

An Integrated Solid Waste Management Plan for Maseru City

- Lessons learnt -

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Environmental & Process Systems Engineering Research Group

2 views of “waste in the city”



1. It's a matter of hygiene
2. Resources going to waste













Maseru

- Capital city of the Kingdom of Lesotho
 - Landlocked inside South Africa
- ~ 300 000 inhabitants (out of 2 million Basotho)







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 - Landlocked inside South Africa
- ~ 300 000 inhabitants (out of 2 million Basotho)
- 50 000 jobs in textiles
- Population growth of ~ 7% p.a. since 1980s
- No sanitary landfill site
- Some local recycling firms
 - Exporting baled materials to South Africa by truck





The currently used dump site





A-Prof. Harro von Blottnitz

Environmental & Process Systems Engineering



- Study of industrial-urban ecology in a developing city context
 - Sustainable Urban Systems course in UID&M MPhil programme
- Expertise in Waste Management, including
 - Energy from Waste
 - Waste Minimisation and Cleaner Production
 - Life Cycle Assessments
- Harnessing renewable energy for urban energisation



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About the University of Cape Town team

- Mainly from the Environmental & Process Systems Engineering Research Group
 - based in the Chemical Engineering Department
- Input also from Environmental & Geographical Science Department
- We are linked into UCT's African Centre for Cities
- E&PSE contributed to 'Energy from Waste' study for DST in 2005/6



A 3-phase ISWMP project

- Phase 1: Baseline study – completed in 2006
 - Led by Ministry of Environment, with foreign and local consultants
- Phase 2: Development of the ISWM Plan
 - Led by Ministry of Local Government, with UCT team as foreign experts and local experts appointed
 - Completed early 2008
- Phase 3: Implementation
 - To be led by Maseru City Council
 - UNEP/UNDP collaboration to assist with implementation



EIA Tsoeneng landfill

HCW initiative

Bilateral aid agreements

Sustainable Maseru

ISWMP

PPPUE

Private sector recycling

Economic development plans

Dublin partnership



Lesson 1

- There were many previous and parallel activities on this and related matters. The consultant and UNEP were not fully briefed on some of these.
- *It is difficult to deliver an integrated plan when some parallel activities are feeling threatened.*
- *ISWMP is not about turf wars, but about painting out the complete picture and making sure all important activities are recognized and resourced.*



The 'architecture' of Maseru's ISWMP

- A short, easy to read document (20 pages)
- 10 guiding principles
- Targets
- Themes for action
- Actions/projects
- Responsible actors
- Time plan



Targets for waste management

- Total waste volumes
 - Projected to grow from 96,000 t in 2006 to 180,000 t in 2020
 - Any targets on reducing this growth?
- Quantity recycled
 - 9,600 t in 2006 = 10%
 - 30% target for 2020 requires collection of 60,000 t/y recyclables
- Fate of bio-waste in households
 - Currently high utilisation (animal feed or composting)
 - Keep that way?
- Dumping (illegal, formal MSW, formal industrial)
 - Do away with all by 2020? Earlier?



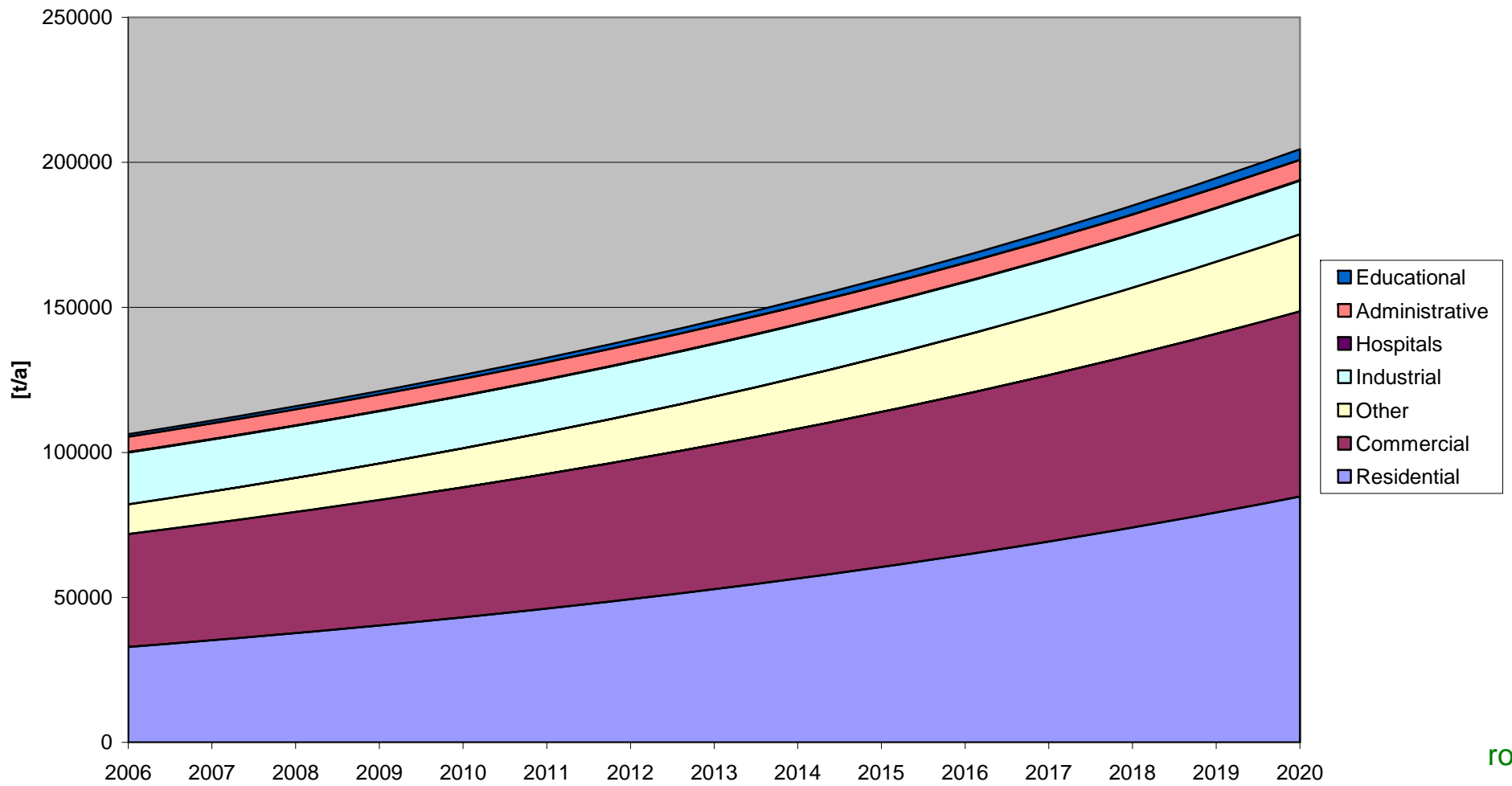
Lesson 2

- The baseline study (completed by another consultant) did not present an overall estimate for waste, and had a factor 10 error in the commercial waste stream.
- ***Cannot plan without an accurate estimate of volumes!***
- The food waste component in the municipal waste stream was very low for a developing city context, because of the wide-spread habit of keeping domestic animals.
- ***It is important to understand waste generation and utilization in every place in detail.***



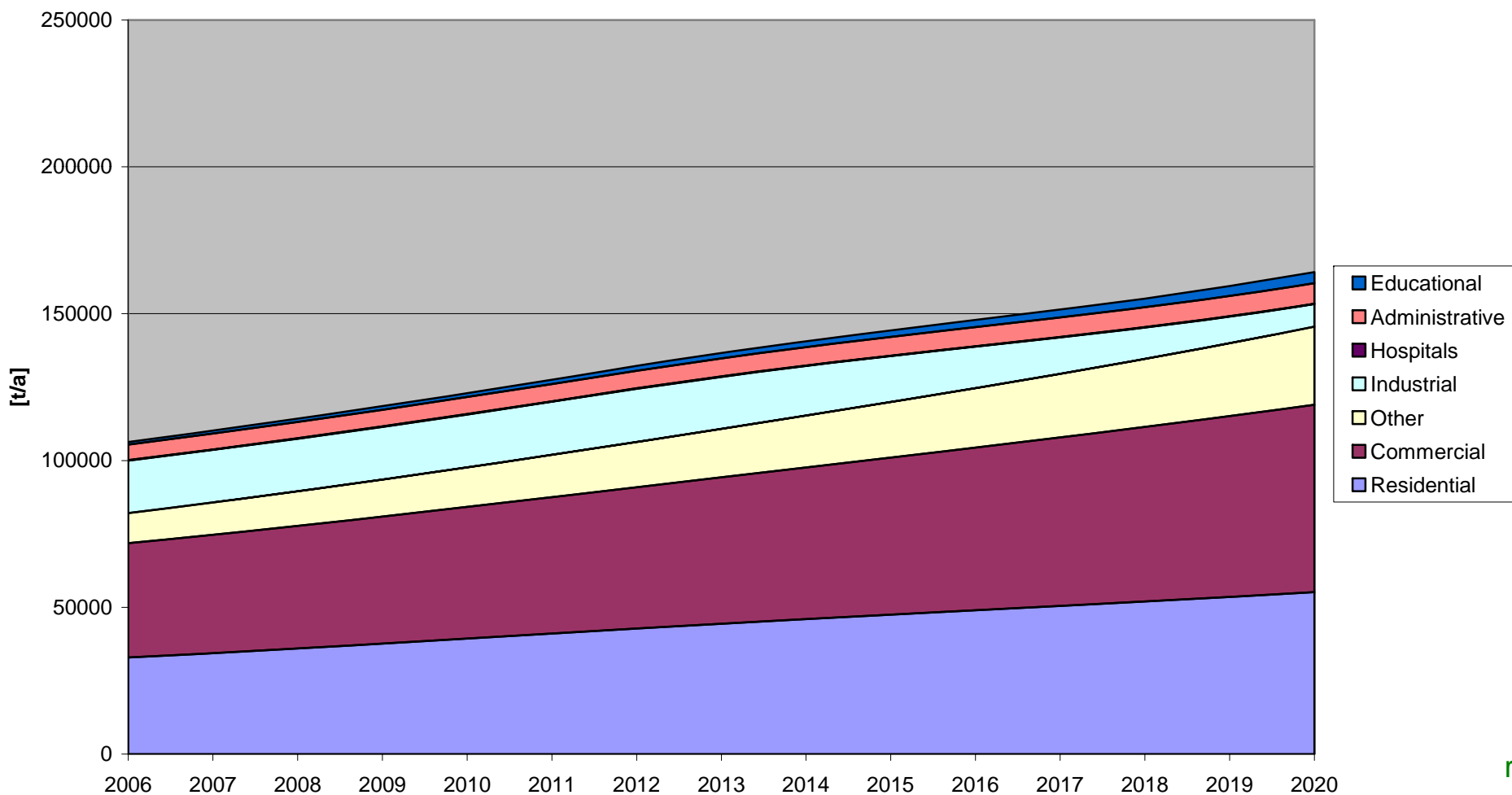
Waste sources - Business as usual

Waste Quantities by Source - Total 2006-2020
Business-As-Usual Scenario



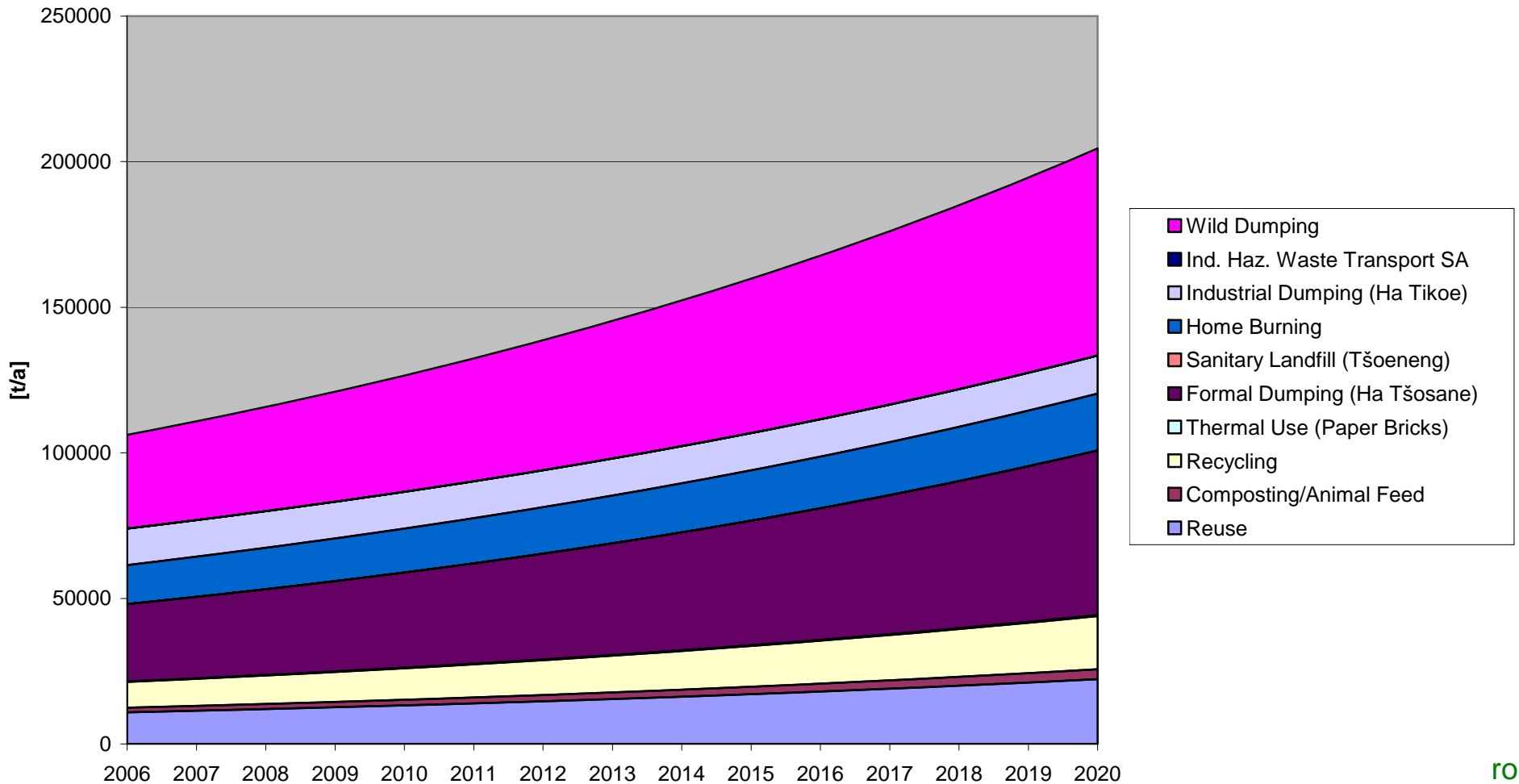
Waste sources – With interventions

Waste Quantities by Source - Total 2006-2020
Interventions Scenario



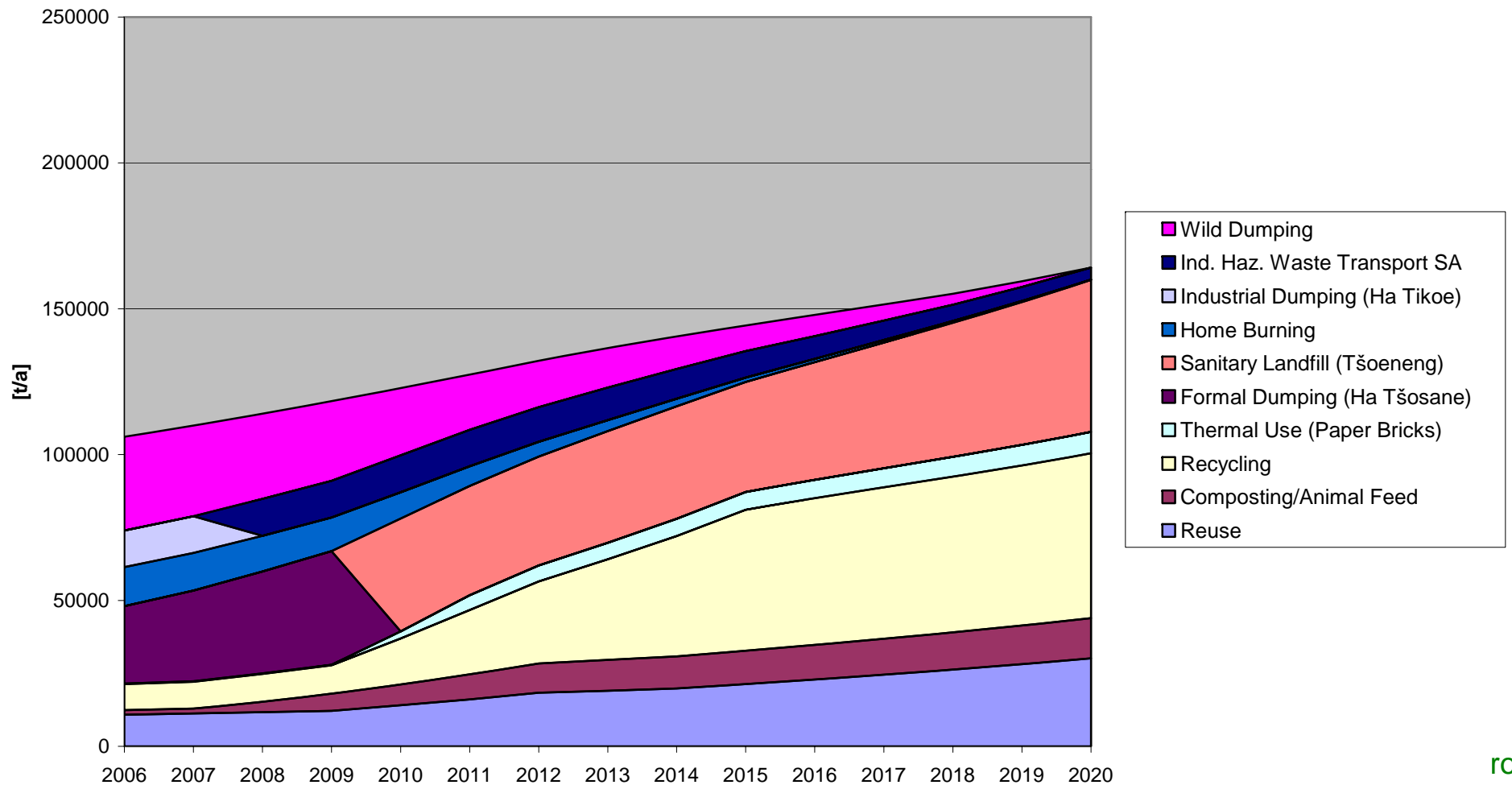
Waste sinks – Business as usual

Waste Quantities by Sinks - Total 2006-2020
Business-As-Usual Scenario



Waste sinks – With interventions

Waste Quantities by Sinks - Total 2006-2020
Interventions Scenario



Vision 2020:
205 000 t/a
total waste potential

40 000 t/a **reduced**

45 000 t/a
re-used, feed, compost

55 000 t/a **recycled**

65 000 t/a **disposed**

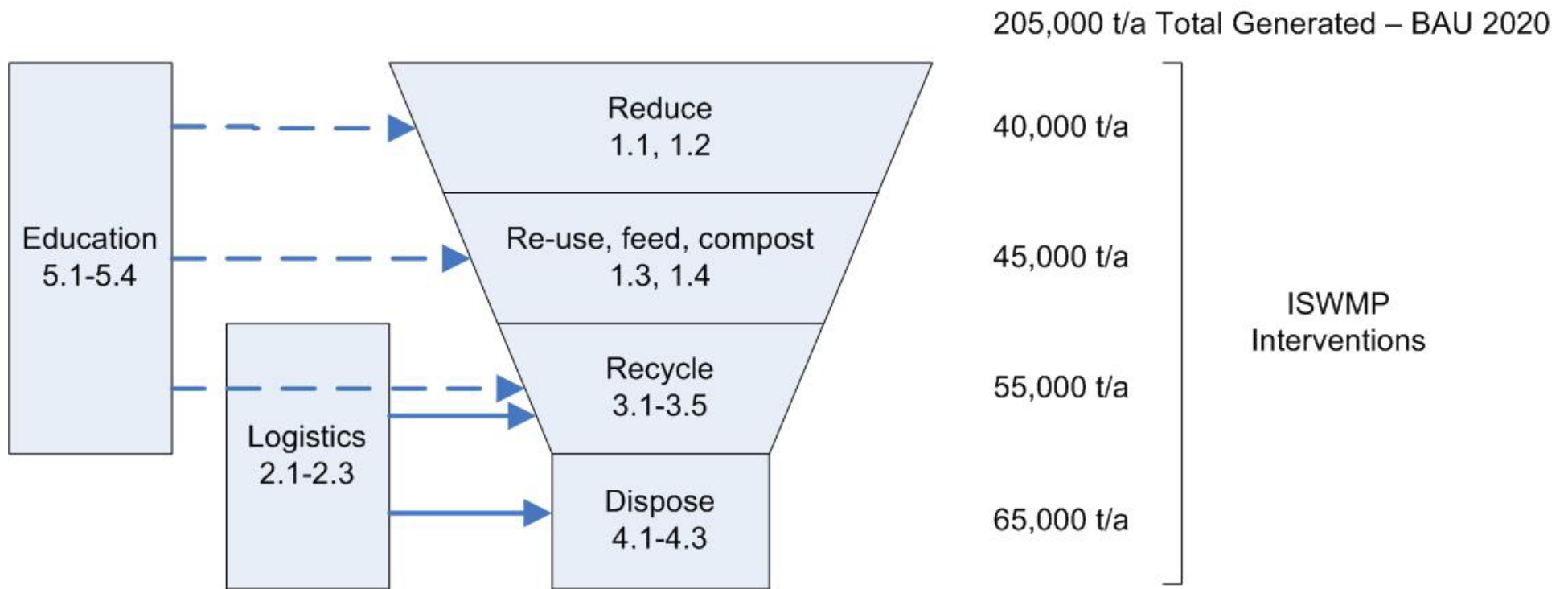


ISWMP: Framework for Action

- Pillar 1: Capacity to prevent wasteful resource use at source
 - Sustainable consumption, cleaner production, source separation, at-source value addition
- Pillar 2: Strong, diversified, appropriate collection systems
 - Different collection systems for different areas
 - Predicated on agreement that MCC will remove real waste if producer takes care of source separation, at source value addition and delivery
- Pillar 3: A healthy recycling industry
 - Including provision of business development support, competition, industry associations
- Pillar 4: Environmentally safe disposal site for real waste
 - Challenge of full cost recovery vs wild dumping
- Foundation: Education, built on real, up-to-date information
 - Households, schools, offices, professionals etc
 - Supported by an up to date waste information system



Framework for Action



Themes, Lead Institutions and Actions

Theme	Lead Institution	Actions
Awareness, Education & information	NES	1.1, 1.2, 1.4, 3.3, 3.4, 4.3, 5.1, 5.4
Collection, segregation & disposal	MCC	1.3, 2.1, 2.2, 2.3, 4.1, 4.2, 5.5
Industrial development (Recycling & CP)	LNDC	3.2, 4.3 + parts of 1.2, 3.1
Policy & institutional mechanisms	MoLG&C	3.1, 3.5, 5.3, 5.5

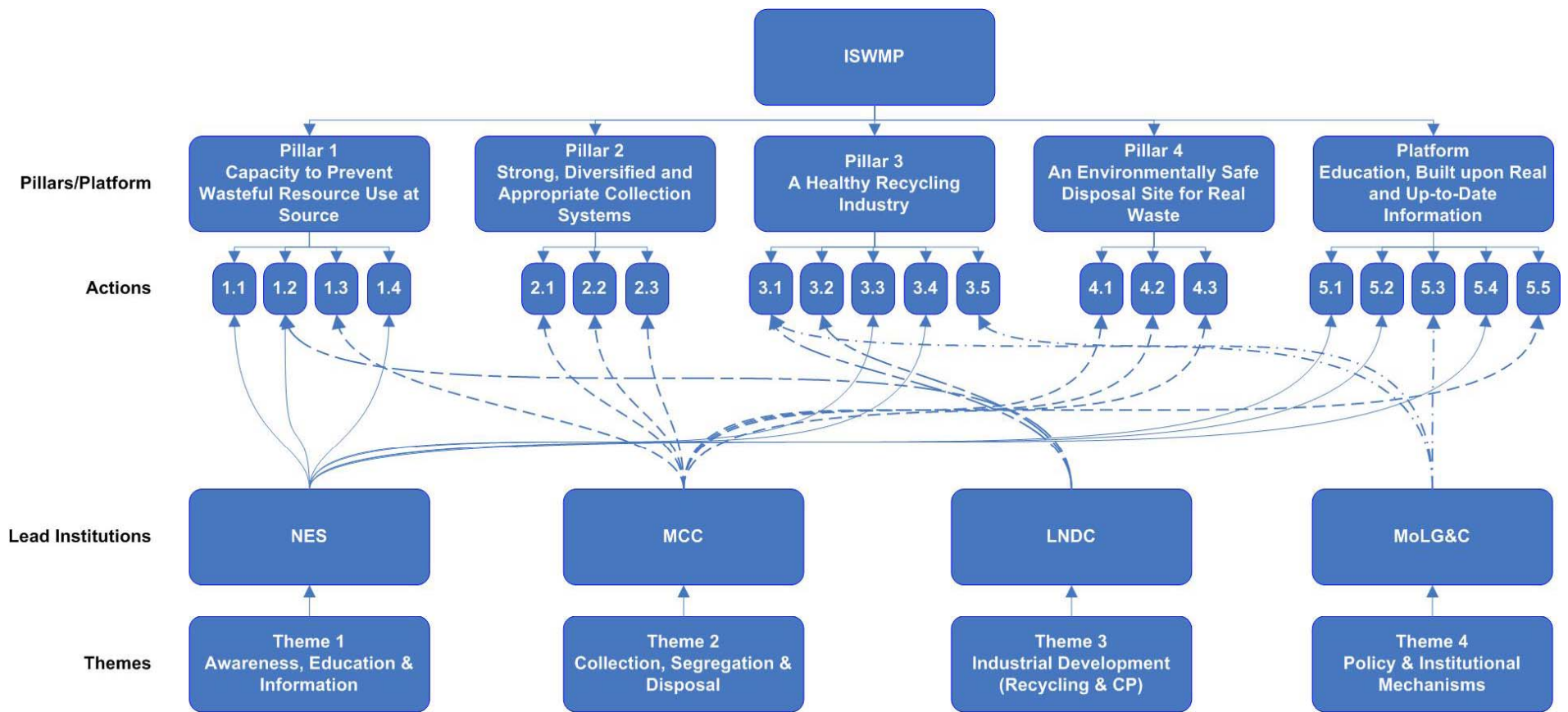


Lesson 3

- *The waste management hierarchy (pyramid) is a useful tool, but turn it on its head (i.e. start with reduction).*
- *Delivering adequate waste management services is impossible without a disposal site, but it can be much smaller than some believe!*



An Integrated Plan



Conclusions

- We should not pin all hopes on the completion of the new landfill disposal site, and neglect some of the proposed ISWMP actions.
- It is very important to realise that:
 - Collection and disposal of waste only costs money and creates only a few jobs.
 - The recovery of resources, their separation and further processing may cost money, but it also makes money. And every ton that does not go to landfill disposal, saves the City, and its ratepayers, money.
 - Over the next decade, resources will become more expensive globally. A small country far away from resource supplies, will become increasingly vulnerable unless it manages its resources well.
- Therefore each of the 20 action items should be implemented



Lesson 4

- So far, no signs of implementation
- Also, very limited technical engagement during the planning phase
- *It is most important that the plan is demanded by, and actively shaped by, a local champion who knows s/he needs this plan to:*
 - *i) save their city from drowning in waste*
 - *ii) make their city a resource-efficient one.*



Acknowledgements

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