The Covenant of Mayors in Sub-Saharan Africa

Training Module:

The Proactive Roles of Local Governments in Delivering Climate Actions:

Integrated Waste Management Projects

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in Sub-Saharan Africa

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OBJECTIVES

TRAINING MODULE ON INTEGRATED WASTE MANAGEMENT (IWM) PROJECTS

ASSESS RELEVANCE

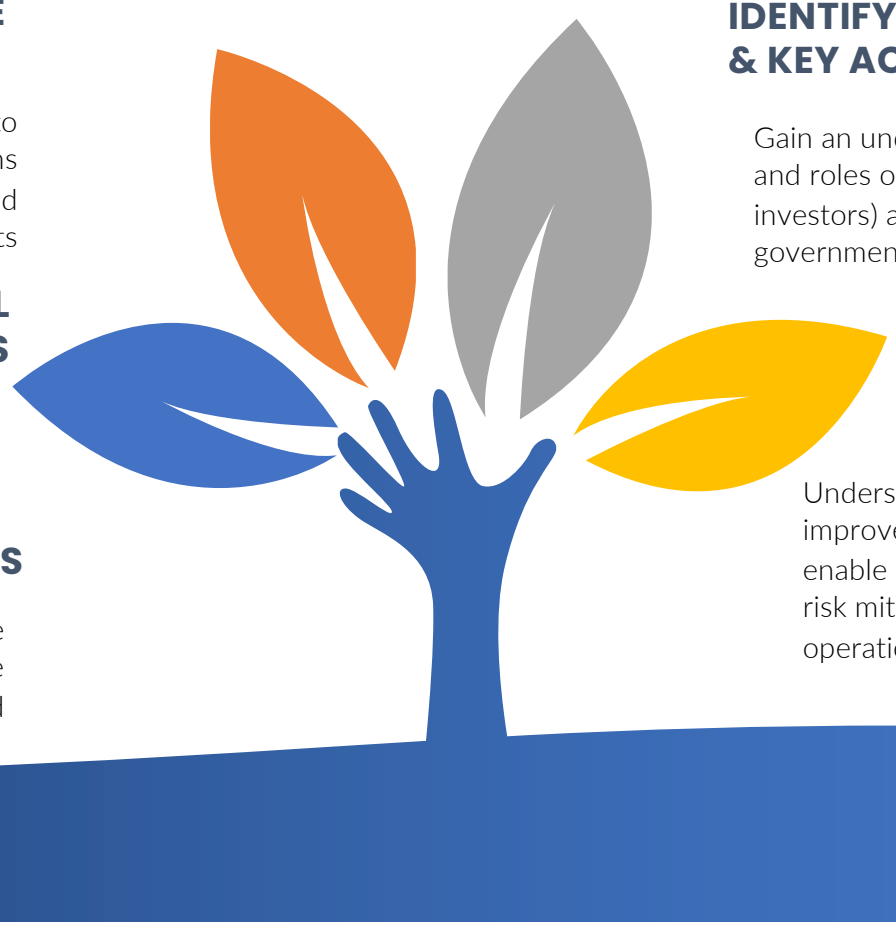
Help Local Governments (LGs) to understand their specific situations and how to identify benefits and challenges of IWM Projects

EXPLORE TECHNICAL SOLUTIONS

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

CASE STUDIES

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



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

AGENDA

1.0	**WHAT IS IWM?** Understanding benefits of IWM 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 IWM 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 an IWM 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 IWM?

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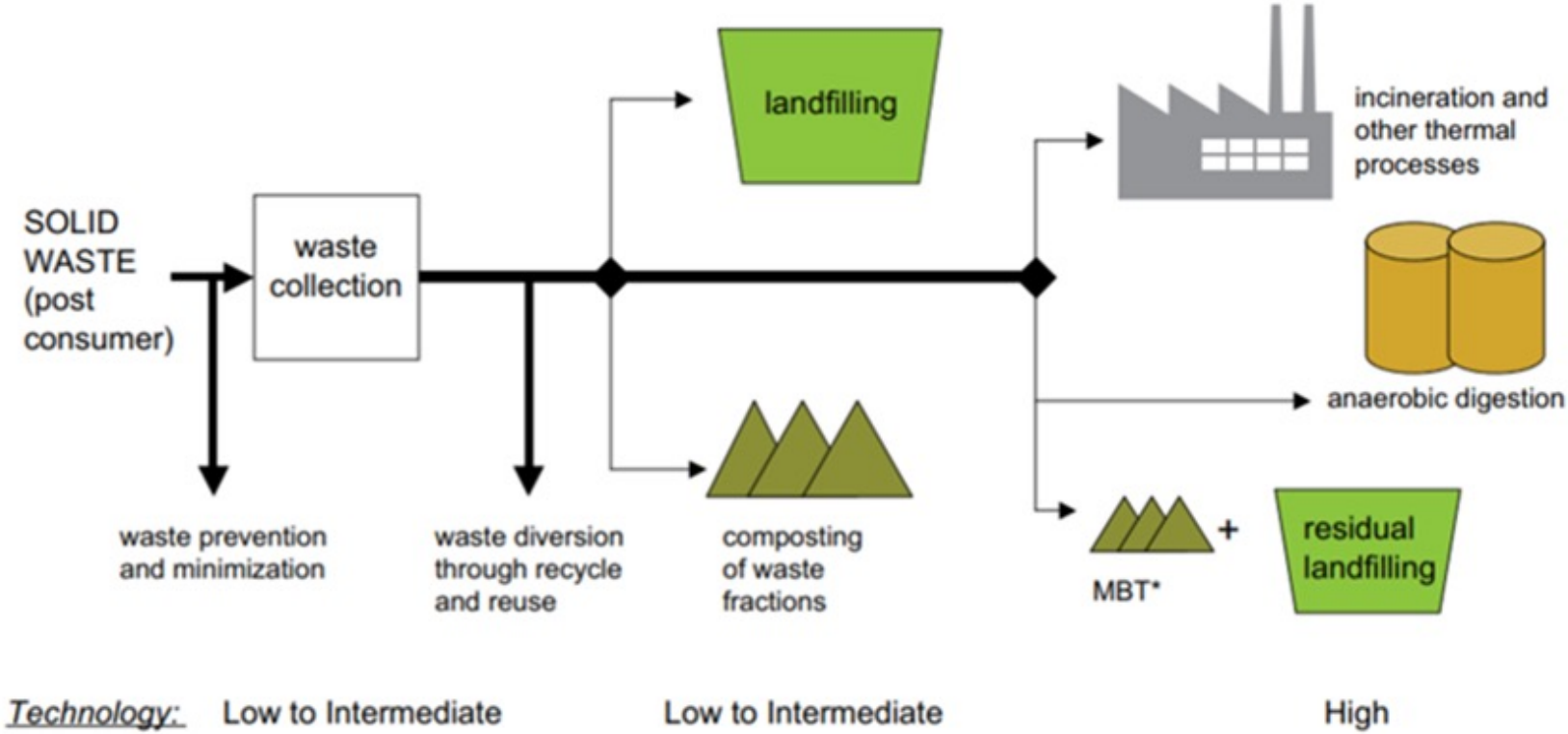
DEFINITION OF IWM PROJECTS

IWM involves the effective combination of several technologies and processes illustrated below to prevent, recycle, and manage solid waste in ways that most effectively protect human health and the environment



Source: *Intergovernmental Panel on Climate Change (IPCC) Waste Publication*, 2007

DIRECT BENEFITS OF IWM PROJECTS

SAVINGS

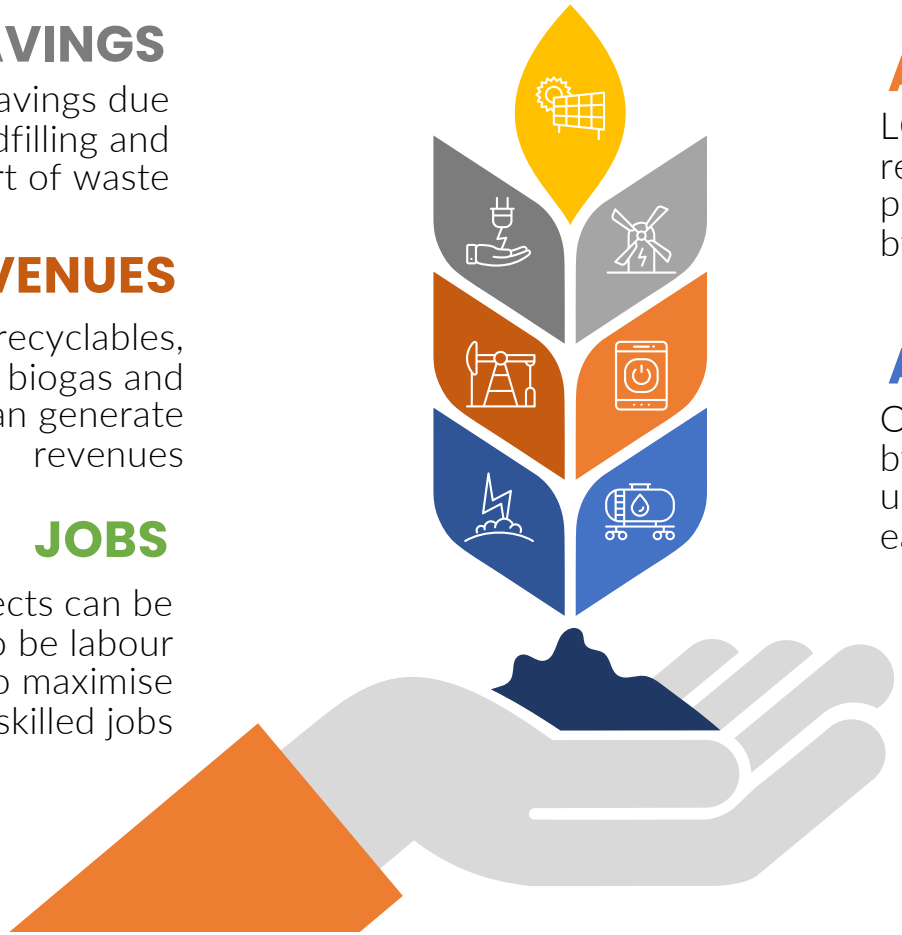
LGs can realise savings due to avoided landfilling and transport of waste

REVENUES

The sale of recyclables, electricity, biogas and fertilizer can generate revenues

JOBS

IWM Projects can be structured to be labour intensive and to maximise unskilled jobs



ACCESS TO ENERGY

LGs can access biogas or renewable energy produced and/or generated by an IWM Project

ACCESS TO FERTILIZER

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

What benefits were delivered by the Ouagadougou Recycling Project in Burkina Faso ?

CLIMATE, DEVELOPMENT & LG/ECONOMIC BENEFITS

CLIMATE

- Biogas/electricity produced can replace dirtier fuels
- Minimise transportation of waste to landfill (avoiding GHG emissions)
- Replace polluting waste burning practices
- Protection of surface and groundwater sources

DEVELOPMENT

- Less pressure on existing infrastructure
- Delayed spend on new infrastructure
- Creation of a circular economy
- Improved public health
- Downstream economic opportunities for entrepreneurs

LG/ECONOMIC

- Revenue from the sale of products
- Economic growth as a result of electricity generated
- Operational savings (avoided landfilling & transport)
- Access to electricity for social services
- Increased tax revenues

Opportunity: An IWM 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 CO_2 will be avoided for every US$ of funding provided.

UNPACKING CHALLENGES TO IMPLEMENTING IWM PROJECTS

WASTE VOLUMES

- Volumes increasing due to urbanization, but budgets are 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 waste
- In LGs that bill households, tariffs are not generally cost-reflective
- Gate fees at landfills either do not exist or are not cost reflective

BUDGETS

- LG funding not usually available as solid waste management 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 IWM 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 SLAs)
- Separation at source may be required to make many interventions viable

ASSESSING RELEVANCE TO YOUR LG

ASSESS TECHNICAL NEEDS, SERVICE DELIVERY MODELS

WASTE VOLUMES & CAPACITY

- What are your waste volumes and composition?
- Do you have enough landfill airspace for the foreseeable future?
- How seasonal are your waste volumes and composition?
- Can separation at source measures be implemented?

CURRENT SERVICE DELIVERY MODEL

- Who is currently responsible for collection and disposal and how are they paid?
- What is your LG's mandate?
- Can informal waste pickers be incorporated into a new system?

BUDGETS & TARIFFS

- What LG capital and operational expenditure budgets are available?
- Does your LG collect solid waste tariffs?
- Is the solid waste 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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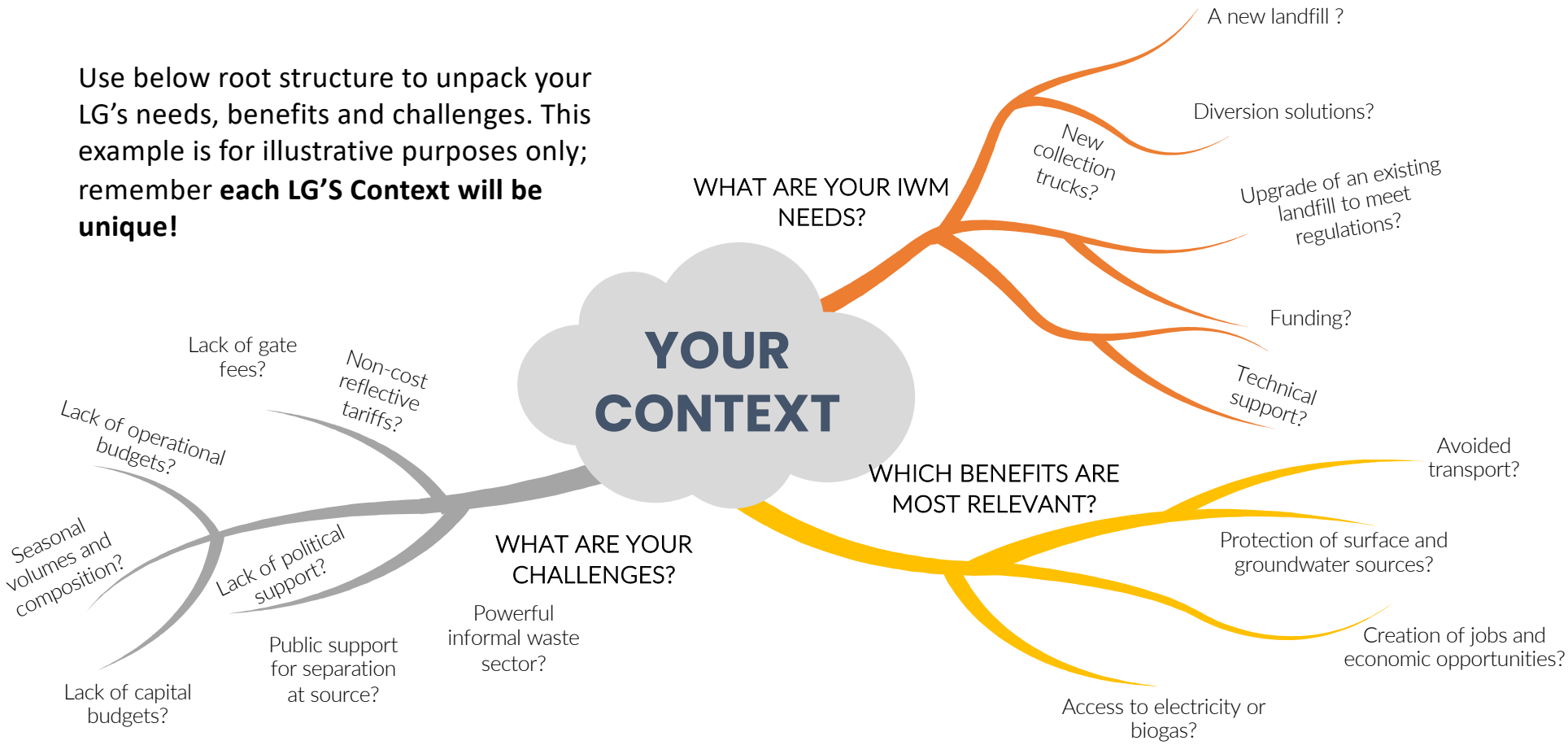
EXERCISE 1: IDENTIFY NEEDS, BENEFITS & CHALLENGES

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 IWM PROJECT

PROJECT MANAGER

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 solid waste treatment processes

CONSULTANT TEAM

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 IWM projects in SSA. The consultant team should comprise different skillsets, including engineers, environmental scientists, a financial expert, etc.

EQUIPMENT SUPPLIERS

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)

CONSTRUCTION COMPANY

Role:
Constructs infrastructure required for the project such as foundations for equipment and landfill sites

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)

OPERATOR

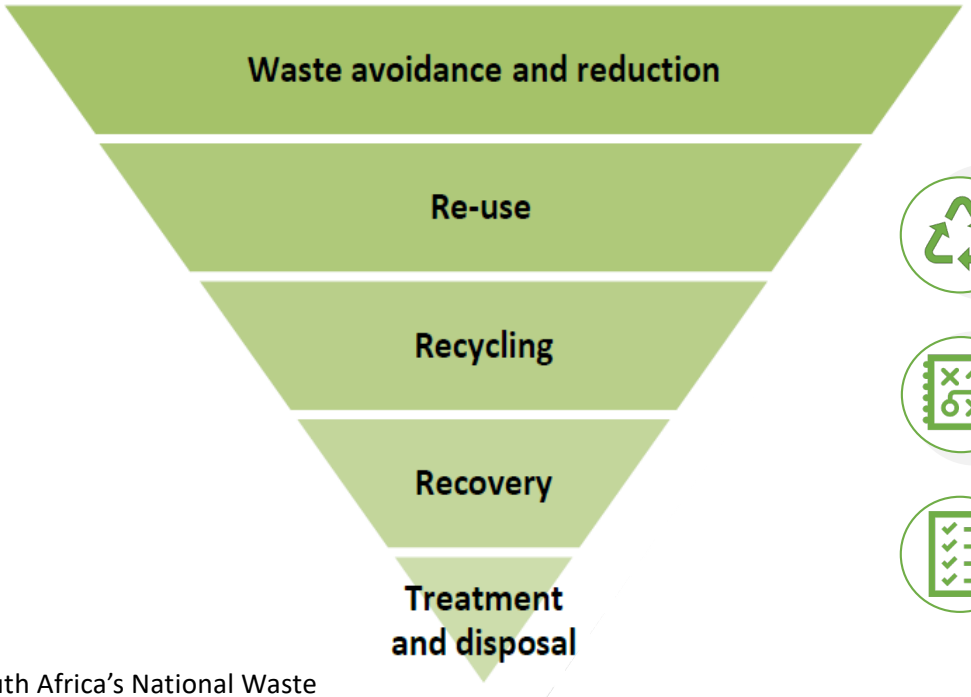
Role:
Operates and maintains the plant and markets by-products (if relevant) to buyers. Commits to meeting performance targets and is penalized for not doing so

Requirements:
Track record of running IWM 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

NATIONAL GOVERMENT

Role:
Ensures adherence to environmental and solid waste standards and regulations

THE WASTE HIERARCHY & IWM PLANS



Source: South Africa's National Waste Management Strategy

- A waste management hierarchy indicates an order for action to reduce and manage waste
- The hierarchy is normally developed by National Government as part of a National Waste Management Strategy
- LGs should develop an IWM plan that aligns with the national strategy and hierarchy

Insight: IWM Projects should advance waste management practices up the waste hierarchy (i.e., away from landfilling) towards reduction, reuse, composting, recycling and creating energy.

TREATMENT OPTIONS FOR LG SOLID WASTE STREAMS

MECHANICAL TREATMENT

- Various mechanical processes to separate recyclable materials, e.g. shredding, sorting, magnets
- Processes can be housed in a material recovery facility (MRF)

BIOLOGICAL TREATMENT

- Processes involving biological breakdown of the waste under controlled conditions
- Examples include anaerobic digestion (AD), in-vessel composting, open windrow composting vermicomposting, nutrient upcycling

MECHANICAL BIOLOGICAL TREATMENT (MBT)

- An MBT facility combines a sorting facility with a form of biological treatment such as composting or AD

THERMAL TREATMENT

- Requires high temperatures to process waste
- Includes incineration and advanced thermal treatment processes (ATT) such as pyrolysis and gasification

SOURCES & PRODUCTS GENERATED BY TREATMENT TYPE

Recyclable solid waste

MECHANICAL TREATMENT

- Metals, paper, plastics, glass etc.
- Plastic pellets

Food & organic waste, sludge

BIOLOGICAL TREATMENT

- Organic fertilizer
- Biogas
- Electricity

General solid waste

THERMAL TREATMENT

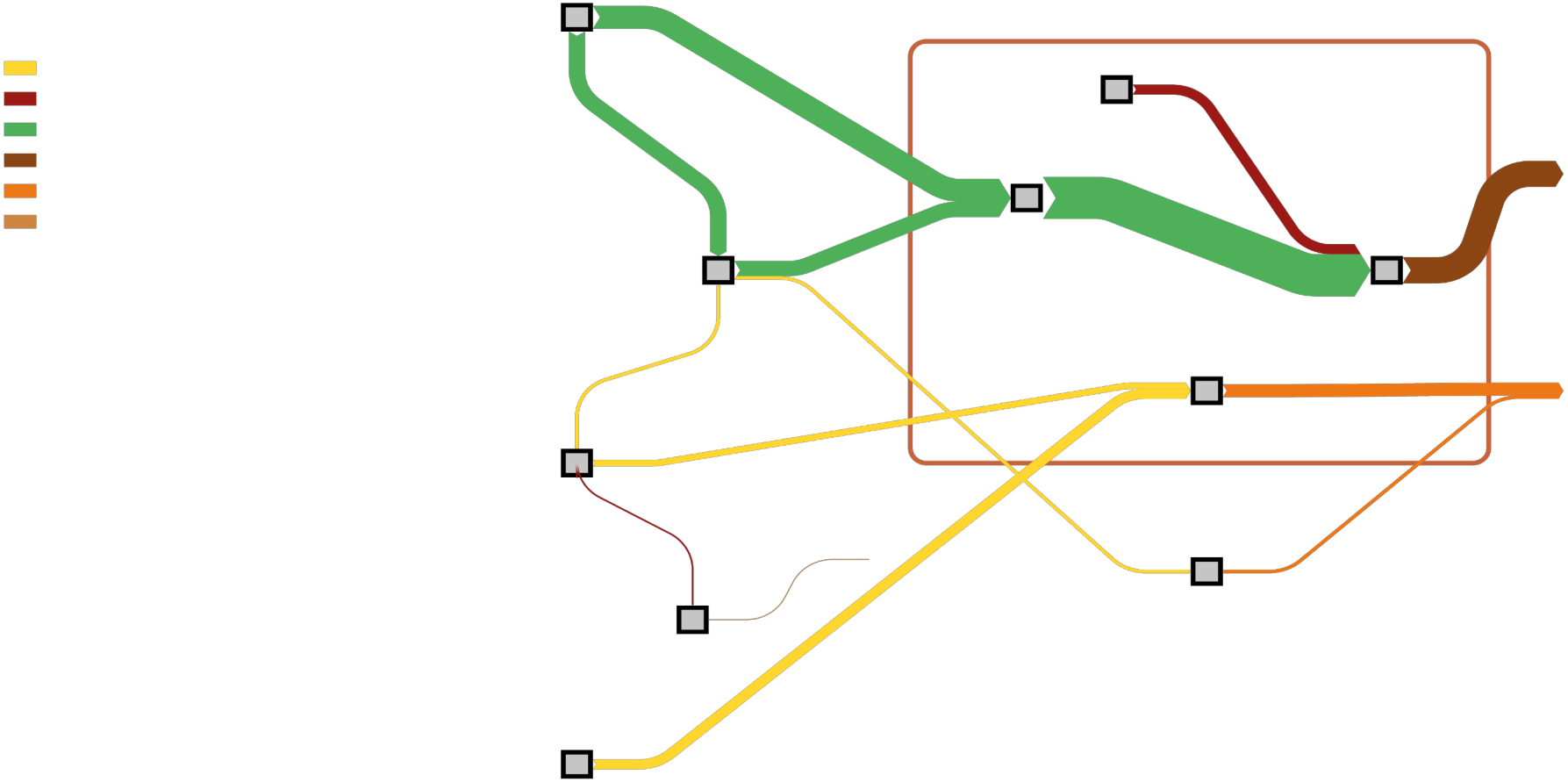
- Electricity
- Ash

HIG LEVEL COMPARISON OF TECHONOLOGIES

KEY ADVANTAGES VS. DISADVANTAGES

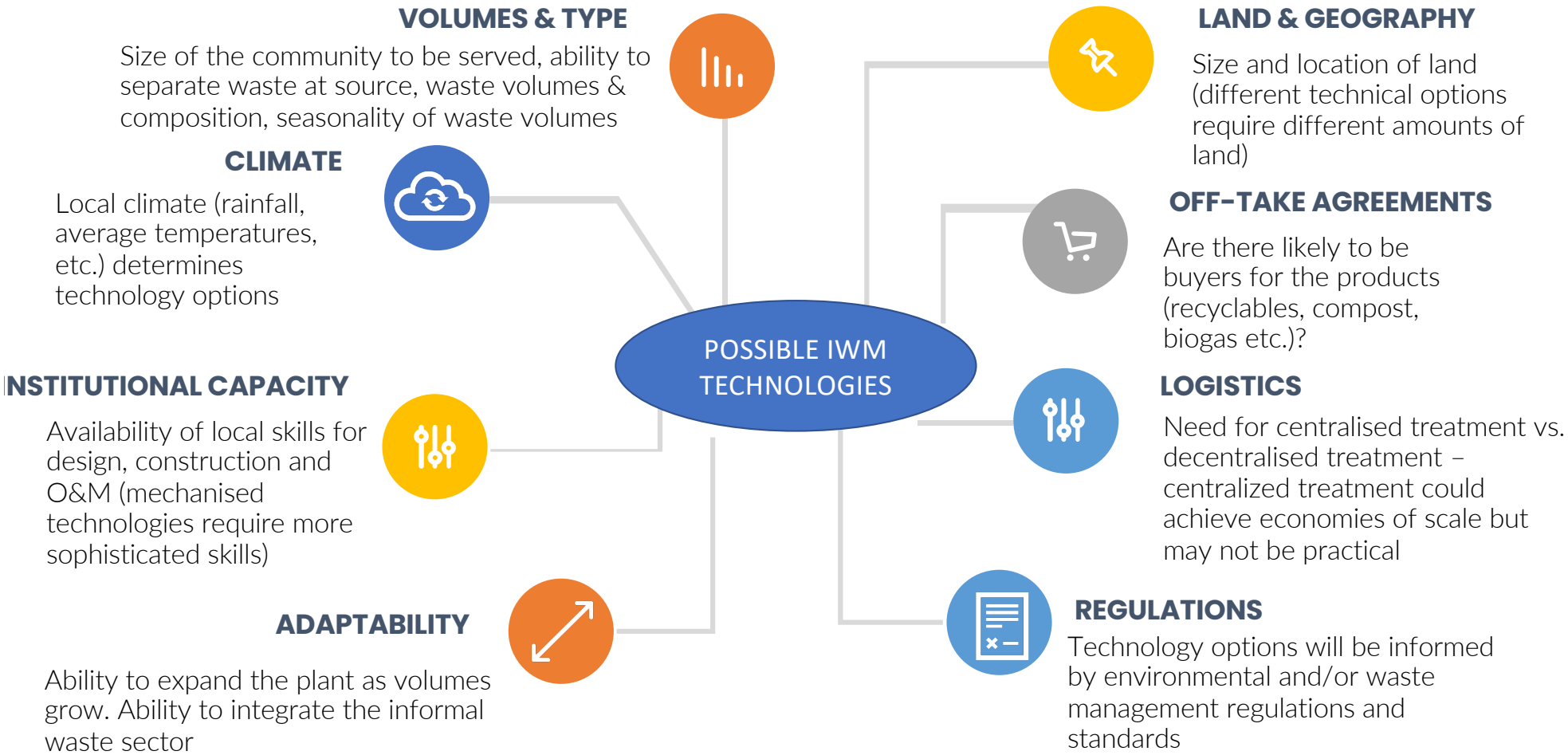
DESCRIPTIONS	KEY ADVANTAGES	KEY DISADVANTAGES
MECHANICAL	• Can offer significant job creation potential if structured appropriately • Potential for decentralized buy back centres	• May be reliant on volatile international market for recyclables • GHG emission savings per ton may not justify climate finance • Need to integrate informal waste pickers
BIOLOGICAL	• Most likely to attract climate finance given methane reduction potential • Potential for decentralized solutions such as ADs at markets	• Technically more complex than mechanical processes
THERMAL	• Decreases waste quantities	• Thermal projects do not generate enough revenue (via the sale of electricity) to cover costs • Substantial gate fees required to cover full costs • Unlikely to attract climate finance • Complex • Does not lend itself to decentralized solutions

IWM PLANNING (DIVERSION FLOWS)

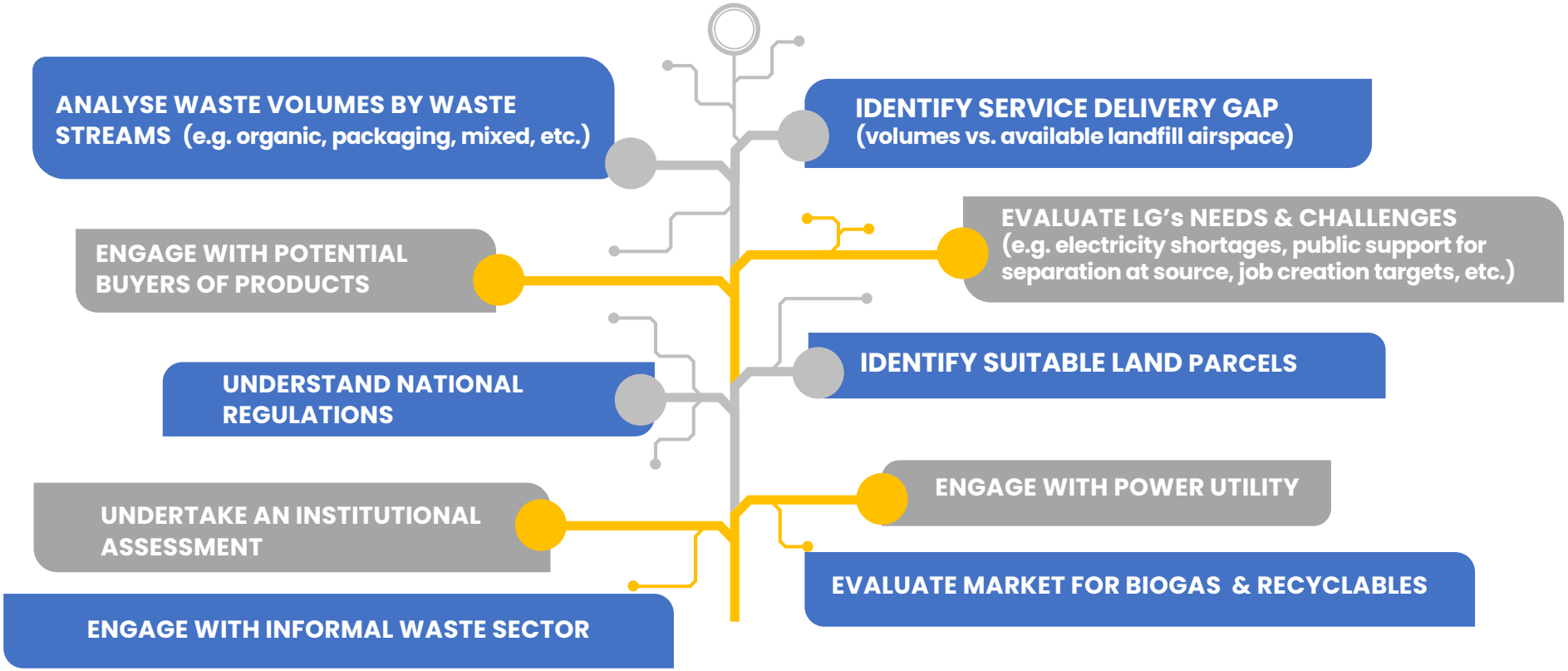


Source: JGA & RWA report commissioned by GIZ for Mogalakwena Municipality (South Africa)

KEY CONSIDERATIONS WHEN SELECTING A TECHNOLOGY



SPECIFIC LG ACTIONS THAT CAN INFORM TECHNOLOGY SELECTION



APPOINT A REPUTABLE EXPERIENCED CONSULTANT TO ASSESS TECHNICAL OPTIONS

2.1 BREAKOUT & FEEDBACK SESSION 2

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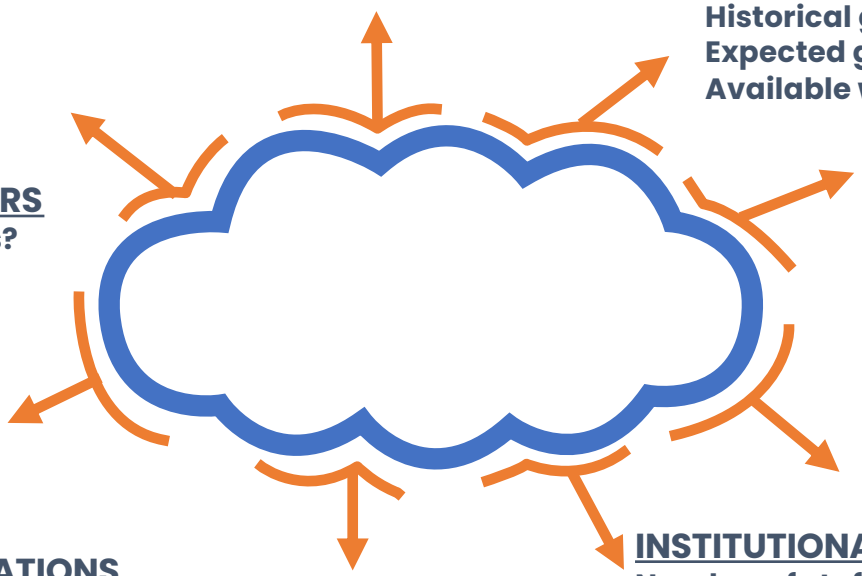
EXERCISE 2 – ASSESS TECHNICAL STATUS QUO & POSSIBLE SOLUTIONS

SITES

What land is available at the existing landfill sites?
What sites are available near generators?
Where are sites in relation to waste transfer stations?

VOLUMES

Annual volumes?
How predictable are volumes?
Has a waste characterization study been done?
Which are the biggest waste streams?
Historical growth rate?
Expected growth?
Available weighbridge data?



TREATMENT CAPACITY

Number of landfill sites?
Nature of landfill sites (formal/informal)?
Available airspace at landfills?
Do landfill sites meet national standards?
Number of waste transfer stations?
Existing recycling, composting facilities?
Treatment capacity of facilities?

POTENTIAL OFF-TAKERS

Large agricultural users?
Large recyclers?
Large manufacturers?
Large retailers?

INSTITUTIONAL CAPACITY

Number of staff in department/team?
Level of skills (unskilled, semi-skilled, skilled)?
Knowledge of mechanical, biological and thermal treatment technologies?

STANDARDS & REGULATIONS

What environmental standards do you have to meet?
Are you meeting the standards?
What changes are required to meet standards?

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 a LG and private sector service provider to operate & maintain a public owned IWM plant

PUBLIC PRIVATE PARTNERSHIP (PPP)

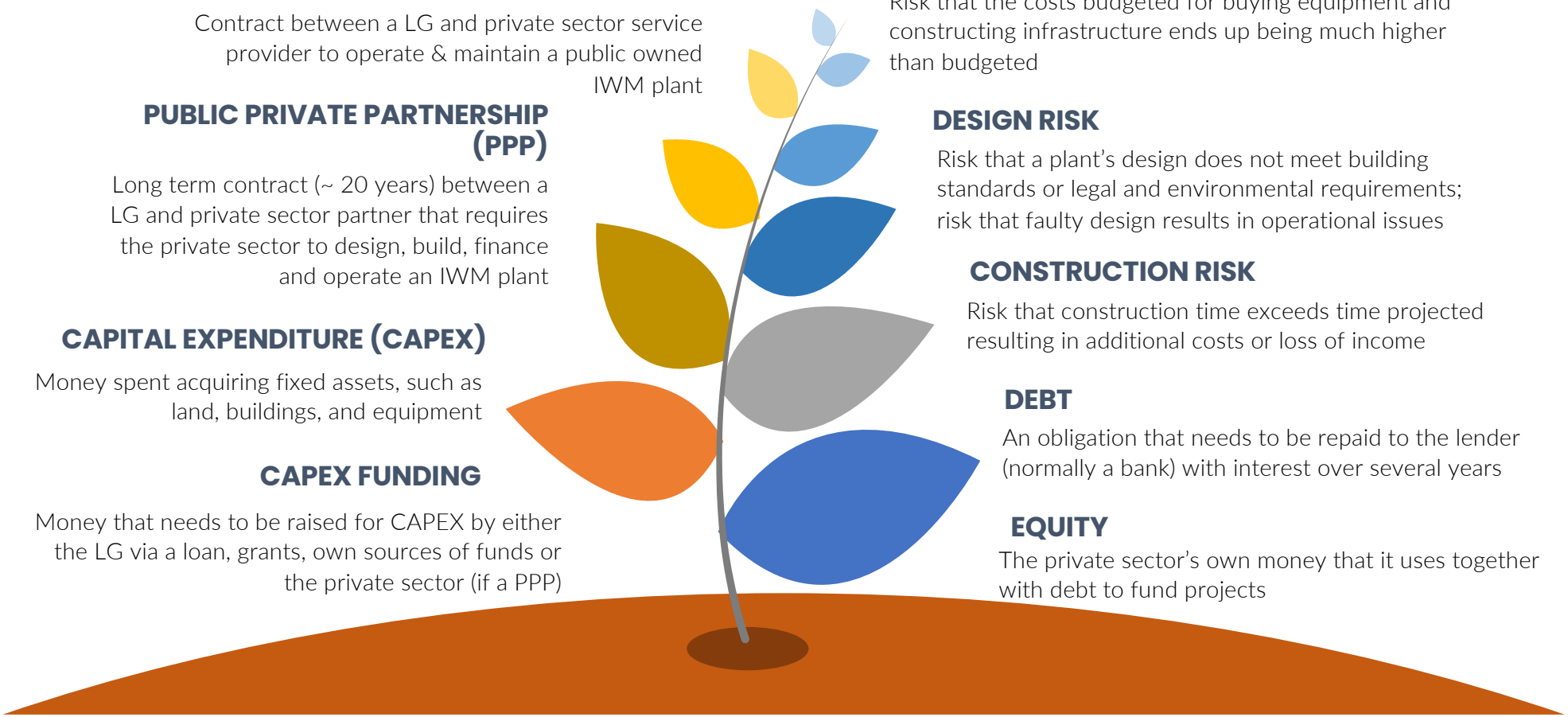
Long term contract (~ 20 years) between a LG and private sector partner that requires the private sector to design, build, finance and operate an IWM plant

CAPITAL EXPENDITURE (CAPEX)

Money spent acquiring fixed assets, such as land, buildings, and equipment

CAPEX FUNDING

Money that needs 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 ends 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 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 money that it uses together with debt to fund projects

DIFFERENT FUNDING MODELS & ALLOCATION OF ROLES

RESPONSIBILITIES OF LG & PRIVATE SECTOR UNDER EACH FUNDING MODEL

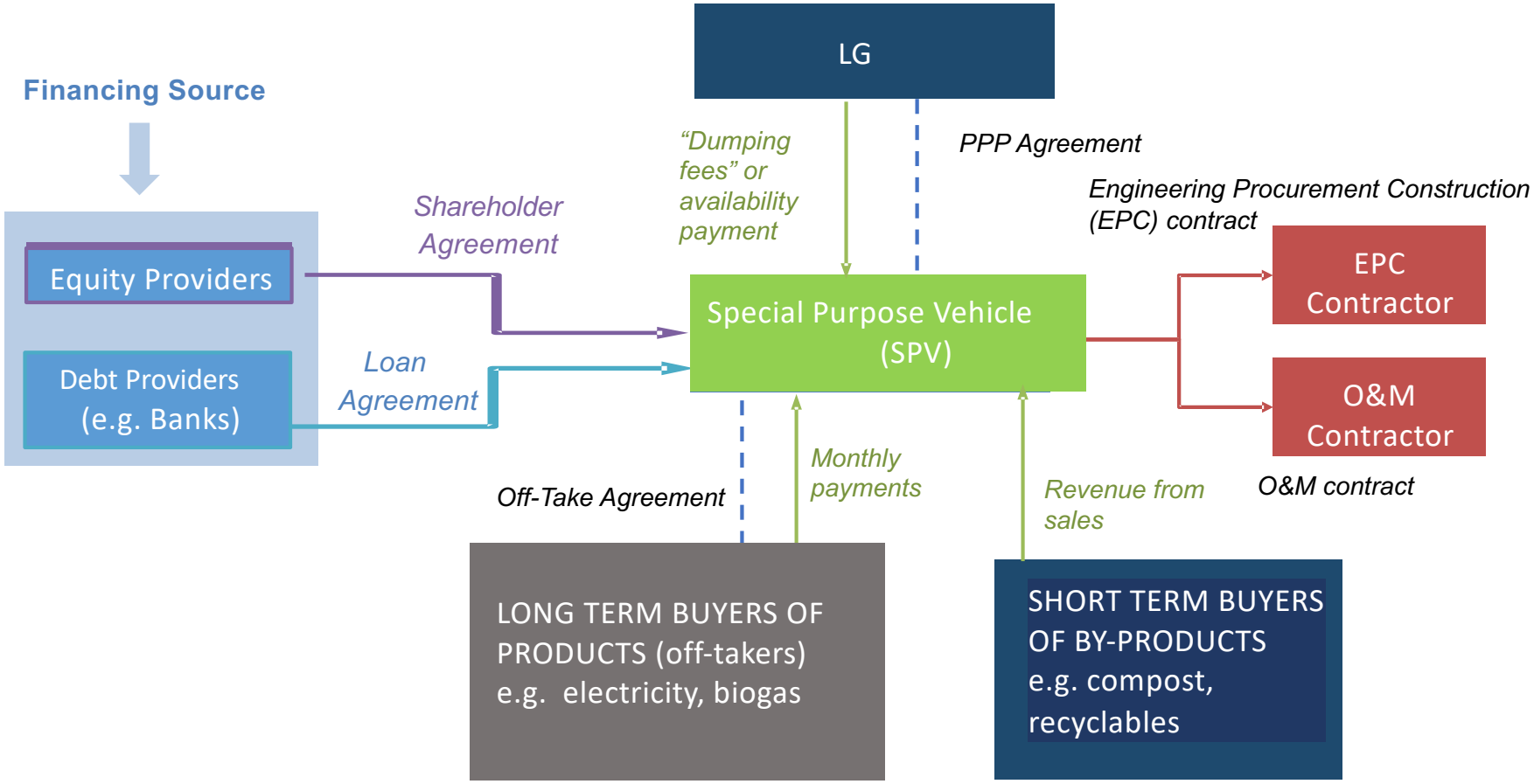
FUNDING MODELS *Role/responsibility*	**PUBLIC OWNED & OPERATED**	**PUBLIC OWNED & PRIVATE SECTOR OPERATED (SLA)**	**PPP (100% private)**	**PPP (minority LG ownership)**	**PRIVATE OWNED & OPERATED**
Design risk	LG		Private sector		
Construction risk & CAPEX cost overruns					
Funding of CAPEX	LG raises grants and debt		Private sector raises debt & equity	LG funds its share of equity. Private sector raises rest of funds	Private sector mobilises equity and debt
Grants	LG can raise grants to make funding model more affordable				Private sector may be able to secure grants
Operation	LG	Private sector			
Maintenance					
Sales & marketing					

COMPARISON OF FUNDING MODELS

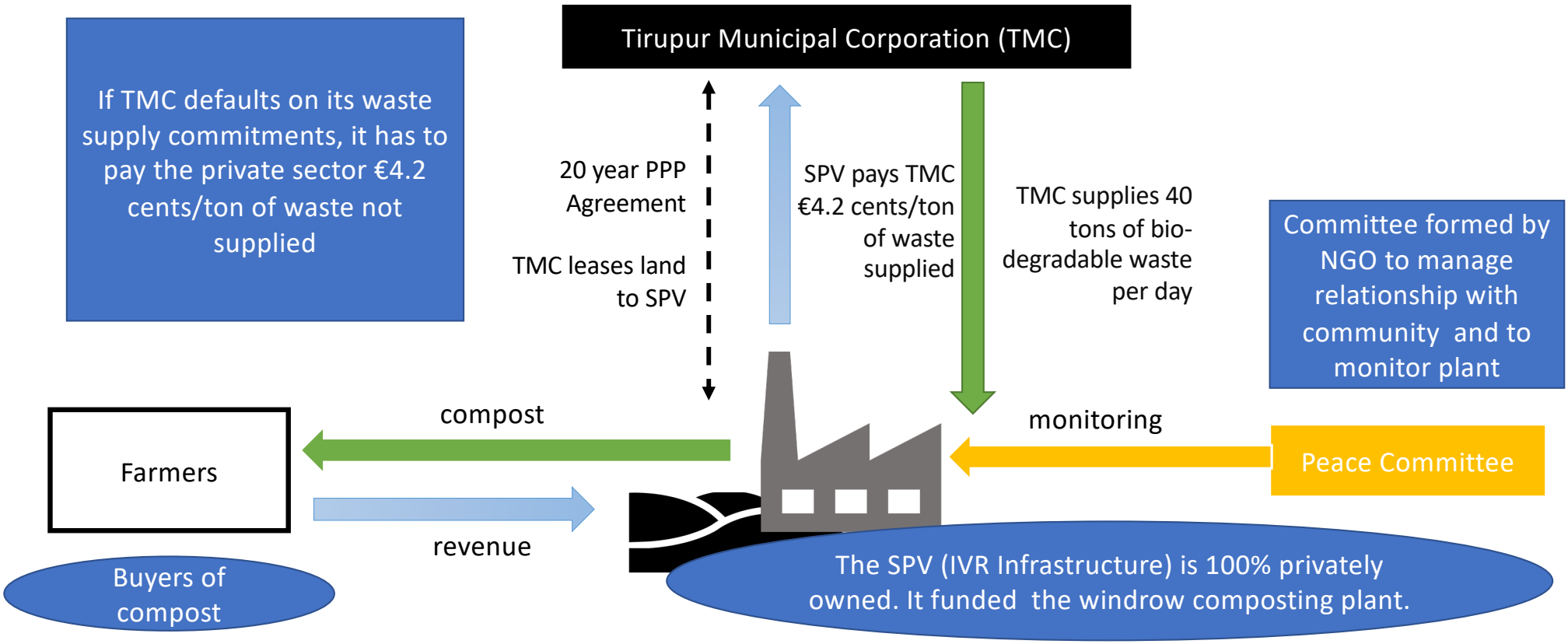
KEY ADVANTAGES VS. DISADVANTAGES

DESCRIPTIONS	KEY ADVANTAGES	KEY DISADVANTAGES
PUBLIC OWNED & OPERATED	• Procurement process is well known • LG controls asset	• 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)	• Project benefits from private sector skills (O&M, marketing, sales) • Procurement process is well known	• LG retains construction risks (capex overruns, design risk) • LG has to raise 100% of funding
PPP (100% private)	• Private sector brings technical know how • Private sector can raise funding for the project	• Prescribed PPP processes can be onerous and time consuming • Private sector capital can be expensive
PPP (minority LG ownership)	• Private sector brings technical know how • Private sector can raise majority of funding	• Prescribed PPP processes can be onerous and time consuming • LG must raise own share of funding • Private sector capital can be expensive
PRIVATE SECTOR OWNED & OPERATED	• No funding required from LG • LG could generate income/ achieve savings through feedstock agreement	• LG has no control over the project or timelines

TYPICAL PPP STRUCTURE FOR AN IWM PROJECT



INDIAN COMPOST PPP UNPACKED

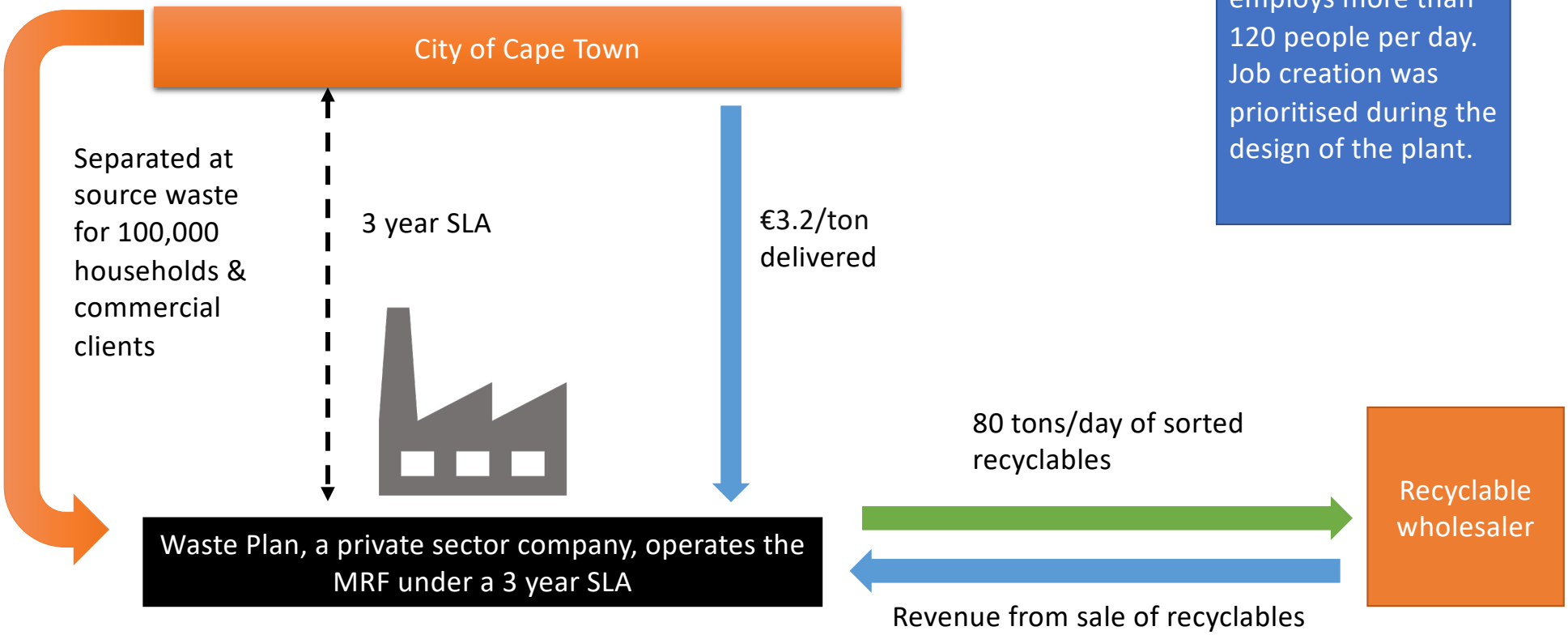


Insight: TMC bears risk under this project as it guarantees minimum waste volumes and is penalized if it does not deliver those volumes. However, instead of incurring landfilling costs, TMC earns income from selling the waste to the SPV.

CAPE TOWN'S PUBLIC OWNED MRF WITH SLA UNPACKED

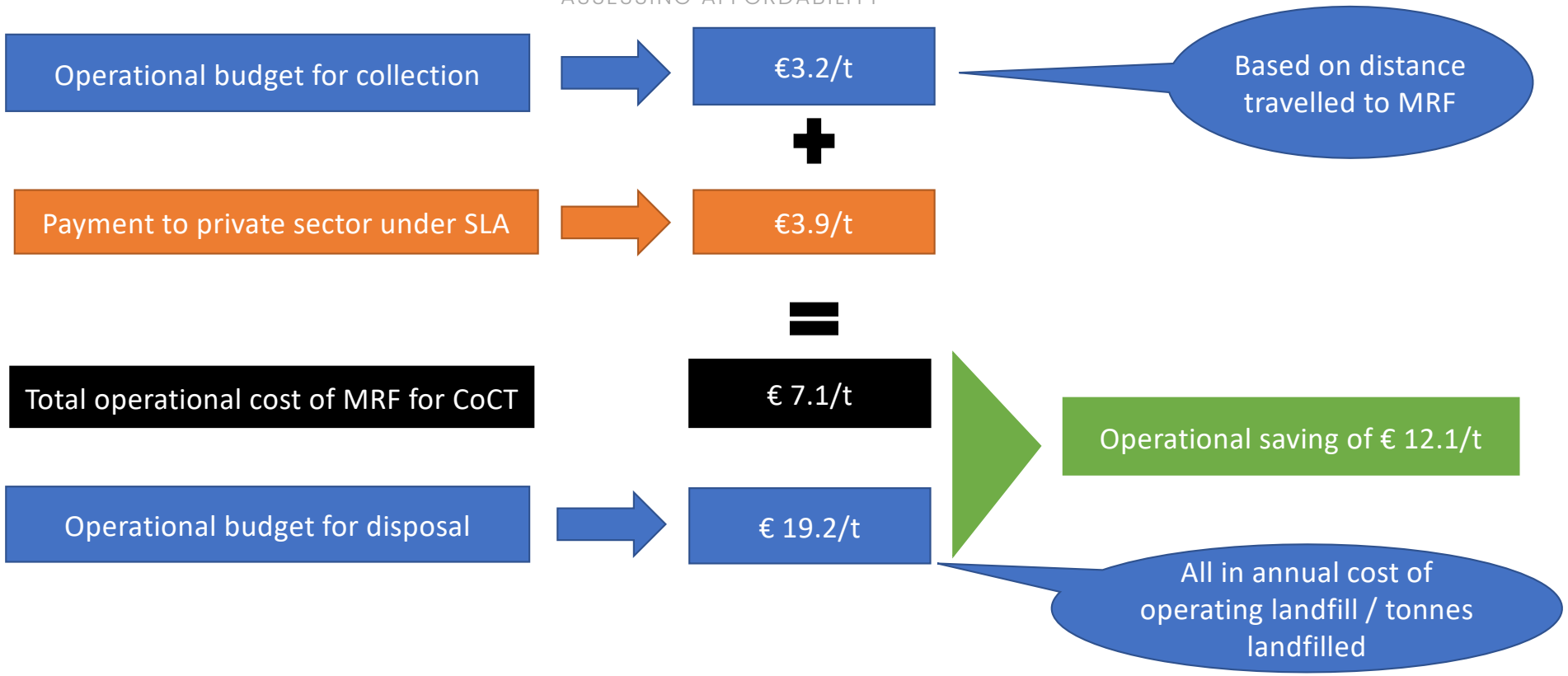
The City of Cape Town raised funds to construct the 100 ton/day public owned material recovery facility (MRF) as part of a larger multi-purpose waste management facility that handles 1,000 tons/day

The privately operated MRF employs more than 120 people per day. Job creation was prioritised during the design of the plant.



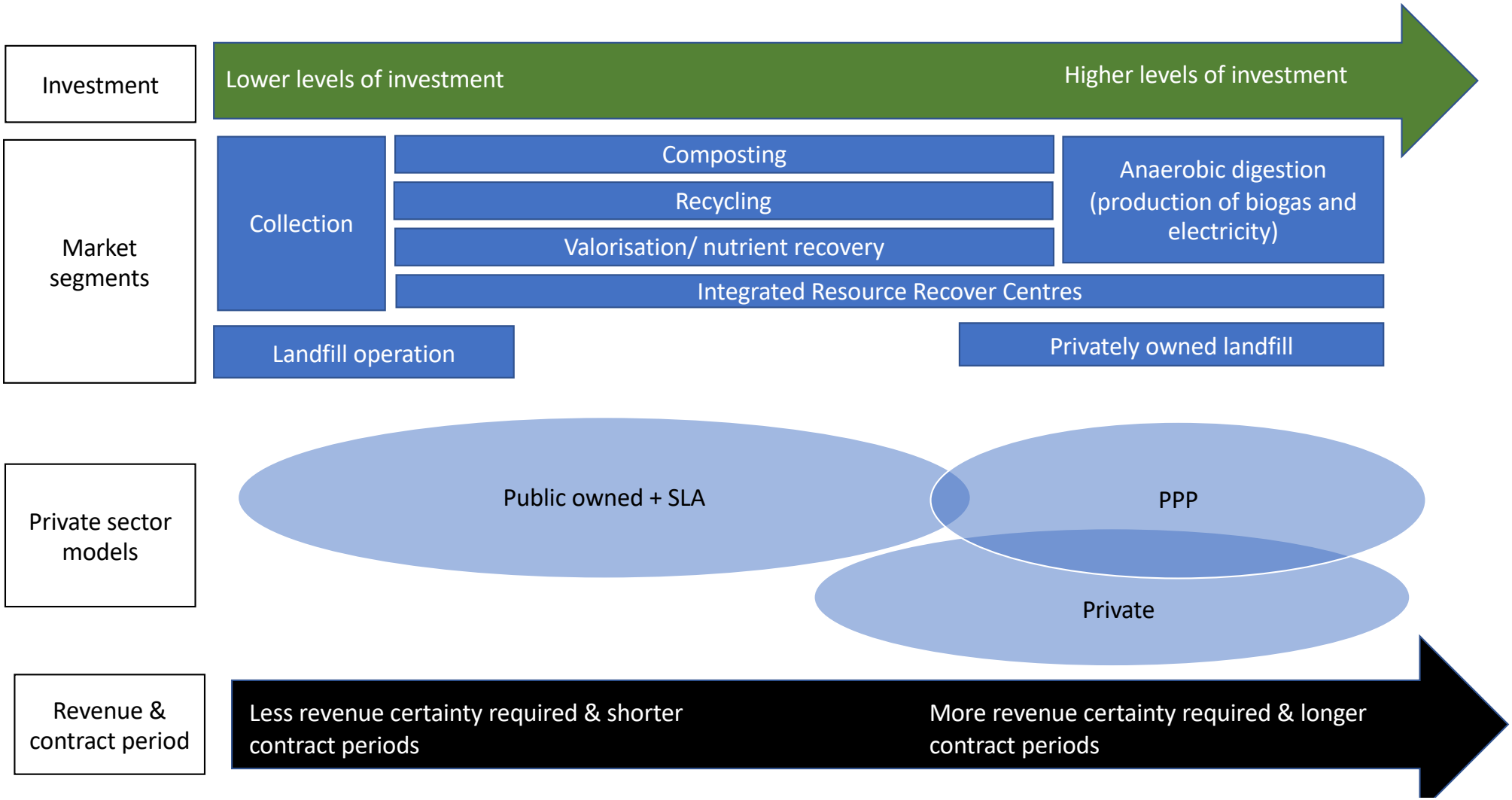
CAPE TOWN'S PUBLIC OWNED MRF WITH SLA

ASSESSING AFFORDABILITY



Insight: When evaluating the affordability of an IWM intervention, an LG needs to understand its budgeted spend per ton on landfilling as well as transportation to the site. To calculate these amounts, reliable weighbridge data is required to understand how many tons are landfilled as well as a detailed breakdown of its operational budget (per activity).

TYPICAL IWM FUNDING MODELS



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

REVENUE CERTAINTY

Key to understanding whether a project can support debt and private sector equity

ABILITY TO MANAGE ENVIRONMENTAL/SOCIAL RISKS

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

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

ACCESS TO CREDIT ENHANCEMENT

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

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 – IWM PROJECT

TIRUPUR MUNICIPAL PPP

REVENUE CERTAINTY

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

High (4.0 out of 5) score due to:

- Significant third-party revenues
- Predictability of supply

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:

- Guaranteed waste 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 (4 out of 5) score due to:

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

RISKS, MITIGATION & REVENUE FACTORS – IWM PROJECT

TIRUPUR MUNICIPAL PPP

TECHNOLOGY RISKS

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

Moderate (3 out of 5) score as:

- Technology was new and untested in 2000 when project was implemented

E&S RISKS

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			

Moderate (3.5 out of 5) score as:

- Project experienced resistance from surrounding community, but risk was eventually managed effectively

SUMMARY

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	N/A		
Average			

Generic funding mechanisms	**Grants (Govt + ODA)**	**Blended finance, impact investment**	**PPP + grant /blended**	**PPP, project bonds**
Climate funding mechanisms	**Grants**	**Concessionary loans + grants**		**Green bonds, equity**

Overall score of 4.0 indicates that project could be developed via a PPP and that it did not require blended finance (concessionary loans, grants)

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 risk/credit guarantee	×	×	×		
Export credit guarantee	×	×	×	×	
Currency risk mitigation (e.g., swaps, TCX)					×

LESSONS LEARNT FROM EXISTING IWM PROJECTS

1 FEEDSTOCK GUARANTEES

Indian Compost PPP – Minimum feedstock guarantees provided by the LG significantly reduced the risk for its private sector partner who was willing to fund 100% of the project's upfront investment.

2 CLIMATE FINANCE CAN BE UNLOCKED FOR THE DEVELOPMENT OF IWM PROGRAMMES ACROSS MULTIPLE LGs

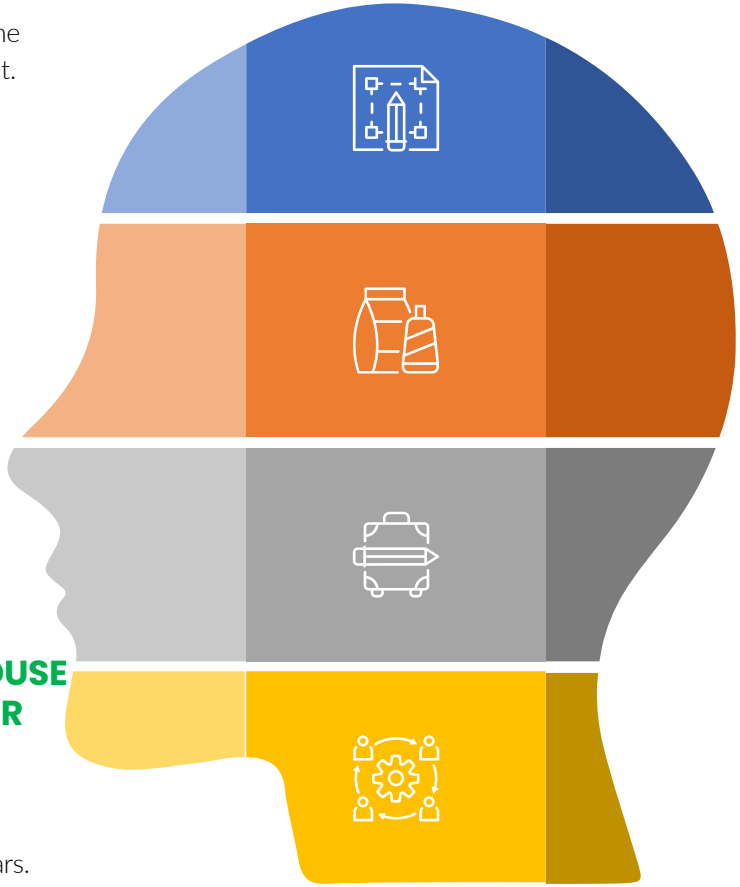
South Africa's Waste Diversion Program – Successfully accessed $1.5 million of project preparation funding from the GCF and is in the process of applying for $50 million of project funding.

3 PROJECTS CAN MADE MORE ATTRACTIVE TO THE PRIVATE SECTOR IF UPFRONT INVESTMENT IS MINIMISED & CONTRACT PERIODS ARE MAXIMISED

Indian Compost PPP – The private sector's upfront investment was minimized by making LG land available under a lease arrangement. A 20-year contract allows enough time to recoup investment.

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

Accra IWM Contract – A private company has been appointed to provide IWM services to Accra. These services include recycling and waste to energy projects with contract periods of up to 25 years.



3.1 BREAKOUT & FEEDBACK SESSION 3

Covenant of Mayors
in Sub-Saharan Africa

EXERCISE 3: APPLY TYPOLOGY TO YOUR IWM PROJECT

EXERCISE 3: TYPOLOGY TOOL TEMPLATE

Project fundamentals	Score (0 to 5)	Clarification	Score guide
Revenue certainty			
Cost recovery through user payments/savings		Will dumping fees paid by LG or waste collectors to the project 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, recyclables, 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 to 3rd parties or can the LG make 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 offtakers that are large, profitable businesses (factories, farms etc)?	
Predictability of demand		Is demand for the project's products (fertilizer, biogas etc.) likely to be predictable?	
Predictability of supply		Is the supply of solid waste 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 an IWM 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
in Sub-Saharan Africa

OVERVIEW OF PROJECT DEVELOPMENT LIFECYCLE

EIGHT STAGES OF DEVELOPMENT

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. Identity a preferred option.

4. EARLY PROJECT FINANCE

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

5. DEMONSTRATE FEASIBILITY

Conduct detailed technical and financial studies to conclude on affordability

6. SECURE FUNDING

Formalize funding commitments with legal contracts or via LG/NG budgets

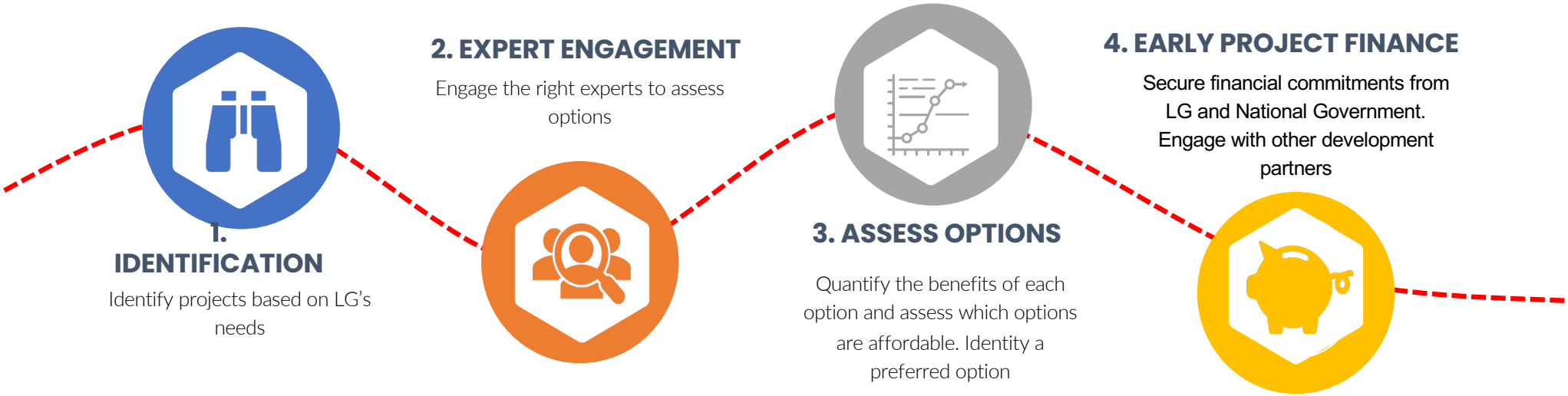
7. PROCUREMENT

Appoint private sector partner (if PPP) via tender process. Procure EPC contractor if public owned, and SLA partner if operated by the private sector.

8. MONITORING

Monitor performance of private sector against contractual obligations. Report on KPIs.

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



PROJECT MANAGER

CONSULTANT TEAM (technical and financial experts)

LG's CHIEF FINANCIAL OFFICER

NG

DFIs

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

5. DEMONSTRATE FEASIBILITY

Conduct detailed technical and financial studies to conclude on affordability

6. SECURE FUNDING

Formalize funding commitments with legal contracts or via LG/NG budgets

7. PROCUREMENT

Appoint private sector partner (if PPP) via tender process. Procure EPC contractor if public owned, and SLA partner if operated by the private sector

8. MONITORING

Monitor performance of private sector against contractual obligations. Report on KPIs

PROJECT MANAGER

CONSULTANT TEAM (various experts)

LG's CHIEF FINANCIAL OFFICER + EXECUTIVE

NG

DFIs

LG's LEGAL/COMPLIANCE TEAM

EQUIPMENT SUPPLIERS

CONSTRUCTION COMPANY

OPERATOR

DETAILS ON STEP 1. IDENTIFICATION

The Project Owner needs to unpack the LG's IWM needs and status quo by answering the following questions:

COST STRUCTURES

What costs are incurred by the public and private sectors to transport solid waste and to dispose of it?

VOLUMES

What are current solid waste volumes and streams?

SITES

Identify potential sites and their proximity to solid waste generators/collectors

REVENUE MECHANISMS

What fees are paid by households/businesses?

EXISTING PROGRAMS

Which programs or standardised designs/contracts can the LG access?

BUDGETS

What budgets are available to implement an IWM project and to appoint consultants?

POSSIBLE FUNDING MODELS

Which funding models are supported by regulations?

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.

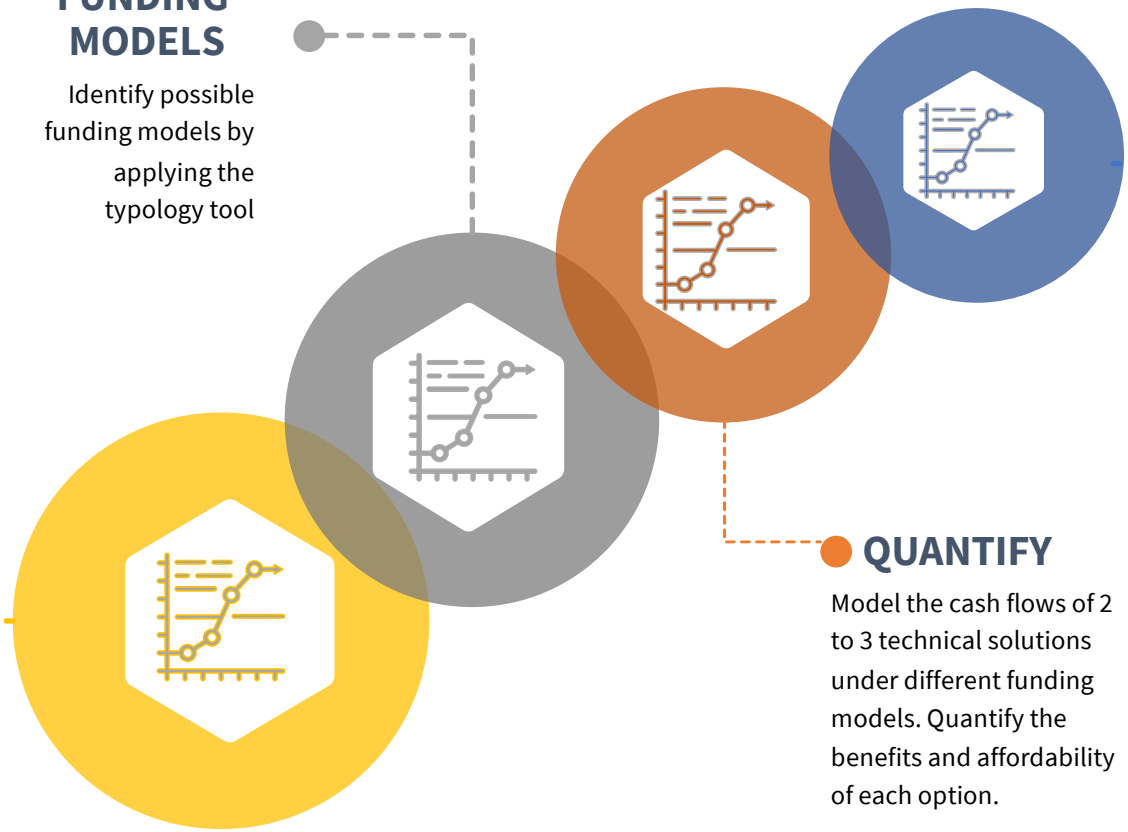
DETAILS ON STEP 3. ASSESS OPTIONS

TECHNICAL SOLUTIONS

Identify most viable technical solutions based on volumes, waste streams, seasonality of waste streams etc.

FUNDING MODELS

Identify possible funding models by applying the typology tool



QUANTIFY

Model the cash flows of 2 to 3 technical solutions under different funding models. Quantify the benefits and affordability of each option.

RANK

Use a multi-criteria assessment approach to rank options and to identify the preferred option.

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

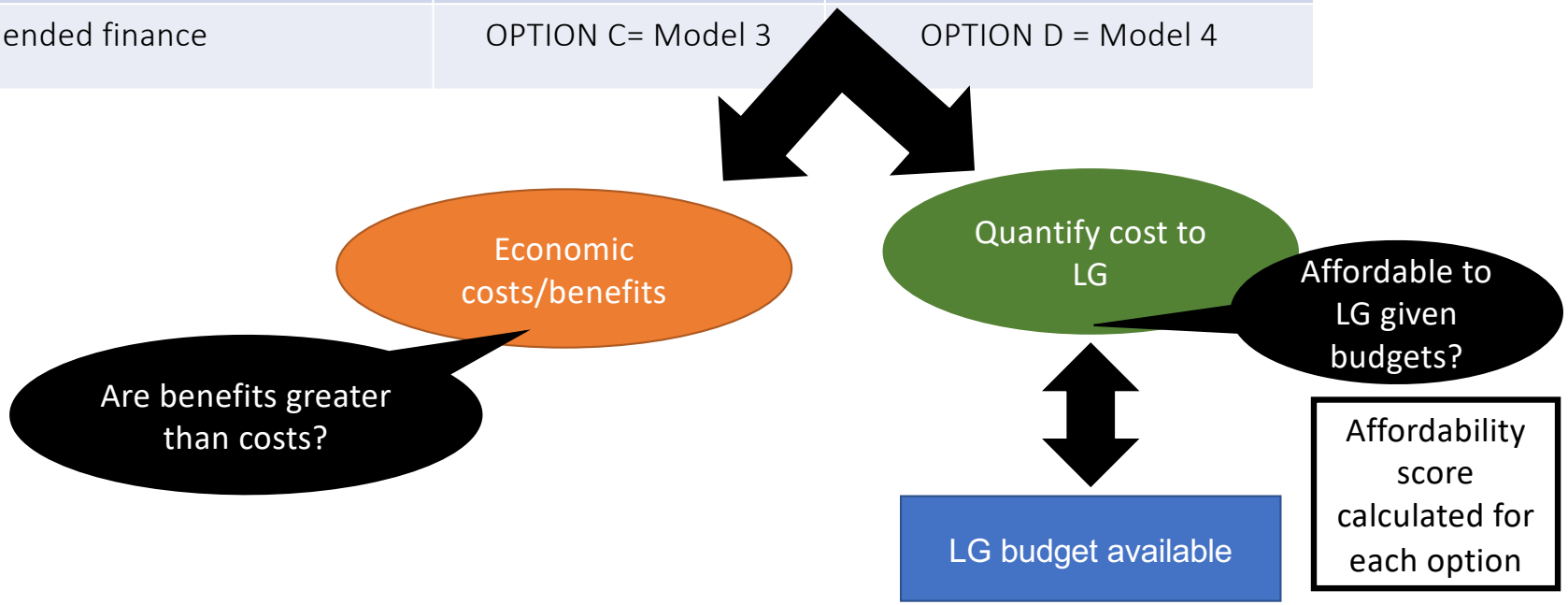
Identify funding models based on the project's revenue and risk profiles

Eliminate funding models that are not supported

CONFIRM MOST SUITABLE FUNDING MODELS

3b. QUANTIFYING OPTIONS

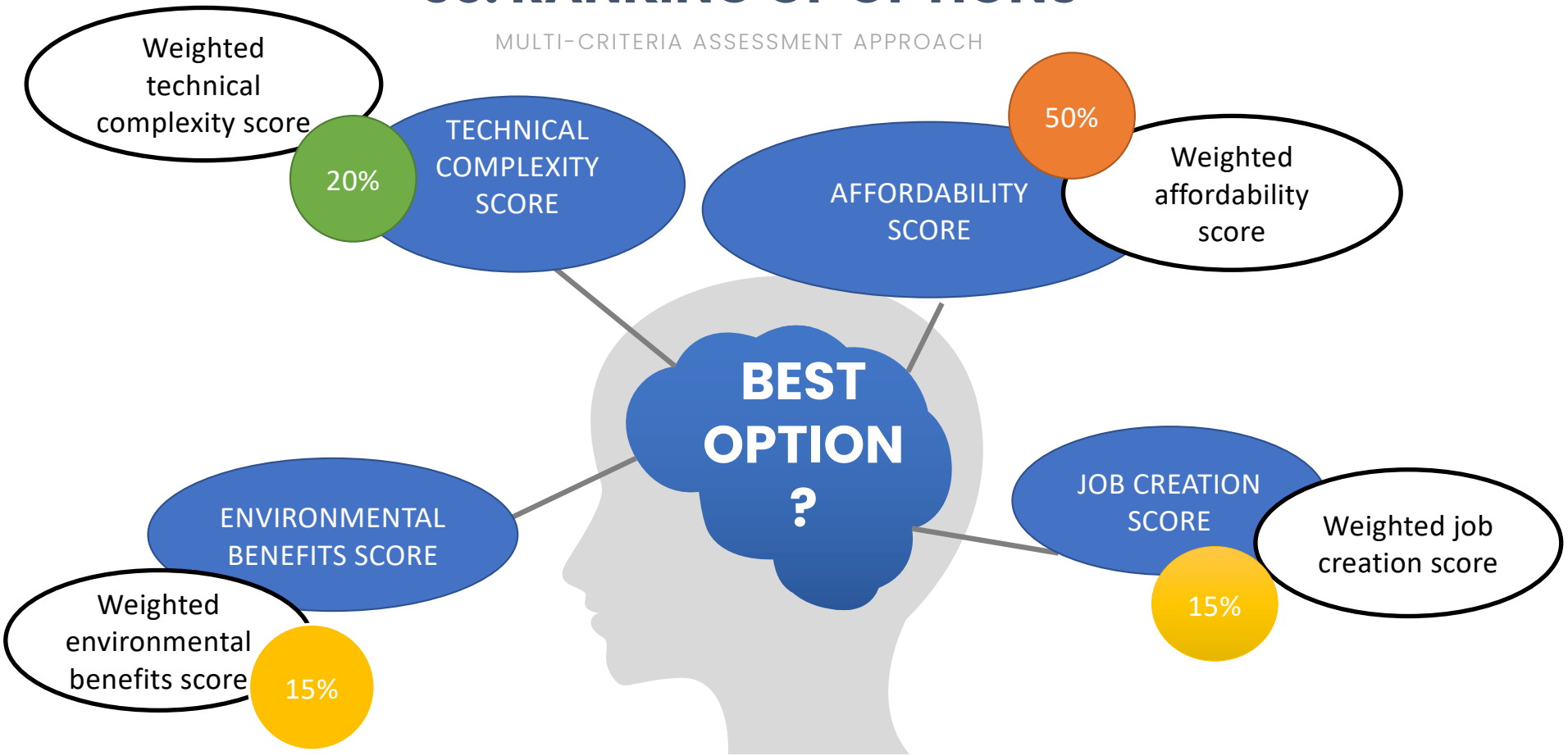
Funding Model	Anaerobic Digestor Plant	**Windrow Composting Plant**
Public Owned + SLA	OPTION A = Model 1	OPTION B = Model 2
PPP using blended finance	OPTION C= Model 3	OPTION D = Model 4



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.

3c. RANKING OF OPTIONS

MULTI-CRITERIA ASSESSMENT APPROACH



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. Funding models may need to be reassessed or adapted if the private sector perceives it as too risky.

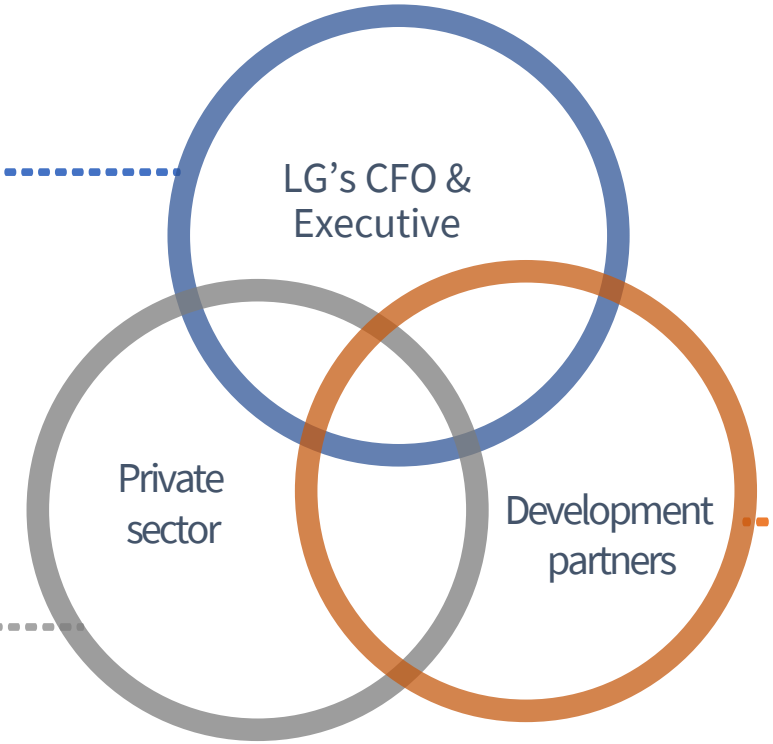
15 MIN BREAK

Covenant of Mayors
in Sub-Saharan Africa

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.



- 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

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

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. 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 and buyers of biogas, electricity, compost etc. will be key to ensuring that revenue forecasts are realistic and defendable.

5. 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.

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 OPERATED (SLA)

PPP

- 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

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

7. PROCUREMENT

PROJECT MANAGER

CONSULTANT TEAM (various experts)

LG's CHIEF FINANCIAL OFFICER + EXECUTIVE

LG's LEGAL/COMPLIANCE TEAM

EQUIPMENT SUPPLIERS

CONSTRUCTION COMPANY

OPERATOR

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 + SLA

- Technical consultant develops service specifications
- RFP 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

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 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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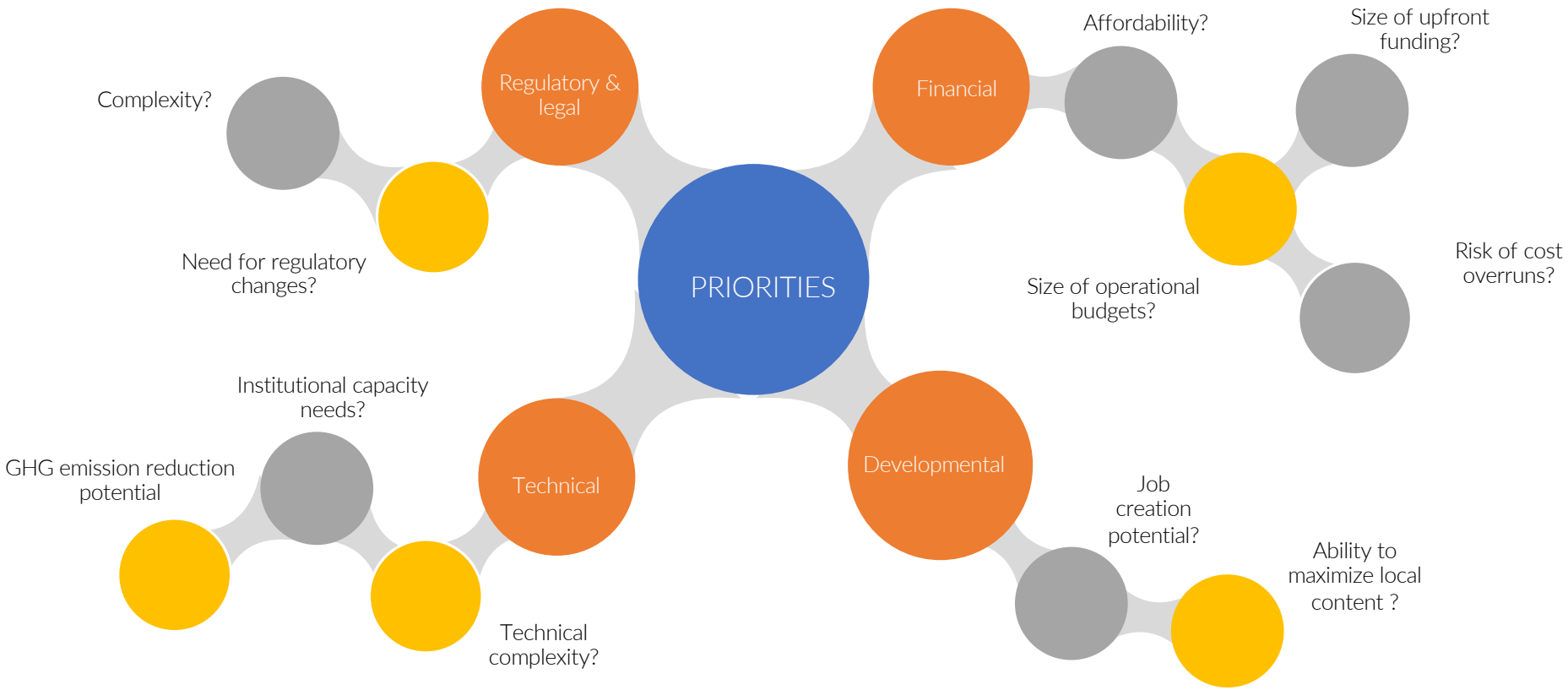
in Sub-Saharan Africa

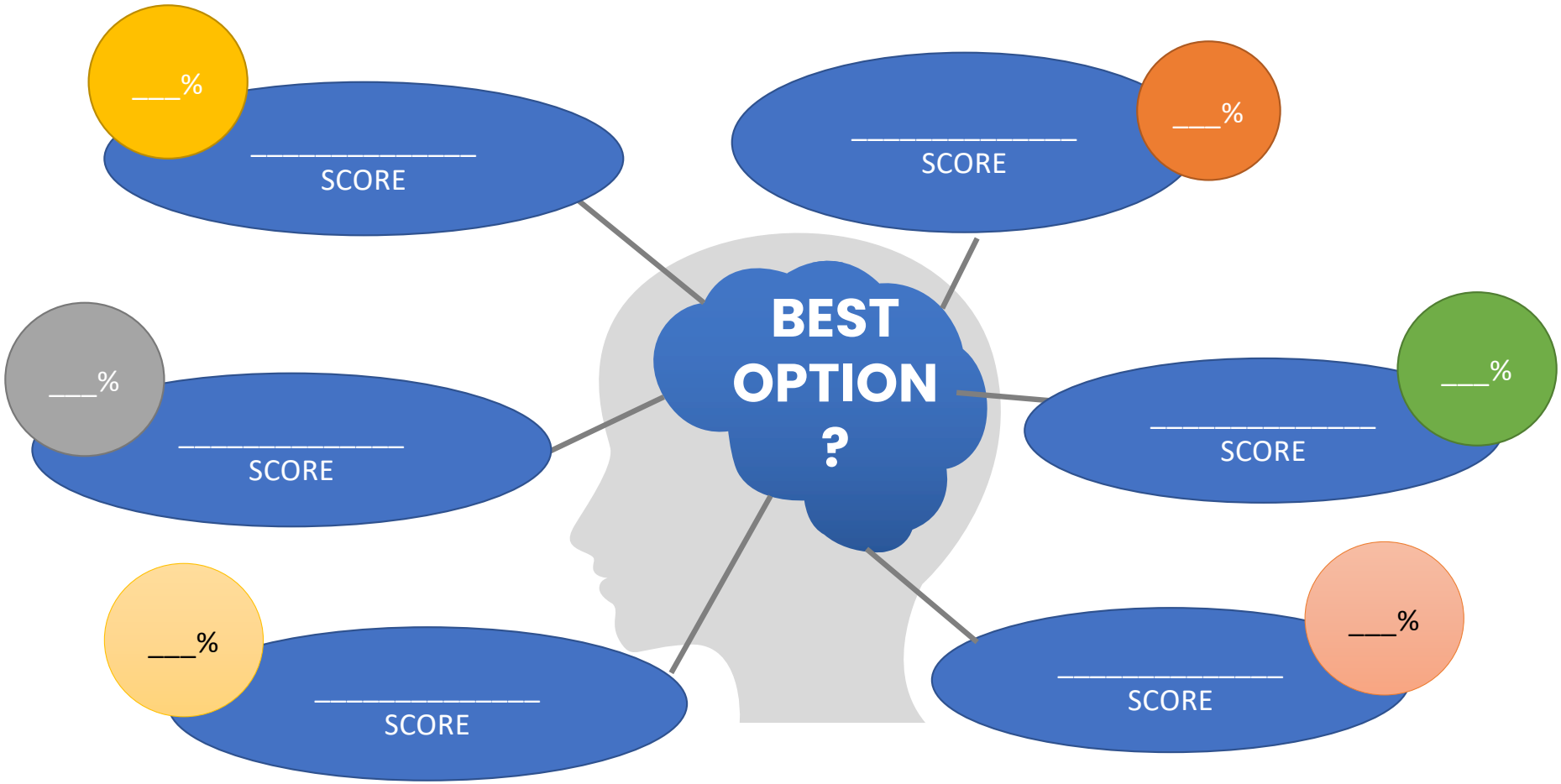
EXERCISE 4: DESIGN A MULTI-CRITERIA ASSESSMENT PROCESS

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

Criteria	Number of people that selected this criteria	Range of weightings assigned to criteria

5.0 HOW TO IMPROVE THE ENABLING ENVIRONMENT

Covenant of Mayors
in Sub-Saharan Africa

HOW LGs CAN UNLOCK IWM PROJECTS

GIVEN THE IDENTIFIED ISSUES AND CONSTRAINTS

BUDGETS

LGs will need to reallocate existing capital and operational budgets to pay SLA and PPP contracts (e.g. City of Cape Town MRF)

FEEDSTOCK

LGs can unlock private sector funded projects if it is able to enter into a feedstock agreements with the private sector (e.g. Indian IWM PPP)

CONCESSIONAL DEBT

LGs may be able to raise concessional debt from DFIs using their own balance sheet to fund Climate Actions (e.g. City of Cape Town)

COST REFLECTIVE TARIFFS

Are key to ensuring financially sustainable projects. Development partners will want to understand how an LG intends to implement cost reflective tariffs

AFFORDABILITY

LG could make in-kind contributions (e.g. land) to make a PPP more affordable (e.g. Indian IWM PPP)

GRANTS

Development partners may be willing to provide capital grants to a Climate Action Project if the LG can demonstrate that it will result in an affordable and sustainable project (e.g. South African Waste Diversion Programme)

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

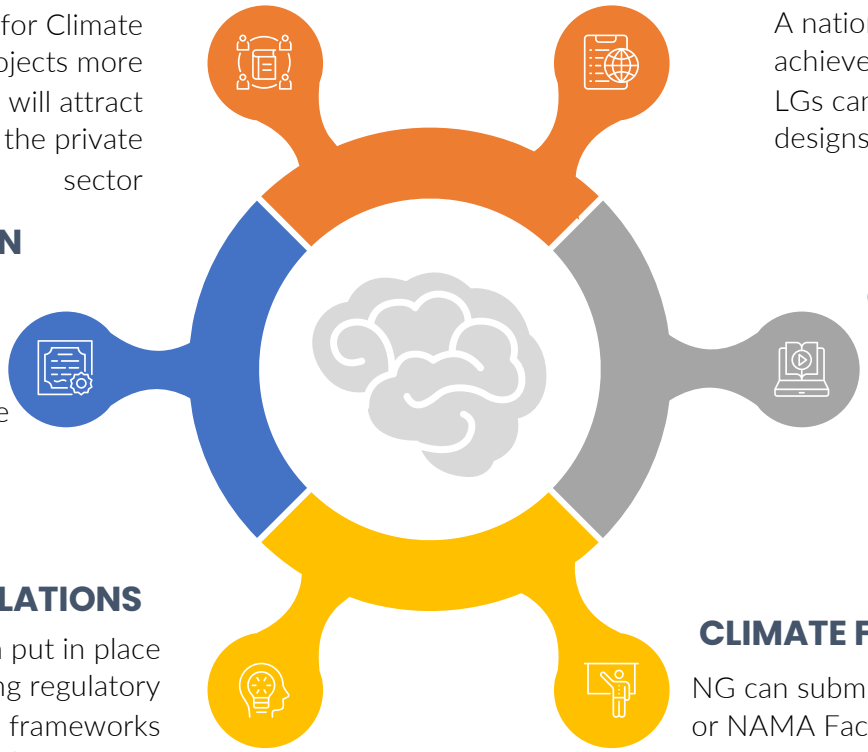
NATIONAL IWM PROGRAMMES

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 IWM and private sector investment

- PPP legislation
- Legislation that protects foreign investors' rights and minimises expropriation and exchange control risks
- Legislation that enables leasing
- Legislation that promotes recycling, e.g. extended producer responsibility legislation



CREDIT ENHANCEMENT

NG can structure a credit enhancement mechanism that will reduce the risk to lenders and investors in IWM Projects

REGULATIONS

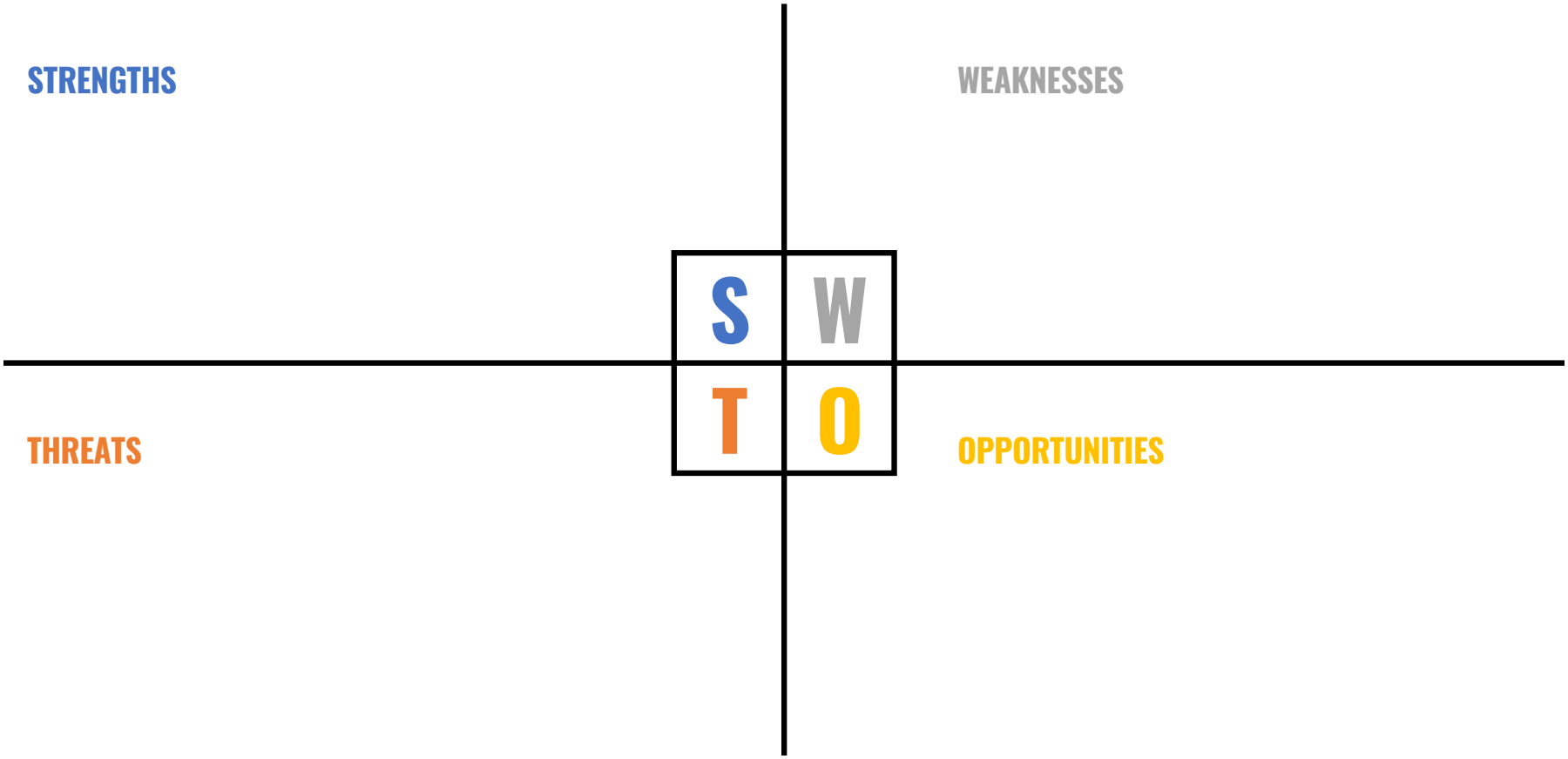
NG can put in place supporting regulatory and legal frameworks required for private sector participation

- Investment policies
- Unsolicited bid policies

CLIMATE FACILITY APPLICATION

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

COUNTRY SPECIFIC ENABLING FACTORS



5.1 BREAKOUT & FEEDBACK SESSION 5

Covenant of Mayors
in Sub-Saharan Africa

EXERCISE 5: ENABLING FACTORS EXAMPLE

ENABLING FACTORS BASED ON THE CITY OF CAPE TOWN'S MATERIAL RECOVERY FACILITY(MRF)

The regulatory environment allowed the CoCT to enter into a 3 year SLA

The CoCT's landfilling budgets were well understood

The cost of landfilling was known and affordability could be demonstrated

A wholesale market for recyclables existed

The CoCT could ensure that the private sector would have enough feedstock to justify its operations

Separation at source interventions had been implemented in the area serviced by the MRF

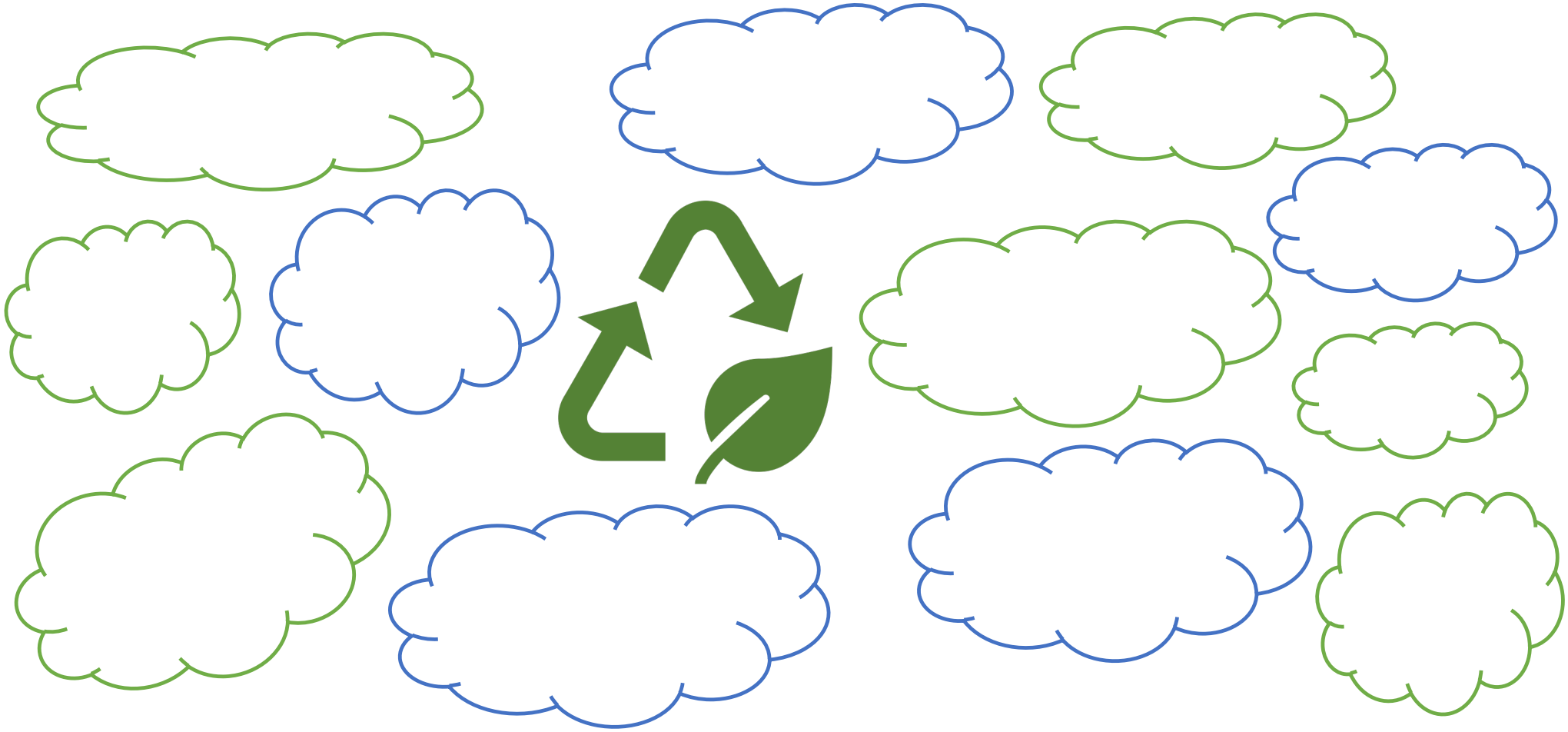
The CoCT was familiar with service level agreements

The private sector's investment was minimised as the CoCT funded the upfront investment

The CoCT could raise funding off its own balance sheet

EXERCISE 5: ENABLING FACTORS TEMPLATE

IDENTIFY WHICH ENABLING FACTORS ARE MOST FEASIBLE & HOW THEY CAN BE OBTAINED



EXERCISE 5: FEEDBACK FORM

Enabling factors – which are most feasible? How to obtain?	Answers (with numbers of how many people shared that issues)	Examples

6.0 WRAP UP

Covenant of Mayors
in Sub-Saharan Africa

ADDITIONAL TOOLS & INFORMATION

How to Finance Roadmaps
for 10 Climate Actions

6 Training Modules for LG
(including this one)

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

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