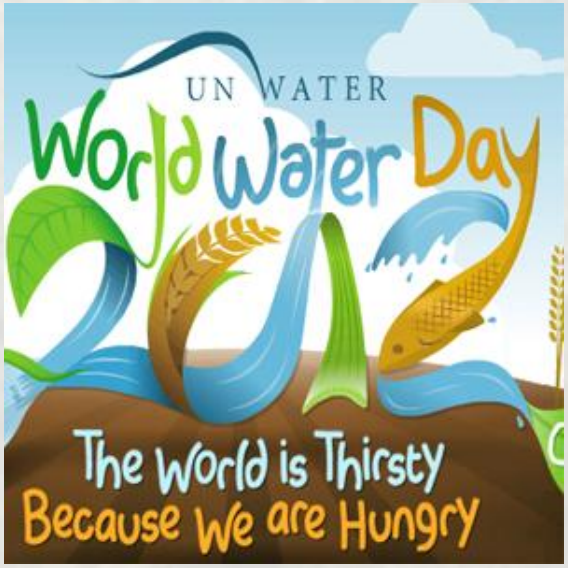

Fresh Water Buffering
Combating the threat of salinization
3R
MANAGING THE WATER BUFFER

Problem analysis

- 50% of world population lives near the coast: Water sources for drinking, agriculture and industry are depleting
- Challenge of climate change: sea level rise, storm surges, long dry spells, flooding



We believe that fresh water buffering is an option

But: Often overlooked by planners: unknown, uncertain, invisible

Our response: priority mapping, pilots/proofs, cost/benefit, upscaling

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Fresh Water Buffering

Project of Aqua for All and Acacia Water

Co-funding: Partners voor Water

Co-partners: IGRAC, Meta Meta

- Aim
  - Promote application and upscaling 3R in coastal zone
- Approach
  - Development of quick scan methodododology
  - Test in 4 pilot countries (Bangladesh, India/Tamil Nadu, Kenya and Mozambique /Zambeze delta)
  - Dissimination and pilot formulation

Quick Scans

More than just technology!

1. Geographical scan for priority and needs mapping
2. Institutional scan for anchoring and upscaling
3. Financial engineering for upscaling

Geographical Scans

Best change for implementation and upscaling

1. Where there is need (and money/interest)

   High population density, seasonal drought, economic activity

2. Where there is hardly any alternative

   No permanent surface water, no easily accessible groundwater

3. Where there is potential

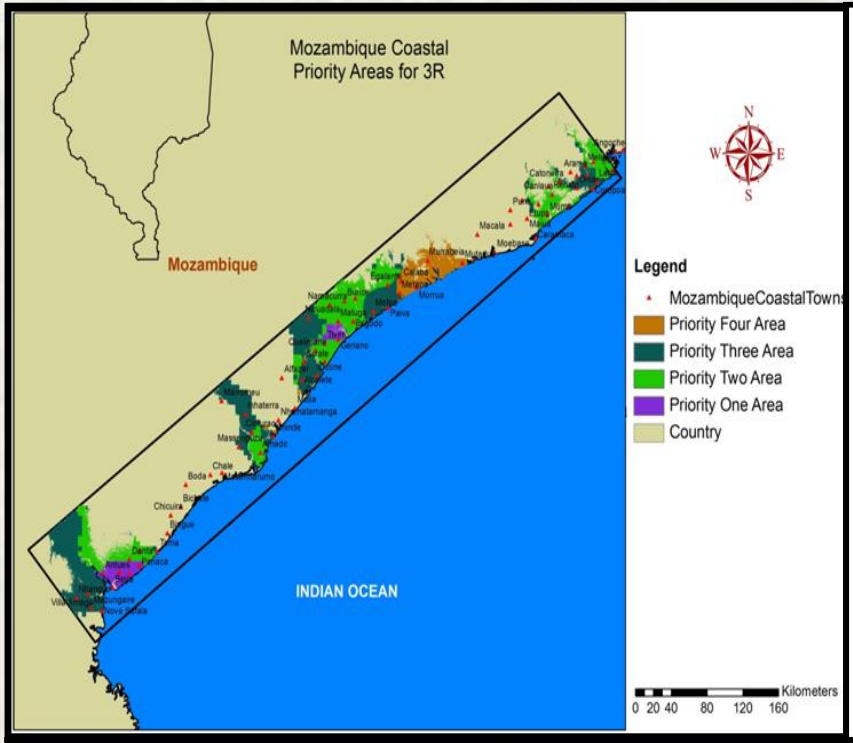
   Seasonal water, rainfall, limited natural recharge

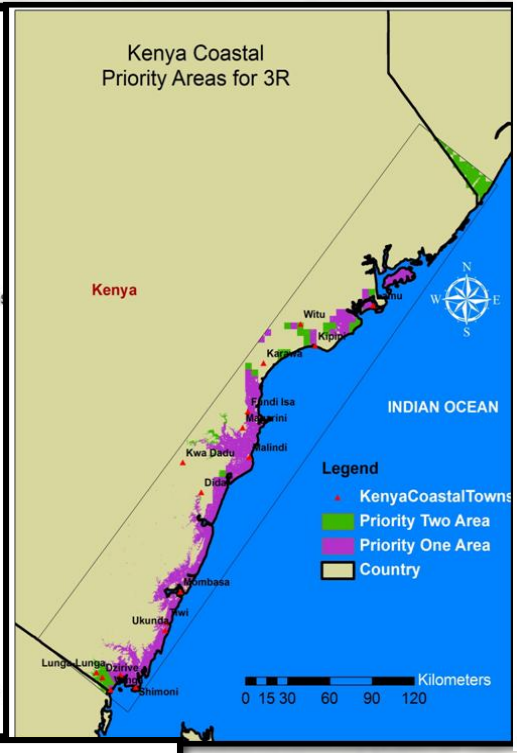
4. Which method is most applicable

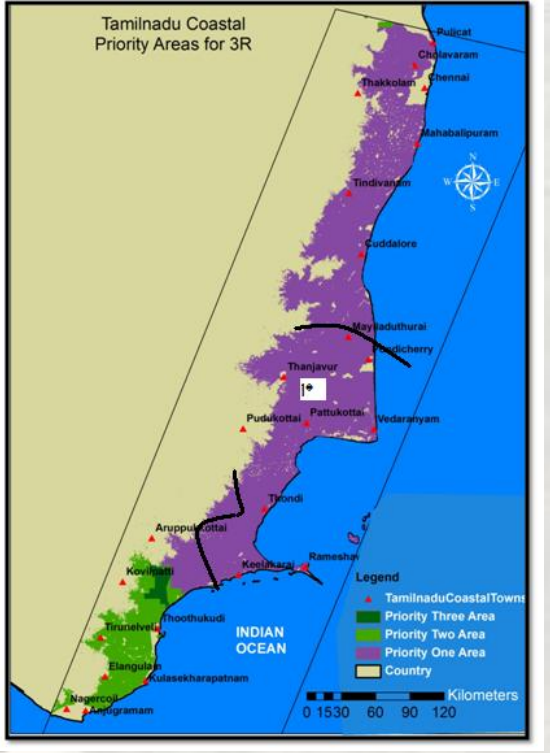
Geographical scans

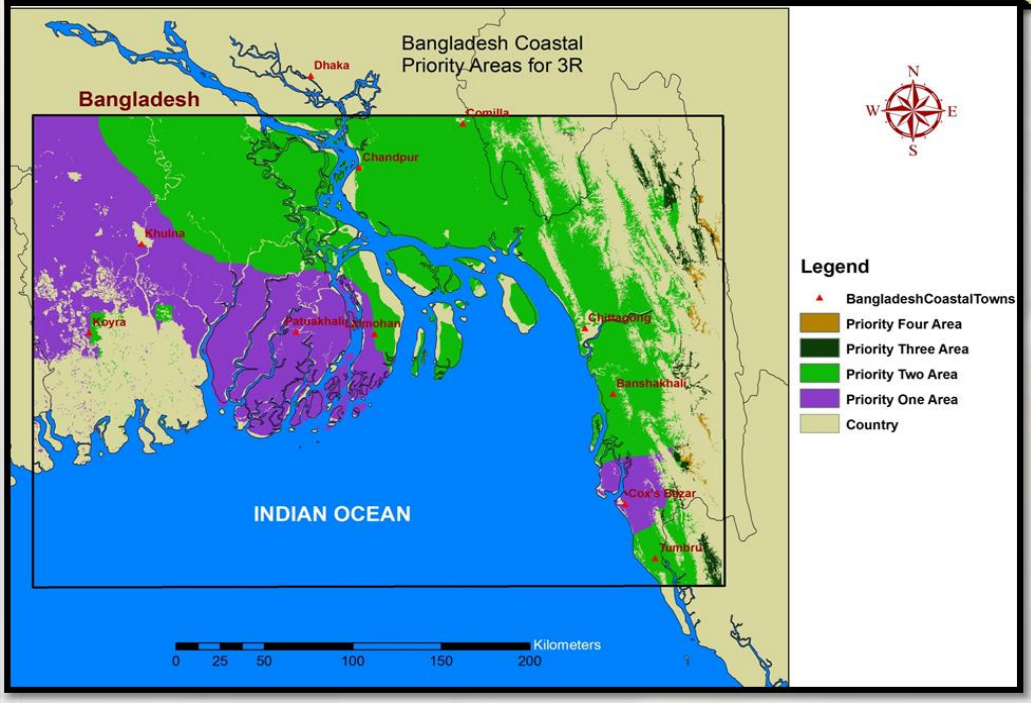
STEP 1: Automated priority mapping from free global data sources:

- **1a. Exclusion of areas**
  - Elevation: <0 and >50 m; (sea; no coast/salinity)
  - no mangroves; (salty; ….. more not automated)
  - (frequently) inundated (… poorly mapped)
  - dense forest or Ramsar Site (Ramsar, …. not global)
- **1b. Priority ranking on combi population and wet**
  - **Population density** (<25/25-50/50-150/150>/km2; built up)
  - **Number of wet months** (P>65% PE; 9> /87/654 /321 months)









Process more difficult than expected:

* Reliability and accuracy of data
* Relevance of distinguished priority areas not always recognized (e.g. Bangladesh)

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Geographical scan

STEP 2: Improvement by professionals

- **2a. reality check, using alternative data from secondary sources.**

  populated agroforestry areas, irrigated areas (to be included) and areas with frequent or permanent inundation (exclusion).

- **2b. further exclusion of no priority areas,**

  such as zones with permanent fresh surface water within 500 m, areas with an accessible permanent fresh aquifer, high salinity areas and areas with high risk of sea water flooding

- **2c. correction of some excluded areas,**

  including areas with industrial demand, tourist centres, intensive cattle breeding (>200 heads per km2 (2 per hectare)??).

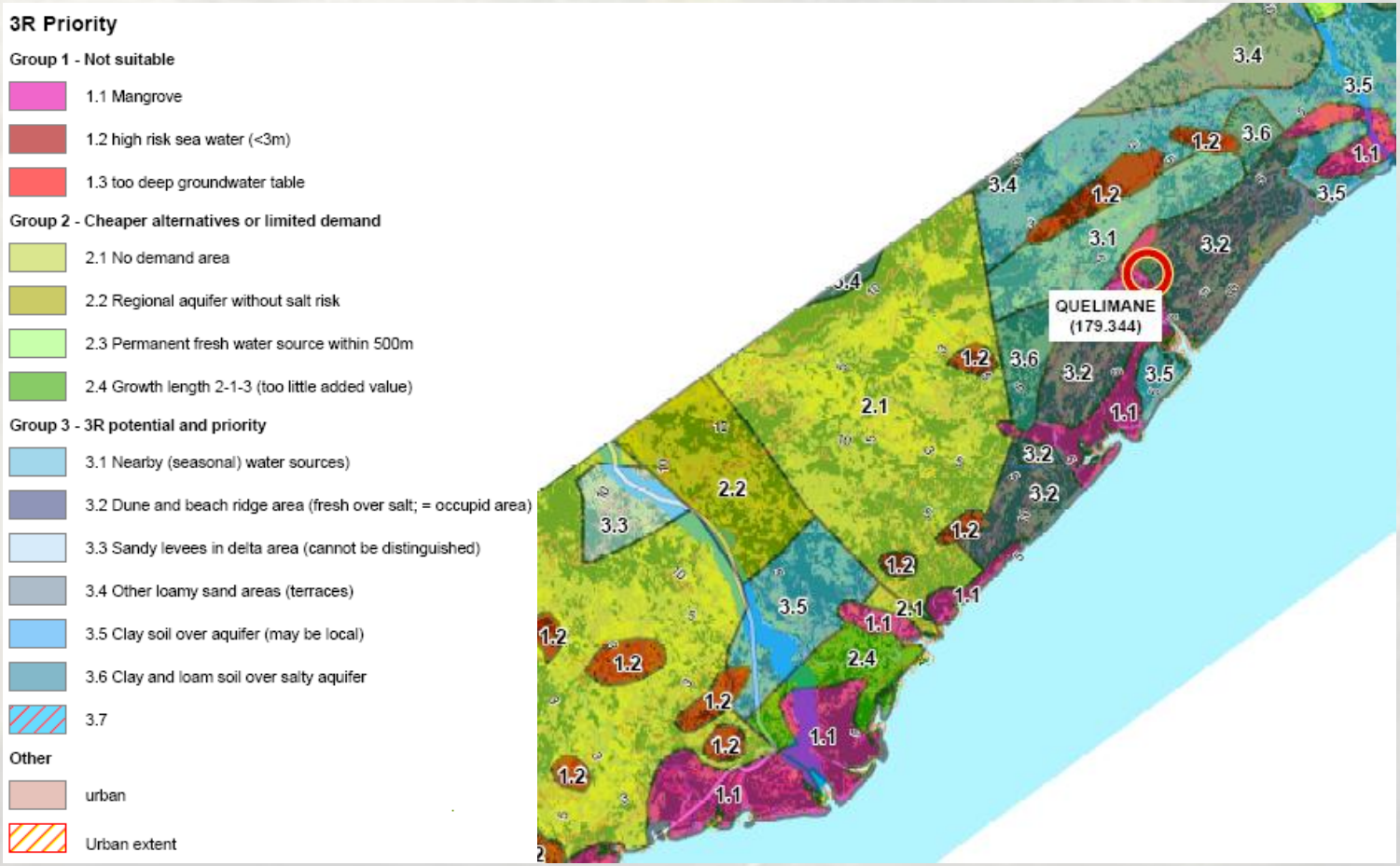
Geographical Scan

STEP 3 : Classification and most feasible options

- 3.1 Nearby (seasonal) water sources
- 3.2 (a)Dune and (b) beach ridge area (fresh over salt; = occupied area)
- 3.3 Sandy levees in delta area
- 3.4 Terraces and dry (sloping) plains (loamy sand)
- 3.5 Lowland - Clay soil over aquifer (may be local)
- 3.6 Lowland - Clay and loam soil over salty aquifer)

- Classification based on applicability 3R technologies
- Green = priority areas selected in workshop

3R Priority/Potential Map Zambeze Delta



Was automated by IGRAC,
Could not be applied in other 3 areas:
Not universal; needs expert input

Institutional Scan

1. Policy , legal and social issues
2. Relevant programs and initiatives
3. Considerations (water use and agric)
4. Possible launching customers and funders

Financial Scan

- Aim is implementation and upscaling
- Use hybrid solutions:
  - Mix of financial instruments
    - grants, loans, micro-credit, franchise
  - Mix of investors:
    - Land owners
    - Local implementors
    - Impact investors (benefits)
    - For profit investors

Financial scan

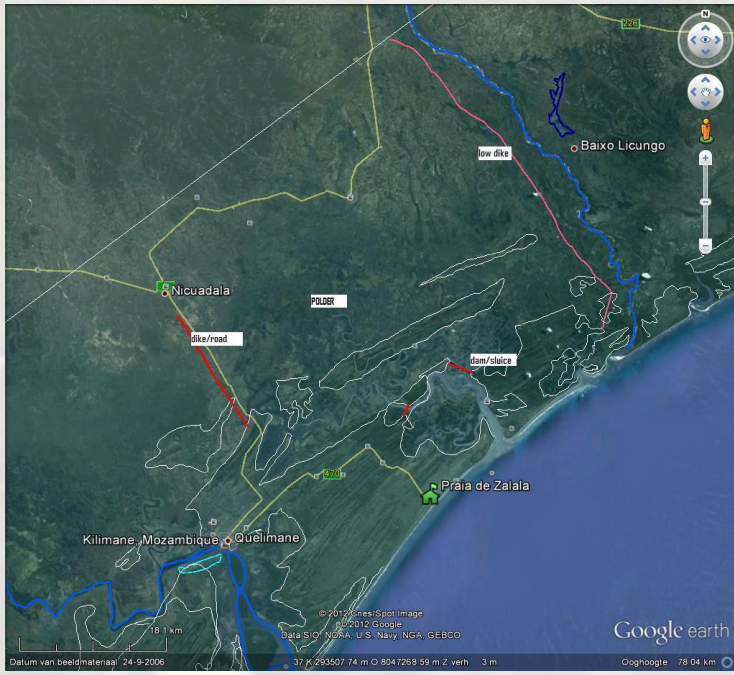
Analogy Access to Safe Water for the BoP

Product Market Combinations – Who is interested

1. Household/schools – Rainwater collection # Closed storage
2. Communities- building storage (sand dams, ponds)
   - Bangladesh Case on well infiltration etc
3. On Farm - Trenching/infiltration devices– low tech/input
4. Irrigation and large scale - Ponding/stream channel and off channel
5. Constructed aquifer storage – medium scale; complex
   - Mozambique case on dune infiltration for Tourist Centres

More crazy ideas

The Quelimane case in Mozambique:



Dilemma:

Invest in protection or let people move to safer place

Dutch design

Create ‘New Holland’ (polders) in otherwise submerging wetlands

Contact

Join the 3R family for knowledge sharing, partnering and new opportunities

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on a solution
without even
knowing it…
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