

The Covenant of Mayors in Sub-Saharan Africa

Training Module:

The Proactive Roles of Local Governments in Delivering Climate Actions: Waste Water Treatment & Reuse Projects



Covenant of Mayors
in Sub-Saharan Africa

Support to CoM SSA – Component III
is co-funded by:



OBJECTIVES

TRAINING MODULE ON WASTEWATER TREATMENT & REUSE (WWT&R) PROJECTS

ASSESS RELEVANCE

Help Local Governments (LGs) to understand their specific situations and how to identify benefits and challenges of WWT&R Projects



EXPLORE TECHNICAL SOLUTIONS

Gain an understanding of how to apply technical solutions, given LG context



IDENTIFY FINANCE MODELS & KEY ACTORS

Gain an understanding of investment requirements and roles of the private sector (developers, experts, investors) and the public sector (national government, development partners)



IMPROVE ENABLING ENVIRONMENT

Understanding how LGs can facilitate improvements to the enabling environment to enable project identification, development, risk mitigation, finance, implementation, and operation



Provide insights from relevant case studies from SSA and rest of the world

AGENDA

1.0

WHAT IS WWT&R?

Understanding benefits of WWT&R and assessing relevance to your LG

8:00 – 8:30

1.1

BREAKOUT & FEEDBACK SESSION 1

8:30 – 9:15

2.0

HOW TO IDENTIFY SOLUTIONS?

Examples of typical WWT&R processes and how to assess relevance to your LG

9:15 – 9:45

2.1

BREAKOUT & FEEDBACK SESSION 2

9:45 –
10:30

3.0

HOW TO IDENTIFY FINANCE OPTIONS?

Unpacking potential finance mechanisms & their benefits and disadvantages for your LG

11:00 –
11:40

3.1

BREAKOUT & FEEDBACK SESSION 3

11:40 – 1:00

4.0

WHAT LG ACTIONS ARE REQUIRED?

Unpacking action steps required for LGs to implement a WWT&R Project

14:00 – 14:40

4.1

BREAKOUT & FEEDBACK SESSION 4

14:40 – 16:00

5.0

HOW TO IMPROVE THE ENABLING ENVIRONMENT?

Identifying key enabling factors for both national and local governments

16:15 – 16:40

5.1

BREAKOUT & FEEDBACK SESSION 5

16:40 – 17:30

6.0

WRAP UP

Open discussion on how to move forward

17:30 – 18:00

1.0 WHAT IS WWT&R?



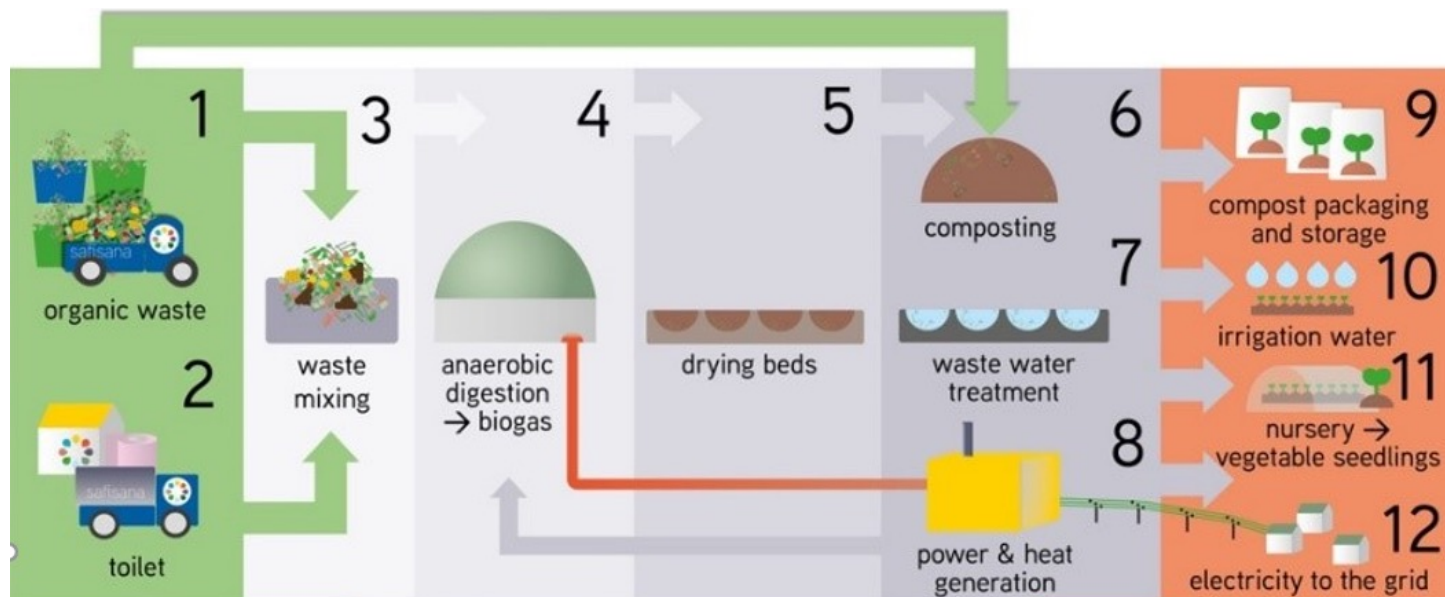
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DEFINITION OF WWT&R PROJECTS

Primary function is to treat and purify wastewater for reuse by industrial, agricultural and/or domestic users

Secondary functions generally include the production and/or generation of:

- Electricity or biogas
- Organic fertiliser and seedlings
- Fuels such as cooking stove briquettes (or bio-briquettes)



DIRECT BENEFITS OF WWT&R PROJECTS

SAVINGS

LGs can realise sewerage treatment and disposal savings

ACCESS TO WATER

LGs can sell treated water to industries or farmers and households if potable



ACCESS TO ENERGY

LGs can access renewable electricity or biogas generated and/or produced by an WWT&R Project

ACCESS TO FERTILIZER

Organic fertilizer produced by an WWT&R Project can be used by a LG or sold to earn income

What benefits were delivered by the SafiSana project in Ghana?

CLIMATE, DEVELOPMENT & LG/ECONOMIC BENEFITS

CLIMATE

- Production of biogas and/or bio briquettes that replace dirtier fuels
- Protection of groundwater sources
- Reduced need for chemical fertilizers
- GHG emission reductions



DEVELOPMENT

- Less pressure on existing infrastructure and available drinking water
- Delayed spend on new infrastructure
- Improved energy security
- Improved public health



LG/ECONOMIC

- Economic growth as a result of electricity generated
- Access to electricity for social services
- Increased yields and water security
- Increased tax revenues



Opportunity: An WWT&R Project could access climate finance (grants and concessional debt) from either a climate facility or a DFI, if the project can demonstrate significant GHG emission reductions. Climate funders will want to understand how many tons of CO₂ will be avoided for every US\$ of funding provided.

UNPACKING CHALLENGES TO IMPLEMENTING WWT&R PROJECTS



WASTEWATER VOLUMES

- Volumes increasing due to urbanization, but budgets not increasing
- Volumes often seasonal or unpredictable so difficult to produce enough biogas, electricity, etc. to repay investment



REVENUES

- LGs usually receive limited revenues as households often pay the private sector for collection of wastewater
- In LGs that bill households, tariffs are not generally cost-reflective



BUDGETS

- LG funding not usually available as WWT&R is not a political priority (for both operations and capital expenditures)
- LGs often reliant on grants from National Governments to fund new infrastructure



DEBT FUNDING

- Banks often not familiar with WWT&R technologies and therefore hesitant to lend
- Cost of due diligence required to lend to a project may not be justified given the small size of a typical project



OFF-TAKERS/BUYERS

- To raise debt, projects need to have credit worthy buyers (off-takers) in place
- Securing long term credible contracts with creditworthy buyers are key to unlocking debt funding



TECHNICAL SOLUTIONS

- Technical solution needs to be “*fit for purpose*”
- New and complex technologies will require private sector input (via Service Level Agreements - SLAs)

ASSESSING RELEVANCE TO YOUR LG

ASSESS TECHNICAL NEEDS, SERVICE DELIVERY MODELS



WASTE VOLUMES & CAPACITY

- What are your wastewater volumes?
- Do you have enough treatment capacity to meet current and future needs?
- How big is the treatment capacity gap?



CURRENT SERVICE DELIVERY MODEL

- Who is currently responsible for collection and treatment?
- How is the private sector paid for the service?
- What is your LG's mandate?



BUDGETS & TARIFFS

- What LG capital and operational expenditure budgets are available?
- Does your LG collect WWT&R tariffs?
- Is the WWT department running at a loss or a surplus?



NATIONAL PROGRAMMES

- Are any national or regional government programmes available that your LG can leverage?
- Are any standardized designs/contracts available that your LG can access?



CAPACITY TO DEVELOP PROJECT

- What technical and project development capacity is available within your LG?
- What budgets are available to contract experts?

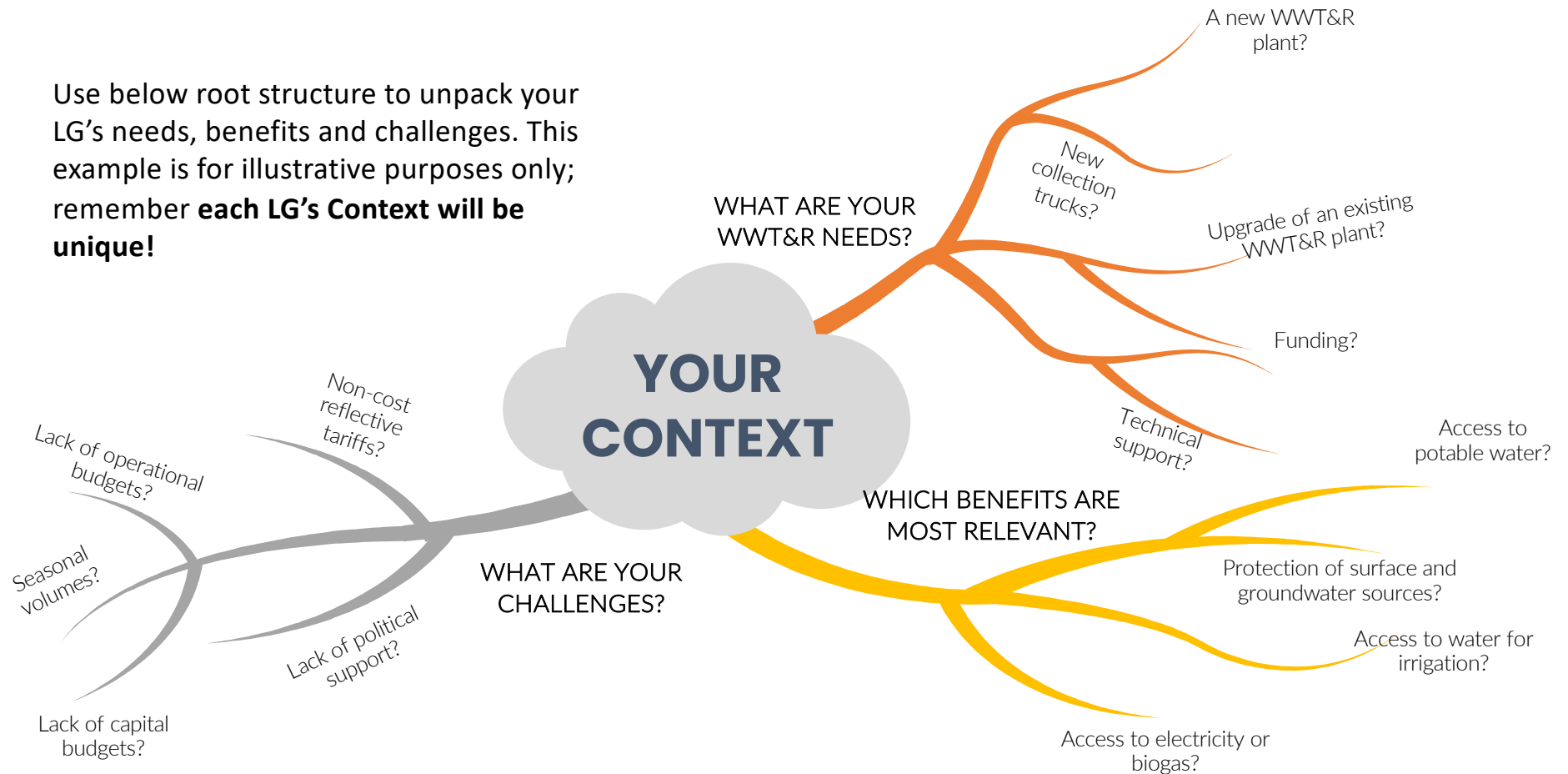
1.1 BREAKOUT & FEEDBACK SESSION 1



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EXERCISE 1: IDENTIFY NEEDS, BENEFITS & CHALLENGES

Use below root structure to unpack your LG's needs, benefits and challenges. This example is for illustrative purposes only; remember **each LG's Context will be unique!**



EXERCISE 1: FEEDBACK FORM

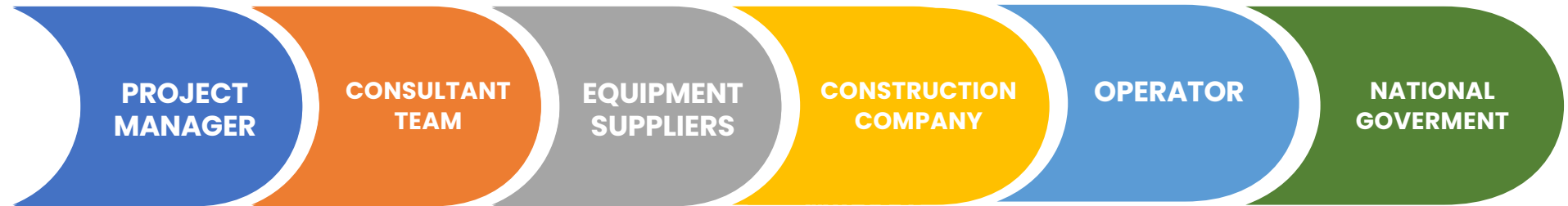
Context – Questions from prior slide	Answers (with numbers of how many people shared that issues)	Examples
Needs		
Challenges		
Benefits		

2.0 HOW TO IDENTIFY TECHNICAL SOLUTIONS?



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TECHNICAL ACTORS IN A TYPICAL WWT&R PROJECT



Role:

LG official that champions the project and forms the main point of contact between the LG, NG, consultants and private sector parties during the development phase

Skills required:

Project management, contract management, understanding of budgeting processes, understanding of wastewater treatment processes

Role:

Develops technical options for the LG that will be assessed to conclude on affordability and technical suitability

Skills required:

A track record of designing and delivering WWT&R projects. The consultant team should comprise different skillsets, including engineers, environmental scientists, a financial expert, etc.

Role:

Supplies equipment such as anaerobic digestors that will represent a large portion of project costs

Requirements:

A track record of supplying equipment, backed by a strong balance sheet (i.e., a company that has significant assets net of liabilities)

Role:

Constructs infrastructure required for the project such as settlement ponds and foundations for equipment

Requirements:

A track record of constructing similar infrastructure, backed by a strong balance sheet (i.e., a company that has significant assets net of liabilities)

Role:

Operates and maintains the plant and markets by-products (if relevant) to buyers. Commits to meeting performance targets and is penalized for not doing so

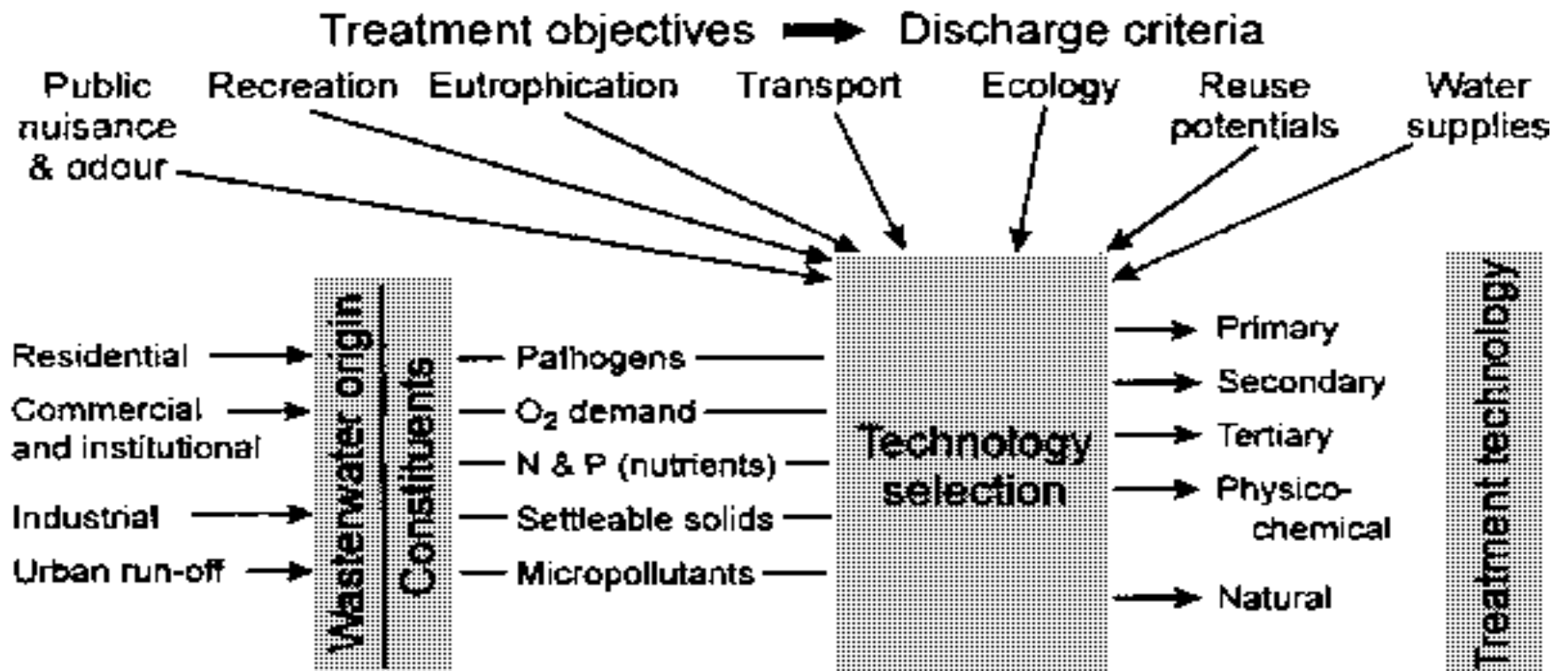
Requirements:

Track record of running WWT&R facilities of a similar size and complexity. Required technical skillsets may justify the appointment of a private sector operator rather than an individual/ inhouse team

Role:

Ensures adherence to discharge standards and other environmental indicators

FACTORS INFLUENCING THE TREATMENT TECHNOLOGY



KEY TECHNICAL CONCEPTS

PRIMARY TREATMENT

Consists of physical processes involving mechanical screening (flotation, filtration, etc.)

SECONDARY TREATMENT

Converts biodegradable organic matter to

- Carbon dioxide, water and nitrates under an **aerobic process** which requires oxygen; or
- A mixture of methane and carbon dioxide (biogas) under an **anaerobic** process where oxygen is withheld

TERTIARY TREATMENT

Removes various “harmful” nutrients from the secondary effluents (via membrane filtration, carbon absorption, advanced oxidation, etc.)

ADVANCED TREATMENT

Is either applied to industrial wastewater to remove specific contaminants or produce potable water? (combination of various tertiary treatments)

TYPICAL SECONDARY TREATMENT TECHNOLOGIES

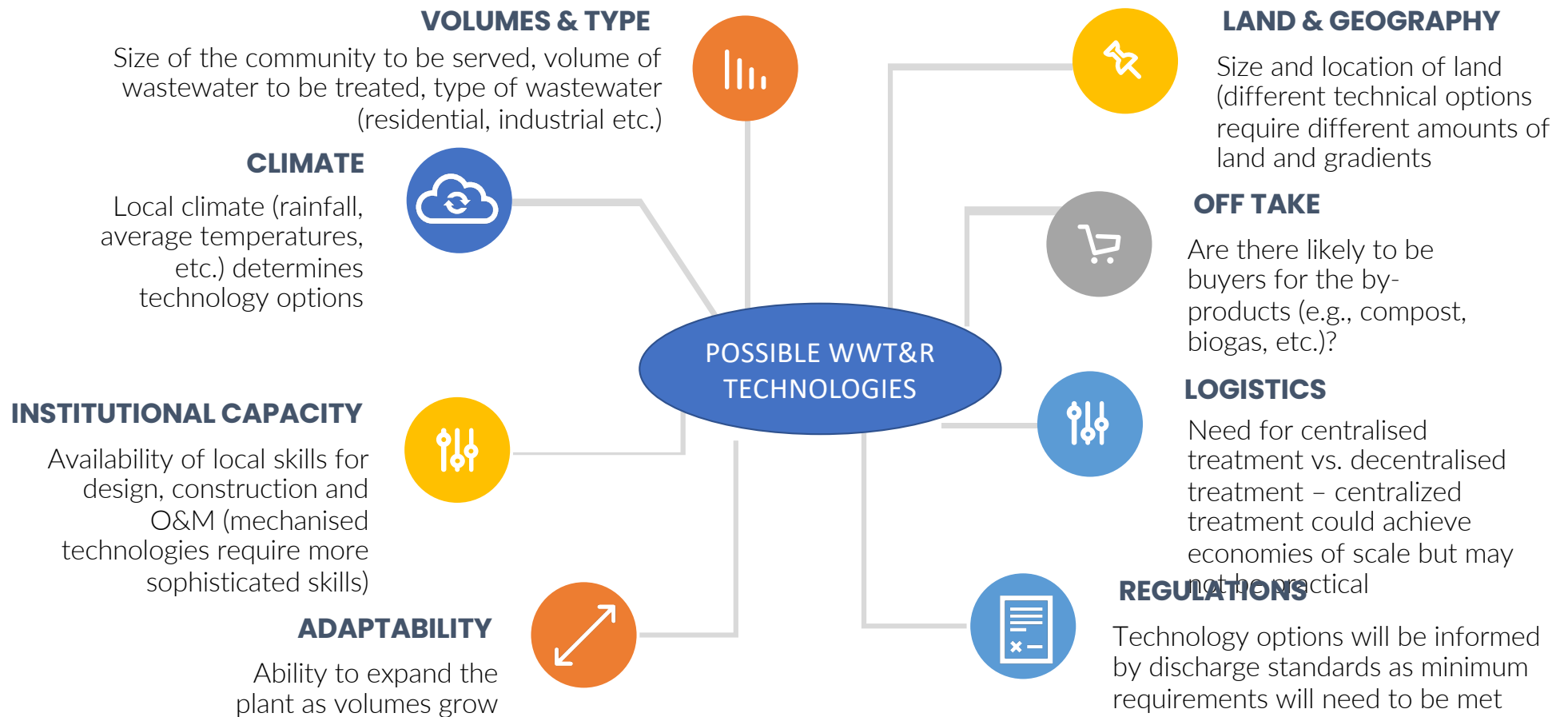
	MECHANISED	NON-MECHANISED
AEROBIC PROCESSES	Activated sludge Trickling filter	Facultative stabilisation ponds Maturation ponds
ANAEROBIC PROCESSES	Upflow anaerobic sludge bed Anaerobic (upflow) filter	Anaerobic ponds

Mechanised technologies often require less land but often have higher upfront costs (i.e. capital expenditure)

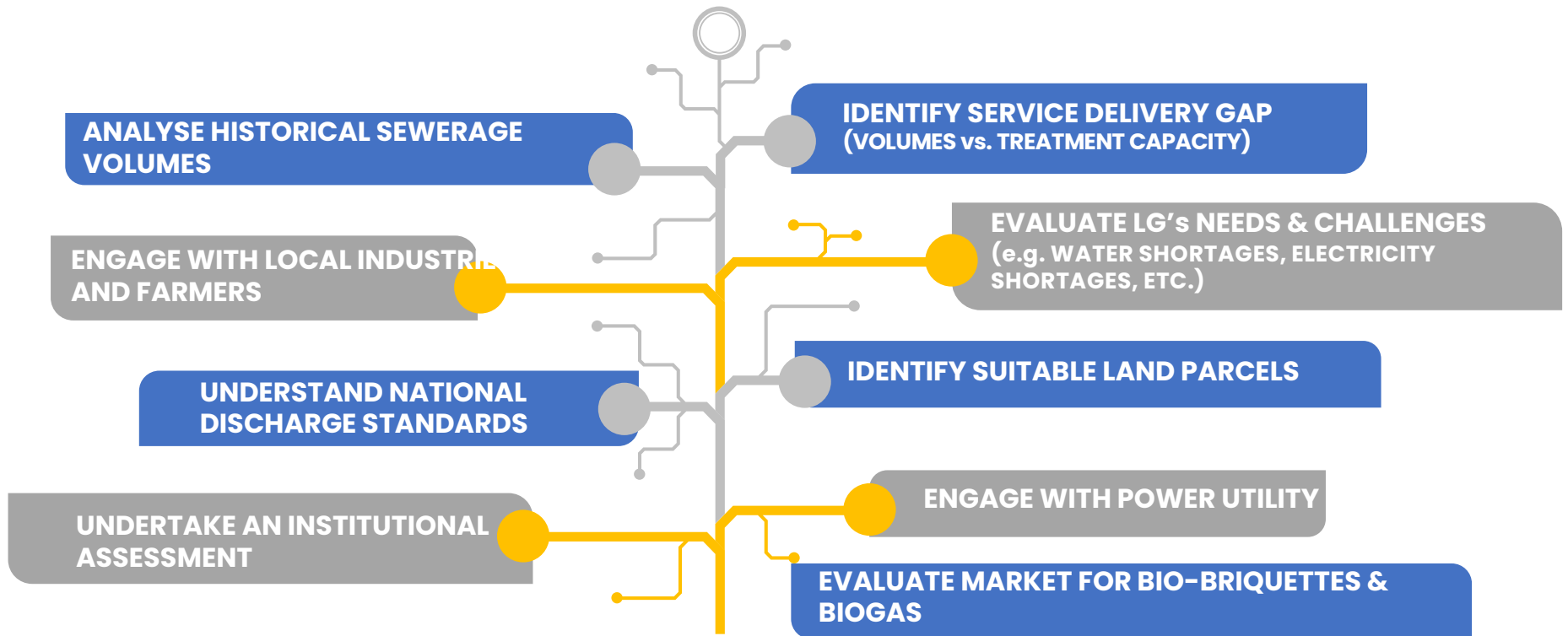
Non-mechanised technologies tend to create more operational jobs but require more land

Source: Adapted from *Water Pollution Control - A Guide to the Use of Water Quality Management Principles*, 1997 WHO/UNEP

KEY CONSIDERATIONS WHEN SELECTING A TECHNOLOGY



SPECIFIC LG ACTIONS THAT INFORM TECHNOLOGY SELECTION



APPOINT A REPUTABLE EXPERIENCED CONSULTANT TO ASSESS TECHNICAL OPTIONS

2.1 BREAKOUT & FEEDBACK SESSION 2



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EXERCISE 2 – ASSESS STATUS QUO & POSSIBLE SOLUTIONS

SITES

What land is available at existing WWT&R sites?

What sites are available near generators?

VOLUMES

Annual volumes?

How predictable are volumes?

What are the WW sources?

Historical growth rate?

Expected growth?

Available data?

TREATMENT CAPACITY

Number of treatment plants?

Annual capacity?

Technologies used at WWT&R facilities?

Age of treatment plants?

Condition of plants?

POTENTIAL OFF-TAKERS

Large industrial water users?

Large agricultural users?

STANDARDS & REGULATIONS

What discharge standards do you have to meet?

Are you meeting the standards?

What changes are required to meet standards?

INSTITUTIONAL CAPACITY

Number of staff in department/team:?

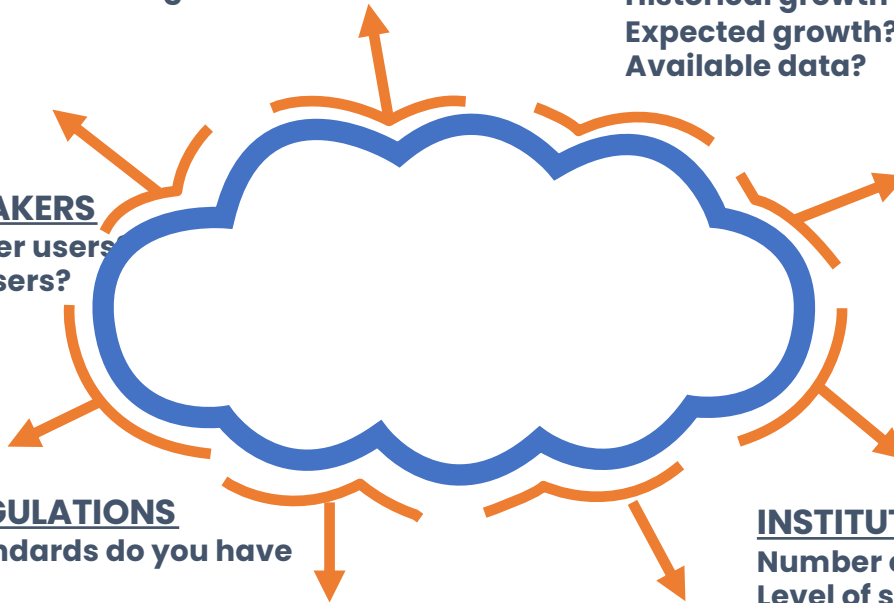
Level of skills (unskilled, semi-skilled, skilled)?

Knowledge of secondary and tertiary treatment technologies?

POSSIBLE SOLUTIONS

Which technologies are likely to be most appropriate?

What technical assessments have been done to date?



EXERCISE 2: FEEDBACK FORM

Context – Questions from prior slide	Answers (with numbers of how many people shared that issues)	Examples

3.0 HOW TO IDENTIFY FINANCE SOLUTIONS?



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KEY FINANCE & RISK TERMS EXPLAINED

SERVICE LEVEL AGREEMENT (SLA)

Contract between an LG and private sector service provider to operate & maintain a public-owned WWT&R plant

PUBLIC PRIVATE PARTNERSHIP (PPP)

Long term contract (~ 20 years) between a LG and private sector partner that requires the private sector to design, build, finance, & operate a WWT&R plant

CAPITAL EXPENDITURE (CAPEX)

Funds spent acquiring fixed assets, such as land, buildings, equipment

CAPEX FUNDING

Funds that need to be raised for CAPEX by either the LG via a loan, grants, own sources of funds, or the private sector (if a PPP)

CAPEX COST OVERRUNS

Risk that the costs budgeted for buying equipment and constructing infrastructure end up being much higher than budgeted

DESIGN RISK

Risk that a plant's design does not meet building standards or legal and environmental requirements; risk that faulty design results in operational issues

CONSTRUCTION RISK

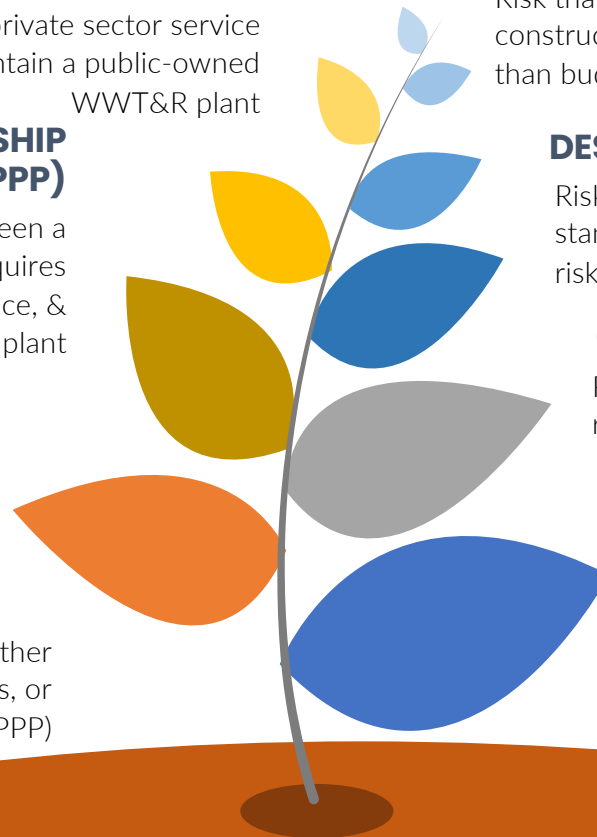
Risk that construction time exceeds time projected resulting in additional costs and/or loss of income

DEBT

An obligation that needs to be repaid to the lender (normally a bank) with interest over several years

EQUITY

The private sector's own funds that it uses together with debt to fund the project



DIFFERENT FUNDING MODELS & ALLOCATION OF ROLES

RESPONSIBILITIES OF LG & PRIVATE SECTOR UNDER EACH FUNDING MODEL

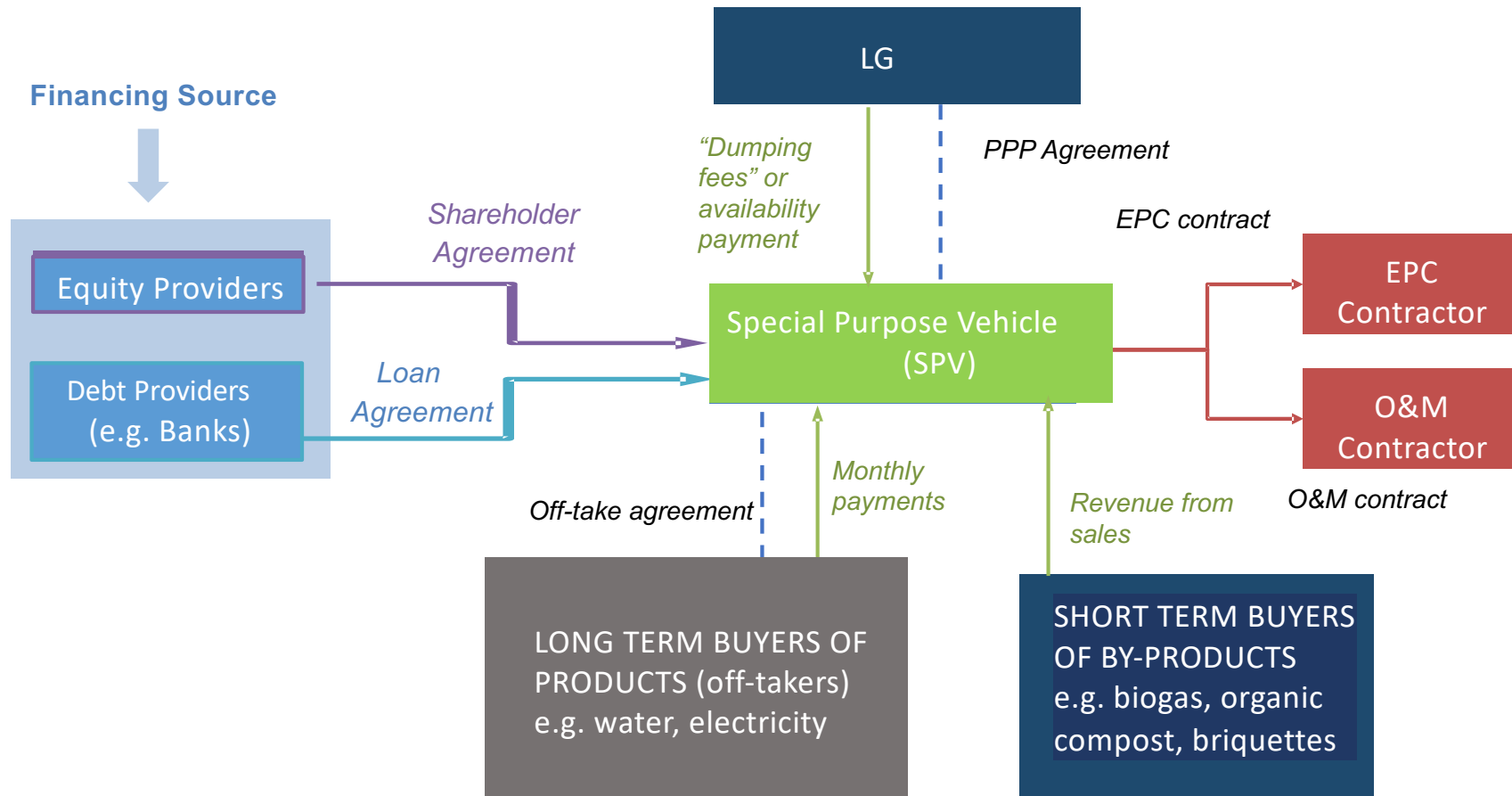
FUNDING MODELS <i>Role/Responsibility</i>	PUBLIC OWNED & OPERATED	PUBLIC OWNED & PRIVATE SECTOR OPERATED (SLA)	PPP (100% private)	PPP (minority LG ownership)	PRIVATE OWNED & OPERATED
<i>Design Risk</i>	LG		Private sector assumes roles and risks		
<i>Construction Risk & CAPEX Cost Overruns</i>					
<i>Funding of CAPEX</i>	LG raises grants and debt		Private sector mobilises debt & equity	LG funds its share of equity and/or provides land. Private sector raises rest of funds	Private sector mobilises equity and debt
<i>Grants</i>	LG can raise grants to make funding model more affordable				Private sector may be able to secure grants
<i>Operation</i>	LG	Private sector			
<i>Maintenance</i>					
<i>Sales & Marketing</i>					

COMPARISON OF FUNDING MODELS

KEY ADVANTAGES VS. DISADVANTAGES

DESCRIPTIONS	KEY ADVANTAGES	KEY DISADVANTAGES
PUBLIC OWNED & OPERATED	<ul style="list-style-type: none"> Procurement process is well known LG controls asset 	<ul style="list-style-type: none"> LG retains all risks and has to raise 100% of funding LG may not have required skills (O&M, marketing, sales)
PUBLIC OWNED + PRIVATE SECTOR OPERATED (SLA)	<ul style="list-style-type: none"> Project benefits from private sector skills (O&M, marketing, sales) Procurement process is well known 	<ul style="list-style-type: none"> LG retains construction risks (CAPEX overruns, design risk) LG has to raise 100% of funding
PPP (100% private)	<ul style="list-style-type: none"> Private sector brings technical know how Private sector can raise funding for the project 	<ul style="list-style-type: none"> Prescribed PPP processes can be onerous and time consuming Private sector capital can be expensive
PPP (minority LG ownership)	<ul style="list-style-type: none"> Private sector brings technical know how Private sector can raise majority of funding 	<ul style="list-style-type: none"> Prescribed PPP processes can be onerous and time consuming LG must raise own equity portion Private sector capital can be expensive
PRIVATE OWNED & OPERATED	<ul style="list-style-type: none"> No funding required from LG LG could generate income/ achieve savings through feedstock agreement 	<ul style="list-style-type: none"> LG has no control over the project or timelines

TYPICAL PPP STRUCTURE FOR AN WWT&R PROJECT



DURBAN'S WWT&R PPP UNPACKED

Scope: Upgrade of an existing wastewater treatment plant with reuse functionality

Total project cost: R72m (~US\$5m)

Construction and O&M risk allocated to:

- EPC contractor: Veolia
- O&M contractor: Veolia

Funding raised by private sector:

- Equity: R14m
- DBSA loan: R34m
- Commercial loan: R24m

m = million

Payments to lenders and equity providers

Due to relatively low upfront investment (upgrade rather than new build), the SPV is able to make payments Durban's utility under the PPP Agreement

Durban's utility

Net payments

Waste water

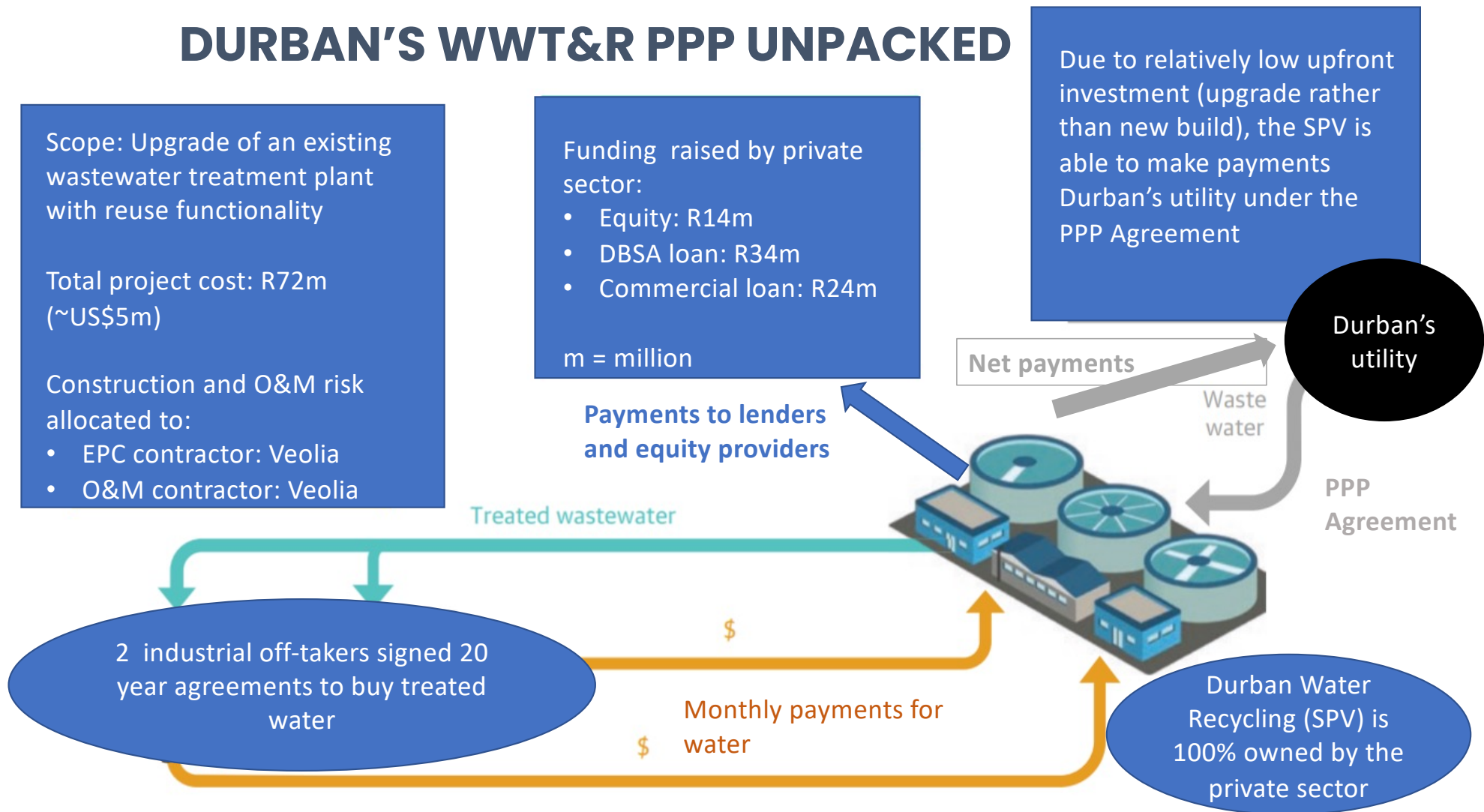
PPP Agreement

Treated wastewater

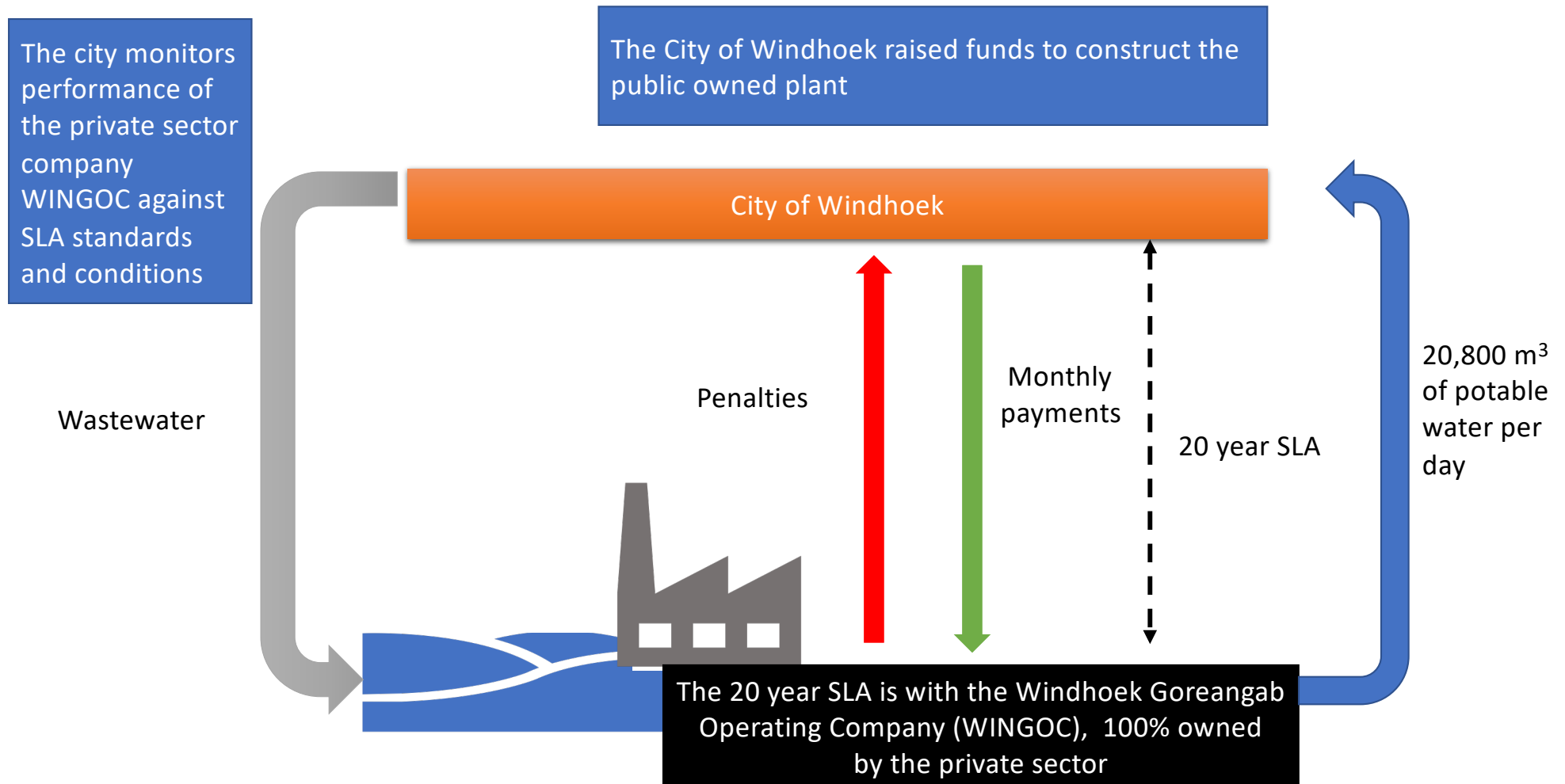
2 industrial off-takers signed 20 year agreements to buy treated water

Monthly payments for water

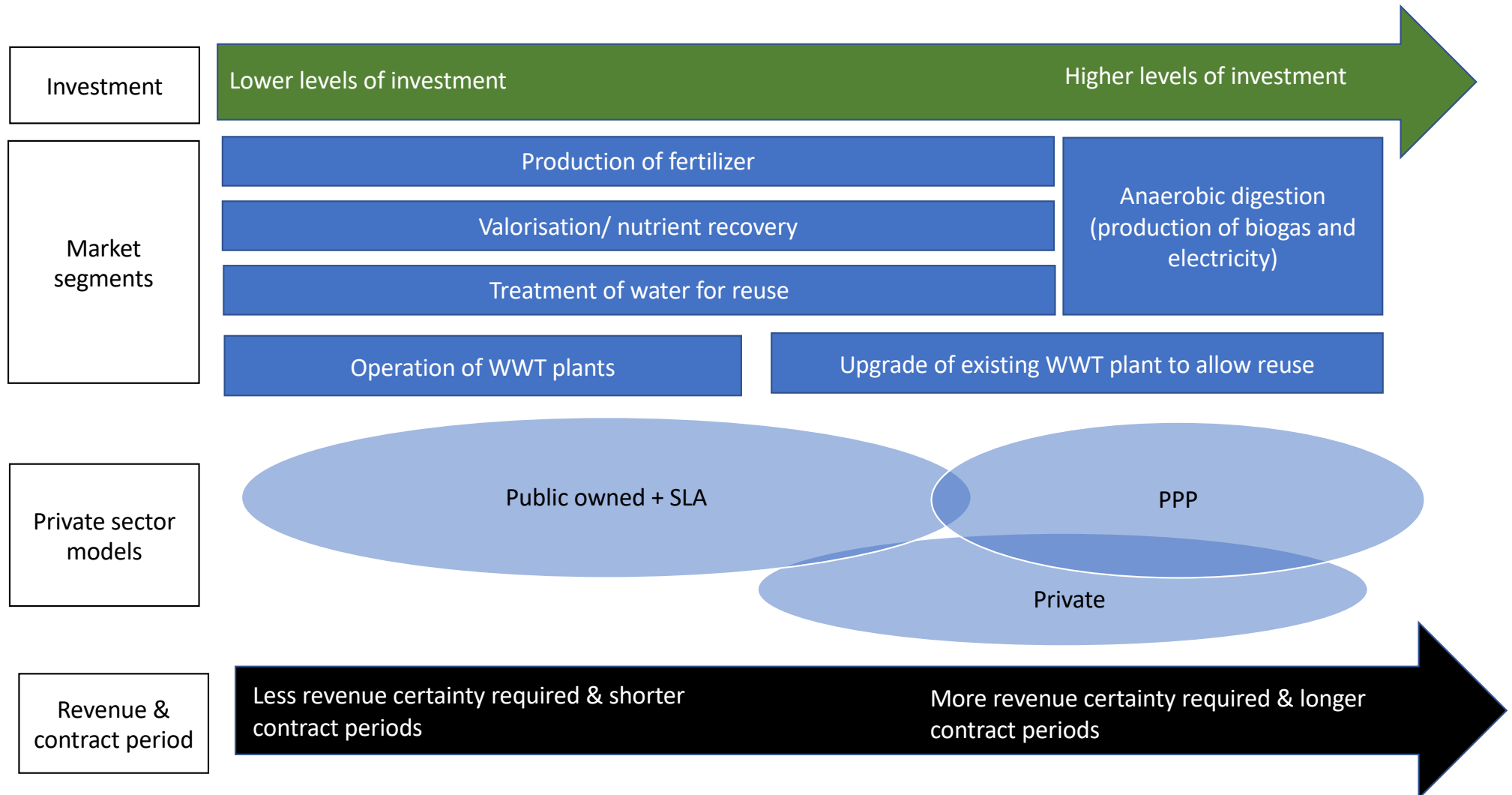
Durban Water Recycling (SPV) is 100% owned by the private sector



WINDHOEK'S PUBLIC OWNED WWT&R WITH SLA UNPACKED



FUNDING MODELS APPLIED TO WWT&R MARKET SEGMENTS



FUNDING TYPOLOGY: RISK AND REVENUE FACTORS TO CONSIDER

ACCEPTANCE OF TECHNOLOGY RISKS

Considers how familiar lenders are with the technology and therefore willingness to finance the project

ABILITY TO MANAGE ENVIRONMENTAL/SOCIAL RISKS

Funders, especially DFIs, will want to ensure that environmental and social risks have been minimized

ACCESS TO CREDIT ENHANCEMENTS

Credit enhancements can increase a project's revenue certainty, allowing the project to access more commercial sources of funding



REVENUE CERTAINTY

Key to understanding whether a project can support debt as lender

ABILITY TO MITIGATE OPERATIONAL RISKS

Considers the project's operational risk and how they can be mitigated to reduce risk for the LG, private sector and lenders

ABILITY TO MANAGE CAPEX RISKS

Considers whether construction risk (and therefore cost overruns) have been mitigated and whether revenues will be enough to repay the upfront investment

RISKS, MITIGATION & REVENUE FACTORS – WWT&R PROJECT

DURBAN WWT&R PPP

REVENUE CERTAINTY

Project fundamentals	Low = 0	Medium =3	High = 5
Revenue certainty			
Cost recovery through user payments/savings			
Opportunities for generating 3rd party revenue			
Ability of LG to guarantee revenue			
Creditworthiness of offtaker(s)			
Predictability of demand			
Predictability of supply			

High (4.5 out of 5) score due to:

- Long-term off-take agreements
- Significant third-party revenues
- Predictability of supply and demand

OPEX RISKS

Project fundamentals	Low = 0	Medium =3	High = 5
Ability to mitigate operational risks			
Ability of LG to guarantee feedstock			
Predictability of costs (due to FX etc.)			
Likelihood of recovering opex via revenue/savings			

High (4.5 out of 5) score due to:

- Known and “guaranteed” sewerage volumes
- Revenues > than operational costs

CAPEX RISKS

Project fundamentals	Low = 0	Medium =3	High = 5
Ability to manage CAPEX risks			
Ability to recover CAPEX investment via revenue			
Ability to transfer construction risk to private sector			

High (5 out of 5) score due to:

- Risk transfer to private sector (EPC Contract)
- Revenues > than investment

Insight: Project benefited from being located in a city with a strong industrial base and access to creditworthy industrial off-takers who were willing to pay for treated water under a long-term contract.

TECHNO-
LOGY RISKSE&S
RISKS

SUMMARY

RISKS, MITIGATION & REVENUE FACTORS – WWT&R PROJECT

DURBAN WWT&R PPP

Project fundamentals	Low = 0	Medium =3	High = 5
Acceptance of technology risks			
Acceptance of technology by lenders			
Suitability as collateral for commercial lenders			

High (4.5 out of 5) score as:

- Technology accepted by lenders
- Debt secured against significant cashflows from off-takers

Project fundamentals	Low = 0	Medium =3	High = 5
Ability to manage environmental/social risks			
Ability to minimise environmental impact/costs			
Ability to minimise social impact/costs			

High (5 out of 5) score as:

- Existing plant with approvals
- Risk mitigation measures put in place

Project fundamentals	Low = 0	Medium =3	High = 5
Revenue certainty			
Ability to mitigate operational risks			
Ability to manage Capex risks			
Acceptance of technology risks			
Ability to manage environmental/social risks			
Access to credit enhancement			
Average			
Generic funding mechanisms	Grants (Govt + ODA)	Blended finance, impact investment	PPP + grant /blended finance
Climate funding mechanisms	Grants	Concessionary loans + grants	PPP, project bonds

Average score of 4.5 indicates that project could be developed via a PPP and that it does not require blended finance (concessional and/or grant finance)

Insight: Project benefited from a strong regulatory environment, including supporting PPP legislation and processes.

WHAT IS BLENDED FINANCE?

Blended finance addresses market failures by mitigating risks for private-sector investors and/or improving returns.

Blended finance can take various forms, including:

An interest rate subsidy - Makes use of public grants to reduce a project's debt service payments

Concessional loans and/or grants - Can reduce interest costs and offer longer maturities than those offered by private banks, allowing annual repayments to be reduced and spread over a longer period

Subordinated debt - Form of debt that ranks behind 'senior debt' (e.g. bank loans) but before equity providers. It can help to insulate senior debt investors from unacceptable risks and reduces the cost of capital in cases where equity is too expensive

First loss equity - Shields investors from a pre-defined amount of financial losses, making it more attractive for the private sector to fund the project's remaining equity

Guarantees can mitigate various types of investment risks, including political, policy, regulatory, credit and technology risk

Guarantee	Political Risk	Policy & Regulatory Risk	Counterparty Risk	Technology Risk	Currency Risk
Political risk insurance	×	×			Convertibility risk only
Partial credit guarantee	×	×	×		
Export credit guarantee	×	×	×	×	
Currency risk mitigation (e.g., swaps, TCX)					×

LESSONS LEARNT FROM EXISTING WWT&R PROJECTS

1

STRONG OFF-TAKER(S) ARE KEY TO RAISING DEBT & STRUCTURING A SUCCESSFUL PPP

Durban's WWT&R PPP raised 80% of the project's cost via debt, mainly due to the availability of a creditworthy off-taker for the plant's treated water. Mondi committed to buy treated water for a period of 20 years.

Ghana's SafiSana WWT&R PPP failed to conclude an offtake agreement for its organic compost. The lack of an off-taker has impacted its revenues and means that it is unable to cover all its costs with the available revenues.

2

PROJECTS CAN BE MADE MORE ATTRACTIVE TO THE PRIVATE SECTOR IF UPFRONT INVESTMENT IS MINIMISED

Durban's WWT&R PPP made use of existing WWT&R infrastructure and the private sector was only required to expand its capacity, minimizing the private sector's upfront investment cost.

3

THE PUBLIC SECTOR NEEDS TO ASSESS WHAT SKILLS IT HAS AND WHAT SKILLS NEED TO BE CONTRACTED. THE PRIVATE SECTOR MAY BE BEST PLACED TO PROVIDE SPECIALISED SERVICES

Windhoek's Goreangab WWT&R plant is publicly owned and funded but is operated and maintained by the private sector under a long-term contract. The contract includes penalty mechanisms to ensure that the private sector meets quality standards.

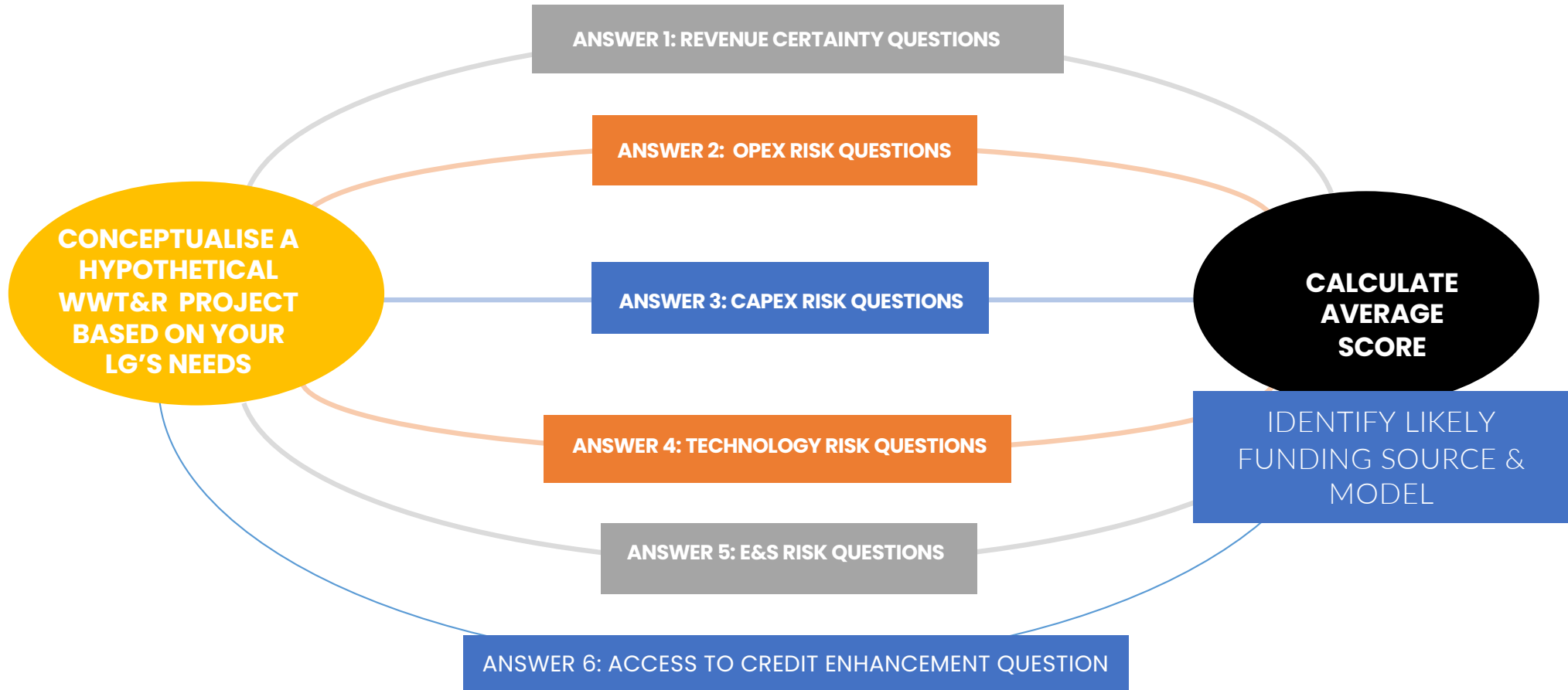


3.1 BREAKOUT & FEEDBACK SESSION 3



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EXERCISE 3: APPLY TYPOLOGY TO YOUR WWT&R PROJECT



EXERCISE 3: TYPOLOGY TOOL TEMPLATE

Project fundamentals	Score (0 to 5)	Clarification	Score guide
Revenue certainty			
Cost recovery through user payments/savings		Will fees from wastewater collectors cover costs? Will savings achieved by LG (if PPP) cover costs?	Yes=5,Maybe=3,No=0 If not applicable, "n/a"
Opportunities for generating 3rd party revenue		Are there significant opportunities to earn revenue from the sale of electricity, biogas, fertilizer etc?	
Ability of LG to guarantee revenue		Is LG able to provide guarantees to the private sector in respect of sales of products or availability payments to the private sector?	
Ability to manage tariff risk		If electricity is produced, will the project have certainty over what it can sell the electricity at in future?	
Creditworthiness of off-taker(s)		Are there potential off-takers that are large, profitable businesses (factories, farms etc)?	
Predictability of demand		Is demand for treated water likely to be predictable?	
Predictability of supply		Is the supply of wastewater likely to be predictable?	
Ability to mitigate operational risks			
Ability of LG to guarantee feedstock		Does LG understand volumes well enough to guarantee volumes to the private sector? Is your LG allowed to issue guarantees?	Yes=5,Maybe=3,No=0 If not applicable, "N/A"
Predictability of costs (including FX, etc.)		Are operational costs likely to be predictable?	
Likelihood of recovering opex via revenue/savings		Will revenues (from sale of electricity, biogas etc) or savings achieved (by new project) be enough to cover operational costs?	
Ability to manage CAPEX risks			
Ability to recover CAPEX investment via revenue		Will revenue generated by the project be enough to first cover operational costs and then also repay the upfront investment?	Yes=5,Maybe=3,No=0 If not applicable, "N/A"
Ability to transfer construction risk to private sector		Can construction risk be transferred to the private sector via an EPC contract or another measure?	
Acceptance of technology risks			
Acceptance of technology by lenders		Is this a tried and tested technology that lenders will be comfortable with?	Yes=5,Maybe=3,No=0 If not applicable, "N/A"
Suitability as collateral for commercial lenders		Will lenders be able to find a buyer for the project (under a PPP) if the private sector partner goes bankrupt?	
Ability to manage environmental/social risks			
Ability to minimise environmental impact/costs		Are environmental approvals already in place, reducing the risk of delays and expensive studies?	Yes=5,Maybe=3,No=0 If not applicable, "N/A"
Ability to minimise social impact/costs		Will there be little or no impact on the surrounding community? Will the surrounding community accept a WWT&R facility nearby?	
Access to credit enhancement			
Availability of guarantees		Can the project access any guarantees from national/LG/DFIs to improve revenue certainty?	Yes=5,Maybe=3,No=0 If not applicable, "N/A"
Average		CALCULATE AVERAGE OF SCORES	

EXERCISE 3: INTERPRETING AVERAGE SCORES



Project fundamentals	Low = 0	Medium =3		High =5
Generic funding mechanisms	Grants (Govt + ODA)	Blended finance, impact investment	Commercial debt	Corporate bond
Climate funding mechanisms	Grants	Concessionary loans + grants		Equity

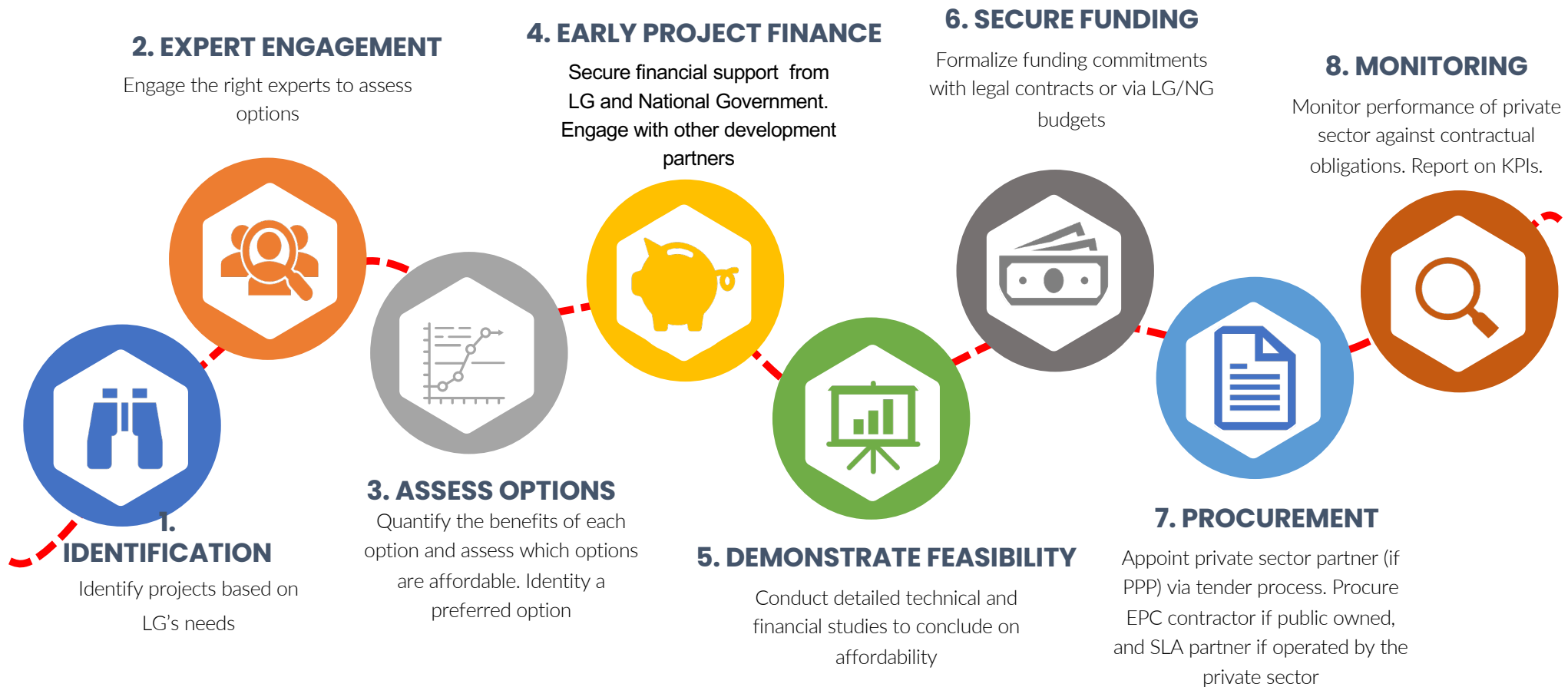
4.0 LG ACTION STEPS REQUIRED



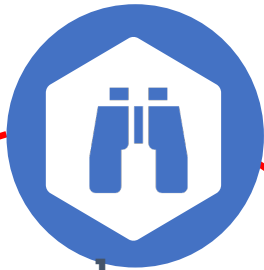
Covenant of Mayors
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OVERVIEW OF PROJECT DEVELOPMENT LIFECYCLE

EIGHT STAGES OF DEVELOPMENT



KEY ROLES DURING PROJECT DEVELOPMENT LIFECYCLE (slide 1 of 2)



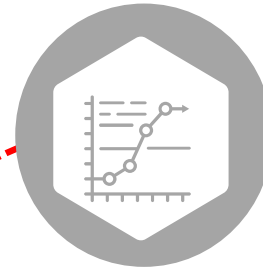
1.

IDENTIFICATION

Identify projects based on LG's needs

2. EXPERT ENGAGEMENT

Engage the right experts to assess options

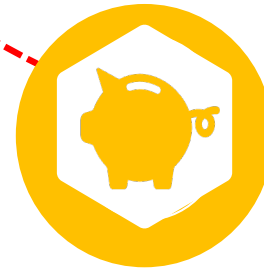


3. ASSESS OPTIONS

Quantify the benefits of each option and assess which options are affordable. Identify a preferred option

4. EARLY PROJECT FINANCE

Secure financial commitments from LG and National Government. Engage with other development partners



PROJECT MANAGER

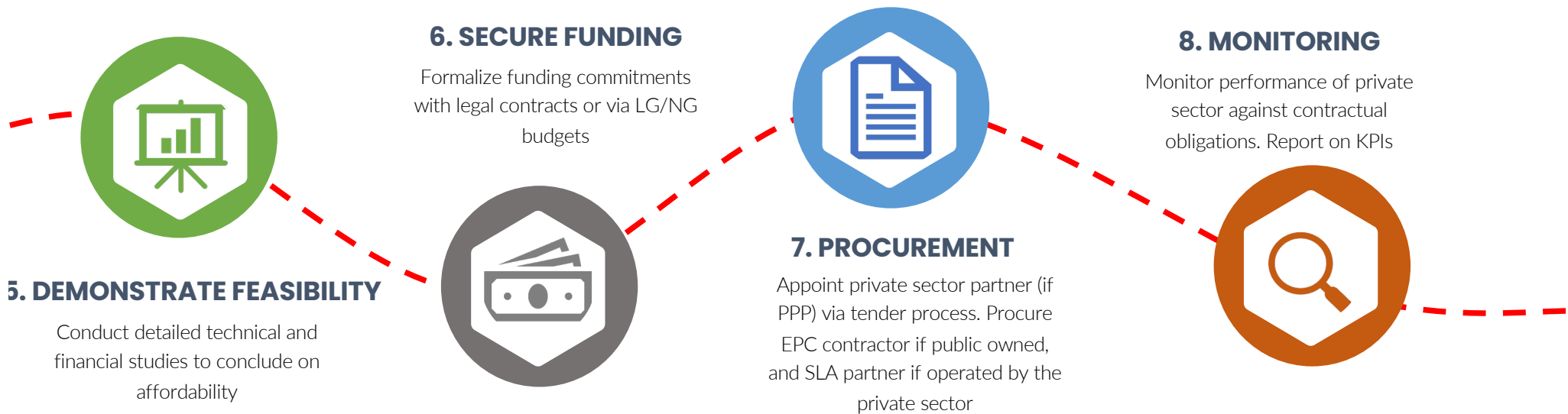
CONSULTANT TEAM (technical and financial)

LG CHIEF FINANCIAL OFFICER

NG

DFIs

KEY ROLES DURING PROJECT DEVELOPMENT LIFECYCLE (slide 2 of 2)



PROJECT MANAGER

CONSULTANT TEAM (various experts)

LG CHIEF FINANCIAL OFFICER + EXECUTIVE

NG

DFIs

LG LEGAL/COMPLIANCE TEAM

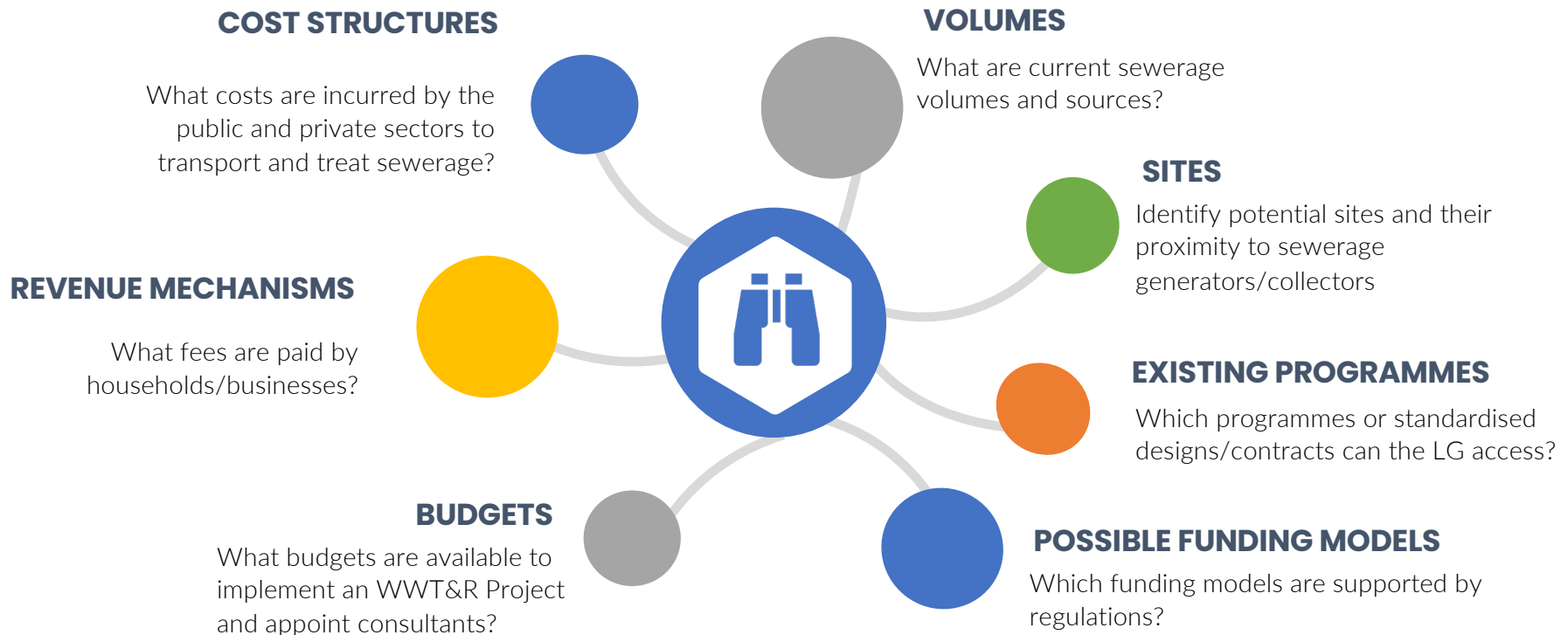
EQUIPMENT SUPPLIERS

CONSTRUCTION COMPANY

OPERATOR

DETAILS ON STEP 1. IDENTIFICATION

The Project Manager needs to unpack the LG's WWT&R needs and status quo by answering the following questions:



Insight/example: In reality, many of the responsibilities listed above are often passed onto experts. Undertaking these steps upfront will allow LGs to better scope work to be undertaken by experts and reduce expert costs.

DETAILS ON STEP 2. EXPERT ENGAGEMENT

HOW TO ENGAGE THE RIGHT EXPERTS



FACTORS TO CONSIDER

- Budgets available to hire experts
- LG's internal capacity
- Complexity of project
- Capacity to develop terms of reference
- Availability of local experts



TERMS OF REFERENCE (ToR)

- Seek support from development partners with ToR development
- Specify minimum skills and track record requirements
- Consider how requirements will be scored/evaluated
- Clearly define deliverables, timelines and payment milestones

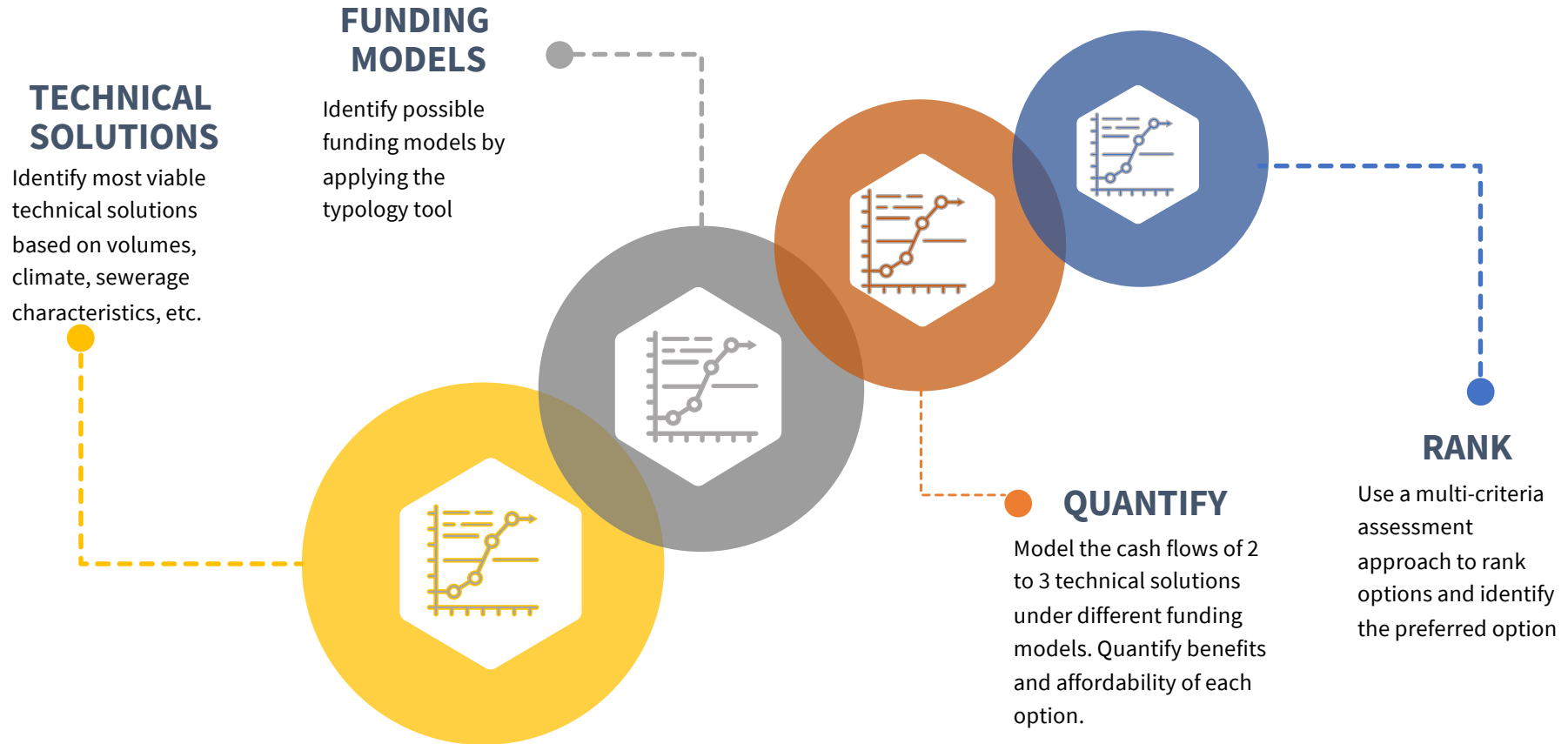


EVALUATION & APPOINTMENT

- Development partner could form part of evaluation committee
- Develop scoring matrix to evaluate bids
- Communicate outcome of evaluation to bidders
- Finalize contract

Insight: If limited budgets are available to appoint consultants, the LG may want to adopt a phased appointment approach. A LG can include a break clause in the contract and require consultants to price the different phases/deliverables separately.

DETAILS ON STEP 3. ASSESS OPTIONS



PROJECT MANAGER

CONSULTANT TEAM (technical and financial)

3a. IDENTIFYING FUNDING MODELS

APPLY THE TYPOLOGY TOOL

Project fundamentals	Low = 0			Medium =3	High = 5		
Revenue certainty							
Ability to mitigate operational risks							
Ability to manage Capex risks							
Acceptance of technology risks							
Ability to manage environmental/social risks							
Access to credit enhancement							
Average							
Generic funding mechanisms	Grants (Govt + ODA)		Blended finance, impact investment		PPP + grant /blended finance	PPP, project bonds	
Climate funding mechanisms	Grants		Concessionary loans + grants			Green bonds, equity	

UNDERSTAND REGULATORY ENVIRONMENT



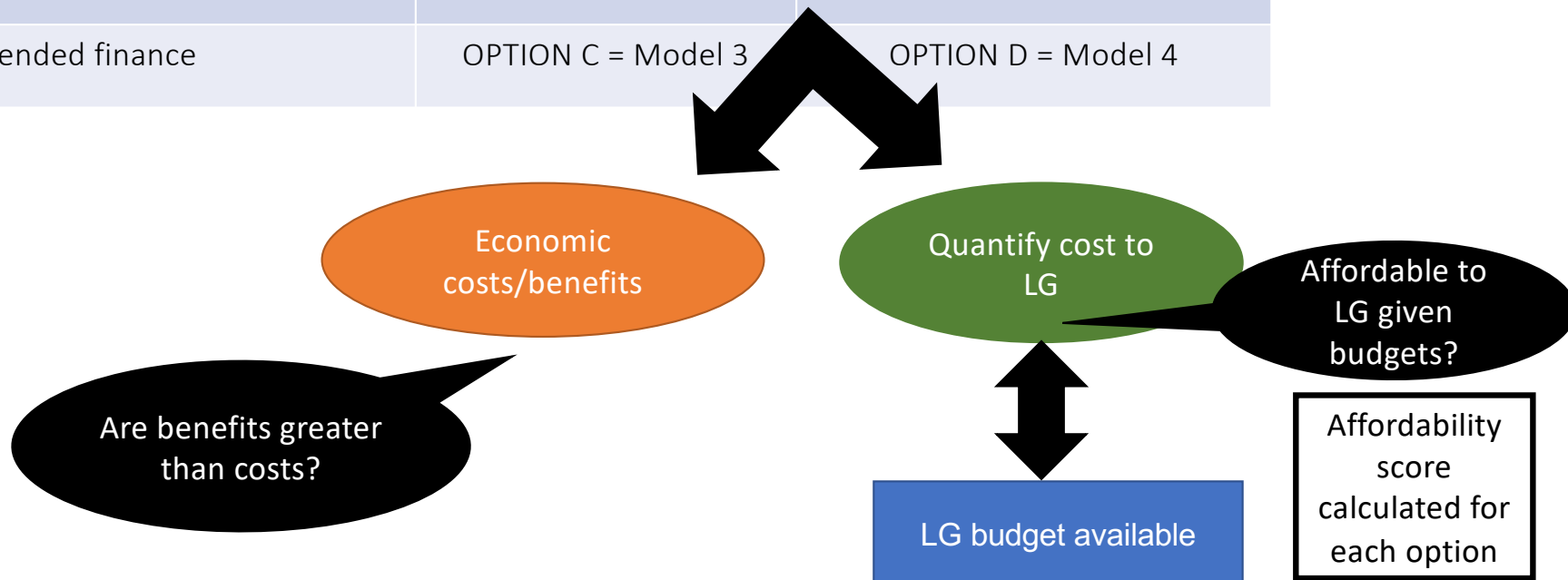
Identify funding models based on the project's revenue and risk profiles

Eliminate funding models that are not supported

CONFIRM MOST SUITABLE FUNDING MODELS

3b. QUANTIFYING OPTIONS

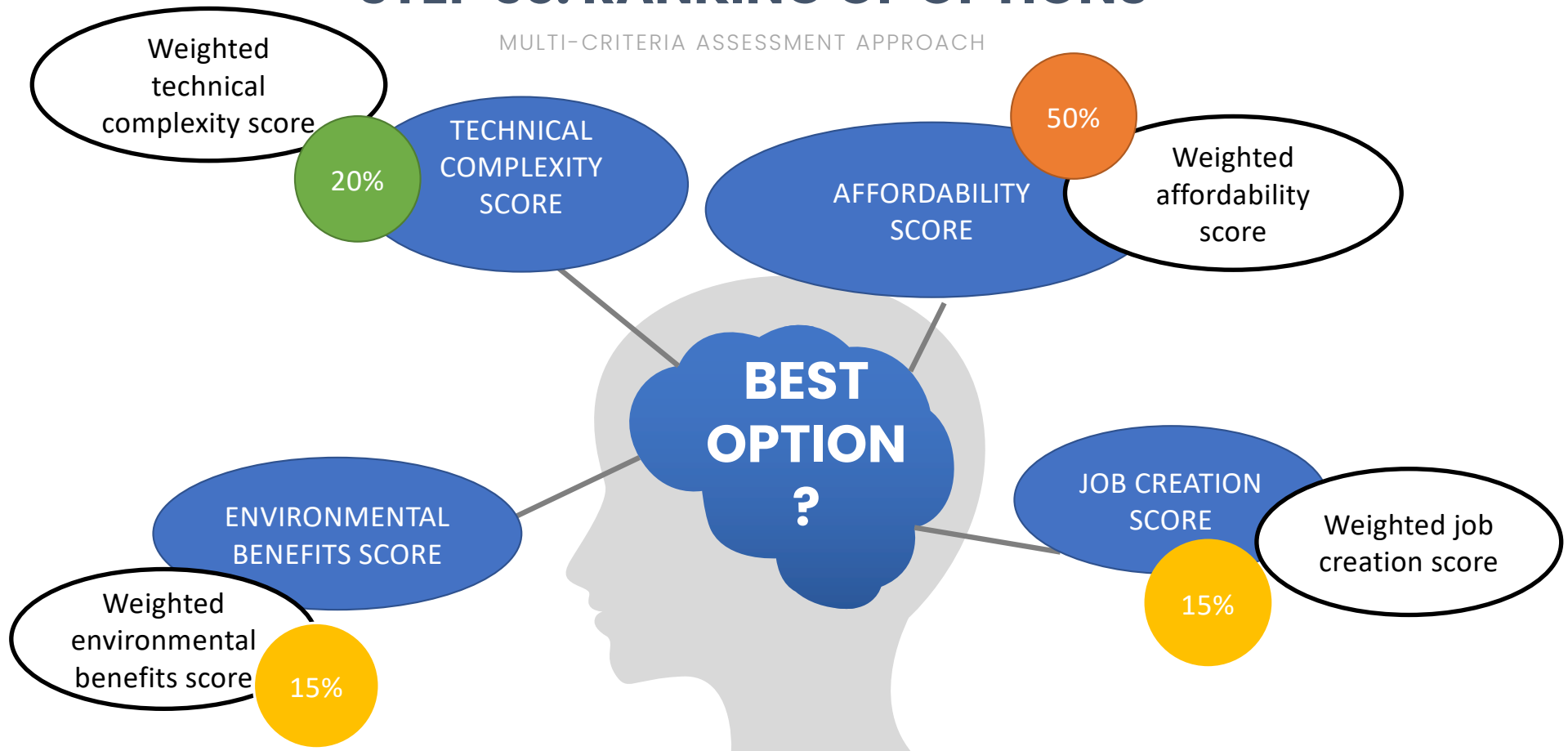
Funding Model	New WWT&R plant	Upgrade of existing WWT&R plant with reuse functionality
Public Owned + Managed by Private Sector (SLA)	OPTION A = Model 1	OPTION B = Model 2
PPP using blended finance	OPTION C = Model 3	OPTION D = Model 4



Insight: An economic cost benefit analysis will take both financial and nonfinancial factors into account. However, if the LG is budget-constrained and the project is not affordable for the LG, **affordability** will need to be a first-order factor in project selection. Finance experts will need to be engaged to develop a viable funding model.

STEP 3c. RANKING OF OPTIONS

MULTI-CRITERIA ASSESSMENT APPROACH



COMPARISON OF FUNDING MODELS

KEY ADVANTAGES VS. DISADVANTAGES

DESCRIPTIONS	KEY ADVANTAGES	KEY DISADVANTAGES
PUBLIC OWNED & OPERATED	<ul style="list-style-type: none"> Procurement process is well known LG controls asset 	<ul style="list-style-type: none"> LG retains all risks and has to raise 100% of funding LG may not have required skills (O&M, marketing, sales)
PUBLIC OWNED + MANAGED BY PRIVATE SECTOR (SLA)	<ul style="list-style-type: none"> Project benefits from private sector skills (O&M, marketing, sales) Procurement process is well known 	<ul style="list-style-type: none"> LG retains construction risks (CAPEX overruns, design risk) LG has to raise 100% of funding
PPP (100% private)	<ul style="list-style-type: none"> Private sector brings technical know how Private sector can raise funding for the project 	<ul style="list-style-type: none"> Prescribed PPP processes can be onerous and time consuming Private sector capital can be expensive
PPP (minority LG ownership)	<ul style="list-style-type: none"> Private sector brings technical know how Private sector can raise majority of funding 	<ul style="list-style-type: none"> Prescribed PPP processes can be onerous and time consuming LG must raise own equity portion Private sector capital can be expensive
PRIVATE OWNED & MANAGED	<ul style="list-style-type: none"> No funding required from LG LG could generate income/ achieve savings through feedstock agreement 	<ul style="list-style-type: none"> LG has no control over the project or timelines

3d. RANKING OF OPTIONS

ILLUSTRATIVE EXAMPLE – WEIGHTS TO BE ADJUSTED GIVEN PROJECT SPECIFICS AND LG CONTEXT

CRITERIA	UNWEIGHTED SCORES					WEIGHTED SCORES			
	A	B	C	D	WEIGHT	A	B	C	D
Affordability	100	75	50	50	50%	50.0	37.5	25.0	25.0
Technical complexity	75	50	75	50	20%	15.0	10.0	15.0	10.0
Job creation	80	75	80	75	15%	12.0	11.3	12.0	11.3
Environmental benefit	75	50	75	50	15%	11.3	7.5	11.3	7.5
TOTAL					100%	88.3	66.3	63.3	53.8
RANKING						1	2	3	4

OPTION A ACHIEVES THE HIGHEST WEIGHTED SCORE, MAINLY DUE TO ITS HIGH AFFORDABILITY SCORE AND THE 50% WEIGHTING ASSIGNED TO THE CRITERIA

PREFERRED OPTION



DETAILS ON STEP 4. EARLY PROJECT FINANCE

SECURING FINANCIAL COMMITMENTS

PROJECT MANAGER

CONSULTANT TEAM (financial expert)



LG ENGAGEMENT

- Present options assessment to LG's CFO
- Seek commitment for funding from CFO (own sources of revenue, debt, grants, etc.)
- Identify funding gap



NG ENGAGEMENT

- Assess relevance of national grant mechanisms
- Understand grant requirements and processes to access



DFI ENGAGEMENT

- Discuss project with development partners who may be able to support project development or fund the project
- Develop a concept note to apply for project preparation funding
- Verify funding assumptions
- Seek commitment for funding

Insight: Early engagement with developers and equipment suppliers is key to ensuring that a project will be attractive and viable for the private sector (expertise, investment). Funding models may need to be reassessed or adapted if the private sector perceives it as too risky.

15 MIN BREAK



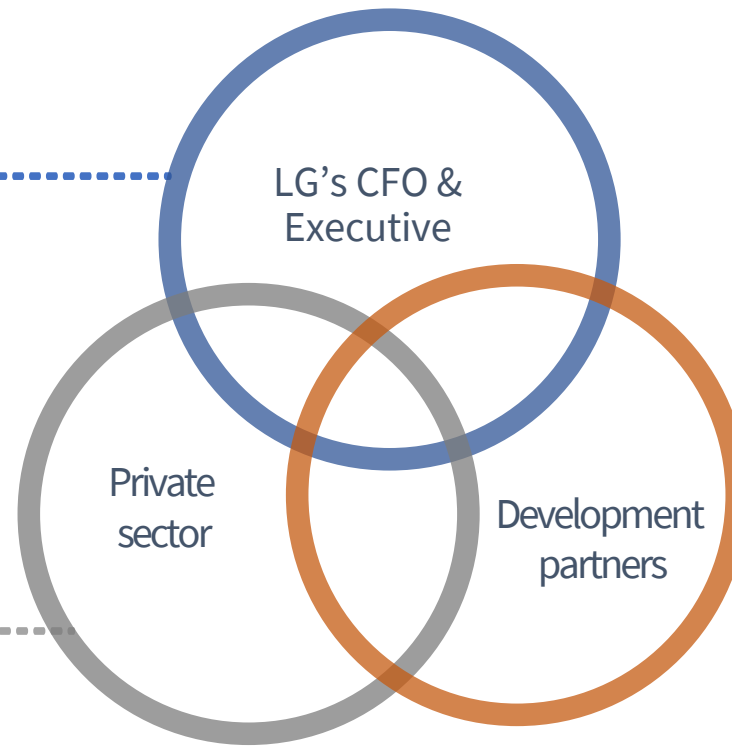
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DETAILS ON STEP 5. DEMONSTRATING FEASIBILITY

UNDERSTAND PROJECT VIABILITY REQUIREMENTS AND THE QUESTIONS THAT WILL NEED TO BE ANSWERED

- Whether the project is affordable
- What the project's impact will be on user fees/tariffs
- How the project aligns with development plans, job creation targets, etc.

- Whether risks have been allocated appropriately between the private and public sectors
- LG's ability to pay the private sector for services



- Political support (local & national) for project
- Development benefits (jobs, climate, etc.)
- Whether the project's benefits will be greater than its costs
- How social and environmental risks will be mitigated
- Whether the business model is sustainable

Insight: Historically, many SSA feasibility studies were led by technical experts with limited inputs from financial experts. This approach often resulted in technically sound, but unaffordable or unfunded solutions.



5.a. DEMONSTRATING FEASIBILITY

STEPS 1 to 3

PROJECT MANAGER

CONSULTANT TEAM (all experts)



SITES

- Identify potential land sites
- Confirm ownership of the sites
- Consider what rights of access the private sector needs
- Identify land access mechanism (e.g. lease)



TECHNICAL STUDIES

- Assess the need for market assessments/surveys to inform revenue assumptions
- Quantify the project's capital and operational expenditure under different scenarios
- Quantify the project's revenues



MODELLING

- Develop a financial model that calculates the project's internal rate of return (IRR) and cost to LG and end users
- The financial model needs to conclude on affordability
- Economic modelling (if required) will quantify the project's economic benefits relative to its costs
- GHG modelling will quantify the project's emission savings

Insight: Market assessments or surveys may be required to inform revenue assumptions. Engagement with potential off-takers of treated water, fertilizer, electricity, etc. will be key to ensuring that revenue forecasts are realistic and defensible.



5.b. DEMONSTRATING FEASIBILITY

STEPS 4 to 6

PROJECT MANAGER

CONSULTANT TEAM (all experts)



CONFIRM FUNDING MODEL

- The financial model's outputs will confirm whether funding model is feasible
- Sensitivities test whether funding model remains feasible
- If funding model is not feasible, alternative funding models could be modelled



M&E CRITERIA

- M&E criteria need to be identified
- GHG emission savings may need to be quantified and reported
- Baseline data may be required



REPORTING

- Feasibility report needs to answer funders' questions
- Report should be concise and contain key findings
- Underlying technical reports should form annexures

Insight: Consultants often produce dense reports that have “thud value” while shorter punchier reports with annexures are far more likely to be read by funders and stakeholders. The project manager should work with the consultants to develop a report template that will be fit for purpose.



DETAILS ON STEP 6. SECURE FUNDING

PROJECT MANAGER

CONSULTANT TEAM (finance expert)

LG's CHIEF FINANCIAL OFFICER + EXECUTIVE

DFIs

NG



**PUBLIC OWNED &
OPERATED**

- Submit feasibility study to LG's CFO, Executive, and other involved parties (e.g., investors, National Government, DFIs, etc.)
- Present findings to Executive and obtain written approval for investment
- Present findings from feasibility study to external funders (DFIs, NG, etc.)
- Obtain written commitments from external funders
- Ensure that project's funding requirements are included in LG's budgets
- LG's CFO finalizes capital funding with LG's treasury and completes grant funding processes



**PUBLIC OWNED
+ PRIVATE SECTOR
OPERATED (SLA)**

- Submit feasibility study to LG's CFO, Executive, and other involved parties
- Present findings to Executive and obtain written approval to procure via a PPP
- Ensure that LG's future estimated payments to the private sector are included in the LG's budgets
- If relevant, present findings from feasibility study to external funders (DFIs, NG, etc.) to secure grants or concessional finance for the PPP

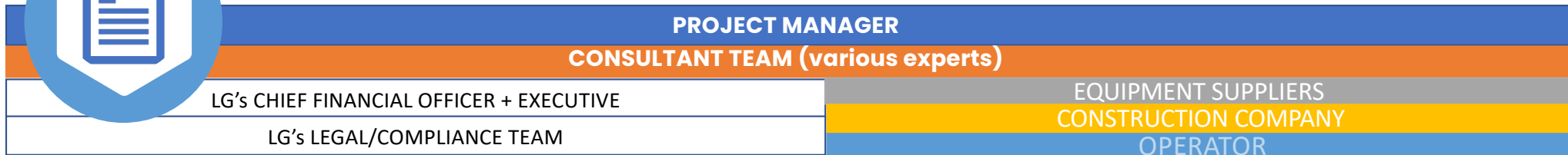


PPP

Insight: Grants from development partners or NG can be used to make any of the models more affordable to the LG.



DETAILS ON STEP 7. PROCUREMENT



PUBLIC OWNED & OPERATED

- Technical consultant develops designs
- Tender is issued to appoint an EPC contractor that contains clear evaluation criteria
- Consortia (equipment supplier & construction company) submit tenders
- Tenders are evaluated by the evaluation committee
- Preferred bidder is selected
- EPC contract is concluded



PUBLIC OWNED + PRIVATE SECTOR OPERATED (SLA)

- Technical consultant develops service specifications
- Tender is issued to appoint operator, containing clear evaluation criteria
- Operators submit tenders
- Tenders are evaluated and preferred bidder selected
- SLA is concluded



PPP

- Technical consultant develops output specifications
- Expression of Interest (EoI) is issued to shortlist consortia (equipment supplier, construction company & operator)
- Consortia are shortlisted by evaluation committee
- Request for Proposal (RFP) issued to shortlisted consortia with clear evaluation criteria
- Bids are evaluated by evaluation committee
- Preferred bidder is selected
- PPP Agreement is concluded



DETAILS ON STEP 8. MONITORING

PROJECT MANAGER

LG's CHIEF FINANCIAL OFFICER + EXECUTIVE

LG's LEGAL/COMPLIANCE TEAM



PUBLIC OWNED & OPERATED

- LG appoints an independent engineer to monitor the EPC contractor
- The independent engineer must verify performance after construction is completed
- Final payments are only made to the EPC contractor once performance is verified
- Performance guarantees/bonds are cancelled following final sign off from independent engineer



PUBLIC OWNED + PRIVATE SECTOR OPERATED (SLA)

- LG establishes SLA monitoring process or appoints consultant to undertake process
- LG processes payments to private sector based on performance



PPP

- SPV's lender appoints an independent engineer to monitor the EPC contractor
- Final payments are only made to the EPC contractor once performance is verified
- LG establishes internal process to ensure that SPV meets its obligations
- Monitoring process must track penalties and apply them to payments

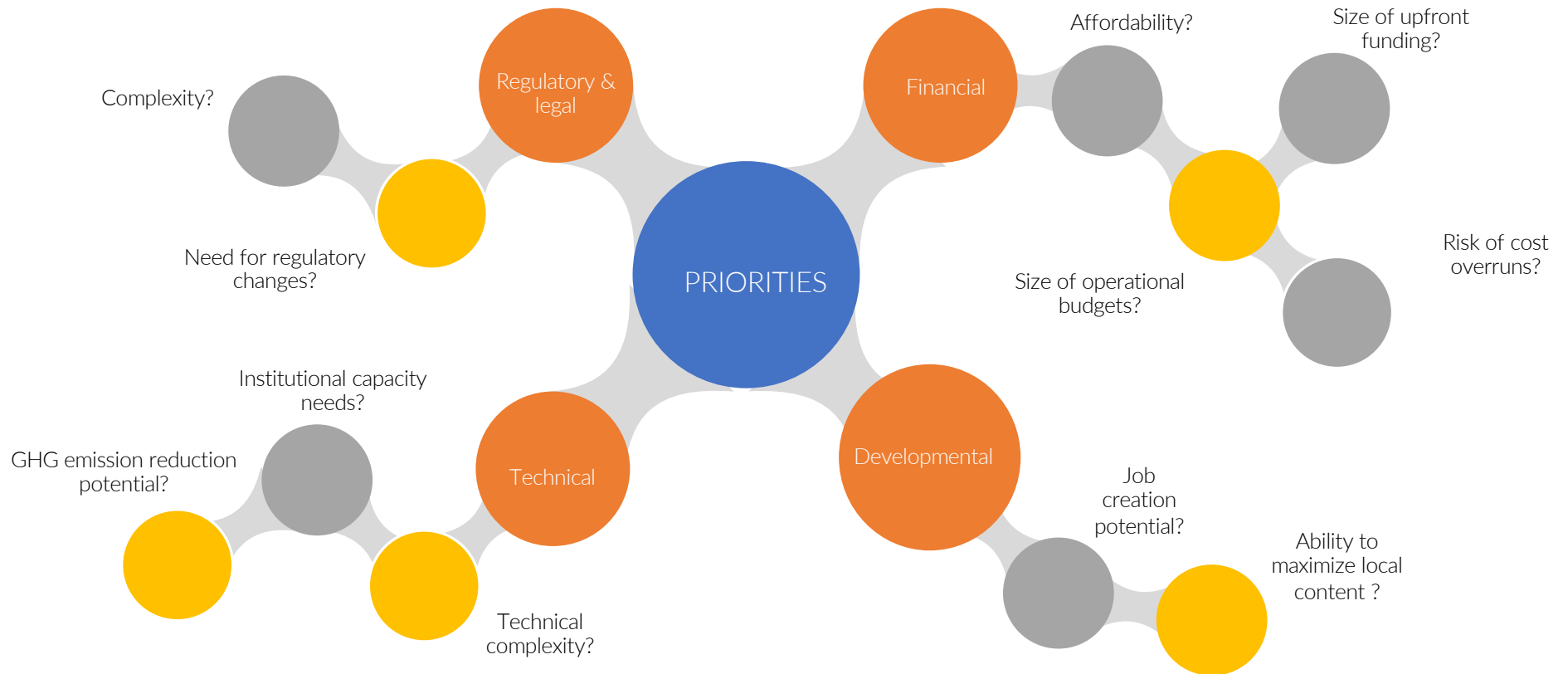
4.1 BREAKOUT & FEEDBACK SESSION 4



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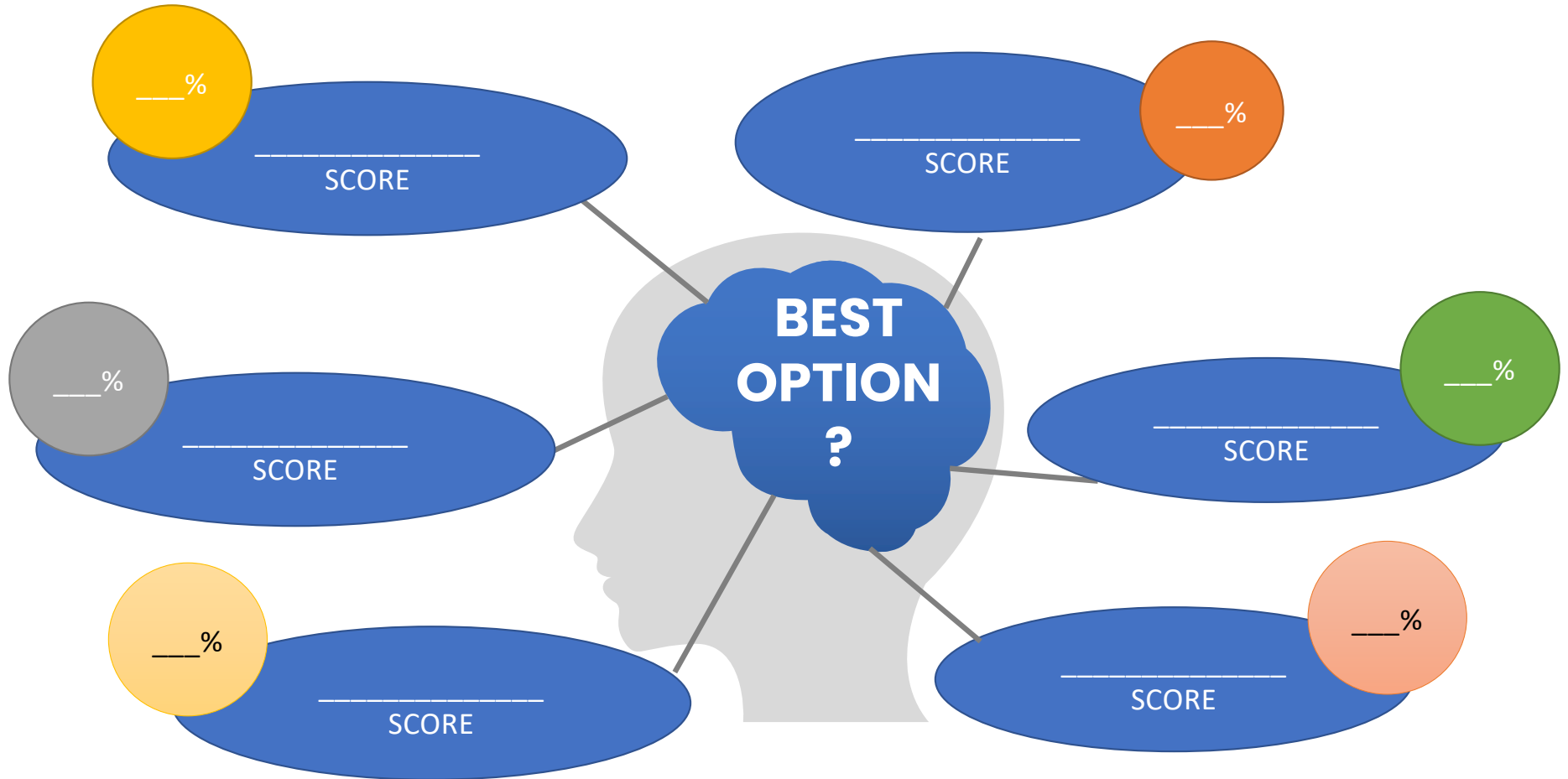
EXERCISE 4: DESIGN A MULTI-CRITERIA ASSESSMENT PROCESS

WHICH CRITERIA ARE LIKELY TO BE PRIORITIES FOR YOUR LG?



EXERCISE 4: MULTI-CRITERIA ASSESSMENT TEMPLATE

IDENTIFY WHICH CRITERIA SHOULD BE SCORED AND ASSIGN WEIGHTINGS



EXERCISE 4: FEEDBACK FORM

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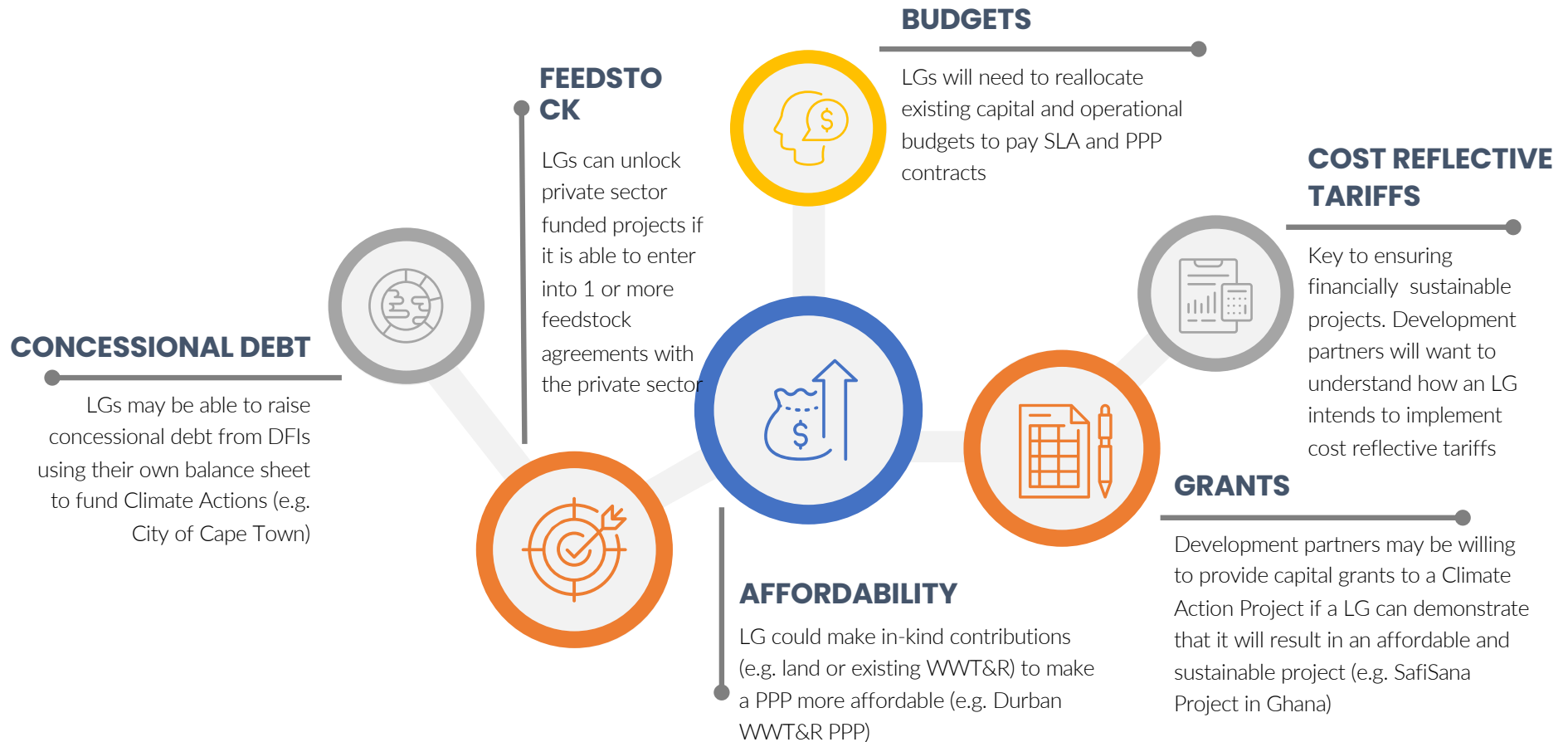
5.0 HOW TO IMPROVE THE ENABLING ENVIRONMENT



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in Sub-Saharan Africa

HOW LGs CAN UNLOCK WWT&R PROJECTS

GIVEN THE IDENTIFIED ISSUES AND CONSTRAINTS



LGs CAN LOBBY NG TO IMPLEMENT ENABLING CONDITIONS

TAX INCENTIVES

Tax incentives for Climate Actions will make projects more affordable to LGs and will attract investment from the private sector

NATIONAL WWT&R PROGRAMMES

A national programme can achieve economies of scale as LGs can access standardized designs, contracts, etc.

LEGISLATION

NG can put into place legislation that promotes WWT&R and private sector investment

CREDIT ENHANCEMENT

NG can structure a credit enhancement mechanism that will reduce the risk to lenders and investors in WWT&R projects

REGULATIONS

NG can put in place supporting regulatory and legal frameworks required for private sector participation

CLIMATE FACILITY APPLICATION

NG can submit an application to the GCF or NAMA Facility that would unlock concessionary finance across several LGs

PPP legislation

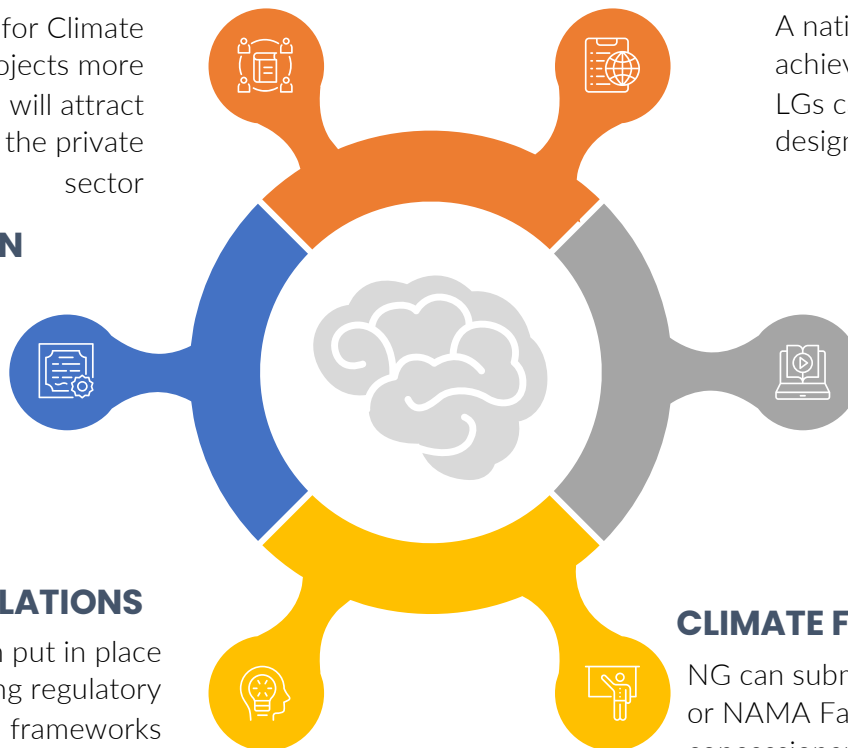
Legislation that protects foreign investors' rights and minimises expropriation and exchange control risks

Legislation that enables leasing

Legislation that allows reuse

Investment policies

Unsolicited bid policies



COUNTRY SPECIFIC ENABLING FACTORS

STRENGTHS

WEAKNESSES

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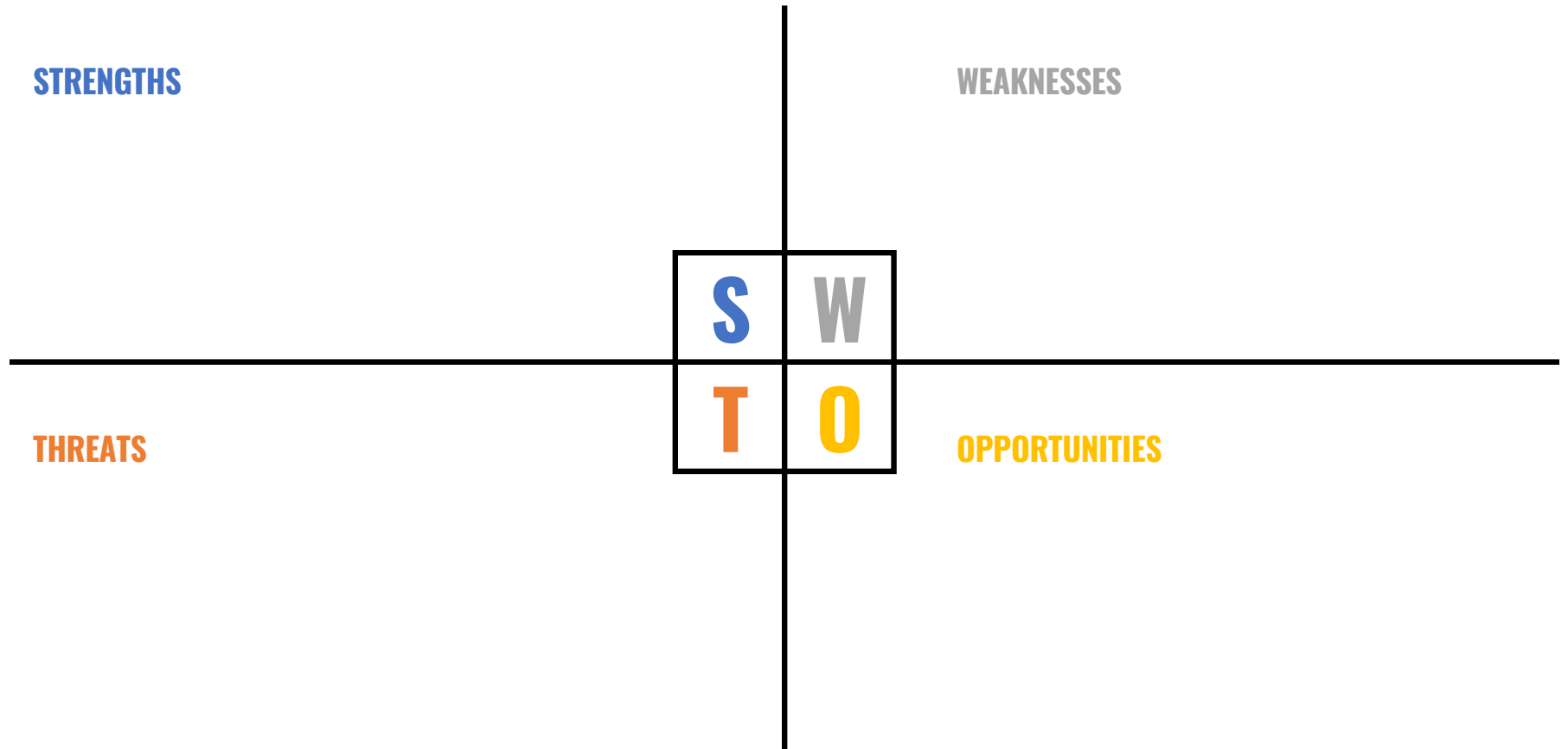
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THREATS

OPPORTUNITIES



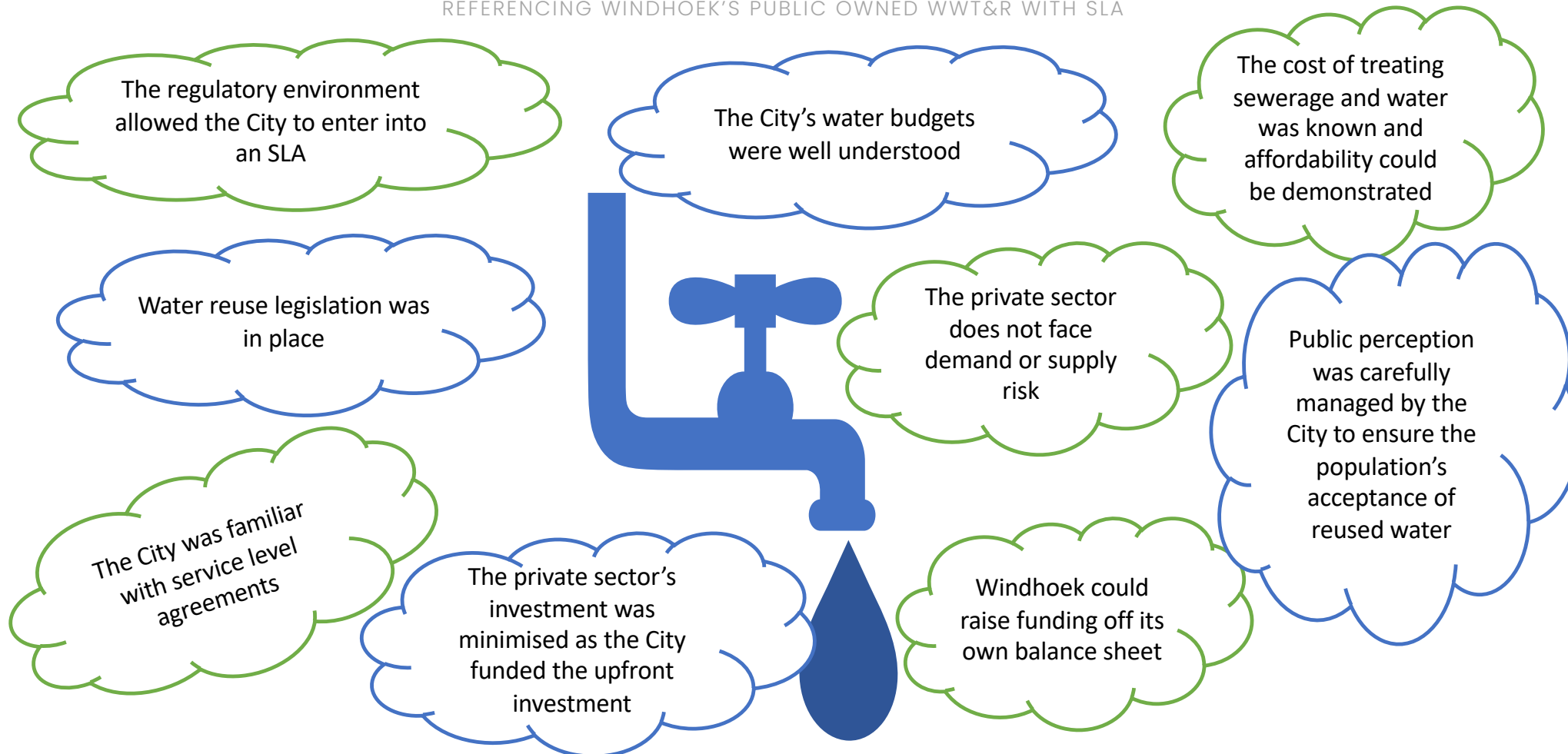
5.1 BREAKOUT & FEEDBACK SESSION 5



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EXERCISE 5: ENABLING FACTORS EXAMPLE

REFERENCING WINDHOEK'S PUBLIC OWNED WWT&R WITH SLA



EXERCISE 5: ENABLING FACTORS TEMPLATE

IDENTIFY WHICH ENABLING FACTORS ARE MOST FEASIBLE TO



EXERCISE 5: FEEDBACK FORM

[illegible]

6.0 WRAP UP



Covenant of Mayors
in Sub-Saharan Africa

ADDITIONAL TOOLS & INFORMATION



**How to Finance Roadmaps
for 10 Climate Actions**

**See COM SSA GlobalDF Climate Finance
(authored by GlobalDF; sponsored by GIZ, EU)
on GlobalDF website www.globaldf.org**



**6 Training Modules for LG
(including this one)**

**See other training modules
(authored by GlobalDF; sponsored by GIZ, EU)
on GlobalDF website www.globaldf.org**

For more information, please contact GlobalDF through the website contact form on www.globaldf.org

*If interested in supporting the use of the training modules and their improvement, please contact
Dr. Barbara Samuels, Executive Director of GlobalDF at barbara@globaldf.org*