

# Reduction of Unintentionally Produced Persistent Organic Pollutants (UPOPs) emissions by improving waste management practices at landfills

*HWISF – Operator Models*

GEF Project ID: 5558 – Component 2 - Development and Implementation of a Sustainable Management Mechanism for POPs in the Caribbean

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# Operator Model for Hazardous Waste Facilities

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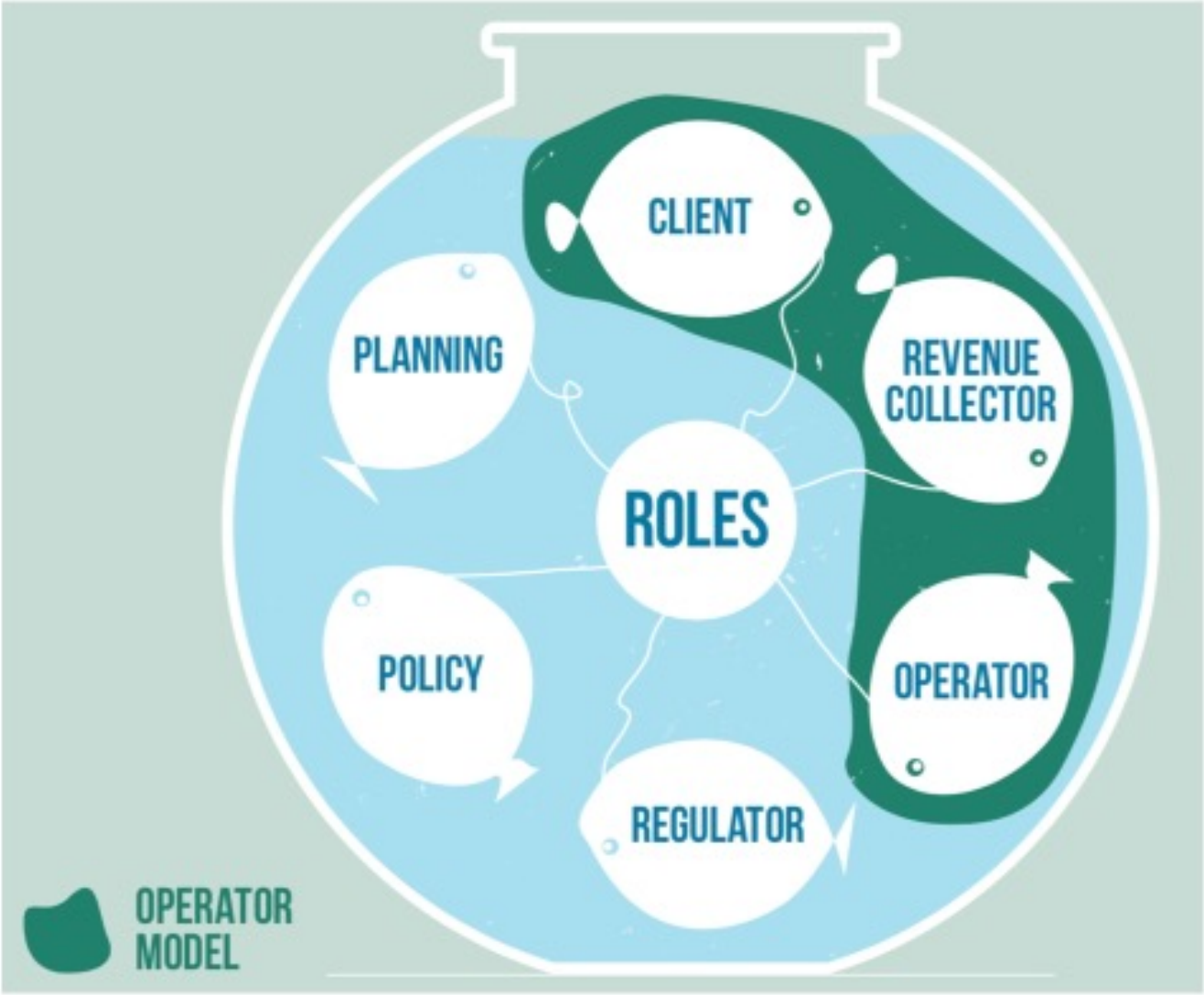
# Introduction

- Only a limited amount of hazardous waste can be expected captured in the first 5 years of operation of a hazardous waste management system
- This period of uncertainty and small quantities can only be overcome if the waste generators are offered proper advice on the handling of hazardous waste and an option for collection and removal of the waste
- Essential to establish a Storage Facility as soon as possible and to further develop the hazardous waste treatment and disposal options in line with the results and experience gained from the Storage Facility
- Documentation of the types and quantities generated before any treatment and disposal facility be designed and constructed

# Rationale for storage and exportation

- Not economically viable to set up treatment/disposal systems for several hazardous waste streams - Quantities generated are too low
- Exportation of these wastes for recovery or disposal is the most practical solution.
- Costs of collection, testing, bulking, packaging and exportation can be quite costly however the costs of inaction can be more expensive in view of public health and environmental impacts

# Operator Model as important as facility design!



Operator Models. Respecting Diversity  
Guidance Paper for Solid Waste Management Practitioners (GIZ)

# Enabling factors

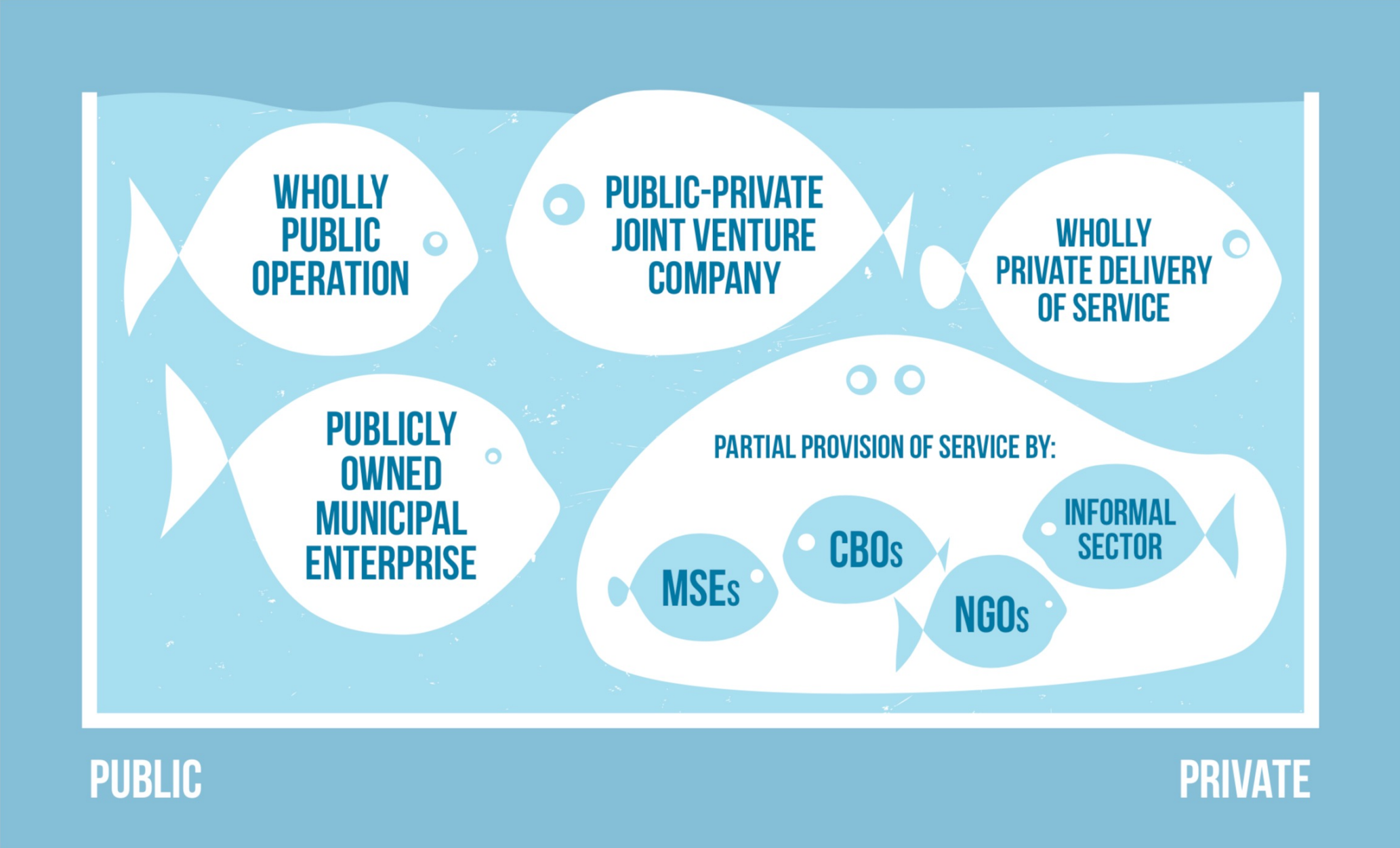
- Legislation
- Enforcement
- Supporting Services such as appropriate laboratory analytical capabilities, skilled inspectors and operators
- Training

# Parameters to consider for operator model

When considering the most feasible operator model, a range of issues needs to be addressed:

- Duration of contract;
- Liability/ risk;
- Waste quantities;
- Fees;
- Financing;
- Land;
- Environmental impact.

# Operator Models – Public or Private?





# Public sector model

- Public sector financed, designed, owned and operated
- In this model the duration of the contract is not an issue. The depreciation of investments through tariffs would be set at the technical lifetime of the facilities
- Common project risks related to hazardous waste management systems are mostly related to the accuracy of the waste quantities, the knowledge of the waste composition, challenges in achieving Authorities' approvals.
- Considerable uncertainty will remain for the HW quantity, as this furthermore will depend on strengthened enforcement of legislation by the Government and the tariff policy
- Financial constraints might limit the implementation especially in a public system where the funds need to be taken from the state budget or borrowed with a state guarantee.
- This model for hazardous waste management is extremely rare. One example is the Nasereya hazardous waste facility in Egypt.

## Private sector model

- The facility is owned, financed and operated by the private sector. This is also not so common.
- In this model the duration of the contract is not an issue as it will be purely private initiative with the operator setting the tariffs.
- However, it will need to secure land, seek all clearances (EIA, building permits) and take all the risks pertaining to quantities.
- The Integrated hazardous waste management centre, Kualiti Alam, in Malaysia is one such example.
- Long period contracts allow investments also in treatment according to the kinds of collected wastes. In Malaysia – 30 years exclusivity contract with the obligation to invest on treatment of hazardous waste.

# Joint ventures Model – Public Private partnership PPP

Two main types:

- (a) Private sector Build, Own Operate and Transfer
- (b) Public Sector Build and Own and Private sector operates

## Option 1

The private sector constructs and operates the facility to a detailed design prepared by the Public sector or its consultants.

The public sector finances the capital and operational costs. Liability for design rests with the Public Sector.

# Joint ventures Model – Public Private partnership

## Option 2

The Private Sector designs, construct and operate the facility to a performance specification prepared by the Public sector or its consultants.

The public sector finances the capital and operational costs without resorting to detailed specifications, through a proper contract with well laid payment schedules

# Joint ventures Model – Public Private partnership

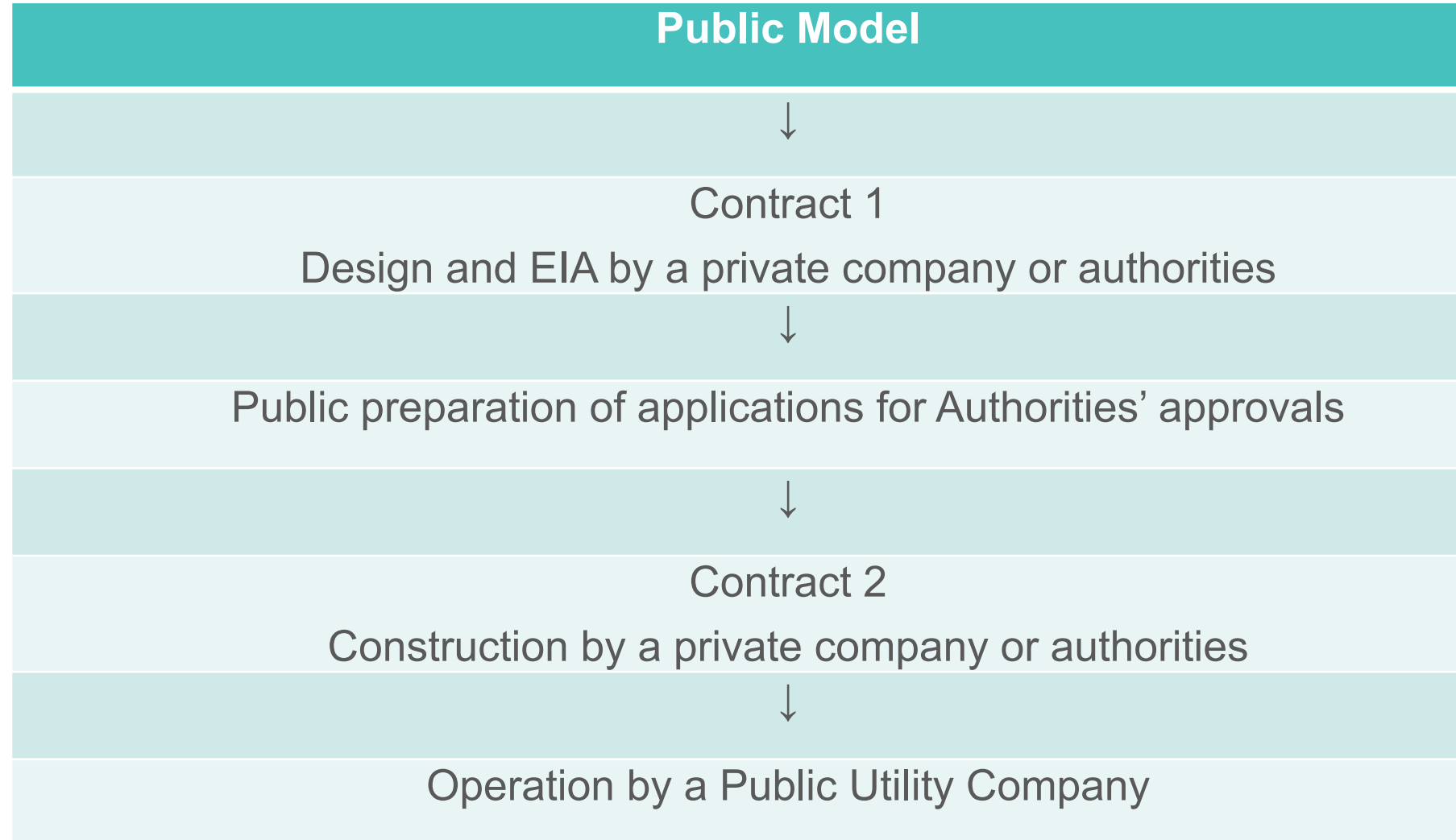
## Option 3

The Private Sector finances the design, construction and operation of the facility to a performance specification prepared by the Public sector or its consultants

# Evaluation of operator models

	Public only	Public BO, private O	Private BOO (T)
<b>Duration of contract</b>	Not applicable.	Could be short-term, e.g 5 years	Should be long term, e.g. 15-20 years.
<b>Risk/ liability</b>	Low risk. All risks and liability with the public sector.	Low risk. The risks can be defined in contract.	Higher risk related to authorities' approvals and land liability. Risk of uncertain waste quantities.
<b>Waste quantities and plant capacities</b>	Important, but no guarantees are required as all liability rests with Authorities	Important. Guarantee from Authorities for minimum quantity or incorporated in the fee structure.	Very important. Guarantee from Authorities for minimum quantity.
<b>Fees</b>	Payment according to cost.	Payment according to cost and private operation.	Payment according to private operation incl. profit element In a concession model for HW no fee need to be paid to the contractor
<b>Financing</b>	Public financing	Public financing	Private financing. Possibly land contribution by Authorities
<b>Land</b>	NA	N/A	Possible still owned by Authorities Closure fund/insurance
<b>Environmental impact</b>	Under public control	Requires more public control through performance standards.	Requires much public control through performance standards

# Contracting under a Public Sector Operator Model



# Contracting under an Operator Model with Construction and Ownership by the Public Sector and Operation by the Private Sector



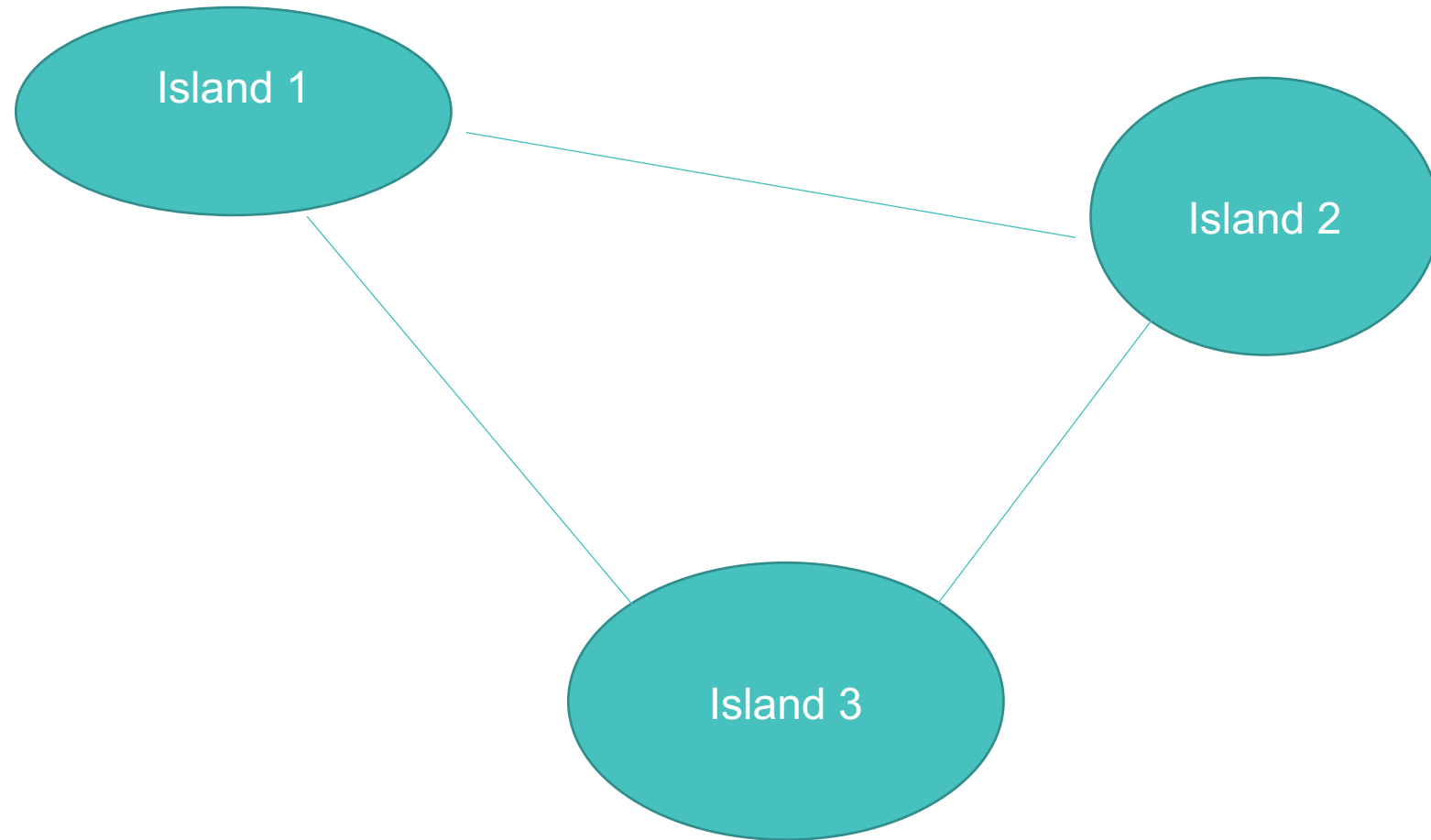


# Contracting under an Operator Model with Construction, Ownership and Operation by the Private Sector

Privately constructed, owned and operated		
↓		↓
Contract 1 Design, ownership, preparation of EIA and environmental approval, construction, and operation of facilities		Public preparation of EIA and application for authorities' approvals
		↓
		Contract 1 Design, ownership, construction, and operation of facilities

# Regional approach – Private sector

One contractor for all three facilities in different countries



# Regional approach – Private sector

This will require :

- Agreements between the countries
- Joint procurement process and ensuring compliance with each national jurisdiction
- Cost sharing mechanisms

# Collaboration

- Quantities that will be collected may not be enough for exportation (depending on the characteristics of wastes or compatibility issues) to final disposal facilities
- Grouping of waste could be difficult as small quantities of wastes could be non-compatible for shipment -There is not a facility for all the kind of hazardous waste (ex. Mercury is not acceptable for incineration, limited recycling facilities)
- Not all Shipping companies accept as cargo all hazardous waste – special restrictions – banned cargos (MSC)
- In such a case wastes could be shipped from one facility to the other in order to be shipped along with other similar waste for final disposal.
- MoU or Agreement between the Governments that will enforce/allow the operators of each facility to cooperate for the transportation and final disposal of the waste.
- Instead of having three laboratories to be established, only one can be set up in the country with the biggest volume of hazardous waste and analyse also the samples from the other countries. This will decrease costs

# Prerequisites

- Generators should be informed about the changes in waste management
- Awareness Campaign
- Legislation
- Generators should submit to the authorities at least an annual inventory of hazardous waste
- Incentives to waste producers (tax relief, subsidy)
- Appropriate cost recovery mechanisms

# Conclusions

- The public waste management sector currently lacks a fully equipped operational arm that could take on the duty to operate hazardous waste management facilities. Such organisation would require careful design and there will be a tremendous demand for capacity building. Such model seems not feasible. Hence Private sector involvement.
- The land should stay in public ownership and be leased to the Operator for the period of operation.
- Enabling environment should be in place i.e. legislation, enforcement, training of public sector etc.
- The capability of the public sector to monitor private sector contracts dealing with hazardous waste needs to be addressed.