

Testing a Methodology to Value the City of Cape Town's Natural Environment

Presentation at Workshop with City Managers, Officials and External Stakeholders, Colophon Seminar
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presented by

Martin De Wit

Project Team: Terence Jayiya, Hugo van Zyl, Doug Crookes, James Blignaut



“No company would stay in business long if its management did not know how much product was being produced, how much it cost to produce it, or the market price for the product. ...Why should we treat our natural capital – capital that sustains life on the planet – any differently?”

From Nancy Olewiler

“The value of natural capital in settled areas of Canada”

Human society is highly dependent upon ecosystem goods and services which are in turn dependent upon biodiversity rich and resilient ecosystems. However, many of these goods and services are public goods with no market and no price. As a result they are not recognised by our economic compass.

It is possible to develop economic tools and to build policies which take proper account of the real value of biodiversity... However, it will be a political choice as to whether to use these tools and to apply these policies.

Pavan Sukhdev - Leader of European Commission's
The Economics of Ecosystems and
Biodiversity (TEEB) project

Institutions to capture value

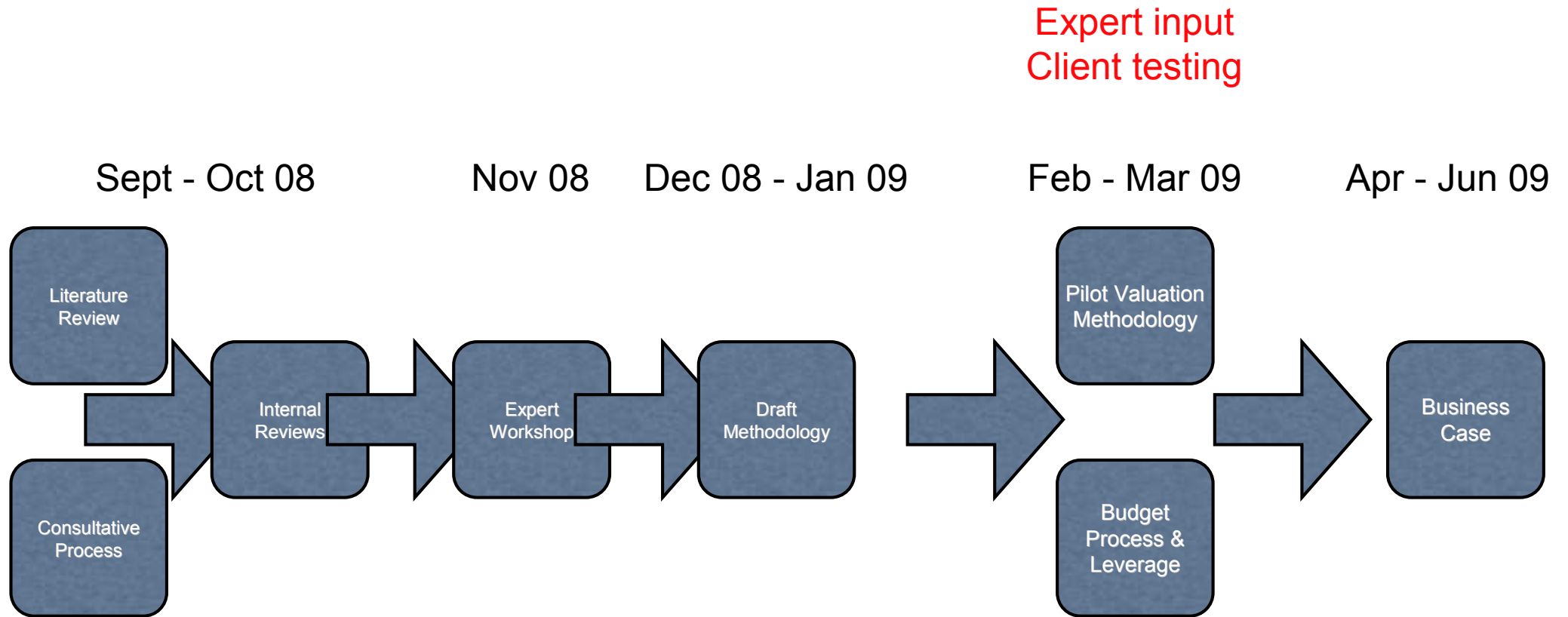
- Conservation and Wetland Banking
- Biodiversity credits and offsets
- Tradable Development Rights
- Nutrient, salinity trading
- Conservation Easements
- Carbon cap-and-trade system
- Trading of carbon credits under CDM/JI
- Water pricing and trading
- Payments for hydrological services
- Community benefit sharing from protected areas
- Progressive public budgeting

Need to balance with inherent public good character of many natural assets!

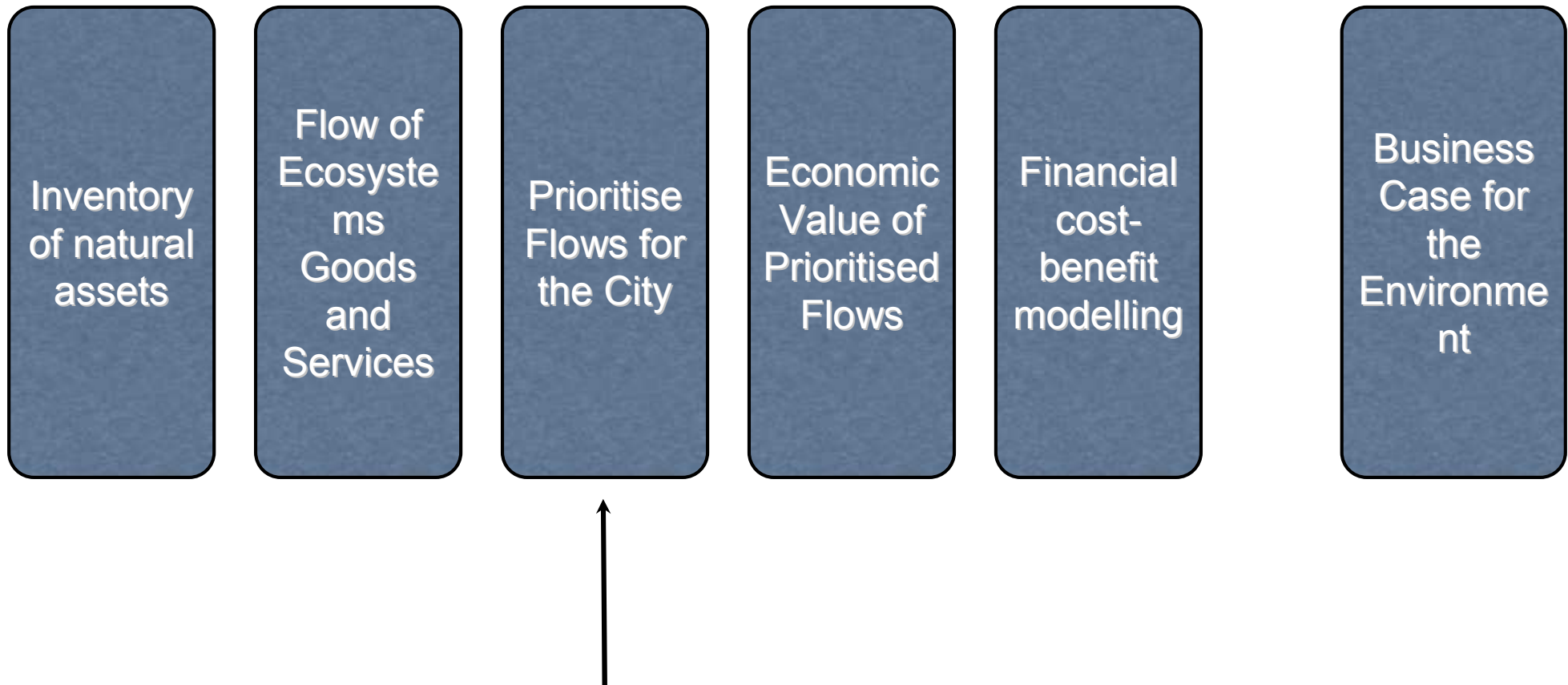
Project phases

- Phase One: International Review (finalised)
 - Valuation techniques, pros and cons; data requirements
- Phase Two: Consultation (finalised)
 - Workshops with line functions; participatory approach
- Phase Three: Methodology (in progress)
 - Build a consolidated methodology.
- Phase Four: Pilot Valuation (in progress)
 - Demonstrate & test valuation methodology

Project Planning



Succession of tasks



Natural Assets in the City

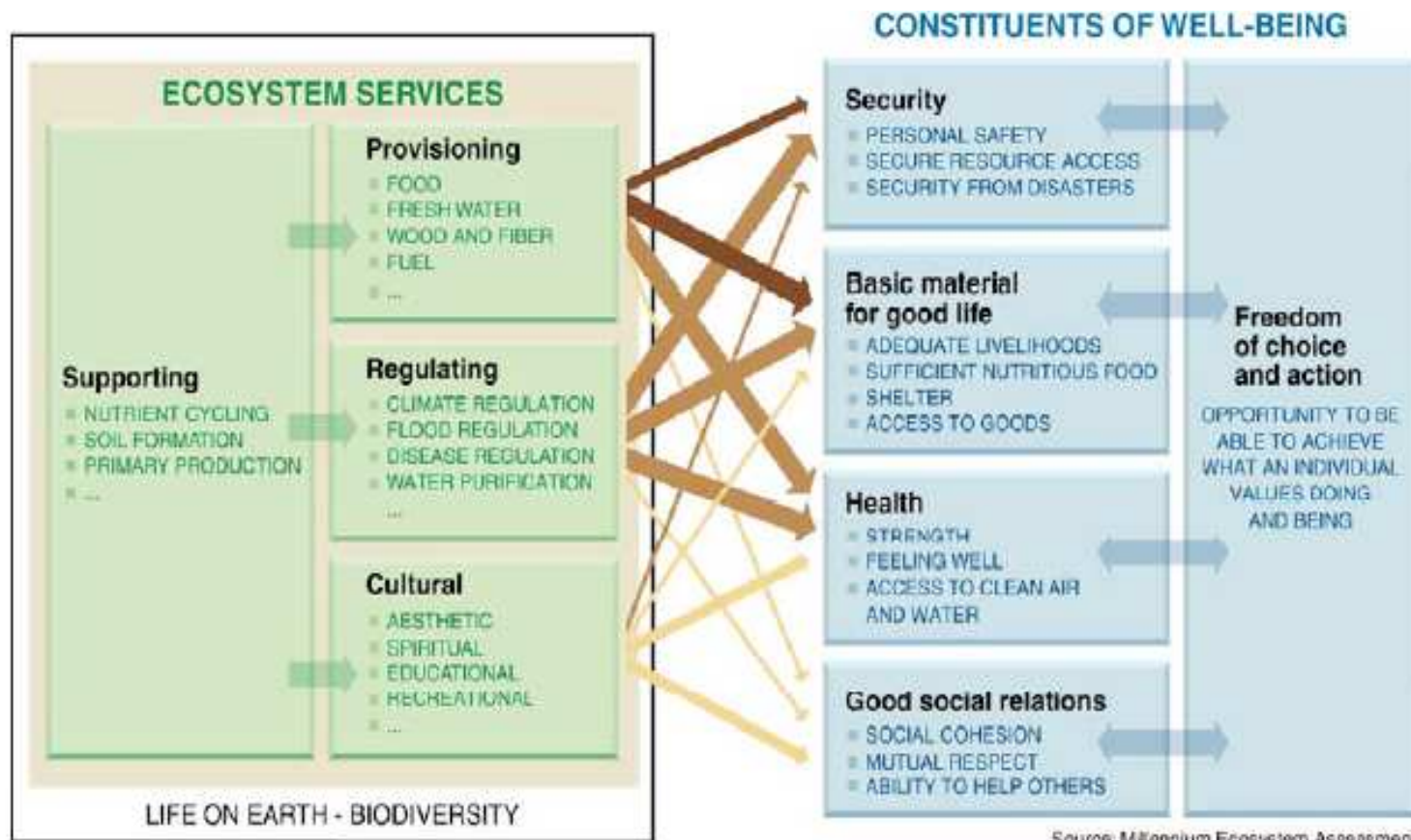
- Water
 - Streams, lakes & wetlands
 - Near-shore coast
- Atmosphere
 - Clean air
- Biota (fauna & flora)
 - Municipal parks
 - Natural areas and Reserves
 - Sports grounds
- Land & soil

Functions and EGS

Supporting, regulation, provisioning and cultural functions => EGS

Functions	Goods and services (examples)
Cultural Functions	Providing opportunities for cognitive development
19 Aesthetic information	<input type="checkbox"/> Enjoyment of scenery (scenic roads, housing, etc.)
20 Recreation	<input type="checkbox"/> Travel to natural ecosystems for eco-tourism, outdoor sports, etc.
21 Cultural and artistic information	<input type="checkbox"/> Use of nature as motive in books, film, painting, folklore, national symbols, architect., advertising, etc.
22 Spiritual and historic information	<input type="checkbox"/> Use of nature for religious or historic purposes (i.e. heritage value of natural ecosystems and features)
23 Science and education	<input type="checkbox"/> Use of natural systems for school excursions, etc. <input type="checkbox"/> Use of nature for scientific research

EGS & Human wellbeing



EGS in City - classified

Cultural related	Regulation related	Habitat/space related	Provisioning related
Use for School excursion	Water for consumption	Space for biota to live and reproduce	Fuel and energy
Travel to Historic/Religious sites	Storm water purification/drainage	Conservation of living resources	Material for craft, and fashion
Use of scenic areas for enjoyment/relaxation	Preventing flooding of areas		Small scale urban farming
Use in the production of films/events	Pollution abatement		Plant or animal material for medicines
Use in advertising and books	Healthy soils for production		Wild flowers for harvesting
Beauty, inspiration and recreation	Oxygen production		Resources for collection
Use or scientific research	Waste assimilation		

Benefitting both poor and wealthy in different ways, e.g. meeting some basic needs

EGS & Users in Cape Town

Supporting Services Photosynthesis Soil Formation Primary production Nutrient cycling Water cycling	Regulating	<i>Water regulation (flows, etc.)</i>
		<i>Natural hazard regulation (floods, etc.)</i>
		<i>Water purification and waste treatment, assimilation</i>
		<i>Erosion regulation</i>
		<i>Pollination</i>
		<i>Disease regulation</i>
		<i>Pest regulation</i>
		<i>Climate regulation - local (air quality)</i>
		<i>Climate regulation - global</i>
	<i>Space for biota to live and reproduce (refugia)</i>	
	Provisioning	<i>Fresh water provision</i>
		<i>Fuelwood provision</i>
		<i>Building materials provision (wood, sand, etc.)</i>
		<i>Wild flowers for harvesting</i>
		<i>Provision of plant, animal material for medicines and biochemicals</i>
		<i>Provision of materials for craft, fashion (e.g. shells)</i>
		<i>Fish and marine resources</i>
		<i>Genetic resources with potential pharmaceutical and other biochemical uses</i>
		<i>Small scale urban farming</i>
	Cultural (information)	<i>Recreation and tourism</i>
		<i>Provision of inspirational beauty</i>
<i>Aesthetic values and sense of place</i>		
<i>Educational uses (e.g. school excursions, scientific research)</i>		
<i>Use in cultural and artistic practices and ceremonies</i>		
<i>Use in religious practices and ceremonies</i>		
<i>Use in productions (film & events), advertising and publications</i>		

Classified under 'residents' are:

- recreational and sporting groups
- harvesters, fishers and small producers
- educational groups
- cultural and religious groups
- property owners
- low income groups

Classified under 'key commercial groups' are:

- tourism & recreation
- film, advertising and events
- arts & crafts
- real estate
- construction and manufacturing
- urban agriculture
- fishing

Classified under 'key public bodies' are:

- Economic development
- Health and welfare
- Disaster Management
- Water
- Waste
- Conservation

Where does this all leave us?

- **Premise: Investment in natural assets enhance ecosystem functions, improve quantity and quality of goods and services and increase human well being**
- The value of the metropole's natural assets is far bigger than charismatic icons such as Table Mountain National Park, whales and the value of niche-market eco-tourism only!
- It often includes services that we take for granted (e.g. air that we breathe, water that we drink, fertility of our soils, productivity of our fauna & flora) and value only when we have lost them and face the costs of engineering a solution (if at all possible)
- Possible litigation if clean and healthy natural environment is pressured to such an extent that only sub-standard services can be delivered
- By nature, Environmental Goods and Services are delivered free of charge. Capital and labour costs may be needed to bring those services to people.
- Increased pressure and scarcity, however, increases the risks of failure, and hence rises the costs of EGS provision.

Summary of valuation studies in the Cape Town metro

	ha	R/ha		Average value 2007 R million	Valuation Technique
		Low	High		
Reserves					
Mountain fynbos	3912	1165	7081	16.1	CVM
Lowlands fynbos	291	1165	7081	1.2	CVM
Strandveld	5364	1165	7081	22.1	CVM
Renosterveld	42	-	-	?	
Wetlands	4626	2533	75159	179.7	HP & CVM
Recreational					
Beaches	-	-	-	54.5	TCM
Parks ¹	1962	3181	104239	105.4	HP & CVM
Sports fields ¹	260.4	19563	36570	7.3	HP & CVM
Vacant land ¹	7729.8	-6082	1021	-19.6	HP & CVM
Other					
Agriculture ¹	3265.9	937	57684	95.7	CVM
Geological	-	-	-	?	HP

¹ Metro South and South East only

Notes

The direct and indirect use values associated with nature based tourism, fishing and other commercial sectors are not reported and are likely to be significant.

Illustrative business case

Natural Assets	Environmental Values (Rm pa, 2007)	City expenditure (Rm, 2007/8, OPEX + CAPEX)	Other expenditure	Benefit: Cost (2007)
Environmental resources	>274	64	??	4.3
<i>Wetlands</i>	180	..		
<i>Nature Reserves</i>	39	..		
<i>Beaches</i>	55	..		
..		
Agricultural fields	95	0		

Note: Static analysis for illustrative purposes only.

Methodology for EGS valuation

- First, estimate relative importance of natural assets for EGS
- Second, estimate importance of EGS to beneficiaries/users (matrix EGS/Users)
 - Residents, commerce, public bodies
 - Identify levels of dependency
 - Users at different levels (municipality, regional, national, global)
- Third, establish links closest to EGSs and development objectives
 - Strategic objectives in the IDP (City Dev Strategy?/Mun Spatial Dev Framework?)
 - General: Identify essential services and acceptable levels of service to meet legal standards, human needs and development objectives
- Fourth, select EGS with mandate & ability to influence through management
 - City's Environmental mandate
 - City's capacity/ability to influence
 - Biophysical and socio-economic boundaries of the system
 - Services that have a high amount of sunk investments can be prioritised

Methodology (ctd)

- Fifth, looking into the future: assess ability of ecosystems to yield a sustainable flow of EGS and prioritise according to risk
 - Prioritise those services that score high on ecological and socio-economic risk (signalling potential problems with a sustained flow of ecosystems goods and services and a potential high loss of social welfare)
- Sixth, apply valuation techniques to selected valuation case studies

Selection for business case: strong cases first

- Where there is a clear link between City's natural assets and EGS
- When EGS benefit a high number of people and/or has a high anticipated value to beneficiaries
- When EGS are clearly linked to the City's socio-economic development objectives
- Those EGS for which the City has a clear mandate and which the City is able to influence

From Valuation to Budget Impact

- Clear, long-term vision on development and natural assets?
 - expansion/maintenance
- Make link development objectives and natural resources explicit
- Approaching decision makers (UNDP/UNEP 2008):
 - Targeted** data and information (selection)
 - Clear** reasons (for increased budget)
 - Relevant** information only (less is more)
 - Credible** data and process (sources)

Key references

European Commission, 2008. The economics of ecosystems and biodiversity (TEEB). Interim Report.

UNDP/UNEP. 2008. Making the Economic Case – a primer for mainstreaming environment in national development planning. The UNDP-UNEP Poverty-Environment Initiative.

Netherlands Commission for Environmental Assessment (NCEA). 2008. Valuation of Ecosystem Services & Strategic Environmental Assessment. Lessons from Influential Cases. Utrecht: NCEA.

Introduction to facilitation

- Need your insights into relative importance of EGS
 - to beneficiaries
 - to development objectives
 - within environmental mandate and City's ability to influence
 - in terms of ecological and socio-economic risks

Method: Rapid participatory assessment

- Participatory Rapid Appraisal (PRA) is a qualitative survey methodology tool utilised by many organisations including World Bank, Action Aid, Aga Khan Foundation, Ford Foundation, GTZ, SIDA, UNICEF, UNDP and UNCHS (Habitat), to formulate solutions to identified problems.
- The main component tools used by the World Bank in PRA include semistructured interviewing, focus group discussions, preference ranking, mapping and modeling, and seasonal and historical diagramming.
- We did a first round of interviewing, now:
 - Focus group discussions
 - Preference ranking

Logistics & outcome

- 5-7 people per group
- 60 minutes
 - EGS & Users (20min)
 - EGS & Dev Obj (10min)
 - EGS & Mandate/Influence (15min)
 - EGS & Risks (15min)
- Outcome:
 - Priorities with motivation (labtop)
- Report back per group
- Short discussion