



Infrastructure Project Appraisal and Cost- Benefit Analysis

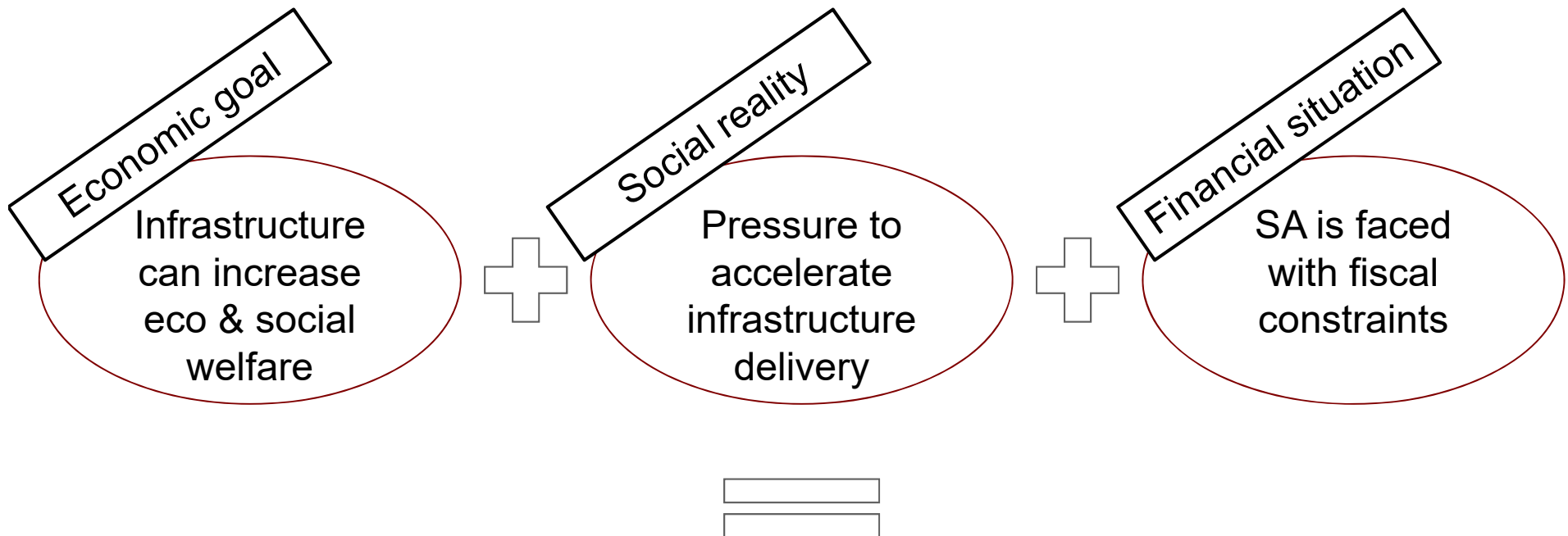
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Public Economics

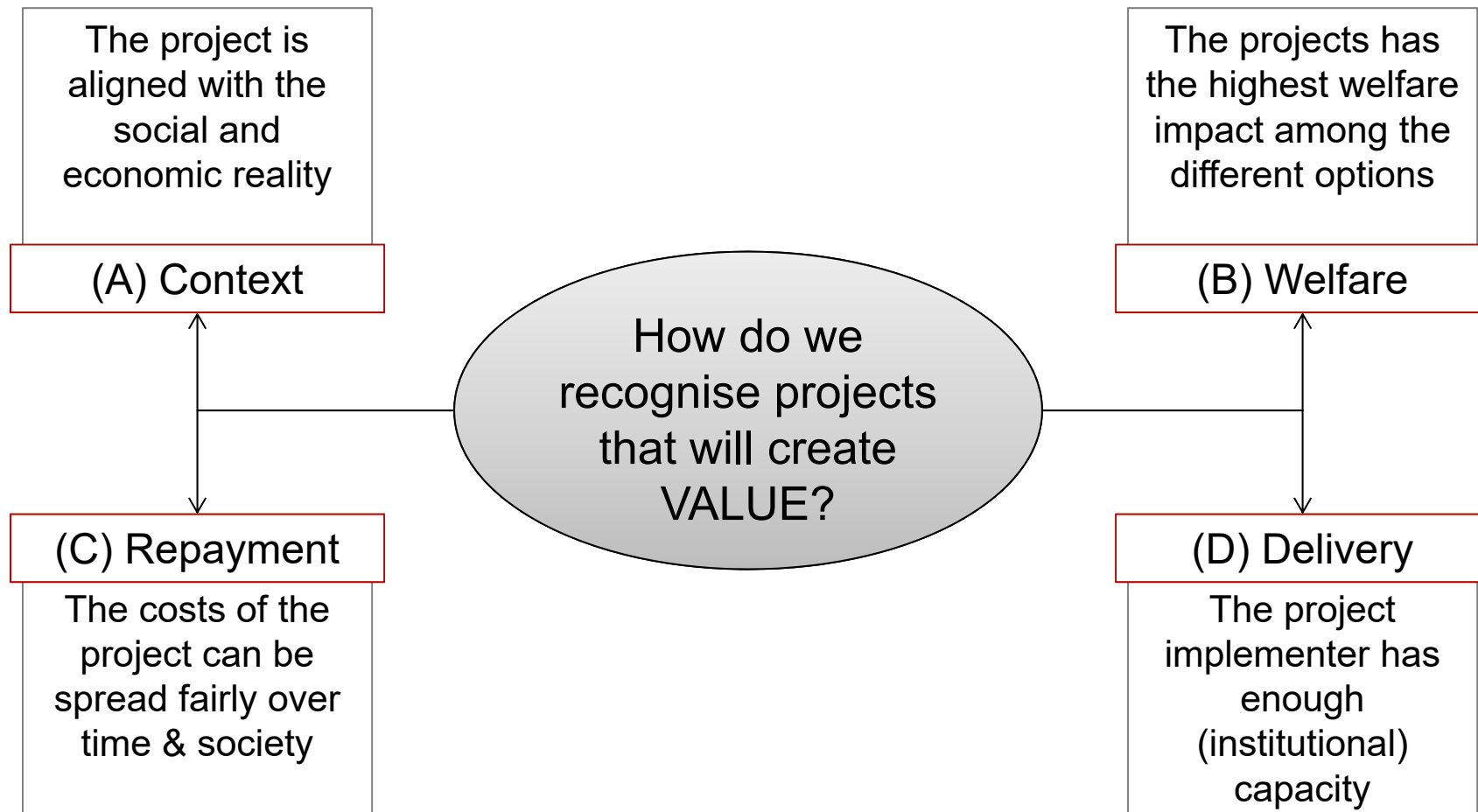
Winter School 2018

Context

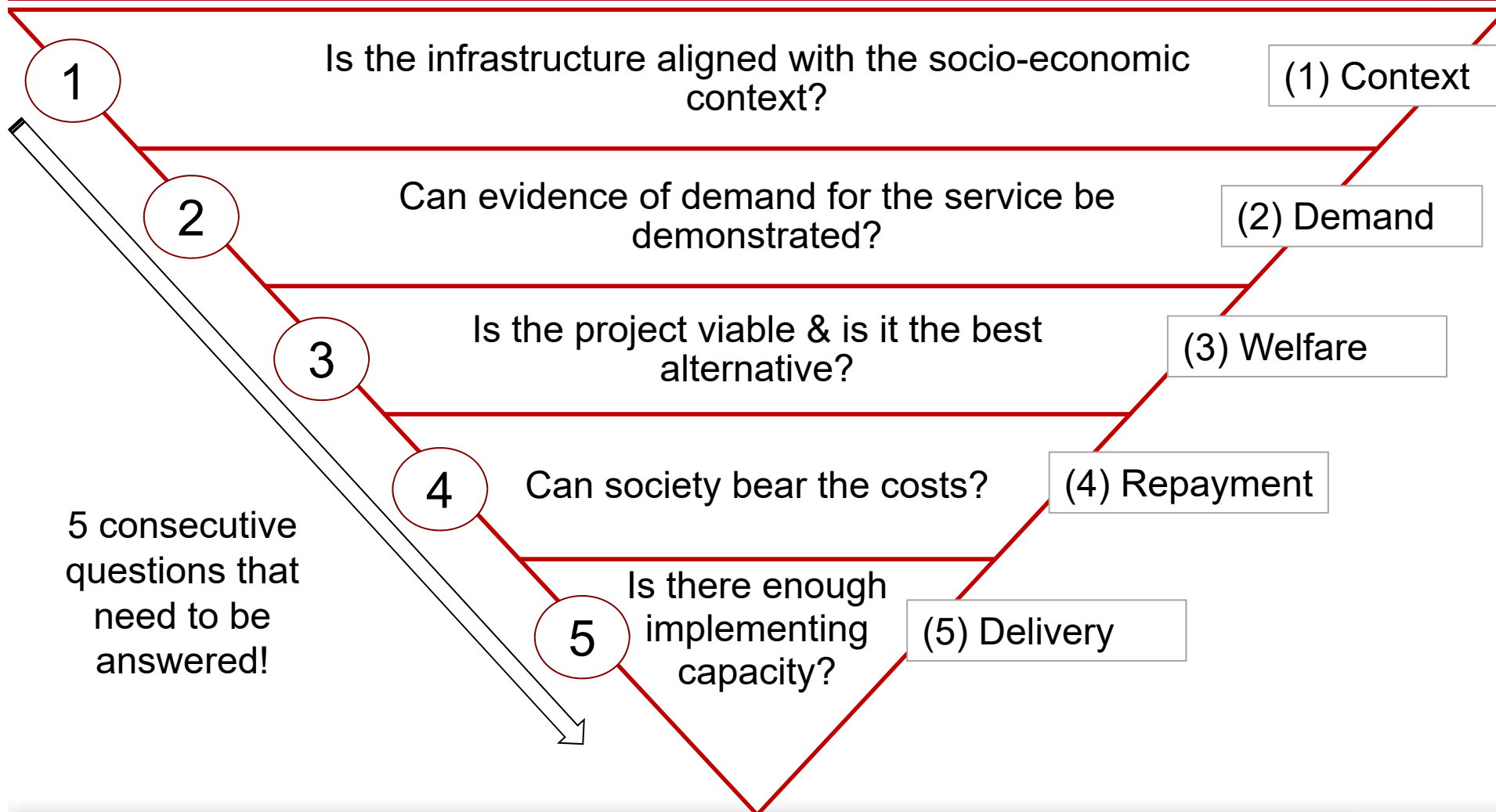


We need to develop a culture of investing in infrastructure that maximises **value for money** and creates a **better life** for South African citizens!

Key aspects



How do we recognise projects that will create value?



How do we recognise projects that will create value?

1

Is the infrastructure aligned with the socio-economic context?

Can evidence of demand for the service be demonstrated?

Is the project viable & is it the best alternative?

Can society bear the costs?

Is there enough implementing capacity?

Is the infrastructure aligned with the socio-economic context of South Africa?

1

The social context

- ✓ By 2030, 71% of people will live in cities
- ✓ Expansion of urban townships
- ✓ Disperse & poor population in rural areas
- ✓ Widespread & structural unemployment

Understand the environment & the actual problems before proposing projects

- ⇒ Target expanding areas
- ⇒ Set appropriate service levels
- ⇒ Ensure investments make individuals more productive

The economic context

- ✓ 80% of GDP in top 27 cities
- ✓ Energy-intensive industrial activities
- ✓ Rural & urban areas have different economic drivers

Understand the economy & the actual drivers before proposing projects

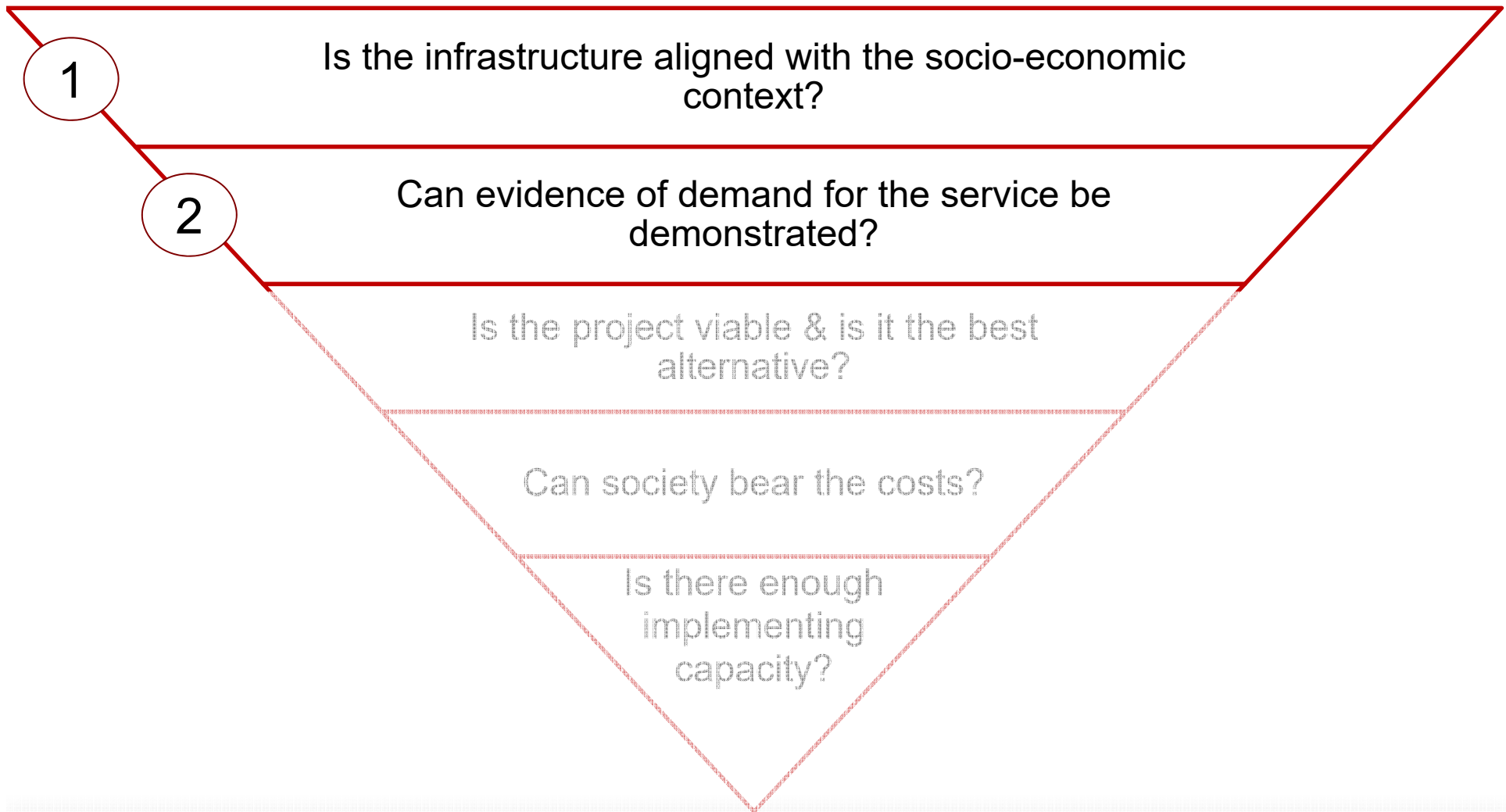
- ⇒ Target private sector growth areas
- ⇒ Focus on comparative advantages
- ⇒ Target investments that can support employment creation in the long-run

 Too often, infrastructure is considered a magical solution for all kinds of problems

Understanding the drivers that created the need for infrastructure is crucial. What is the motivation for the project?

Example
Water provision in rural or urban environments must be tackled differently, as settlement density varies

How do we recognise projects that will create value?



Can evidence of demand for the service be demonstrated?

2

Projects with a high social demand

Social demand evidence:

- ✓ Household surveys & poverty maps highlight service gaps
- ✓ Promises in constitution & elections
- ✓ Service delivery protests

- ⇒ Target the social backlogs
- ⇒ Listen to what the people are telling you
- ⇒ Use phased construction approaches if demand has not yet materialised fully

Projects with a high economic demand

Economic demand evidence:

- ✓ Growth of clusters, value chains & networks
- ✓ Traffic congestion or rising property prices
- ✓ Input price hikes (electricity, water, fares)
- ✓ Inability to fulfil export orders

- ⇒ Aim to unblock largest supply constraints
- ⇒ Listen to what the industry is telling you
- ⇒ Ensure that the cost of postponing a project is larger than the benefit of postponing

Look for evidence that indicates there is a need/demand for the project!

No demand = speculative / wasteful investment
Low demand = premature project
High demand = overdue project & a priority

Review the risks and benefits of large scale 'transformative' projects compared to modular or incremental expansion

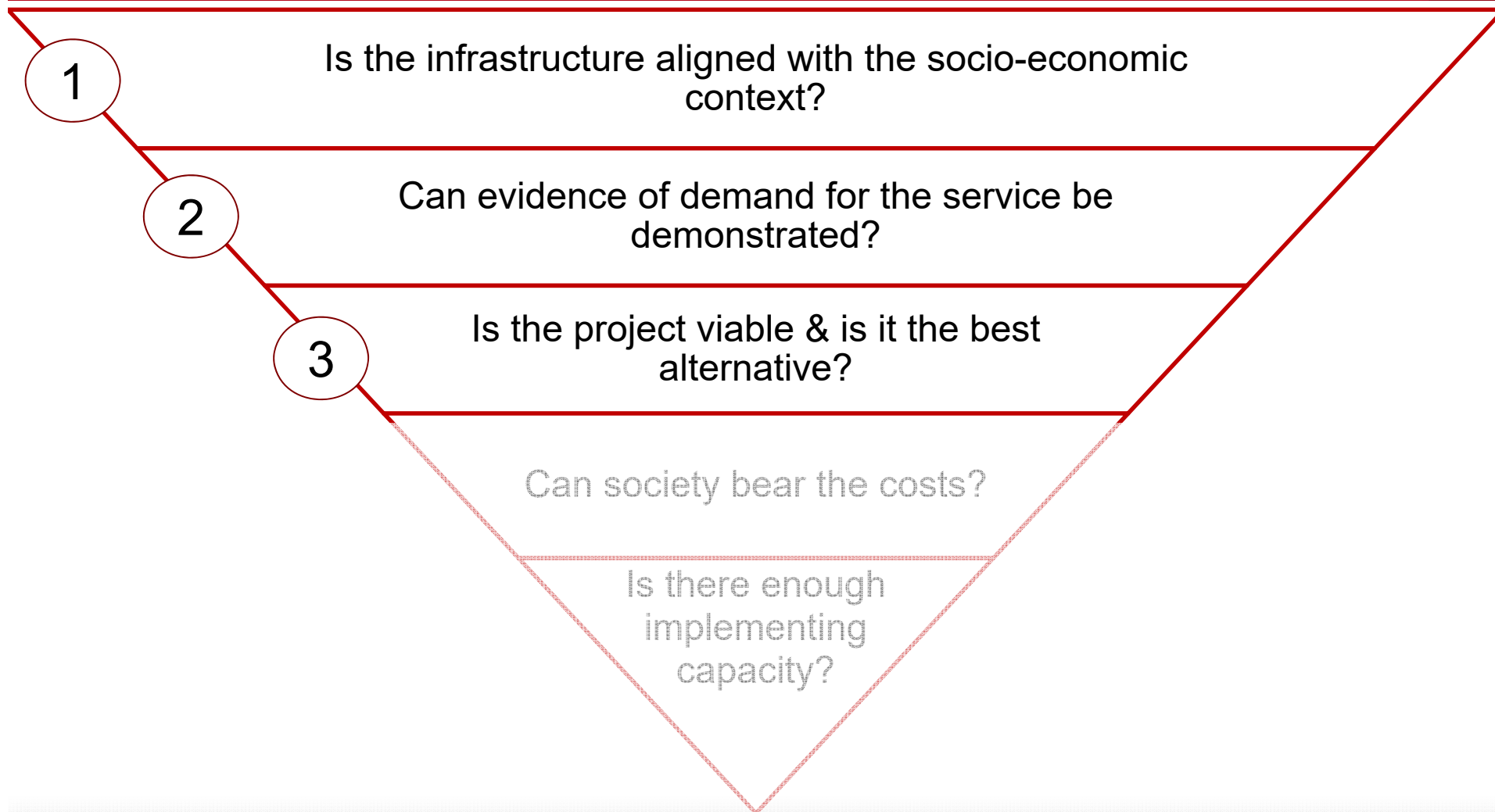


Optimism bias:
Proponents will
exaggerate the
demand

Example

Coega port was built on belief that it would stimulate demand whilst in Durban bottlenecks were developing

How do we recognise projects that will create value?



Is the project the best alternative?

3

The full range of options have been considered

Certain problems require options identification outside of a specific mandate of 1 entity

Example:

Transport problems should analyse solutions in all the possible modes: road, rail, aviation, ...

Project is not over-designed or gold plated

Infrastructure is of the standard and capacity to meet the identified need, but not more

Example:

Earthquake proof SABC studio; extremely luxury police cars;

Full life-cycle cost has been taken into account

Long term operating and maintenance costs have been taken into account and are budgeted for

Example:

De-siltation costs of dams must either be included in the long-term maintenance budget, or in the design costs

Costs are realistic

Costs have not been under-estimated to make the project look attractive or to win contracts, but at the same time excess fat has not been built in

Example:

Costs on the new multi-product pipeline have escalated from R8 billion to R23 billion

Is the project viable?

3

Viable social infrastructure projects

The infrastructure must generate social benefits (improved livelihood, health benefits, etc.) at the lowest cost possible

Understand the analytical tools you can use to assess investment effectiveness

⇒ Perform a **Cost-Effectiveness Analysis** for every single project

Viable economic infrastructure projects

The infrastructure must generate more economic direct benefits (efficiency gains) than direct costs (construction, O&M)

Understand the analytical tools you can use to assess investment efficiency

⇒ Perform a **Cost-Benefit Analysis** for every single project

Evidence Based Policy:

An investment should only be undertaken if a thorough CBA can demonstrate that the project will generate more additional benefits than costs!

Additional Macro & Micro analysis can assess indirect benefits and distributional impacts. However, they cannot demonstrate a project to be viable



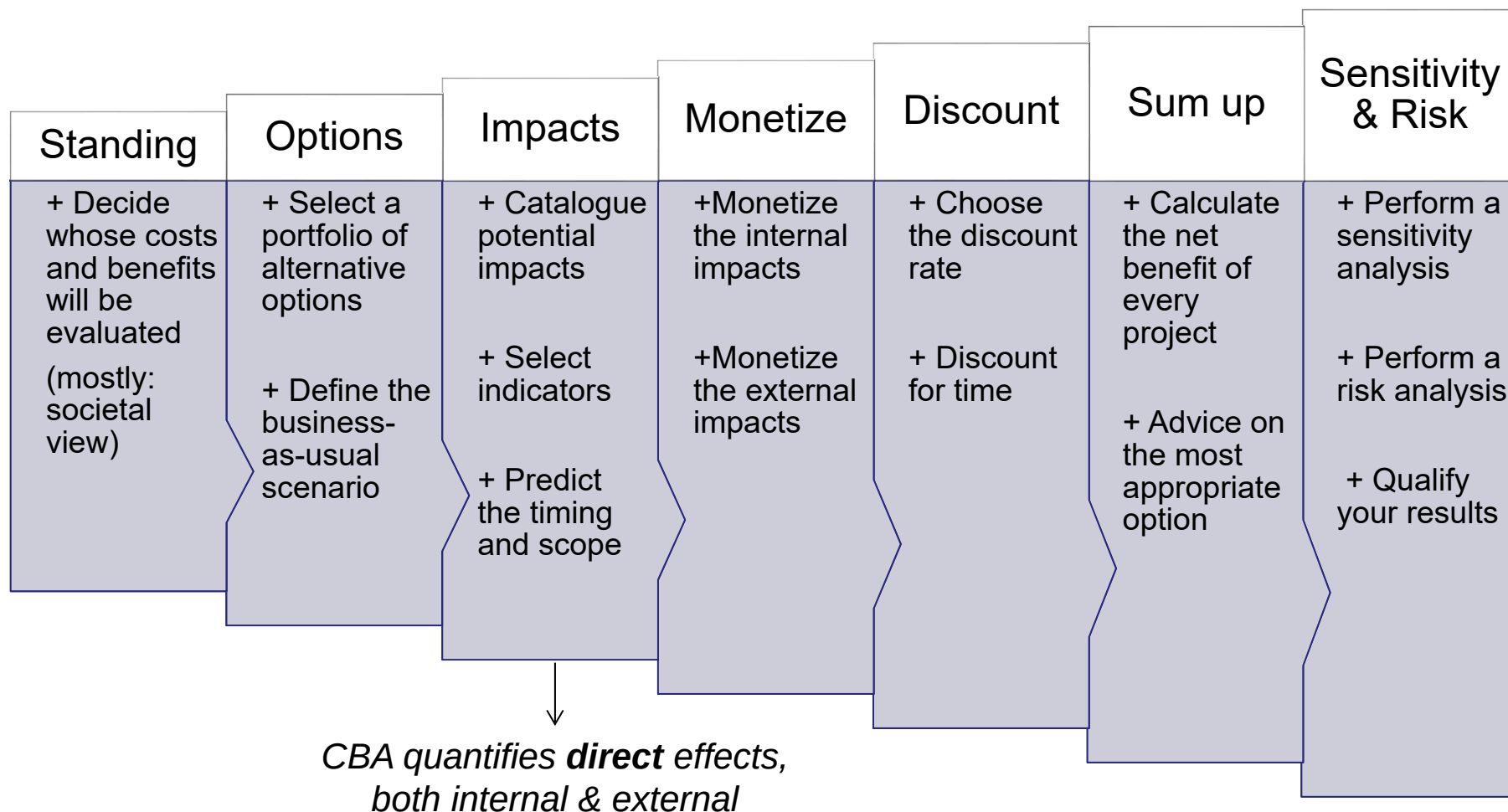
Indirect and distributional impacts alone cannot justify a project

Example

Studies estimated that the GFIP project would generate benefits to society that were 8 times the costs

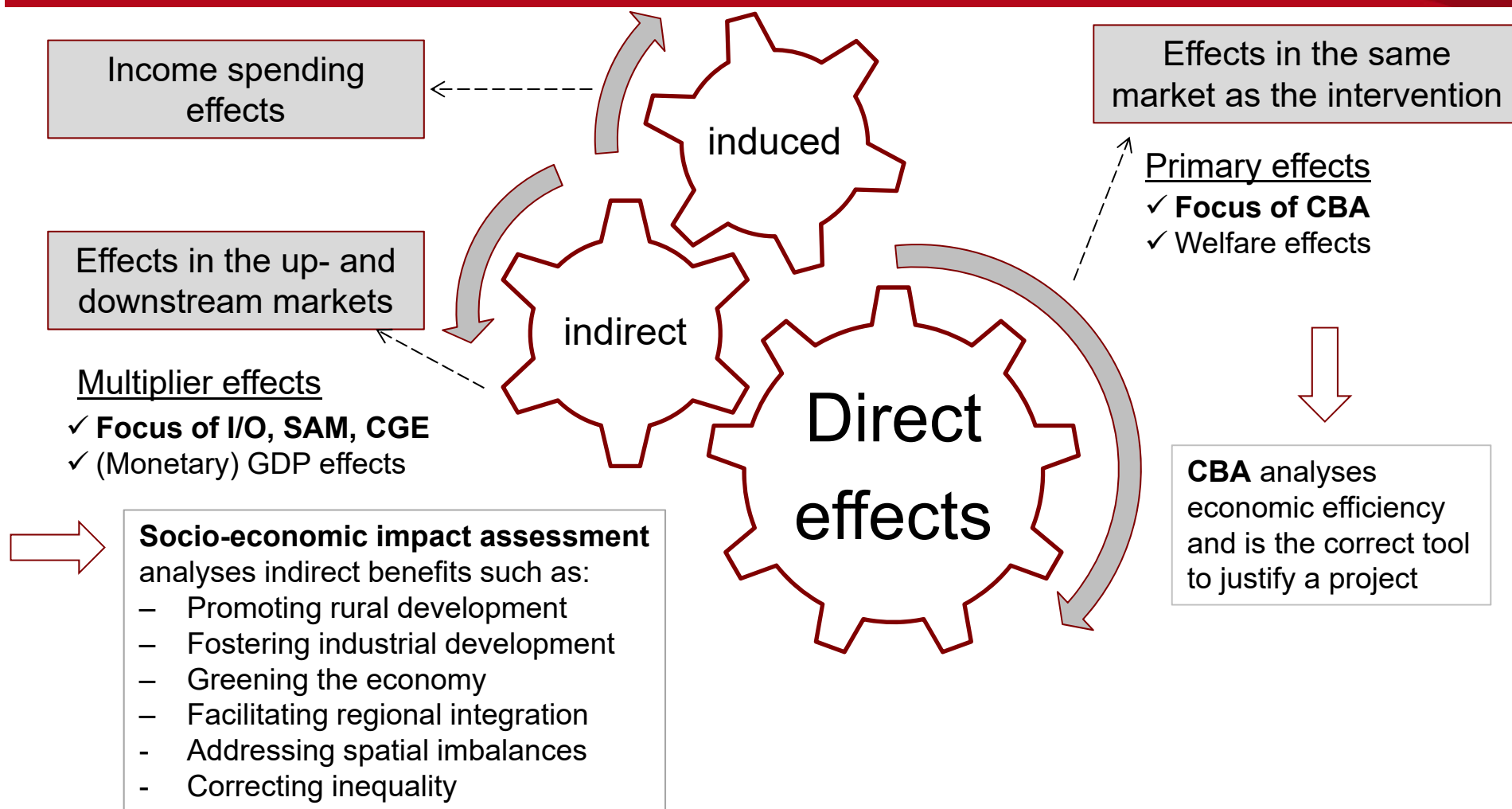
Analytical tools: CBA to demonstrate economic viability

3



Analytical tools: socio-economic impact assessment

3



Analytical tools: Professional analyses

3

Are there any legal or technical issues that can significantly impact the project?

Legal issues

Early legal certainty reduces costs overruns and time delays

- environmental?
- market regulation?
- labour regulation?
- tax regulation?
- correct mandate?
- BEE regulation?

Location issues

The need for a specific location can slow down implementation

- locational criteria?
- ownership issues?
- land availability?
- geological issues?
- heritage matters?

Exit issues

A solid exit strategy can reduce decommission costs

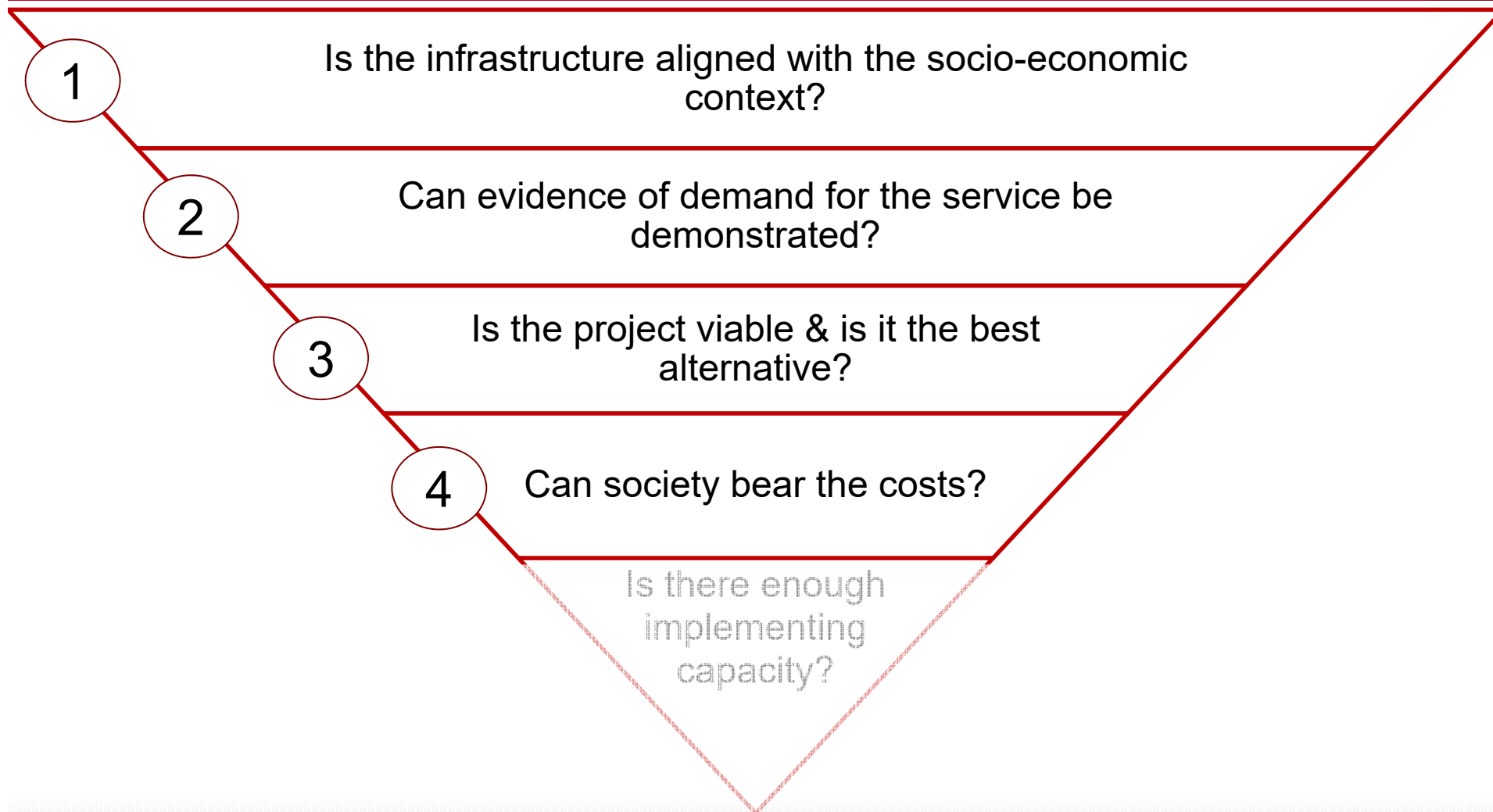
- exit timeline?
- fiscal consequence?
- sustainability > exit?
- exit failed projects?

Technology

A technical assessment can improve operational efficiency

- Optimal scale?
- Optimal scope?
- Efficient design?
- Effective technology?

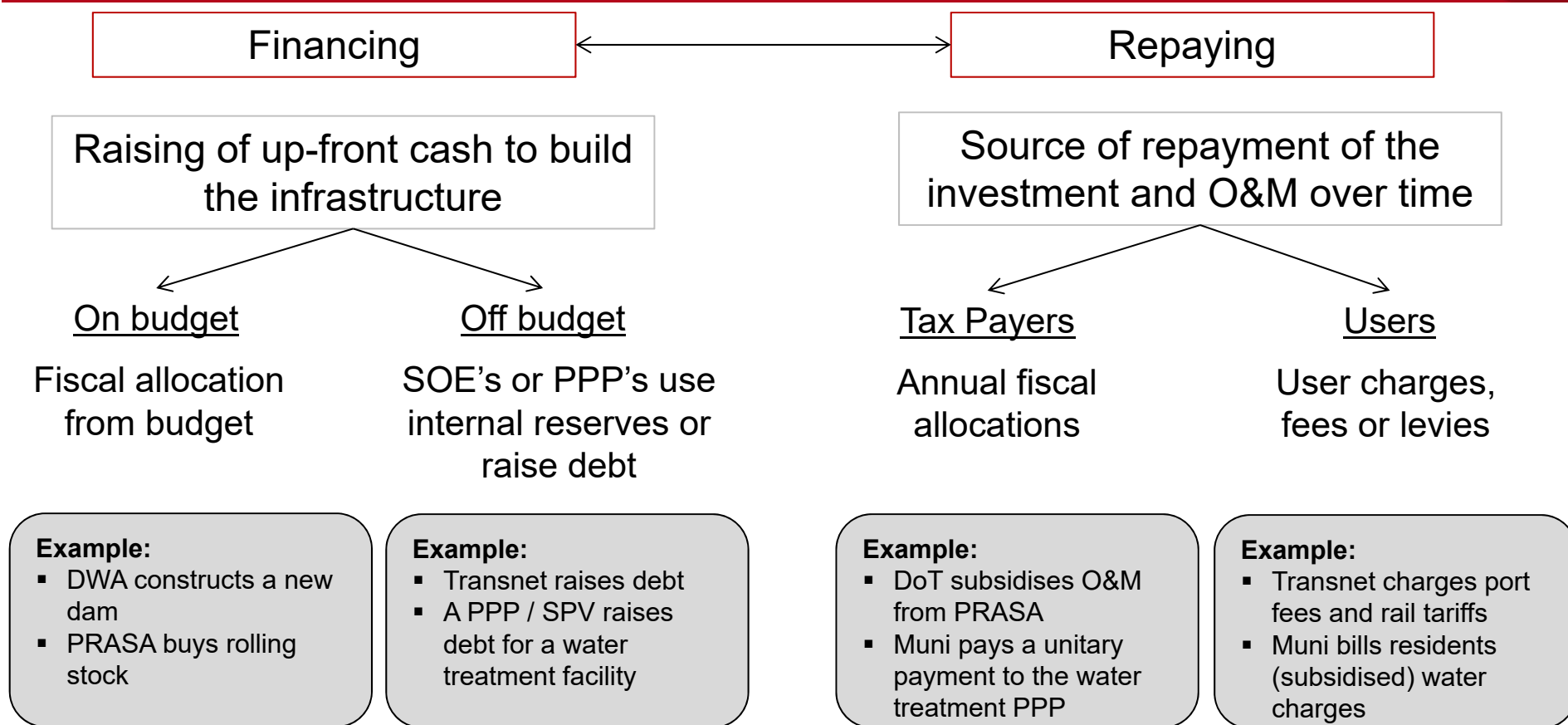
How do we recognise projects that will create value?



Can society bear the costs?

Financing versus Repaying infrastructure

4



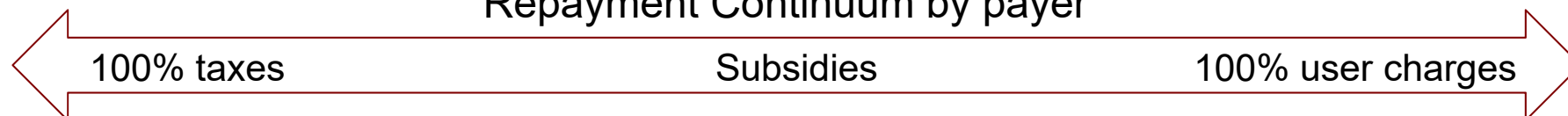
The challenge is not financing infrastructure, but repaying it!

Can society bear the costs?

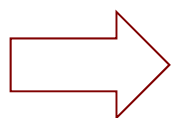
Intra-generational equity

4

Repayment Continuum by payer



- ✓ *If users cannot pay, taxpayers must*
- ✓ Financing of infrastructure is limited not by the sources of (innovative) financing, but by the **affordability of users and taxpayers**



So what would be equitable & sustainable repayment?

Taxpayer:

- ✓ wider & substantial benefits beyond users
 - ✓ indivisible benefits for society as a whole
 - ✓ affordability issues for critical services
- ⇒ **Affordability ends** when fiscal principles can no longer be adhered to due to too high demand on the fiscus

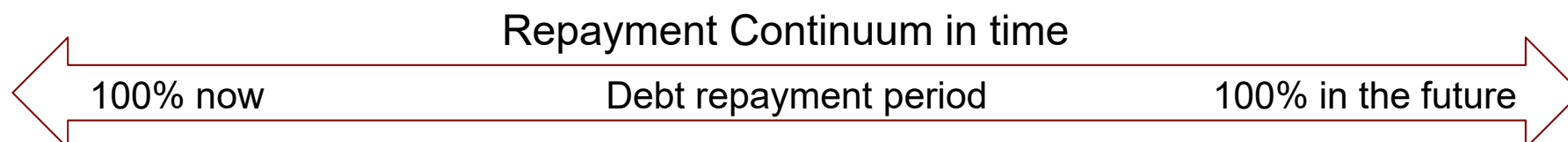
User:

- ✓ Identified users benefit directly from service
 - ✓ Charges are aligned with the benefits
 - ✓ Charges for essential goods are affordable
- ⇒ **Affordability ends** when user charges crowd-out other expenditures in disposable income and thereby hamper growth

Can society bear the costs?

Inter-generational equity

4

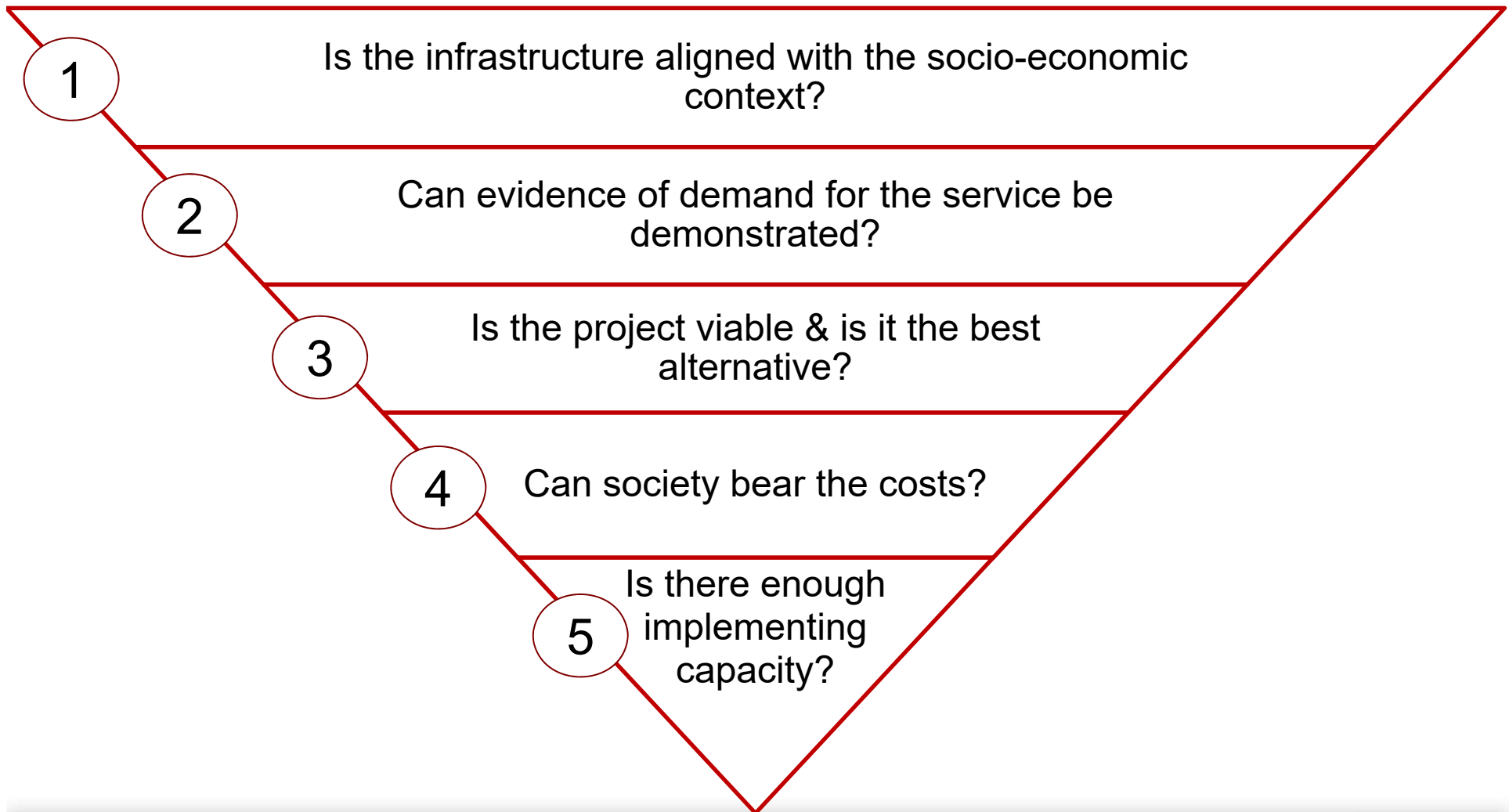


- ✓ *If the current generation cannot pay, the future generation must*
- ✓ Financing of infrastructure is limited not by how much Gov' *can* borrow, but by how much Gov' *should* borrow (the sustainability of debt & interest repayments)

➡ *So what would be equitable & sustainable repayment?*

- ✓ Spread the costs of infrastructure over the same time as the benefits
- ✓ Use inter-generational accounting and aim to maintain a stable (tax burden) / (services received from Gov') ratio

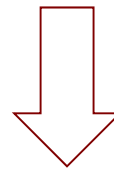
How do we recognise projects that will create value?



Is there enough implementing capacity?

5

It is not sufficient that a project has a good fit with the South African context, a solid CBA analysis backing it up and can be repaid by society



The delivery mechanism must be able to achieve the promised benefits!

SOE
PPP / SPV
Subcontractor
...

On time & in budget
According to design
Efficiently operated
Effectively maintained

Is there enough implementing capacity?

5

A good institutional set-up is not a guarantee for delivery!
But it can certainly help...

Mandate

- ✓ Should promote clear accountability
- ✓ Should promote value creation, not spending
- ✓ Should limit political interference

Incentives

- ✓ For good governance
- ✓ For both construction & operational delivery
- ✓ For spending discipline
- ✓ For LT sustainability

Capacity

- ✓ Planning capacity
- ✓ Technical leadership
- ✓ Procurement capacity
- ✓ Contract management
- ✓ Risk mitigation
- ✓ Monitoring & evaluation

Ensure the delivery mechanism has the correct mandate, proper incentives and the capacity to deliver the promised benefits of the infrastructure

Thanks

