Online Course on Municipal Solid Waste Management (MSWM) towards Circular Economy, Session 3. Financial Sustainability and Policy Arrangements

Greater Malé Environmental Improvement and Waste Management Project

Greater Malé Waste-to-Energy Project

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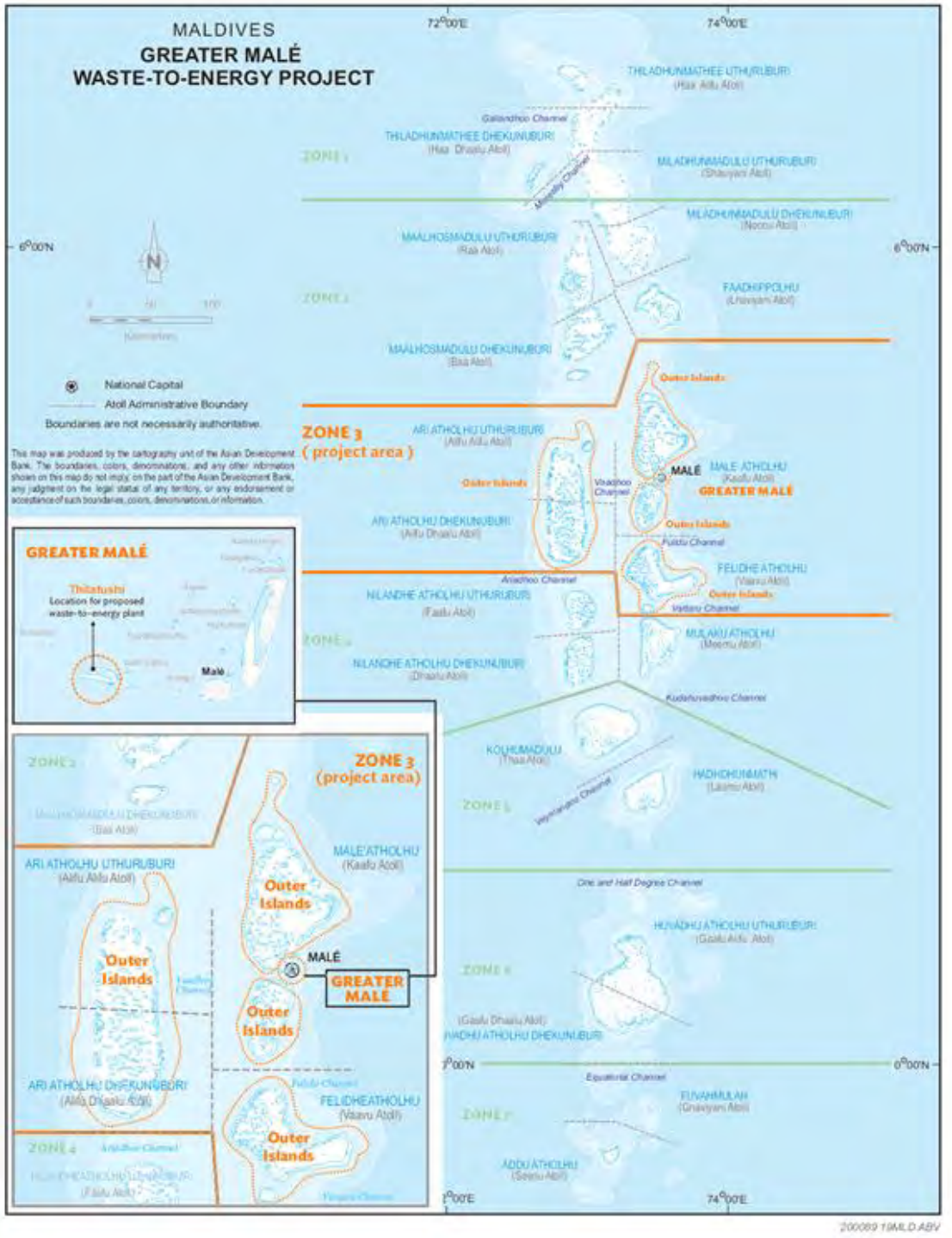
16 Nov 2022

Context

- End of 2016, the Government requested ADB's support to tackle solid waste critical situation in Zone 3 (project area):
- Greater Malé, 32 small outer islands, and 86 tourist resorts, ~53% of country population
- Inadequate infrastructure and equipment and low institutional capacity for SWM



Strategic approach

Implement urgent measures while achieving higher readiness for complex WTE (land reclamation, bidding, safeguards)

More financing (access to 2 ADF cycles)

Generation | Collection | Transport/transfer | Treatment | Final disposal

GM Environmental Improvement and Waste Management Project 2018-2023

$40.00 million (ADB and JFPR)

1. Improved waste collection, transfer and disposal in Greater Malé including improved site management and logistics on Thilafushi (temporary measure) + constr and demolition waste
2. Improved outer island waste management system
3. Improved awareness and behavioral change

GM Waste to Energy Project 2020-2026

$151.13 million (ADB, AIIB, JFJCM)

1. Regional waste management facility with WTE plant and landfill for APC and IBA;
2. Institutional capacity & public awareness

Strengthened **institutional capacities for sustainable solid waste service delivery** and **environmental monitoring**

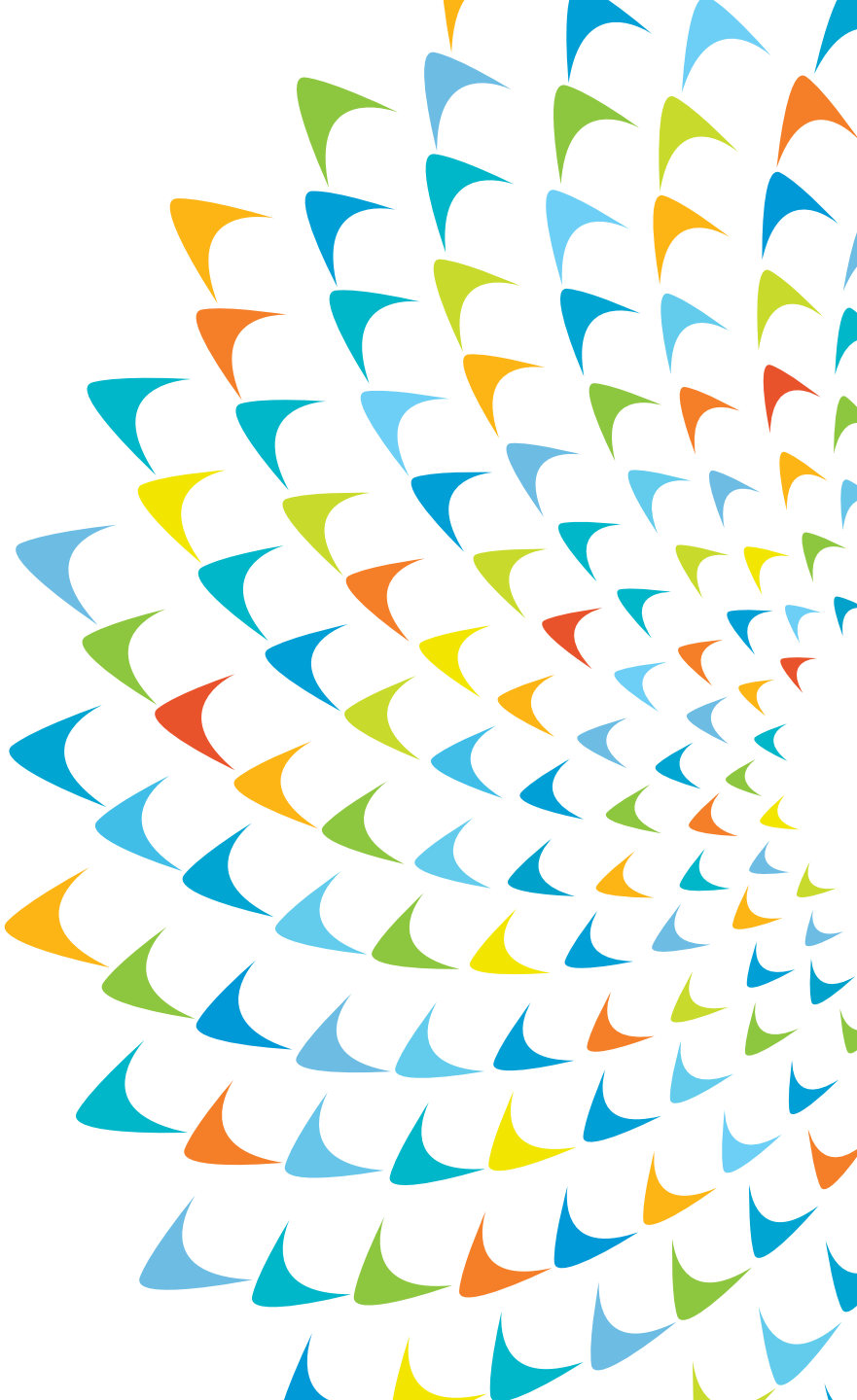
The project will

OP2 | OP3 | OP4 | OP6

- establish a **sustainable solid waste management system** for the Greater Malé region and its neighboring outer islands, consisting of treatment (proven waste-to-energy [WTE]), recycling and disposal infrastructure
- strengthen **institutional capacities for solid waste services delivery and environmental monitoring**, and improve **public awareness** in reduce-reuse-recycle (3R)
- reduce **greenhouse gas emissions**, create a cleaner environment (ocean health), and improve disaster- and climate- **resilience**

Greater Malé Environmental Improvement and Waste Management Project

Phase 1



Phase 1, $40m (ADB, JFPR)

- **Output 1**: Waste collection, transfer and disposal systems improved and made climate resilient

Bins, collection vehicles and system optimization

2 transfer stations

3 transfer vessels

Equipment and site optimization at Thilafushi

- **Output 2**: Community-based outer island waste management systems targeting poor and women enhanced

IWMCs + Community capacity building

Phase 1, $40m (ADB, JFPR)

- **Output 3**: Institutional capacity and public awareness in sustainable waste management strengthened

WAMCO

Reduce Replace 3R Recycle

Importance of grant TA Support and handholding

- Waste Management Specialist / Site Supervisor for Thilafushi Dumpsite Operations
- International Financial and Business Planning Specialist for the Waste Management Sector
- Greater Malé Waste-to-Energy Project - International WTE Expert
- International Financial and Business Planning Specialist for the Waste Management Sector


Nov 2022
WAMCO

Greater Malé Waste-to-Energy Project

Phase 2

Output 1
Disaster- and climate- resilient regional waste management facility developed (500t/d WTE – 15yrs DBO – 8MW)

Output 2
Institutional capacity in sustainable WTE service delivery and environmental monitoring, and public awareness on WTE and 3R improved

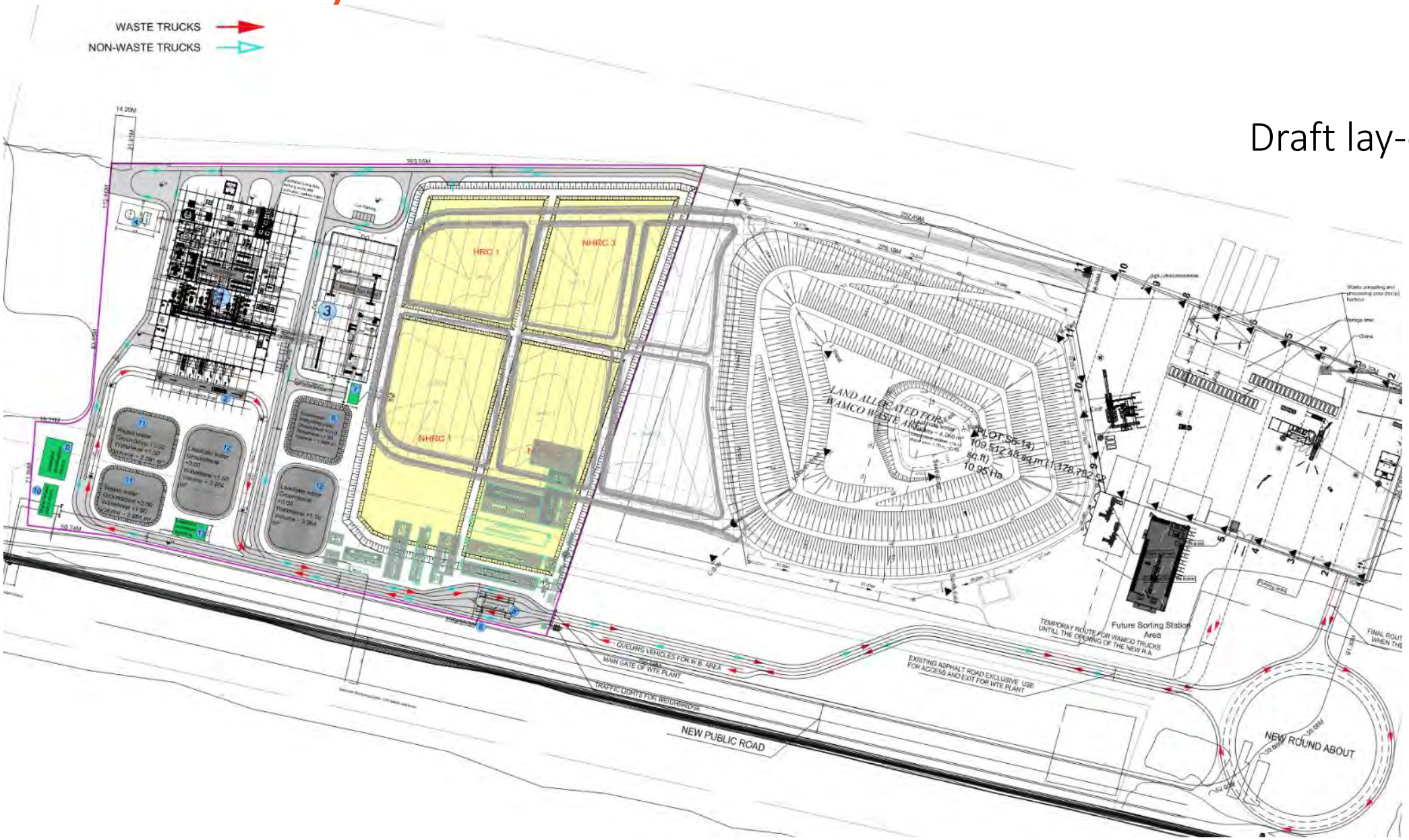
Greater Malé WTE Project

$151.13 million (ADB, AIIB, JFJCM, GOM)
Approved in Aug 2020

Summary of the Main WtE Features

- Two line facility, expandable by a third line
- Each line 10.5 tons/h
- Annual capacity 168,000 tons
- Cooled by sea water
- Max power surplus appr. 10.5 MW
- APC system incl. CEMS
- Bottom ash processing facility
- Residue landfill for non-marketable bottom ash and APC residues, with leachate treatment plant
- Admin building, workshop, laboratory etc.
- 15 years Operation Service Period

Summary of the Main WtE Features



Draft lay-out

ADB Value Addition

- Sustainable SWM strategies and solutions suitable for reducing ocean pollution in a small island context
- Adoption **of DBO modality** to tap private sector know-how for efficient and innovative solutions, allocate risk properly, **life-cycle cost, value for money** and ensure sustainability of service provision;
- incorporation of **proven high-level technology and operational standards** into WTE DBO contract to ensure quality infrastructure and high technical and environment performance during operations;
- **strategic procurement** initiatives such as market sounding to understand WTE markets and ensure good competition in small island country context
- **capacity support** for procurement, contract management, safeguards and O&M to procure and manage complex WTE DBO;
- development of an **O&M financing plan** to establish a clear fund flow arrangement and **financing strategy for sustainable O&M → implementation**
- key designs to improve project resilience to **climate and disaster risks**; and
- ensure strong **community consultation and public awareness** on WTE and 3R


Greater Malé
Kurumba Maldives
Hulhumalé
Eastern Beach
The Avenue and Spa
Fithiroanu Magu
Velana International Airport
Thilafushi
Thilafushi
Gulhi Falhu
Villimalé
Villingili Public Beach
Malé
The Somerset Hotel
Treasury Building
Varunulaa Raalhugandu
Boduthakurufaanu Magu
Hulhule-Male Ferry
Midhili Magu


2018, before the project

Nov 2022


DESIGN-BUILD AND OPERATE
VASTE TO ENERGY FACILITY IN K.THILAFUSHI
ECHNOLOGY
ALDIVES
NTATIVE :
CO. KG
R :
NEER :
ACTOR :
ATAS JOINT VENTURE
AGENCY :
EVELOPMENT BANK
NFRASTRUCTURE INVESTMENT BANK
TRY OF FINANCE
HE REPUBLIC OF MALDIVES
OMMENCEMENT DATE : 02.03.2022
COMPLETION DATE : 30.08.2025
ADB ASIAN DEVELOPMENT BANK
AIIB ASIAN INFRASTRUCTURE INVESTMENT BANK
JAPAN FUND FOR THE JOINT CREDITING MECHANISM
FICHTNER
urbaser
RAMBØLL
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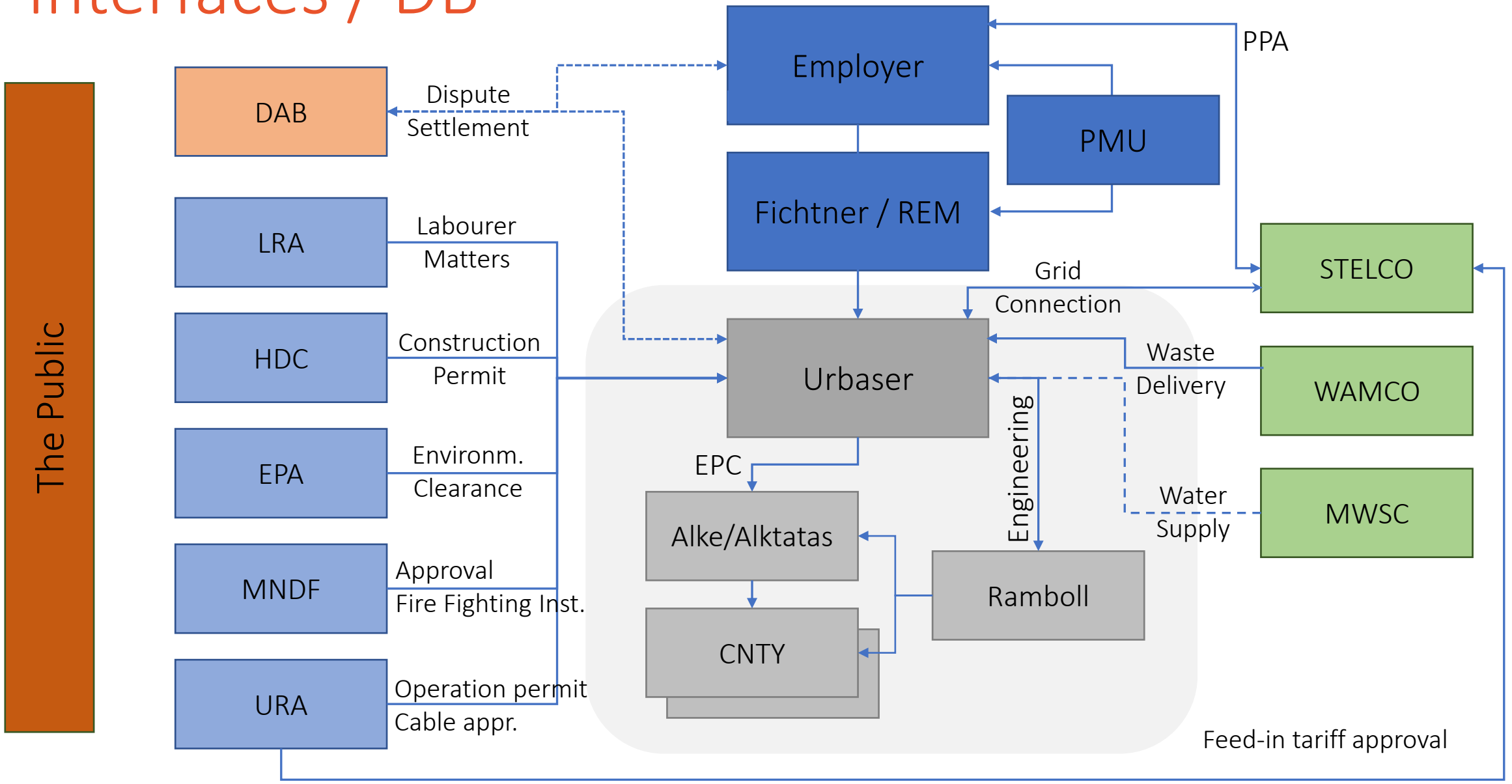
Interfaces / DB



Integrated approach and TA Support is critical!

- **Technical and operational complexity** in MSW treatment and disposal – limited capacity of local governments.
- **Financial sustainability!** Change of fund flows, tariff structure, accounting systems, difficult to charge; current practice (i.e., linear process) is cheaper (collection, open dump); benefits are mostly positive externalities (GHG reduction, clean air/water).
- Operational **responsibility**, **accountability** of service providers
- SWM is a **social issue** as much as a technical issue: source segregation is a key but **behavior change** takes time and efforts and citizens' commitment.
- Lack of **accurate indicators** to assess good SWM (e.g., more waste landfilled – is this a good thing?)

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Thank you!

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