

**Working with local actors on ecosystem-based adaptation
of vulnerable delta-city Beira, Mozambique**



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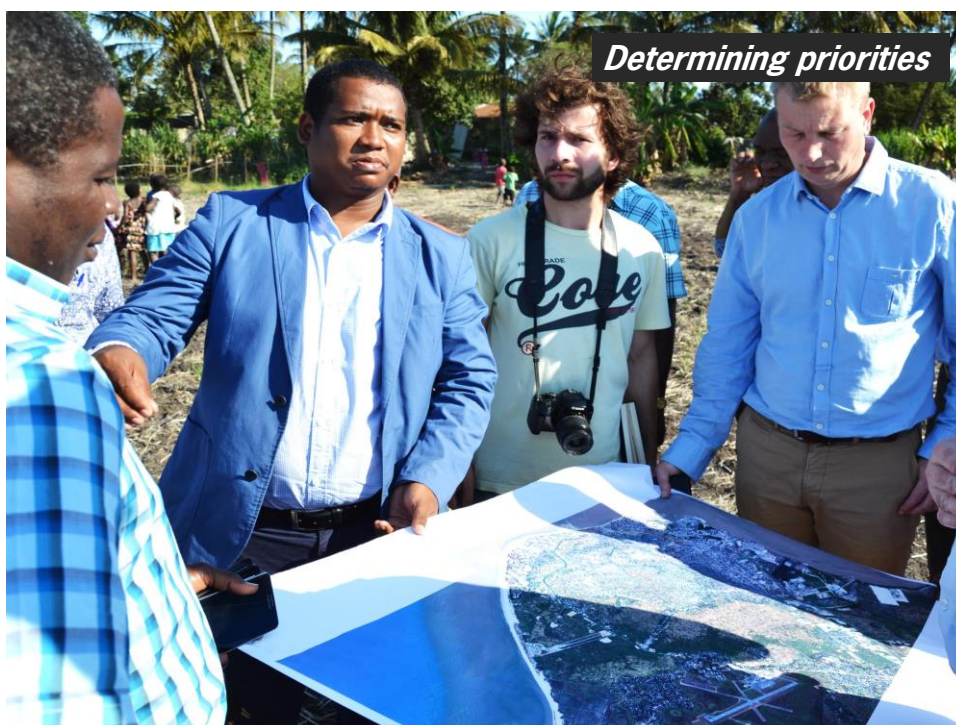
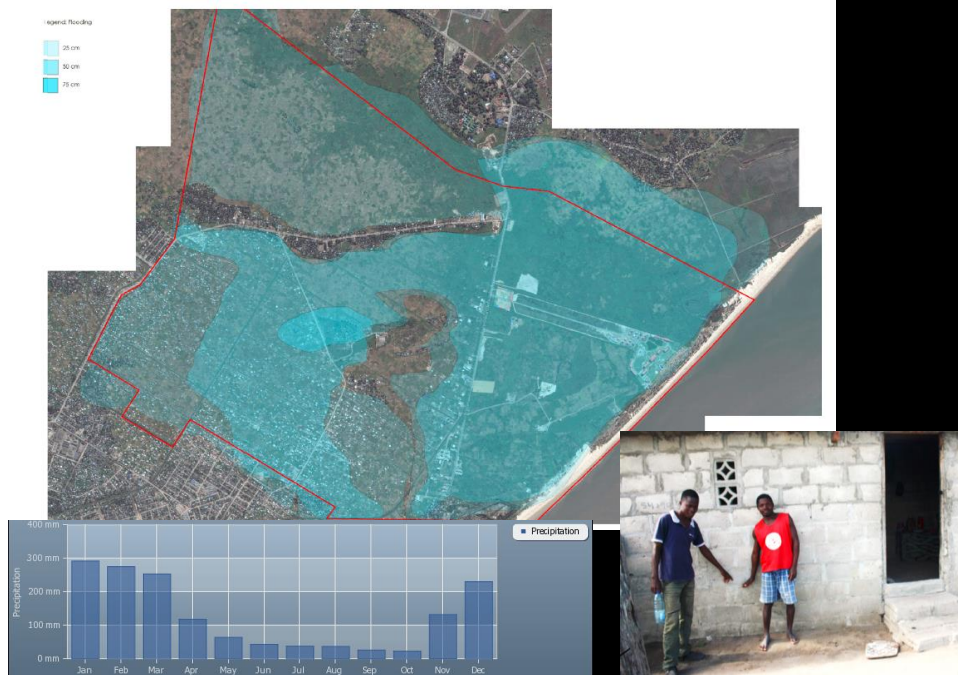








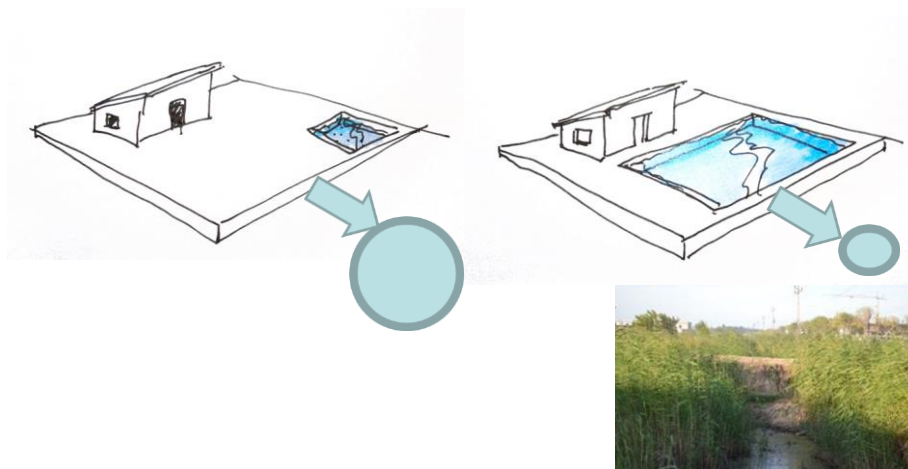
Flooding (based on interviews inhabitants and height interpretations)

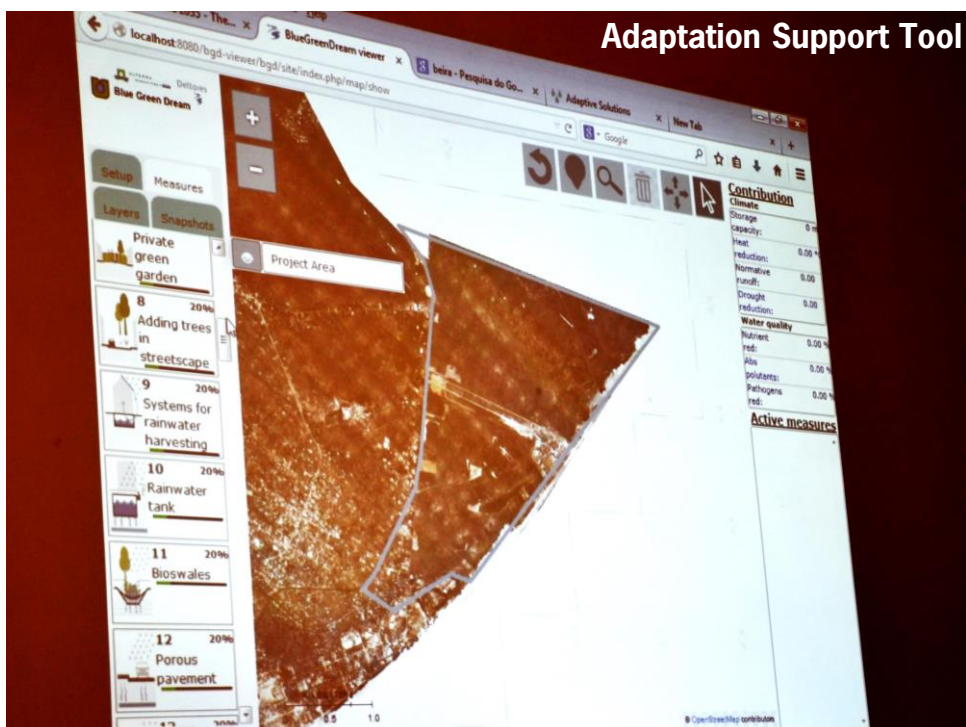




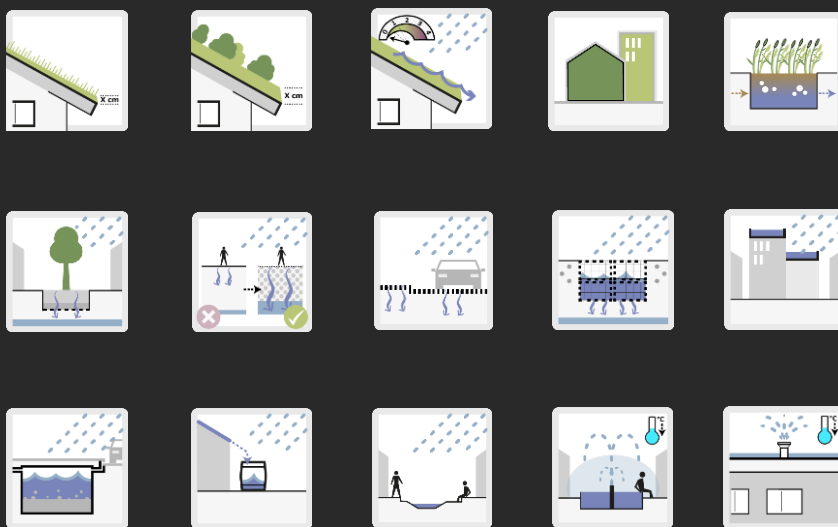
Explaining solution directions

Retenção: 1200 m³/ha (T = 10 ano)
Capacidade de drenagem: 10 l/s/ha





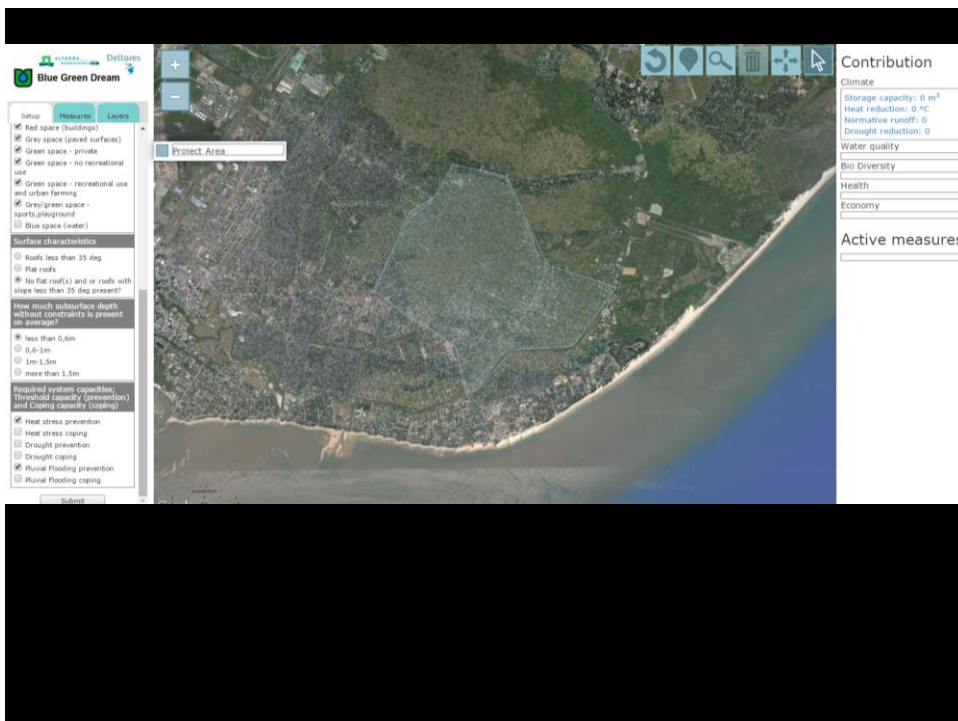
More than 60 EbA and other measures for adaptation of urban areas



Source Adaptation Support Tool

Selecting adaptation measures (incl. ESS)

- Bacias de retenção com infiltração 
- Bacias de retenção largas 
- Bacias de retenção pequena 
- "Bioswales" / "wadi's" 
- Capacidade de infiltração aumentada 
- Cobertura de solo por arbustos, arvores 
- Conexão / interligação de vazão de água 
- Compartimentos 
- Canais de drenagens largas 
- Casas elevados 
- Estradas verdes
- Casas protegidas as inundações
- Pântanos urbanos / plantas aquáticas



Blue Green Dream

Setup | **Measures** | **Layers**

- ☒ Red space (buildings)
- ☒ Grey space (paved surfaces)
- ☒ Green space - private
- ☒ Green space - no recreational use
- ☒ Green space - recreational use and urban farming
- ☒ Grey-green space - sports, playground
- ☐ Blue space (water)

Surface characteristics

- ☐ Roofs less than 35 deg
- ☐ Flat roofs
- ☐ No flat roof(s) and/or roofs with slope less than 35 deg present?

How much subsurface depth without constraints is present on average?

- ☐ less than 0,6m
- ☐ 0,6-1m
- ☐ 1m-1,5m
- ☐ more than 1,5m

Required system capacities; Threshold capacity (prevention) and Coping capacity (coping)

- ☒ Heat stress prevention
- ☐ Heat stress coping
- ☐ Drought prevention
- ☐ Drought coping
- ☒ Fluvial Flooding prevention
- ☐ Fluvial Flooding coping

Contribution

Climate

- Storage capacity: 0 m³
- Heat reduction: 0 °C
- Normative runoff: 0
- Drought reduction: 0

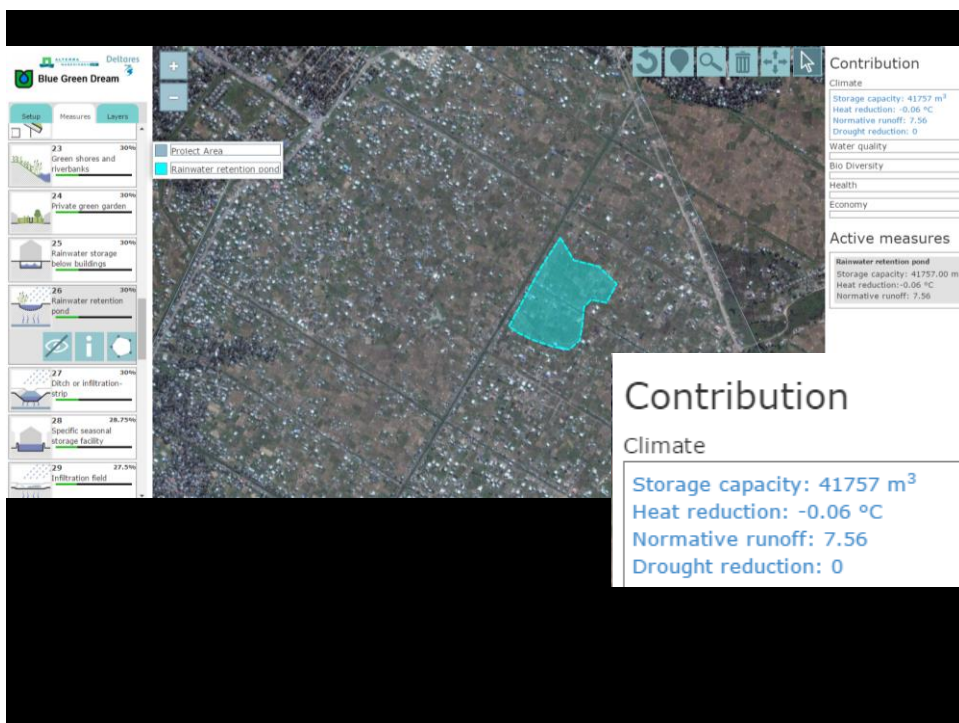
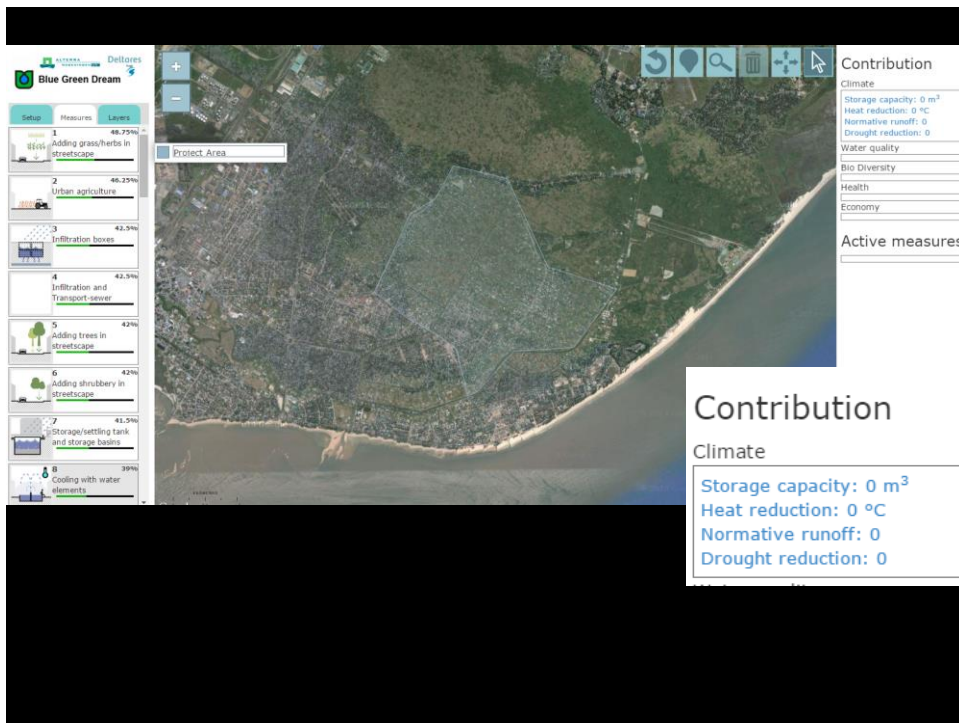
Water quality

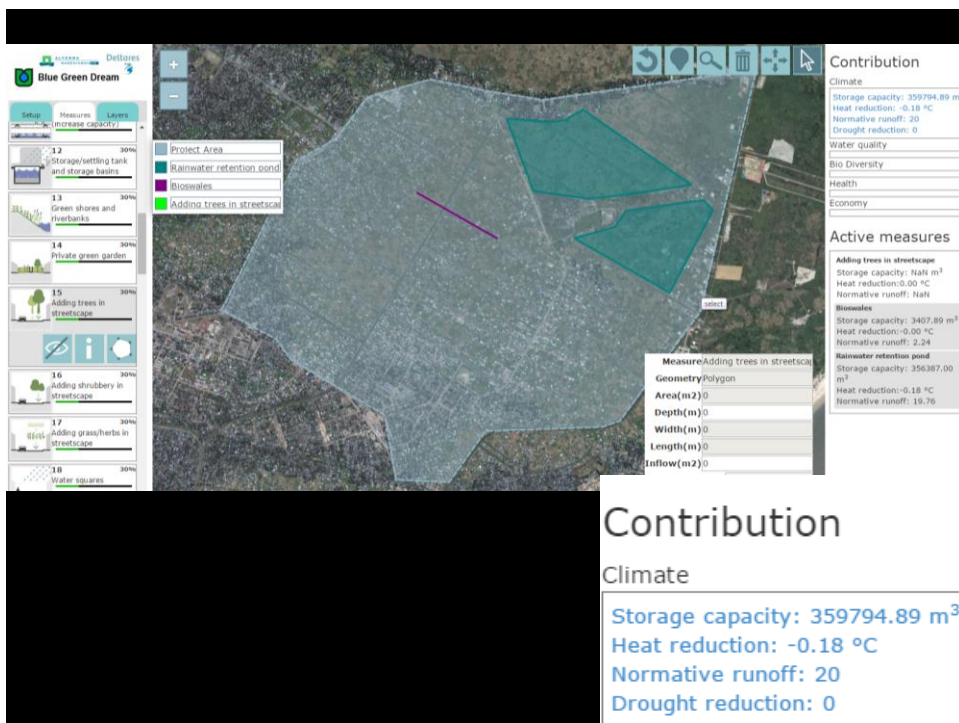
Bio Diversity

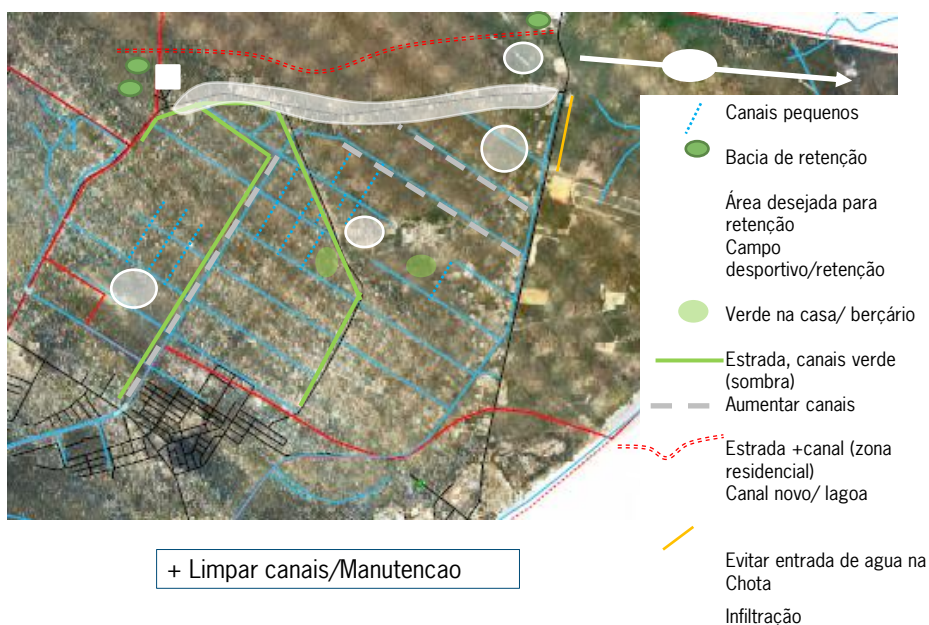
Health

Economy

Active measures







Quantitative adaptation strategy

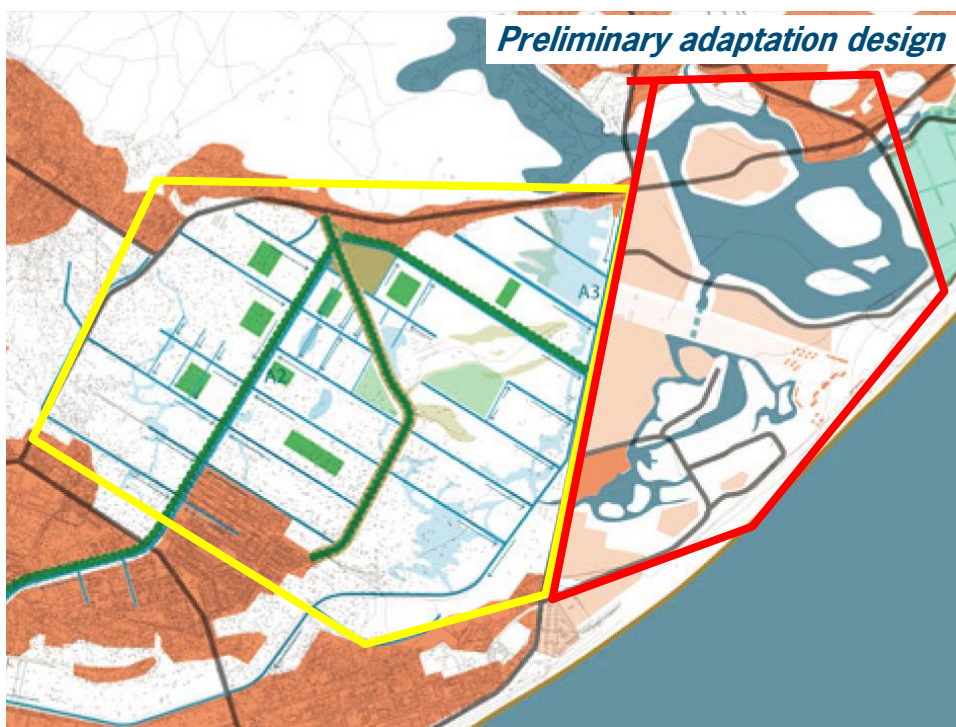
- Área Chota: 7.69 km²
- Tarefa armazenamento: 1.000.000 m³ (T=10 anos)

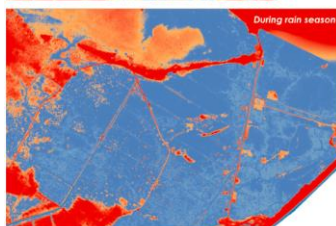
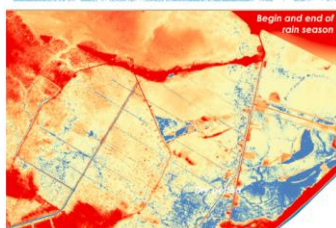
Medidas	Volume armazenado	Dimensões
Bacias de retenção	330.000 m ³	1m vertical extra em bacias pequenas e 0.5m em bacias grandes
Canais de infiltração	60.000 m ³	10% da área, canais 2m profundidade
Água superficial	180.000 m ³	10m largura em canal principal e 5m em canal secundário
Armazenamento	570.000 m³	

- Medidas adicionais (não apresentadas na mapa)

Medidas	Volume	Dimensões
Micro	18.000m ³	1m largura e 0.5m profundidade

	Período de retorno
Curto prazo	1 – 2 anos
Prazo médio	5 anos
Longo prazo	10 anos





- Soil becoming available from earth works: 50 % clay, 50 % sand;
- Revenue clay: 15 USD/m³ (based on an Inventory in the Beira Masterplan project)
- Revenue sand: 12.50 USD/m³
- Revenue fish-farming: Chota 2,500 USD/year; Lagoon: 5,000 USD/year
- Revenue recreational use Lagoon: 5,000 USD/year;
- Revenue reed production: 500 USD/year
- Sale of residential plots near the lagoon: net revenue 7,500 USD/plot; 100 plots
- Avoided cost flooding: 5,000 USD/year as a result from measures in Chota and 5,000 USD/year as a result from the lagoon
- Avoided cost malaria: 5,000 USD/year








Conclusion

Dutch Delta knowledge

Sophisticated tools (Adaptation Support Tool)

Local geo-information

Local stakeholder knowledge

+

Community-based EbA adaptation strategy

