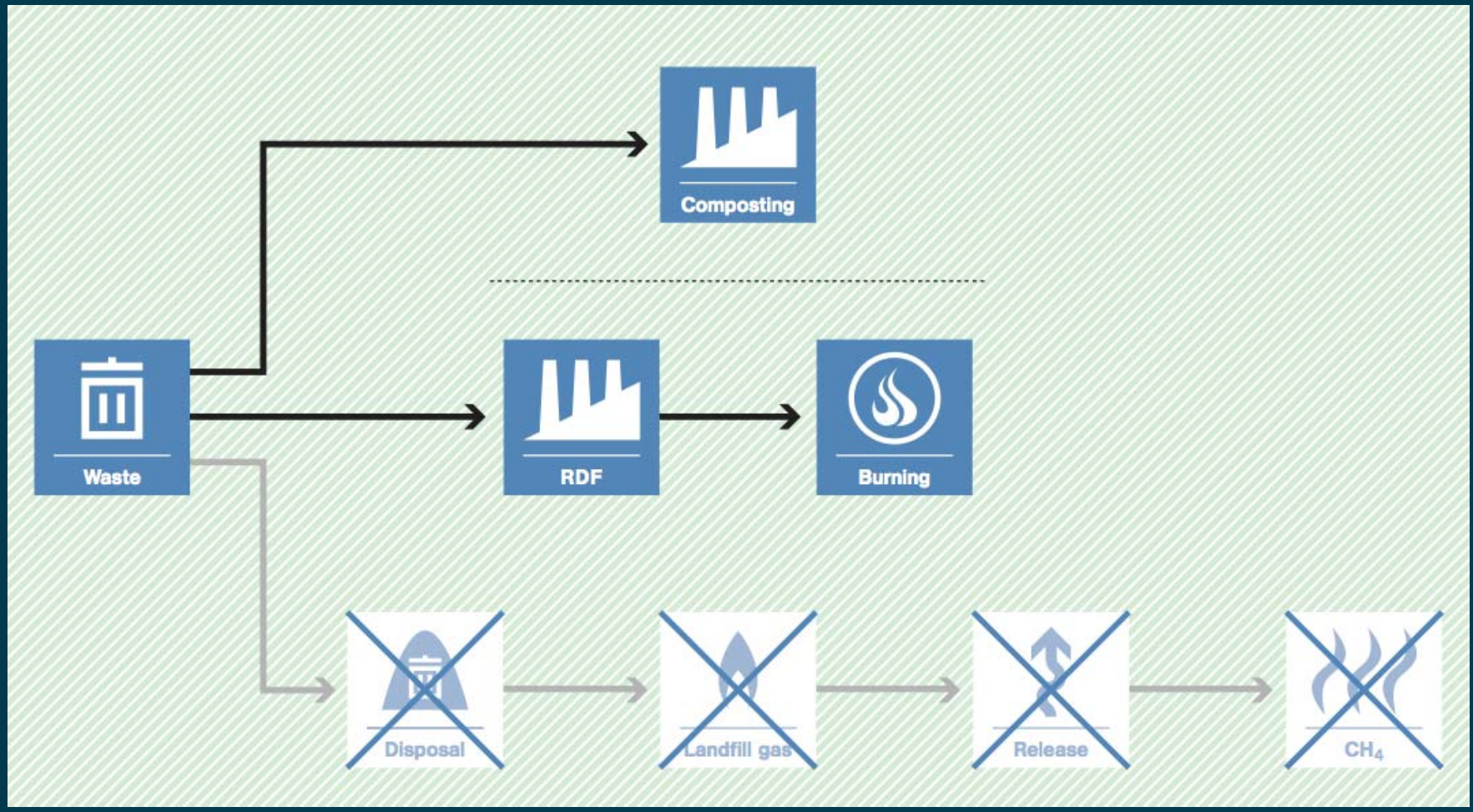
Baseline scenario of ACM001 and AM0025



Project scenario for ACM001



Project scenario for AM0025



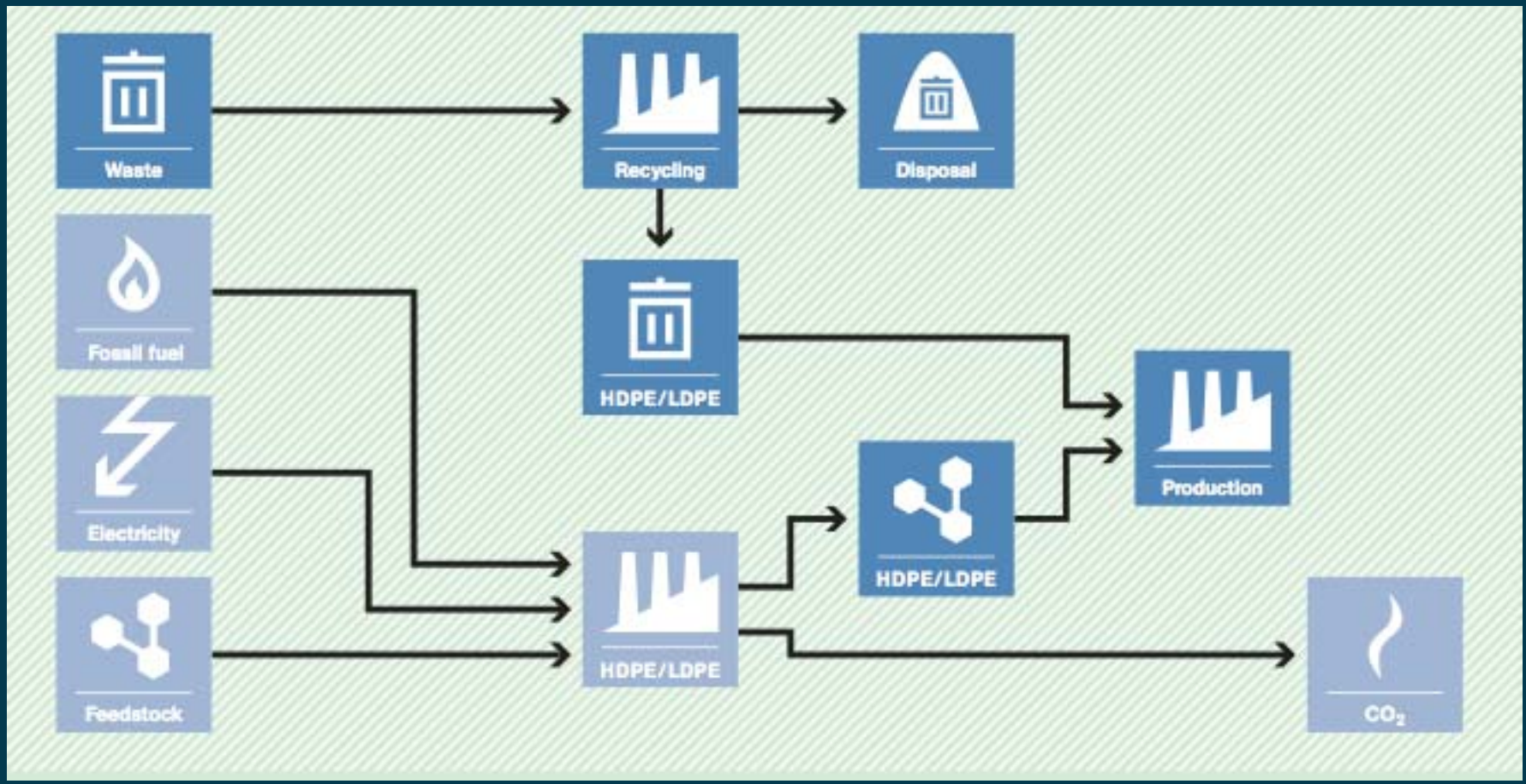
Alternative scenarios

- Alternative scenarios M1, M2 and M3 do not reflect the reality of waste recycling in developing countries.

- A new alternative scenario M4 is needed

This should survey current recycling practices and their climate benefits with lifecycle assessment.

Project scenario for AMS-III.AJ



Biogenic Carbon (1)

Editorials

How to Account for CO_2 Emissions from Biomass in an LCA

Ari Rabl*, Anthony Benoist, Dominique Dron, Bruno Peuportier, Joseph V. Spadaro and Assaad Zoughaib

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DOI: http://dx.doi.org/10.1065/lca2007.06.347

In a part of the LCA community, a special convention has ... under a system of greenhouse gas taxation, the CO_2 from using

"In a part of the LCA community, a special convention has been established according to which CO_2 emissions need not be counted if emitted by biomass. For example, many studies on waste incineration do not take into account CO_2 from biomass within the incinerated waste, arguing that the creation of biomass has removed as much CO_2 as is emitted during its combustion."

Rabl. IntJLCA 12(5)281(2007)

Biogenic Carbon

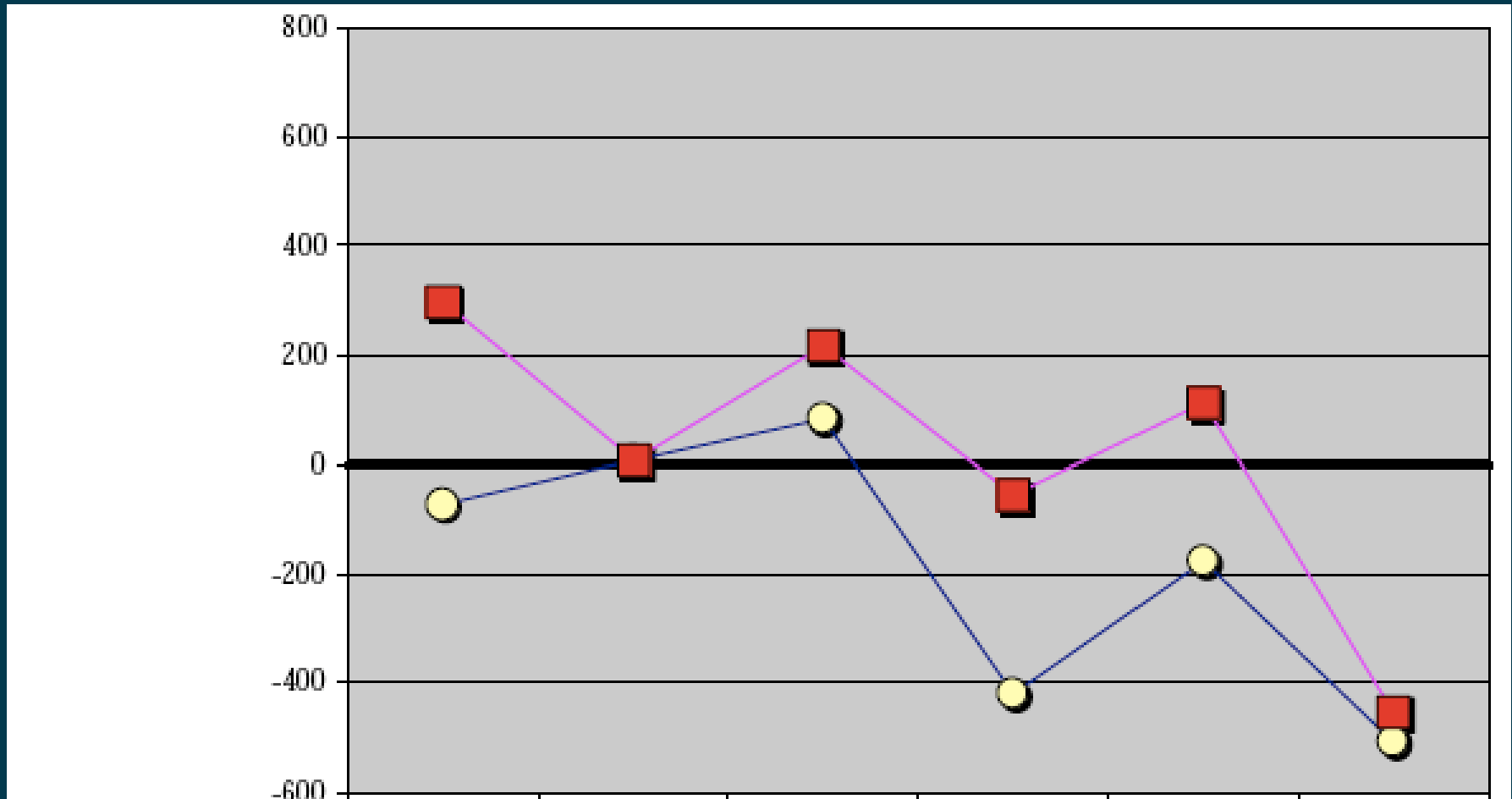
"We recommend that the emission and removal of CO_2 <u>be counted explicitly</u> at each stage of the cycle"

Rabl et al (2007) IntJLCA 12(5)281

"…if incineration of waste is used for energy purposes, both fossil and biogenic CO2 emissions should be estimated "

Agriculture, Forestry and Other Land Use (AFOLU) Volume of the *2006 Guidelines*.

Sequestration



	Landfill raw waste	Mass burn	RDF-FBC	MBT landfill	MBT incin	Recycling, compost & AD
Net flux	-74	8	84	-420	-178	-507
Net flux excluding sequestration	297	8	218	-56	111	-451

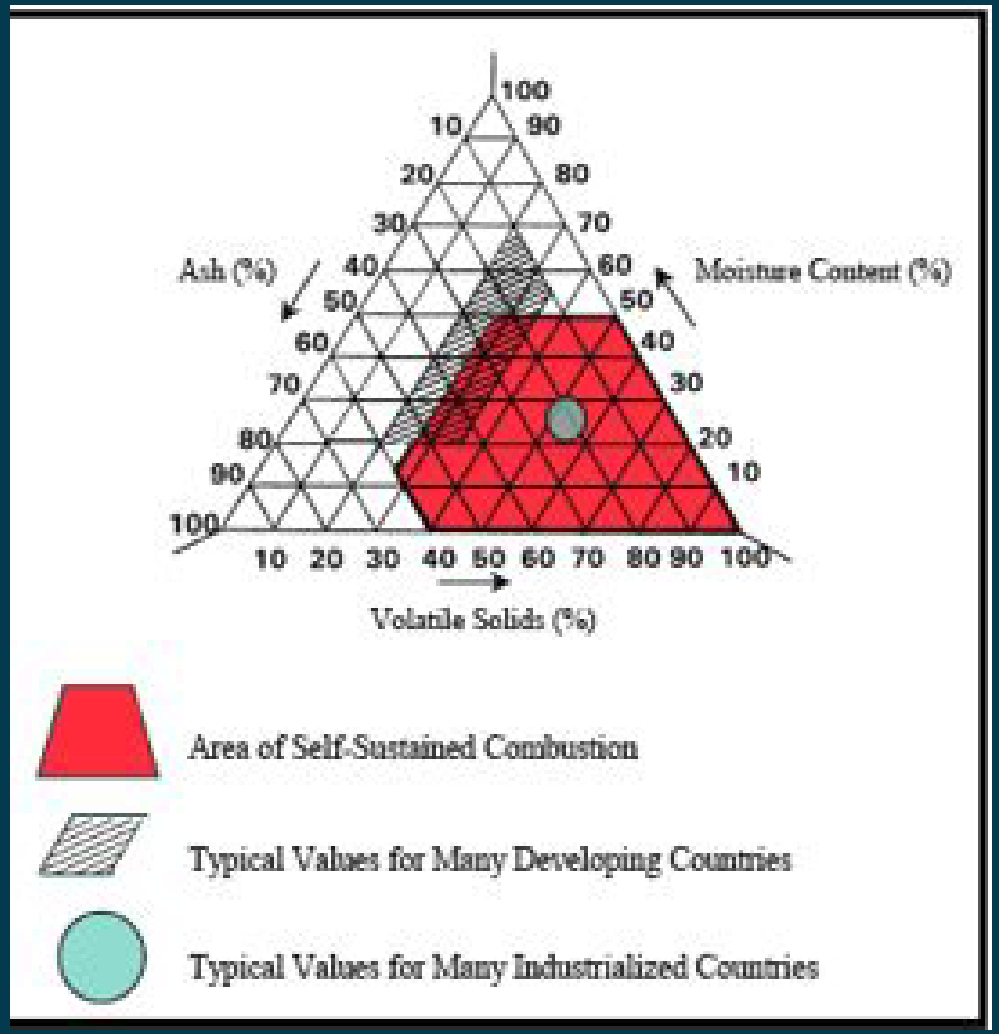
AEA Technology, A. Smith, et al. (2001). Waste Management Options and Climate Change Final report to the European Commission,. Brussels, DG Environment.

Wasting Jobs…

"There is no doubt that incineration or pyrolysis will reduce livelihoods opportunities because waste has to be owned and transported by the incineration company, and much incineration requires some proportion of paper and plastic to produce a sufficient calorific content for incineration to occur".

Forsyth, T. (2006) Cooperative environmental governance and waste-to-energy technologies in Asia. International journal of technology management and sustainable development, 5 (3). pp. 209-220.

Self-Sustaining Combustion…



United Nations Environment Programme and Calrecovery Inc 2005

Self-Sustaining Combustion (2)

"Incineration is … not the technology of choice for wet waste, and municipal waste in many developing countries contains a high percentage of food waste with high moisture contents".

Intergovernmental Panel on Climate Change IPCC (2007). Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], . Cambridge, United Kingdom and New York, NY, USA, Cambridge University Press,

Recommendations for AM0025

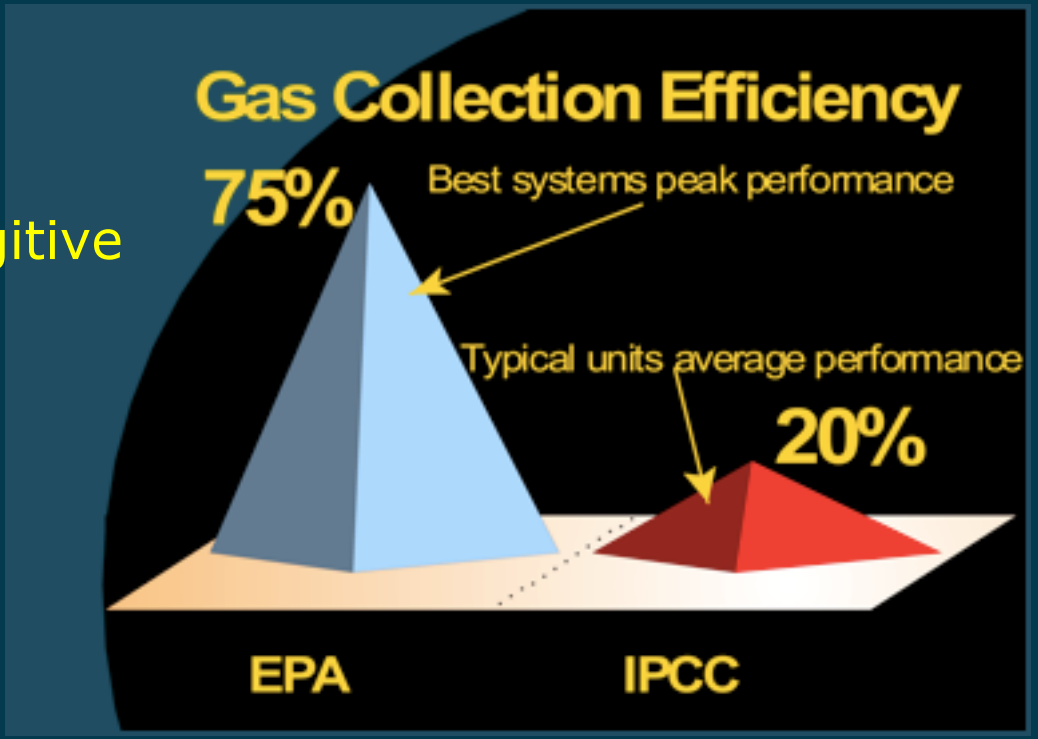
- LCA for displaced recycling
  - –Formula 1 (pg. 9, AM0025/Version 12) should be amended by adding the term: $+PE_{u,y}$
- Include Biogenic emissions – and test
- Temporal emissions for all GHGs
- Limit auxiliary fossils fuels to 5% NOT 50%

Landfill Gas and ACM0001

Emissions: Operation for methane production can increase total emissions Practices to increase methane production should be banned.

Methane fraction: Uncertain - Rigorous characterisation of waste.

Gas collection: Huge uncertainty
Regular monitoring of fugitive emissions.



Landfill Gas Additionality?

The Chinese 'Standard for Pollution Control on the Landfill Site of Municipal Solid Waste' (GB16889-2008) requires LFG to be extracted for flare combustion or utilization

Chen, Z., H. Gong, et al. (2010). "Overview on LFG projects in China." Waste Management **30(6): 1006-1010.**

So where is the additionality?

Additionality

- Investment barrier: recycling and composting are (much) cheaper and more effective
- Technology: Complex but not BAT – and deters best practice
- Uncommon: Inappropriate and uneconomic in developing countries

Summary

- Baseline scenarios should be adapted to take into account current – and future - recycling practices, including supporting wastepickers

- GHG emission reductions should be optimised using BAT and BEP techniques

- Only waste that can not, and will not, be recycled or composted by wastepickers or others should be included

The Waste Methodologies need revision as documented in critiques provided by GAIA.