Instruments for sustainable resource management in the UAE

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1. Introduction. Situational analysis
## Waste Generation UAE — Tons, By Emirate

<table>
<thead>
<tr>
<th>Emirate</th>
<th>% of total</th>
<th>Total</th>
<th>% Hazardous</th>
<th>% Non-Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu Dhabi</td>
<td>49.2%</td>
<td>12,884,554</td>
<td>0.93%</td>
<td>99.07%</td>
</tr>
<tr>
<td>Dubai</td>
<td>36.6%</td>
<td>9,581,640</td>
<td>1.42%</td>
<td>98.58%</td>
</tr>
<tr>
<td>Sharjah</td>
<td>9.9%</td>
<td>2,589,351</td>
<td>2.32%</td>
<td>97.68%</td>
</tr>
<tr>
<td>Ajman</td>
<td>1.7%</td>
<td>450,448</td>
<td>0.12%</td>
<td>99.88%</td>
</tr>
<tr>
<td>Umm Al-Quwain</td>
<td>0.5%</td>
<td>135,020</td>
<td>0.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Ras-Al Khaimah</td>
<td>1.0%</td>
<td>267,478</td>
<td>0.49%</td>
<td>99.51%</td>
</tr>
<tr>
<td>Fujairah</td>
<td>1.0%</td>
<td>258,108</td>
<td>9.31%</td>
<td>90.69%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>26,166,599</strong></td>
<td><strong>1.30%</strong></td>
<td><strong>98.70%</strong></td>
</tr>
</tbody>
</table>


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1. Introduction: Situational analysis

The UAE
# 1. Introduction: Situational analysis

The UAE

<table>
<thead>
<tr>
<th>Source of Waste</th>
<th>%</th>
<th>Total</th>
<th>Gathering for post treatment and other methods</th>
<th>Incineration</th>
<th>Composting</th>
<th>Landfill</th>
<th>Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Waste</td>
<td>67</td>
<td>17,291,223</td>
<td>5,811,844</td>
<td>–</td>
<td>–</td>
<td>7,497,995</td>
<td>3,981,384</td>
</tr>
<tr>
<td>Municipal Waste</td>
<td>21</td>
<td>5,324,992</td>
<td>756,052</td>
<td>–</td>
<td>275,995</td>
<td>3,529,462</td>
<td>763,483</td>
</tr>
<tr>
<td>Industrial General Waste (non hazardous)</td>
<td>5</td>
<td>1,227,333</td>
<td>672,690</td>
<td>–</td>
<td>48,077</td>
<td>383,835</td>
<td>122,732</td>
</tr>
<tr>
<td>Agricultural Waste</td>
<td>4</td>
<td>1,140,313</td>
<td>757,884</td>
<td>37,432</td>
<td>108,797</td>
<td>227,301</td>
<td>8,899</td>
</tr>
<tr>
<td>Sludge</td>
<td>3</td>
<td>676,257</td>
<td>59,261</td>
<td>–</td>
<td>103,032</td>
<td>509,236</td>
<td>4,728</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>165,059</td>
<td>83,659</td>
<td>398</td>
<td>23,187</td>
<td>51,488</td>
<td>6,327</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>25,825,177</td>
<td>8,141,390</td>
<td>37,830</td>
<td>559,088</td>
<td>12,199,317</td>
<td>4,887,553</td>
</tr>
</tbody>
</table>

1. Introduction: Situational analysis
The UAE

Recycling Percentages – UAE

- Constructions Wastes: 23%
- Municipality Waste: 14%
- Industrial General Wastes (nonhazardous): 10%
- Agriculture Wastes: 1%
- Sludge: 1%
- Others: 4%

## 1. Introduction: Situational analysis

The UAE

### Fact sheet

- Growing population; *(x2 in 20 yrs)*
- Raising levels of waste generation; *(10 mio tonnes/yr)*
- Cheap landfill rates do not provide incentives for 3Rs.
- Missed recovery (recycling/reuse) opportunities; *(64%) loss of economic value*
- “Insufficient” adapted waste management infrastructure;
- Ample fossil fuels make waste to energy a costly option.
- Need for a strengthened and integrated policy framework
- Non optimal coordination and enforcement control

*Source: 2013 Policy brief “Towards integrated waste management in Abu Dhabi*
1. Introduction: Situational analysis
The UAE: overview of current actions

► The percentage of recycled waste has increased from 8.5% in 2009 to 14% in 2012, a positive indicator but well behind world leaders;

► Dubai Waste Master Plan in development and being finalized. Pilot residential recycling expanded across Jumeirah;

► Abu Dhabi Center of Waste Management (CWM) created a waste producing tariff system; AED225/t (since 2011).

► Abu Dhabi Center of Waste Management (CWM) Master plan in development (2015-16);

► Bee'ah of Sharjah invested in recycling facilities in Sharjah (over USD 1billion) combined with a reputable education/awareness program and waste tariffs to change behaviour. Sharjah currently has the highest recycling rates of the country;

► TAQA and CWM (Abu Dhabi) “are developing” a Waste to Energy facility to operate in 2015 (on hold);

► MASDAR (Abu Dhabi) seeks to be the world's first zero-waste/carbon city.

► “Federal” legislation is under its way. This could significantly drive the sustainable resource market forward;

<table>
<thead>
<tr>
<th>#</th>
<th>Main federal targets set by the MOEW (UAE)</th>
<th>Actual Figures (2012)</th>
<th>2021 Target</th>
<th>Main Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The proportion of the total waste treatment of waste produced (solid)</td>
<td>23%</td>
<td>75%</td>
<td>MOEW</td>
</tr>
<tr>
<td>2</td>
<td>Amount of Municipal Solid Waste generated</td>
<td>2.1 Kg/capita/day</td>
<td>0.9 Kg/capita/day</td>
<td>MOEW</td>
</tr>
</tbody>
</table>
At global and regional level, current waste growth and resource management practices are unsustainable. The linear model is not providing for a sustainable future for the region as it applies as well to other regions in the world.

#### How to react to the pressures of change

- Government must create the economic and legislative conditions for change
- Integrated waste management strategy and system design to reinforce the waste hierarchy
- Implementation of capacity building at municipal/city authority level
- EPR principles to place the cost burden on the producers and drive market development for creating circular economies
- Increasing use of outsourcing, performance based contracting and PPP/BOT commercial structures to manage the municipal financial burden, drive change and manage technology risks
- Increasing use of multi-stream collection systems to manage public health risks and provide material to the treatment system
- Investment in engineered landfills, waste to energy/gasification and anaerobic digestion as well as intangible factors such as education and awareness
- Economies of scale, increasing capital intensity, technology focus drive joint ventures and M&A activity in the supply chain
1. Introduction: Situational analysis
The UAE: but the biggest challenge ahead is not operational

- Political, regulatory and operational competencies over waste management is shared between the federal and Emirate level governments, which - in the case of waste and resource management - is generating a lot of transaction costs and hampering a national sustainable policy over the long run...

- New law proposals are expected to help unify (operational) waste management guidelines in the UAE and strengthen the impact of the federal level.
2. In perspective: Sustainable Resource Management
2. In perspective: sustainable resource management
In a nutshell

- Sustainable resource management is a strategic challenge today and tomorrow for all countries across the world.

- It is a key theme for industries and the public sector alike.

- There are several key economic (regulatory) instruments which are broadly used/in development in OECD (also in increasing number of non-OECD countries):
  - ADF (advance disposal fees)
  - Landfill/recovery/incineration — taxes tipping fees
  - Tradeable (landfill) permits
  - Recycling credits or rebates
  - Virgin material and ecotaxes
  - **Extended producer responsibility (EPR)**
  - Design for Environment incentives
The cooperation between the private and public sector is key to design and implement a sustainable EPR or other regulation.

There are different partnership models for public-private cooperation:

- **Voluntary** agreements established by industry
- **Voluntary agreements as a partnership** between industry and government (participation of individual firms not obligatory)
- **Industry-government co-regulation** (of industry self regulation combination and government regulation, with government having the authority to enforce)
- **Regulation established and enforced by government**

Experience shows that in most case close cooperation between government and private sector is necessary to realise the objectives and avoid dramatic risks in the market.
2. In perspective: sustainable resource management
Optimising the resource loops at different stages of the life cycle

► Traditional **linear economy**: ‘take-make-use-dispose’

► **Circular economy:**
  ▶ Extending life of resources
  ▶ Turning “waste” into resources
  ▶ Enabling design changes (eg substitution of high cost / rare resources)

- **Natural resources**
  - Extraction
  - Processing
  - Manufacturing
  - Sales
  - Use
  - Dispose
  - Waste

- **Natural resources**
  - Recycling
  - Remanufacturing
  - Refurbishment
  - Second hand
  - Reuse
  - Repair
  - Landfill
  - Incineration
  - Waste to Energy
  - Bio gasification
  - etc..
2. In perspective: sustainable resource management creates opportunities for the UAE to take or leave

<table>
<thead>
<tr>
<th>Product and Waste flows</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural waste</td>
<td>1</td>
</tr>
<tr>
<td>Battery waste (not ELV)</td>
<td>2</td>
</tr>
<tr>
<td>Commercial waste</td>
<td>3</td>
</tr>
<tr>
<td>Construction &amp; demolition waste</td>
<td>4</td>
</tr>
<tr>
<td>Desalination chemicals</td>
<td>5</td>
</tr>
<tr>
<td>Electronics (11 sub-categories)</td>
<td>6</td>
</tr>
<tr>
<td>End of life vehicles</td>
<td>7</td>
</tr>
<tr>
<td>Household packaging</td>
<td>8</td>
</tr>
<tr>
<td>Industrial packaging</td>
<td>9</td>
</tr>
<tr>
<td>Medical waste</td>
<td>10</td>
</tr>
<tr>
<td>Oils</td>
<td>11</td>
</tr>
<tr>
<td>Organic waste</td>
<td>12</td>
</tr>
<tr>
<td>Pesticides</td>
<td>13</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>14</td>
</tr>
<tr>
<td>Residual domestic waste</td>
<td>15</td>
</tr>
<tr>
<td>Sludge</td>
<td>16</td>
</tr>
<tr>
<td>Tyres</td>
<td>17</td>
</tr>
<tr>
<td>Wood</td>
<td>18</td>
</tr>
</tbody>
</table>

Natural resources

Extraction → Processing → Recycling

Landfill Incineration
Waste to Energy
Bio gassification etc..

Rearrangement

Reuse Repair

Second hand

Manufacturing

Sales

Use

Waste

In perspective: sustainable resource management creates opportunities for the UAE to take or leave.
3. EY Belgium footprint in the field
Through more than 20 years involvement in more than 40 countries we **effectively contribute in the creation of the future markets and an enivitable circular economy to secure the needs of the future overpopulated world.**

Our solutions have since the start gradually **impacted the daily lives** in a positive way of more than half of the world population (so far).
شكرا جزيلا
Thank you
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