European advances and trends in waste management and its relevance for South Africa

Introduction

1. Brief introduction to status quo in the EU and where the EU is heading in terms of SWM
2. When we fail – How do we fail? (EU & SA)
3. Solid waste management challenges in South Africa
4. Suggested focus for improving waste management in SA (seen from a foreigners perspective)
5. Conclusions
6. Q&A?
European Waste Management in the past

1. Copenhagen's **first waste by-law** was published in year 1661, regulating payment for waste services, mandates and responsibilities.

2. The **first WtE facility** in Copenhagen utilizing heat was operated 1903 (113 years ago)

3. **Establishment of inter-municipal waste management utilities** in 1970'ies to secure economies of scale and muscle to invest in regional landfills and waste treatment facilities

4. **Waste taxes** on landfilling and WtE in 1987

5. Driven by ground water protection and sanitation, **landfill ban** was established in 1980'ies effective from 1997

6. **2006-ongoing**: **Merging of waste utilities** to even larger companies due to increasing complexity and capital costs
Future EU Waste Management

1. **Significantly reduced need for landfilling**: Large scale landfilling is unsustainable. Northern European practice of **only 2-8% to landfill sets the trend**
2. **Strong drive towards resource efficiency**, requiring phasing out of harmful chemicals
3. Move towards **circular economy** where materials and nutrients exist in "closed material loops": **Increased pressure from resource, carbon and energy policies**. Energy recovery from remaining residual waste only – **Development of new business models (new taxes/regulation + repair, return, disassembly, material standards)**
4. **Less need for WtE capacity in N. Europe** – and more in Eastern and Southern Europe. Need to define "recycling quality". As energy becomes fossil-free, WtE is used for non-recyclable waste only (contaminated or un-separable waste)
5. **Continued liberalization of the waste market**, result in less direct waste flow control and more indirect control via regulation and fiscal tools. We must **be even better organized** and regulation will be more complex! Benchmarking and push for lower waste tariffs to balance profits in liberalized market
6. **More cross-sectoral approach**: waste – energy – agriculture – resources
Use of waste disposal/recovery options in EU-28 and selected countries
Waste Management in EU (1990-2015), selected countries and best performers today

Current best no-landfill performers

Current best recycling performers

Current best organised EU countries
- Germany
- Denmark
- Sweden
- Netherlands
- Belgium
- Austria

Current "best" WtE performers

Combustion with energy recovery (EfW) (%)
How are we failing (in SA & EU)?

1. Preference to established practices, pressure groups and technologies, resulting in barriers/delays for better technologies and practices. This includes capital subsidies or O&M grants to maintain status quo *(Why upset my partners?)*

2. Waste **tariffs are often not reflective of true costs**, because of capital grants, tax rebates, cross-subsidisation from other sectors, and pressure from political/NGO/industrial/commercial stakeholders etc. *(Grant junkies)*

3. **Political inability to make necessary but unpleasant decisions** to secure adequate and high-quality waste treatment and disposal capacity *(Why now? Let's wait!)*

4. **Inability to align and coordinate policies** on e.g. waste, energy, industry, agriculture and mining, resulting in inefficiencies, unfair preferences and making sub-optimised decisions. *(Powerful sectors/ministries call the shots)*

5. **Inability to regulate and enforce efficiently**, leading to non-compliant businesses winning the competitive race *(Feeding the sharks).*

6. **Excesses, corruption and inefficiencies** in the operation and maintenance of waste collection and management facilities. *(Efficiency and transparency is a pain!)*
The future waste generation will increase in Africa and South Africa

Waste generation is growing the most in Africa
Conundrums concerning formal standards and actual situation on the ground

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<th>We have excellent...</th>
<th>But....</th>
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<td>Regulations and legislation:</td>
<td>But limited compliance and impact on the ground</td>
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<td>Environmental standards:</td>
<td>But the compliance is low</td>
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<td>Lots of grants and financing sources:</td>
<td>But lack financially viable waste management services and tariffs are not reflective of costs. Limited ability to make long-term investment plans</td>
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<td>Waste Management Officers appointed (WMA 2008):</td>
<td>But significant shortage of skills and difficult to retain skills</td>
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<td>Constitution allocates roles and responsibilities well:</td>
<td>But cooperation, economies of scale and service delivery is limited</td>
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<td>Clear functions and mandates:</td>
<td>But numerous vacant positions due to budget and employment constraints</td>
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## Key challenges for SWM in SA (1/2)

| Planning, compliance and data management: | **No reliable waste data**, SAWIS is not fully operational, very difficult to monitor impact of policy changes or define most urgent interventions. Very difficult to introduce waste taxes, if desirable  
The **IWMPs, if updated, are sometimes lacking ambitions** in terms of expanding service delivery and providing acceptable landfill capacity as well as diverting more waste towards resource recovery |
| Service level: | **A large part of South Africa, in particular in rural and informal areas, is not receiving any reliable waste collection service**, if at all.  
Significant **difference in the service levels provided** in rural, urban and affluent areas, including stability of service, quality and availability of receptacles, and opportunity to participate in recycling activities  
Practically all **collected waste is landfilled** |
| Environmental performance: | Many **unlicensed or non-compliant landfills/dumpsites** are in operation  
Significant **fly-dumping** of building rubble, garden waste etc. in public open space  
**Significant environmental impact**  
Lack of control of disposal of hazardous chemicals, solvents, etc.  
**Significant environmental impact** from e.g. sub-standard metal scrap and chemical recovery operations  
Frequent **uncontrolled landfill events** (fires, leachate overflow, injuries, plant failure etc.) |
### Key challenges for SWM in SA (2/2)

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<th>Challenge</th>
<th>Description</th>
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<td><strong>Lack of financial sustainability:</strong></td>
<td>Waste management services are underfunded, and often dependent on grants and unable to plan for capital and operational costs or to ring-fence budget. Many municipalities are unable to collect tipping fees or waste tariffs that are reflective of true costs of capital and operation. Inability of inefficiency in dealing with non-payment. Many residents are unable or unwilling to pay a reflective waste management tariff.</td>
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<td><strong>Inefficiency in the use of current infrastructure:</strong></td>
<td>Due to absence of planning, regulation and infrastructure e.g. garden waste and building rubble cause costly waste of landfill space. Landfill operation is often inefficient due to waste pickers and absence of equipment. Costs of cleaning up of fly dumping of rubble etc. due to lack of control and enforcement.</td>
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<td><strong>Shortage of treatment and disposal capacity:</strong></td>
<td>Landfill crisis in many municipalities due to inability to locate and fund new landfill sites. Due to grant funding of existing landfills and the absence of fiscal measures in favour of recycling and treatment technologies it are rarely financially viable to invest in advanced treatment plants. NGOs can only &quot;cherry pick&quot;.</td>
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<td><strong>Enforcement of standards and regulations:</strong></td>
<td>Significant legal requirements but sometimes limited capacity to process such applications timeously. This result in business advantages and opportunities for sub-standard firms. Waste Management Officers are in some cases poorly equipped in terms of time and training to fully function as intended, due to many other commitments, thus, making the post a position shared between several functions.</td>
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Suggested focus for South Africa

1. Securing **reliable waste statistics and waste data** to allow for proper planning, enforcement and the basis for waste tariffs and waste taxes, thus providing mechanism to direct waste well.  *(Know what you are doing)*
2. Establish firm framework for **efficient collection of waste management tariffs** that are fully reflective of the whole-life costs *(Fund what you are doing)*
3. Secure sufficient and timeous waste **processing, treatment and disposal capacity of compliant standards** *(Secure needed processing capacity)*
4. Expand waste collection efficiency to include practically all residents and businesses, including rural and informal areas *(Service all residents)*
5. Implement **measures to increase resource recovery and landfilling diversion**, while generation goes up *(Reduce landfill dependency)*
6. When **affordable** supplement the existing recycling and material recovery capacity with **advanced waste treatment capacity**, especially in metros, such as Mechanical Biological Treatment, Waste-to-Energy and Anaerobic Digestion *(Build advanced processing capacity, when affordable)*
7. Prepare for the circular economy now by enabling new CE business models
Conclusions

1. Globally and also in SA, SWM has come a very long way from take, use and throw, to building a circular economy. But, we have only just started the circular economy journey!

2. Households in N. Europe pay 450-650 €/y. In SA metros it is 85-150 €/y. SA landfill tipping fees are 10 – 20 times less that of N. Europe. This is a significant barrier to any capital-intensive waste facility. Unless significant changes are made, practically 100% dependency on landfilling will continue.

3. Building a circular economy requires a paradigm shift in the ownership and stewardship of materials/products and how we are organised. However, a CE approach provides new employment opportunities

4. Growth in population and prosperity means that waste generation will grow enormously in South Africa, Waste management will only get harder!

5. The EU will push for resource efficiency and viable circular economy business models. It is therefore possible that the current gap between waste management practices in the South Africa and the EU may widen. Europe will buy less extracted resources from Africa, and will demand less African goods.

6. There's only one way to go: We must be much better organised and prepare for the paradigm shift needed to perform better and future-proof our economy in terms of access to resources and new opportunities for a more resource-efficient economy.

We better start now! 😊
Thank you for your attention

Any questions?

Torben Kristiansen, M. Sc. Civ Eng
Vice President Solid Waste, COWI A/S
Denmark

tokh@cowi.com
www.COWI.com/waste