

MLD: Greater Malé Waste-to-Energy Project

ADB

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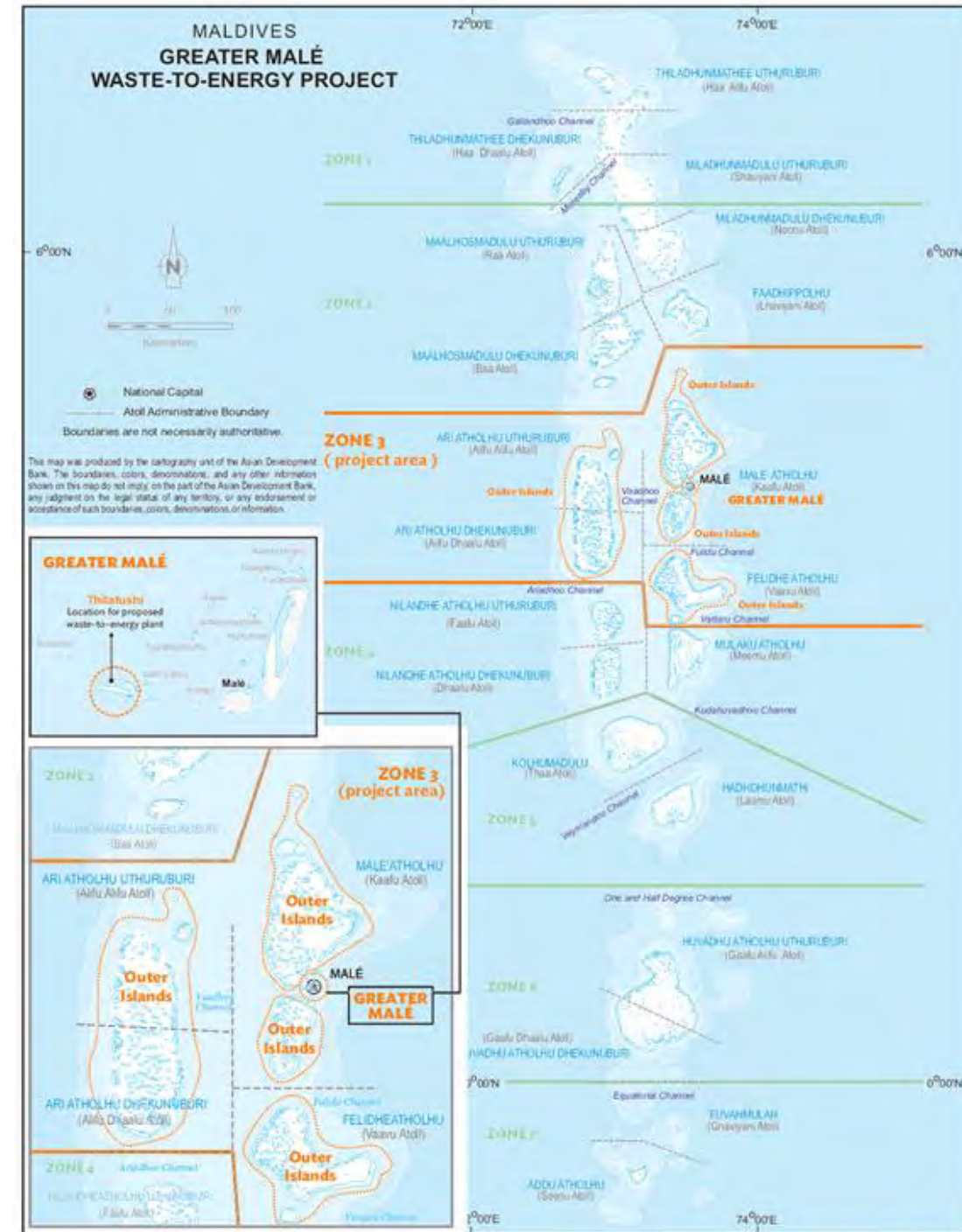


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Forum on Successful Project Design and Implementation

Context

- End of 2016, the Government requests ADB's support to tackle solid waste critical situation in Zone 3 (**project area**):
 - Capital Malé, 32 small outer islands, and 86 tourist resorts
 - ~53% of country population
- Inadequate infrastructure and equipment and low institutional capacity for SWM
- ~ 836 tons per day of mixed waste generated is disposed without treatment on Thilafushi island dump site (30 years old)



Thilafushi island dumpsite



Three key challenges



Thilafushi

2019

Scarce land for solid waste disposal
need for high volume reduction efficiency - high level technology



Only 15 ha for SWM

Google Earth

Image © 2020 Maxar Technologies

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1 km



Remote context

requires for good capacity to handle logistics and implementation



Low capacity to design, operate and maintain waste treatment infrastructure
need to transfer technical risk to a party is better able to manage it



Waste-to-energy facility

- grate incineration with 8MWe energy recovery (80-90% waste volume reduction)
- design-build and operate (DBO): 15 years



The solution

Thilafushi 2020

Output 1

Disaster- and climate- resilient regional waste management facility developed (500t/d WTE – 15yrs DBO – 8MW)

Outcome: Disaster- and climate-resilient solid waste treatment and disposal services improved in Greater Malé region and its outer islands



Output 2

Institutional capacity in sustainable WTE service delivery and environmental monitoring, and public awareness on WTE and 3R improved

Greater Malé WTE Project

\$151.13 million (ADB, AIIB, JFJCM, GOM)

Approved in Aug 2020

Achieving Value for Money...



Design Build and Operate (DBO) contract

- **Performance-based:** contractor responsible to deliver a fit-for-purpose facility which meets **performance requirements**
 - 12 performance guarantees and damages – based on international operational and emission standards
 - Clear core tech: Grate incineration technology
- **Life-cycle:** the contractor bears the risk (cost) of more frequent replacements if inefficient design or O&M (or low bid price)
 - Long term operation service period (OSP): 15 years
- **Contract value (~\$271 million):** \$121 million (DB) + \$150 million (OSP)



Performance guarantee and damages (DBO)

- PG1: Waste processing capacity
- PG2: Minimal annual waste throughput
- PG3: Availability of WTE lines



Waste treatment service

- PG4: Live steam rate
- PG5: Annual electricity exports



Energy efficiency and recovery

- PG6: Total Organic Content in bottom ash
- PG7: Temperature of cooling water outlet
- PG8: Air emission standards
- PG9: Combustion conditions
- PG10: Leachate treatment discharge standards
- PG11: Wastewater discharge standards
- PG12: Sound Pressure level

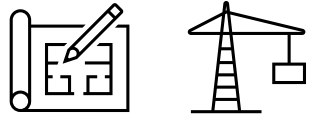


Environmental safeguards



Performance
security =
10% of
contract
value

Life-cycle - price bid evaluation (DBO)



Design and Build Price

Plant + Design Services + Installation

Total Operation Service Price (per year – discounted @4%)



Contractor's Fixed Fee (\$)

+ Contractor's Variable Fee (\$/tons of waste processed/year)

+ Asset Replacement Fund (\$)

+ Contractor's Electricity Incentive Fee (~\$XX/MWh x MWh/year)

– Employers incentivize higher efficiency/electricity generation (beyond guarantee)



- Value of Electricity Exports (~\$XX/MWh x MWh/year)

– Based on performance guarantee (PG 5) set by the contractor

– Employers gains from higher efficiency/electricity generation

Market sounding and pre-qualification

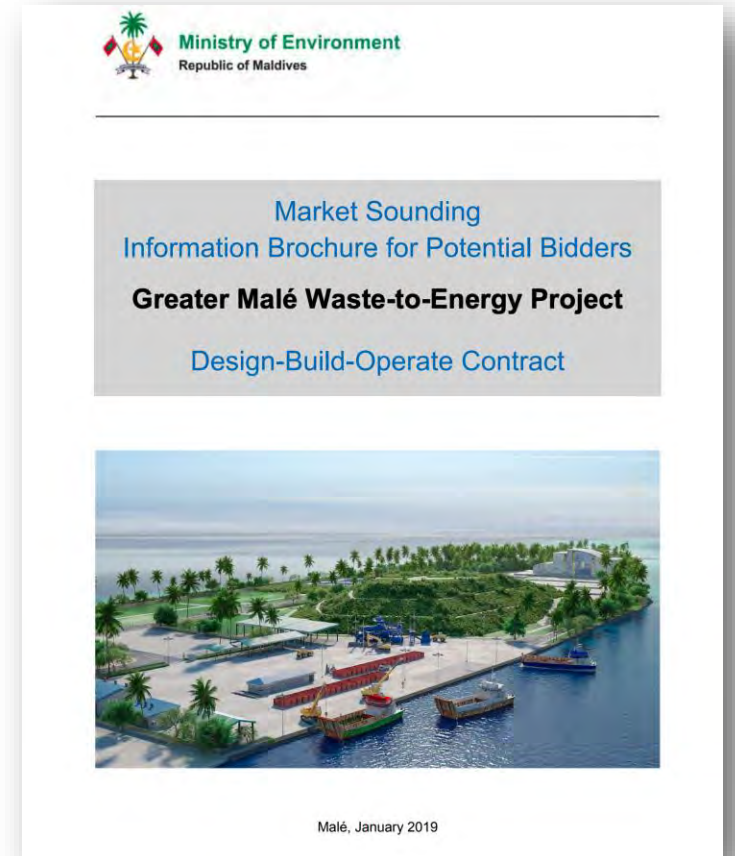


Market sounding in 2019



Pre-qual stage: 19 applicants → 6 pre-qualified

At least 2 WTE DBO or BOT contracts in operation since more than 2 years



To summarize... we expect to achieve VfM



Market sounding to ensure good competition and understand risks



Pre-qualification to prevent entry of poor performing contractor



Design build and operate (DBO) contract

- Clear core WTE technology to prevent wrong tech choice
- 12 performance guarantees with clear damages to ensure quality
- Long (15 years) operation service period – life cycle
- Price bid evaluation integrating efficiency measures



Strengthen Employer's contract management capacity

