CEBC: Waste to Energy Generation Workshop

Success factors for WTE Projects

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Overview

- Introduction
- Key factors to successful projects
- WTE risks and challenges
- Key regional issues
- Public sector solutions

Introduction – I

The waste issue in the region

- **High producers of waste**: Bahrain, Saudi Arabia, UAE, Qatar and Kuwait rank in the top 10 per capita for solid waste generation in the world
- Middle East has some of the **largest carbon footprints** per capita in the world
- Rapid economic growth = **increase in energy demand**
- **Landfill** = valuable land used
- **Health** and sanitation issues
- Environmental/**pollution** issues

Introduction – II

Current market interest

- Huge potential for WTE technology in the region but the sector is still undeveloped
- Despite global development of WTE projects, no significant amount of energy produced from waste across the region
- Focus on reducing greenhouse gases and renewable energy
- Several large-scale WTE projects are currently being considered

Key factors to successful projects - I

- Balancing of project risks with level of returns
- Risks should be allocated to the parties best able to manage them
- Regulatory structure
- Government support and drive
- Infrastructure
- Payment structure

Key factors to successful projects - II

- Project must be profitable from an equity perspective
- Able to attract significant levels of project financing - project must be "bankable" to achieve financial close:
  - few risks remaining with the borrower (project company)
  - predictable revenues
  - operating costs are either fixed or predictable
  - revenues from parties which will remain creditworthy over life of project
  - contractual obligations and risks borne by parties able to bear resulting costs and liabilities

WTE risks and challenges - I

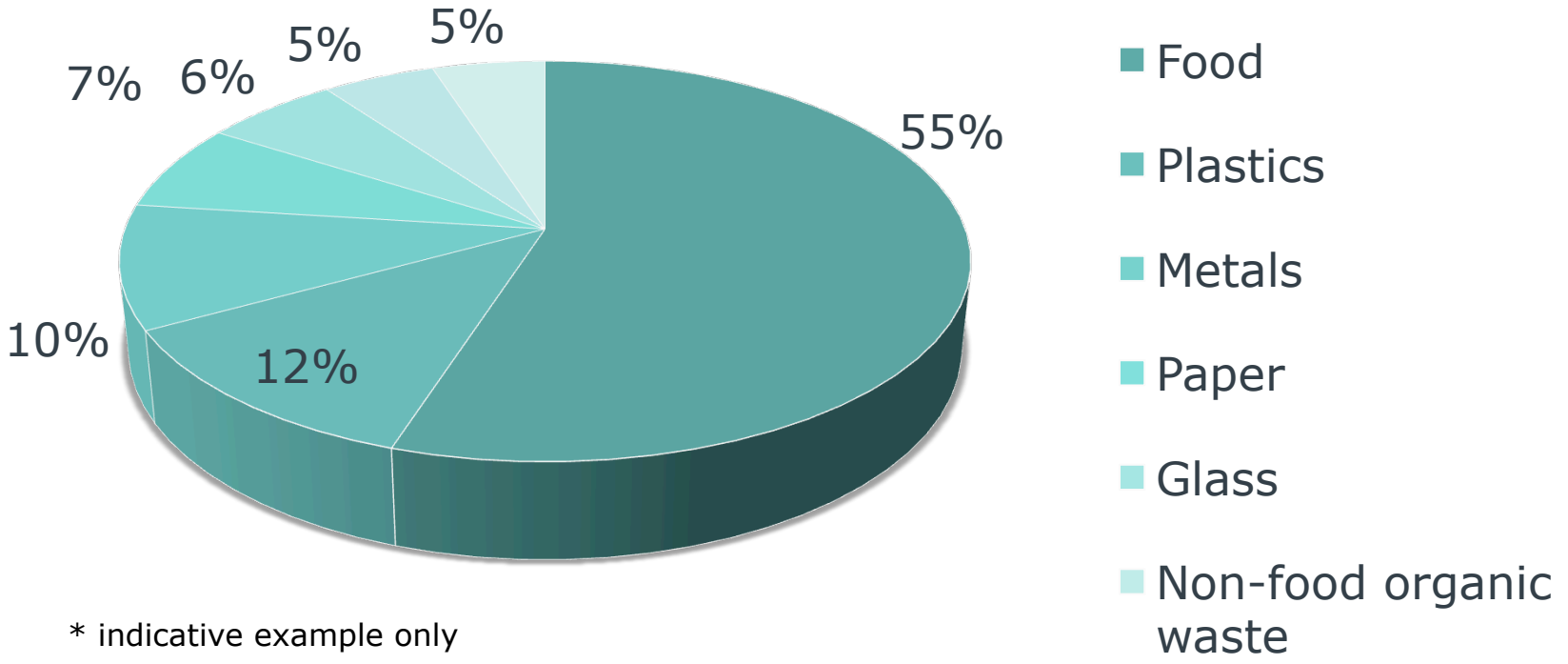
Supply/quantity risk

- certainty is critical for lenders
- how many waste supply agreements?
- interface with collection arrangements
- dedicated/government waste supplies v merchant risk
- counterparty strength
- waste top-up arrangements
- necessity for waste studies
- risk during testing and commissioning
- operational risk: exclusivity or minimum tonnage

WTE risks and challenges – II

Waste composition

- key driver of the overall economics and treatment technology selection
- risk during testing and commissioning
- operational risk



* indicative example only

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WTE risks and challenges – III

Non-conforming waste

- physical interface risk
- right to reject
- damage to facility

WTE risks and challenges - IV

Metals recycling and other recyclables

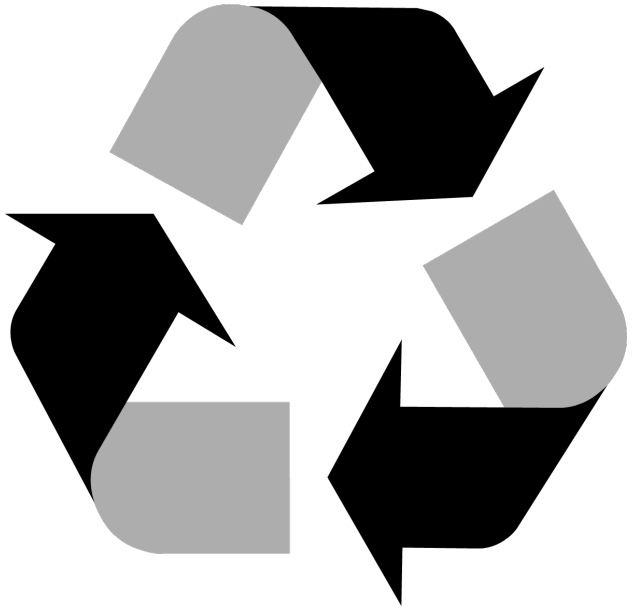
- risk passed to bottom ash recycler or O&M Contractor
- project company takes risk and returns

Ash disposal/re-use

- O&M contractor responsibility
- separately procured

Power/heat offtake

- long term PPA



Key regional issues

Economics

- cost
  - absent or nominal waste collection charges
  - landfill v incineration plant costs
  - no landfill taxes or gate fees
- price of electricity
- uncertainty in carbon markets
- lack of incentives

Policy

- absent or untested regulatory regime
- lack of awareness
- electrical system interconnection for offtake
- land

Public sector solutions - financial policy support

- Subsidies:
  - feed-in tariffs
  - grants
  - tax/duties exemptions
  - low interest loans
  - incentives/certificates

- Tipping fees and landfill restrictions

- Green energy purchase requirements

Public sector solutions - non-financial policy support

- Grid access
- Development of interconnection standards for distributed generation
- Development of a regulatory regime which is supportive of the thermal treatment of waste
- Development of an organised waste collection and regulatory regime
- Ownership by municipal authorities of the waste stream
- Transparent licensing and planning regime capable of enabling key consents

Ashurst WTE experience

Highlights of our lawyers' WTE experience include

Kuwait Authority for Partnership Projects

Kabd Municipal WTE PPP project

Kuwait

Satarem

Large-scale EfW facility in Buenos Aries

Argentina

The Royal Bank of Scotland

Antibes WTE plant

France

Covanta

Dublin WTE project

Ireland

A Bidder

Fifth incineration PPP project

Singapore

Mercia Waste Management

Herefordshire and Worcestershire EfW facility

United Kingdom

Ineos Chlor Ltd

Runcorn EfW plant

United Kingdom

Australia New Zealand Bank

WTE plant in Tai'an

China

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Critical success factors for a waste to energy project - Ashurst - 30 Aug 2016

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