CCAC – Suez webinar

How to make municipal waste projects sustainable?

Suez Treatment Infrastructure
Webinar content

- Suez return on experience from waste projects in emerging countries
  - Suez at a glance
  - PPP experience and model development principles
  - Real Business Cases
  - Conclusion
  - Questions & Answers
Suez
At a glance
our fields of activity

smart & sustainable management of the water cycle, smart water solutions

recycling and waste recovery to produce new resources, secondary raw materials and energy

engineering, design and construction of treatment infrastructure

innovative solutions for smart & resourceful cities
key figures

€15.9bn
total SUEZ turnover in 2017

€120m
dedicated to R&D in 2017

450,000+
industrial and business customers

90,000+
Employees worldwide

€7.7bn
waste turnover worldwide in 2017

5
continents where SUEZ is present
we help cities and industries optimize recycling and waste recovery

33m tons of waste collected

43m tons of waste treated

8m tons THERMAL waste treatment
16m tons sanitary LANDFILLING

12m tons MRF treated material from sorting centers

3m tons HAZARDOUS waste treatment

4m tons BIOLOGICAL TREATMENT AD, MBT and compost plants

43m tons of waste treated
PPP experience and model development principles
Acronyms and definition

- **BOO**: Build Own Operate, business model in which developer designs and builds a facility at own cost and operates it as a private business.

- **BOT**: Build Operate Transfer, business model in which the private company agrees to design, build, finance and operate a facility for a given period of time and under negotiated terms with the Authority, then transfer ownership to the Authority.

- **DB**: Design & Build, business model in which the private company agrees to design and build a facility against client payment.

- **DBO**: Design, Build, Operate, business model in which the private company agrees to design and build a facility against client payment, and to operate the facility under negotiated terms.

- **DBFOM**: Design Build Finance Operate Maintain business model. See BOT definition.

- **IDA**: International Development Association, part of the World Bank that helps the world’s poorest countries.

- **IFI**: International Financing Institutions, term to qualify the main Multilateral Development Banks (World Bank, Asian Development Bank, Interamerican Development Bank…).

- **IRR**: Internal Rate of Return, metric used in capital budgeting to estimate the profitability of potential investments.

- **O&M**: Operation & Maintenance, business model in which the private company agrees to operate a facility for a period of time and under negotiated terms with the Authority.

- **WWTP**: Waste Water Treatment Plant.
Models in which SUEZ operates

- Management Contract / « Affermage »
  No CAPEX / MT-LT O&M

- Design Build Operate
  Low CAPEX (working Capital)
  MT-LT O&M

- Build Operate Transfer
  Equity investment & Debt
  High CAPEX
  LT O&M

- Concession
  Full CAPEX Risk
  LT O&M
Affordability & bankability in waste projects

Affordability (Business Dictionary)

- Conclusion drawn from the analysis of the ‘life cycle cost’ of a proposed acquisition, that the purchase is in accord with the resources and long-term requirements of the acquirer. Waste operator will mainly look at:
  - Project operational cost Vs local resources (municipal budget for waste)
  - Scale of project in line with local payment capacities

Bankability (Business Dictionary)

- Project or proposal that has sufficient collateral (guarantee), future cash flow, and high probability of success, to be acceptable to institutional lenders for financing. Investor in waste projects will look at:
  - Chosen technology Vs Waste composition
  - Cash flows certainty: municipal tipping fee Vs other operational revenues
  - Contractual guarantees: municipal tonnage, exclusivity, third-party guarantees (take or pay systems…)
Project sustainability
• Environmental needs
• Regulation stake
• Stakeholders support

Technical solution – 2 main drivers for choice
• Adapted to local waste characteristics
• Adapted to DB and O&M budget

Business model
• Grant for CAPEX and affordability for O&M
• Remaining financing by equity/debt
• LT duration for sustainable O&M

Bankability
• Affordability: end uses/taxes versus LT O&M/tariff
• Tonnages warranted (« take or pay ») and long term payments securisation by IFI involvement
• Expert operator
SUEZ REX: emerging solutions for emerging countries

**DBO model**

- D&B fully paid for by client
- Client O&M payment
  - 3 years
  - 10 years

**DBFOM models (BOT, Concession...)**

- D&B grant by IFIs, Gvt...
- D&B debt by Banks
- D&B Equity by Sponsor

The more grant to cover D&B, the more the tariff is close to O&M cost and sustainable for Municipality

Client pays long term stable tariff to cover O&M and financing costs

- 3 years
- 20 years
SUEZ REX: emerging solutions for emerging countries

**Tariff resource mix**

- **IFIs O&M loans / grants** for countries within IDA scope will just cover a 3 or 4 years of O&M. Allow municipality to prepare municipal budget.

- **Municipal budget for waste** have to be created / adapted to cover the biggest part of the costs (tax recovery issue).

- **Energy revenue** allow to transfer a share of the cost of service to non-municipal budgets. Needs local policies and regulations to be implemented (PPA, guarantees). Terms can be variable.

- **Carbon credits and “green funds”** can be mobilized once the project is prepared and certified, to lower cost impact on municipal budget.

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**Stable tariff but dynamic resource mix**

- **Tariff resource mix to reach affordability**
  - Each component has different terms & duration

- **IFI O&M loans or grants (IDA countries)**

- **Third party revenue for carbon credits (green finance)**

- **Third party revenue for energy (power & heat)**

- **Municipal budget available for waste treatment**

- **D&B grant by IFIs, Gvt…**

- **D&B debt by Banks**

- **D&B Equity by Sponsors or**
Real business cases
## Waste business cases in emerging countries

<table>
<thead>
<tr>
<th>Project name</th>
<th>Project Type</th>
<th>Grant / subsidy</th>
<th>Private Equity</th>
<th>Debt</th>
<th>Municipal tax recovery</th>
<th>Third-party revenue</th>
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</thead>
<tbody>
<tr>
<td>Samra, Jordan</td>
<td>WWTP / green energy</td>
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<td>X</td>
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<td>Saida, Lebanon</td>
<td>Landfill remediation (Works)</td>
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<tr>
<td>Meknes, Morocco</td>
<td>Landfill remediation &amp; O&amp;M</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Bogota, Colombia *</td>
<td>Landfill remediation &amp; O&amp;M</td>
<td>X</td>
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<tr>
<td>Poznan, Poland</td>
<td>EfW project - PPP</td>
<td>X</td>
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<tr>
<td>Belgrad, Serbia</td>
<td>EfW project - PPP Inc. Landfill remediation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Chonburi, Thailand</td>
<td>EfW project - BOO</td>
<td>X</td>
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* Benchmark for waste projects

* Not a Suez site. Technical assistance mission
As-Samra WWTP – green and sustainable solution

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<th>Suez role</th>
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<th>Municipal tax recovery</th>
<th>Energy credits</th>
</tr>
</thead>
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<tr>
<td>Dev/EPC/O&amp;M</td>
<td>50% third-party</td>
<td>Suez/CCC</td>
<td>Arab Bank</td>
<td>-</td>
<td>Included in tariff</td>
</tr>
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</table>

As Samra WWTP phase I
- BOT contract signed in 2003 with the Government of Jordan
- 78 MUSD grant from USAID for phase I
- Plant capacity: 267,000 m³/day
- Construction completed: 2008
- O&M period of 22 years

As Samra Expansion (phase II) signed in 2012
- Water line capacity increased by 37%: 267,000 m³/d to 365,000 m³/d.
- Sludge line capacity increased by 80% + mechanical dewatering for phases I & II.
- 93 MUSD grant from USAID for phase II
- The BOT duration is up to July 2037

Project funded by the MCC in the context of global poverty reduction

Water reuse for irrigation
Renewable Energy: cover 80% of plant needs with biogas
Dump site remediation projects generally incur high work costs that Municipalities alone cannot support.

- Being considered an environmental crisis with international impact, **UNDP donated the budget for works**
- The project did **not** address any new capacity building with associated O&M
- Local anaerobic digestion plant could not treat the whole flow
- **High risk of having new dump sites elsewhere**

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<tbody>
<tr>
<td>Designer</td>
<td>100% third-party</td>
<td>-</td>
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Step 1- Old waste excavation and sorting

An environmental burden for Lebanon and the whole Mediterranean Sea

Step 3- Construction of engineered landfill cells for residual waste

Step 4- Delivery of a public park on the old dumpsite
Meknes – Morocco: dump remediation and LF O&M

- Dump site remediation projects generally incur high work costs that Municipalities alone cannot support

- Considered a national priority, remediation budget were taken from a national specific fund

- **Success factor:** Municipality chose a technology in line with its budget capacity:
  - Sanitary landfill
  - Treatment of leachate and biogas in situ to avoid pollution of local waters and air

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<tr>
<td>DBFO</td>
<td>Special national fund for dump remediation</td>
<td>Suez</td>
<td>Local banks</td>
<td>Sustainable for Mun. fee</td>
<td>-</td>
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Step 1 - Dump closure and sanitary landfill construction including biogas network and flare

Step 2 - New plant to treat and recycle leachate for operational purposes (mobile plant and road washing)

Step 3 - Construction of sorting premises and creation of an official and sustainable activity for the waste pickers
Bogota, Colombia: LF contract price underestimation

- New operator gained concession contract in 2010. Landfill almost converted into a dump
  - Exceptional site: 6,000 tpd, on a river bank:
    - Contractual price was underestimated
    - Biogas business was given to other operator
  - Authorities finally voted a 100% increase of fee paid to Operator
  - Resource came from joint utility bill increase (3% to 4%) that was deemed acceptable for households
City of Poznan produced about **250,000 tons MSW per year, mostly landfilled**. Client unwilling to self-finance the investment due to **balance sheet / public debt limitations**. **EU landfill diversion targets** by 2020 (Project was designed in 2012)

### Key success factors

- **Procurement under Competitive dialogue**
- **Viable financing model to adjust Private Partner’s remuneration on a pivotal IRR** – under the rule “no better no worse”
- **Risk Allocation:**
  - fixed financing fee (to cover financing cost)
  - fixed operating fee (to cover labor, maintenance…)
  - variable operating fee (to cover disposal of ashes…)
  - Private Partner guarantees energy production
  - Energy revenues to City who takes full energy price risk
- **EU subsidies:**
  - When private partner is refunded of part of construction cost incurred, partner’s remuneration is decreased to reach the **pivotal IRR**
Belgrade, Serbia EfW-PPP: tax recovery and energy credits

- National and local priorities: remediate Vinca dump site and build biogas and leachate treatment + build EfW plant under PPP

- Key success factors
  - Procurement under **Competitive dialogue (Initial MBT solution)**
  - Project bankability ensured by experienced advisers team (IFC leading)
  - **Risk Allocation:**
    - availability payment in EUR: no forex / volume risk
    - city’s payment funded by municipal tax increase with an escrow account mechanism
    - power price (85€ / MWh) is guaranteed in EUR under 12-year PPA
    - heat price (30€ / MWh) is fixed under Take-or-pay system for 25 years
  
  - **Affordability:**
    - Average salary in Serbia is 500 EUR/month
    - New tax of 55€/year per household (less than 1% of annual revenues)
Thailand, Chonburi: industrial waste to power grid

In 2015 the Ministry Of Industry estimated only 24% of non hazardous industrial waste was collected and treated.

Ministry of Industry & Energy Regulatory Commission (ERC) issued a tender for Industrial Waste to Energy defining zones within a national quota of 50 MWE.

Key success factors:

- Access to a subsidised tariff for power under a 20-year power purchase agreement with PEA (Provincial Electricity Authority)
- Ability of Private Entrepreneur to take the risk of the waste supply quantity
- Ability of Private Entrepreneur to provide its industrial customers with the highest level of environmental compliance and recovery efficiency

A model for other countries?
Conclusion
What is a good municipal waste project?

- Clear regulatory context for fair market competition and project scope & business model adapted to local situation
- **Highest grant component for D&B** (variable sources) to enhance affordability by minimizing debts and equity
- O&M cost of selected technology must be coherent with local resources
  - Sanitary landfill + energy recovery (biogas, leachate)
  - Sanitary Landfill + energy recovery (biogas, leachate) + material & organic recovery
  - Energy from Waste + recycling
  - Technology can be upgraded in line with growth of resource, and context changes
- Strong business case regarding **third-party revenues for affordable long-term O&M**
  - EfW case stronger if regulations and robust PPA
  - MBT more difficult for unsecured downstream markets
- Bankability and affordability allowed with strong contractual terms
Climate finance: a booster for waste projects bankability?

- By 2020, countries have to close their nationally determined contribution (NDC) to the global effort of limiting global warming, as per the Paris Agreement
  - Is Waste included in the national plans?
  - Can Municipalities contribute to NDCs with waste projects?

- Climate funds could contribute to waste crisis solving but project developers still on the learning curve
  - Strategic climate funds to de-risk private investment
  - Green climate fund (GCF) to implement Paris agreement (energy infrastructure…)
  - Climate loans, Carbon credit mechanisms…
  - Grants

- Sustainable waste infrastructure have a strong positive impact on climate change mitigation
  - Dumpsite remediation projects (black carbon and CH4): the most urgent to stop CH4 emissions
  - LFG system implementation
  - Compost and AD projects to produce biogas and green electricity where waste is organic & wet (emerging countries)
  - Refused derived fuel projects to replace coal combustion in cement plants, district heating networks…

- Grants on waste assets can enhance momentum of private finance development (MFD)
Q&A session