Water Quality : A Shared Responsibility

World Water Quality Assessment, Water Quality Guidelines and Monitoring

Eric HOA
Eric.Hoa@unep.org
UNEP, Freshwater Ecosystems Unit

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Outline

- World Water Quality Assessment (WWQA)
  - Objectives
  - Modeling Results / Identification of hot spots (Africa)
  - Summary of initial findings / Next Steps
- UNEP Policy Support
  - Development of International Water Quality Guidelines for Ecosystems (IWQGES)
    - Objectives / Concept / Next Steps
  - Compendium of Water Quality Guidelines
  - Monitoring Mechanisms

World Water Quality Assessment Objectives (1)

- Global coverage, with focus on developing countries
- State of freshwater, inland waters
- To provide better understanding about :
  - Type and intensity of water quality problems in different parts of the world
  - Impact of water pollution on ecosystem services
  - Sources of water pollution and policy options for restoring water quality or avoiding water quality degradation

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World Water Quality Assessment Objectives (2)

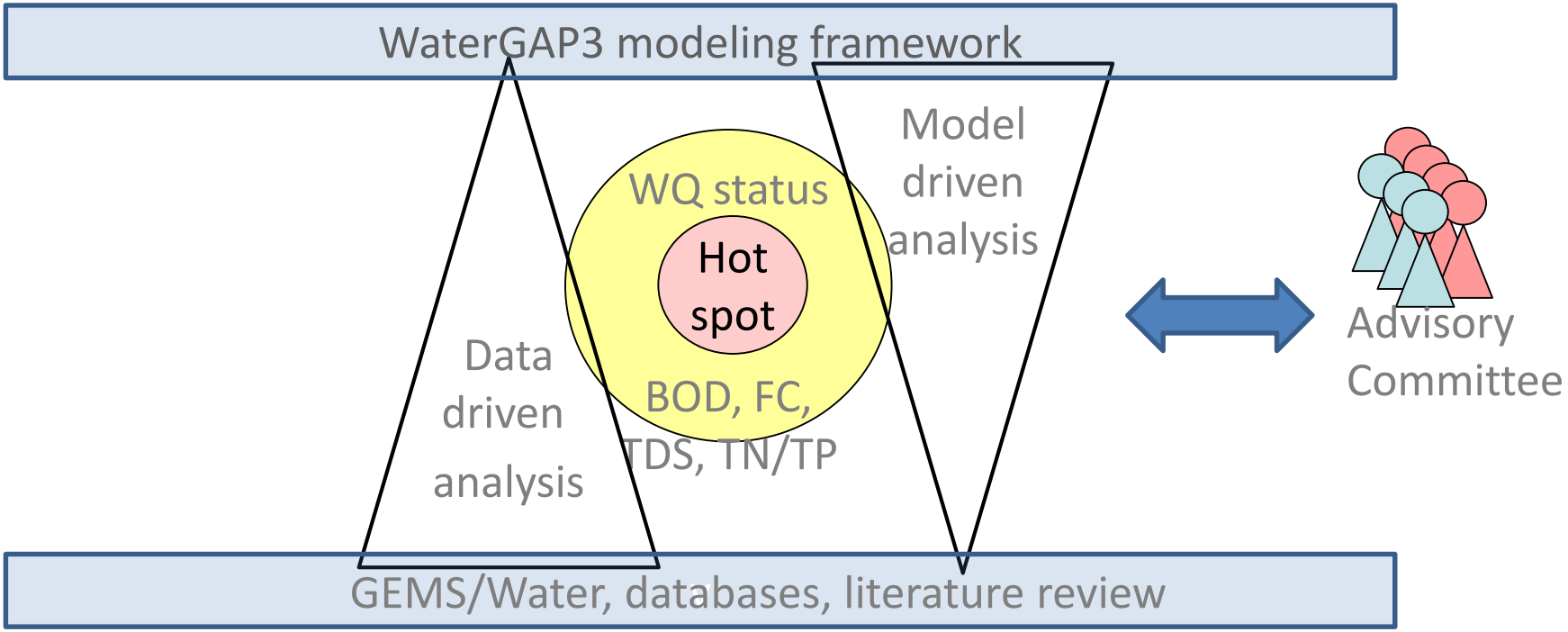
A 2-stage assessment:

- **Stage 1 (2 years)**
  - Using existing models and data
  - Identify current hot spot areas of degraded water quality (use preliminary water quality guidelines as benchmark)
  - Identify sources of water pollution
  - First assessment of freshwater fishery link to food security
  - Survey of policy options
  - Identify main water quality data gaps

- **Stage 2 (3 years)**
  - With new data from Phase I, fill in gaps in assessment of current water quality situation.
  - Develop scenarios that show trends and policy options over 10-20 years. - Climate change, economic growth
  - Evaluate options for abatement (ecological wastewater treatment; wastewater reuse, …)
  - Assess governance options at all levels that would support management of water quality.

World Water Quality Assessment Objectives (3)

Global perspective – Top down



Regional perspective – Bottom up

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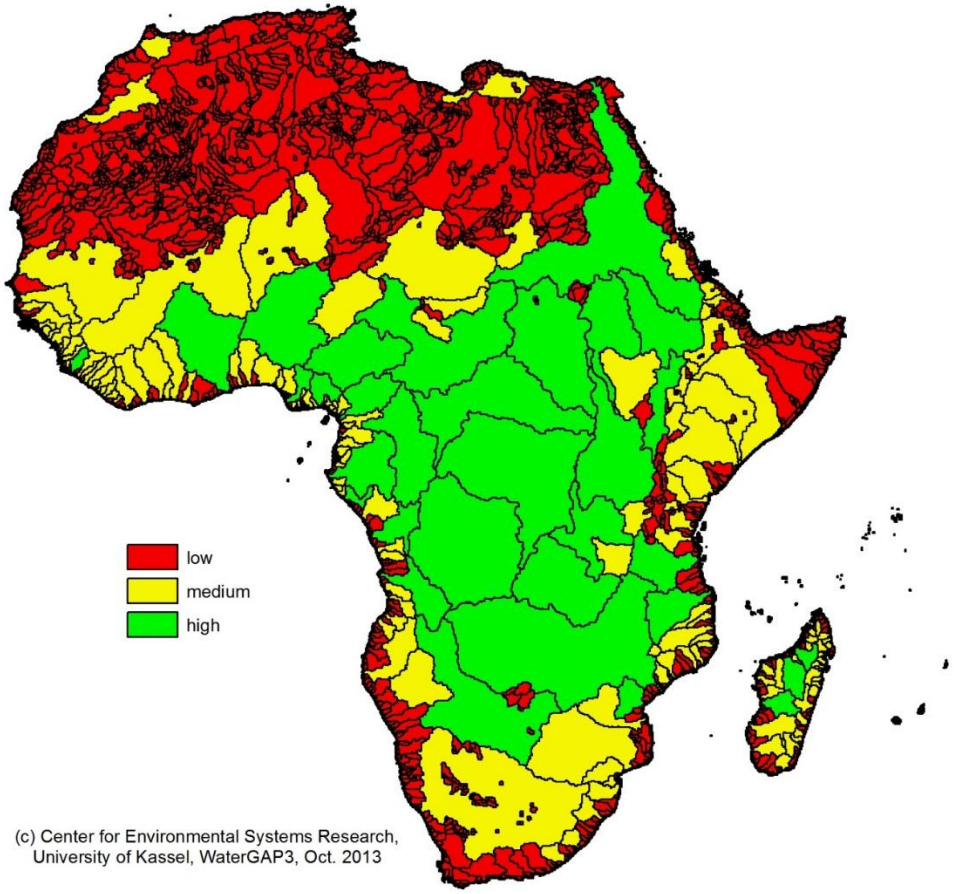
World Water Quality Assessment Modeling Results (1)

Computing inputs

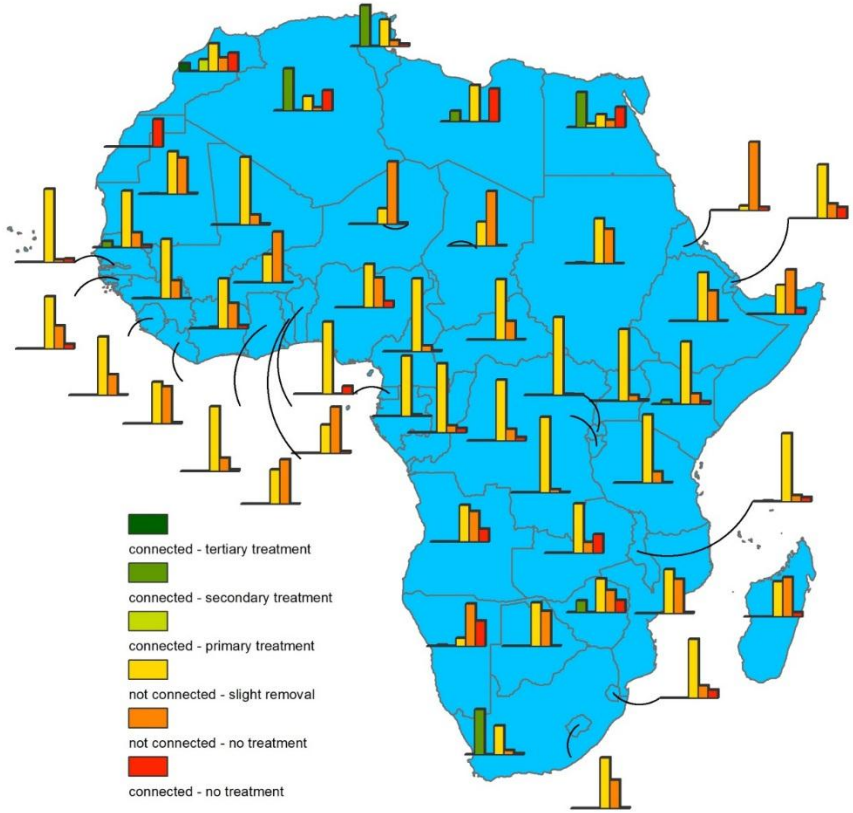
- Synthesize information about population, sanitation and connectivity and make spatially explicit for all of Africa



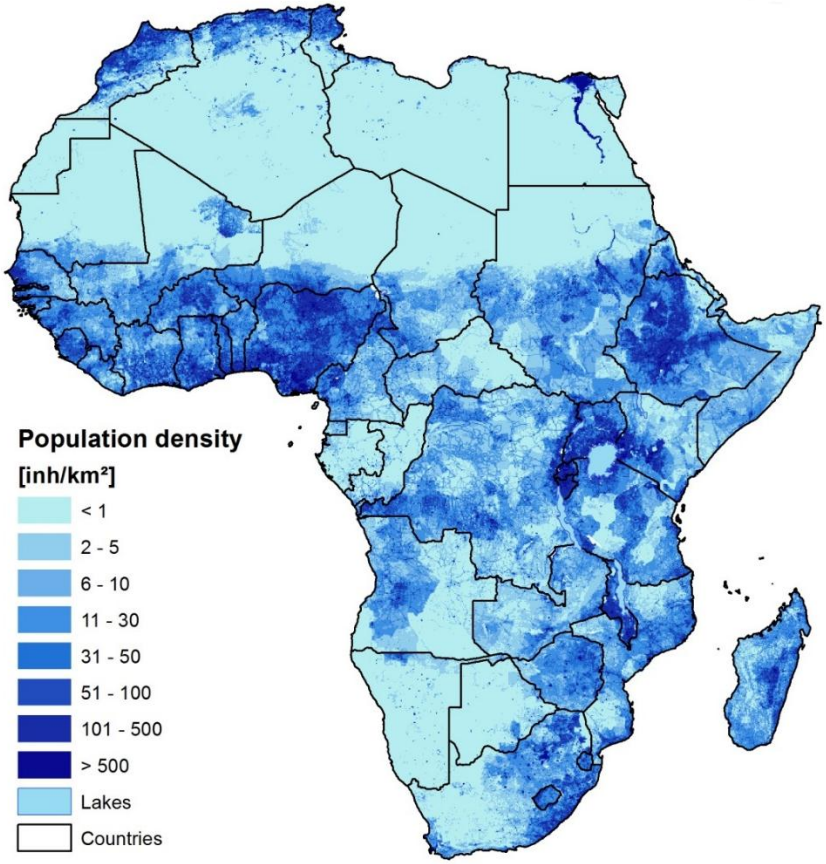
Dilution factor

World Water Quality Assessment Modeling Results (2)

Computing inputs



Connection to sanitation schemes



Population Density

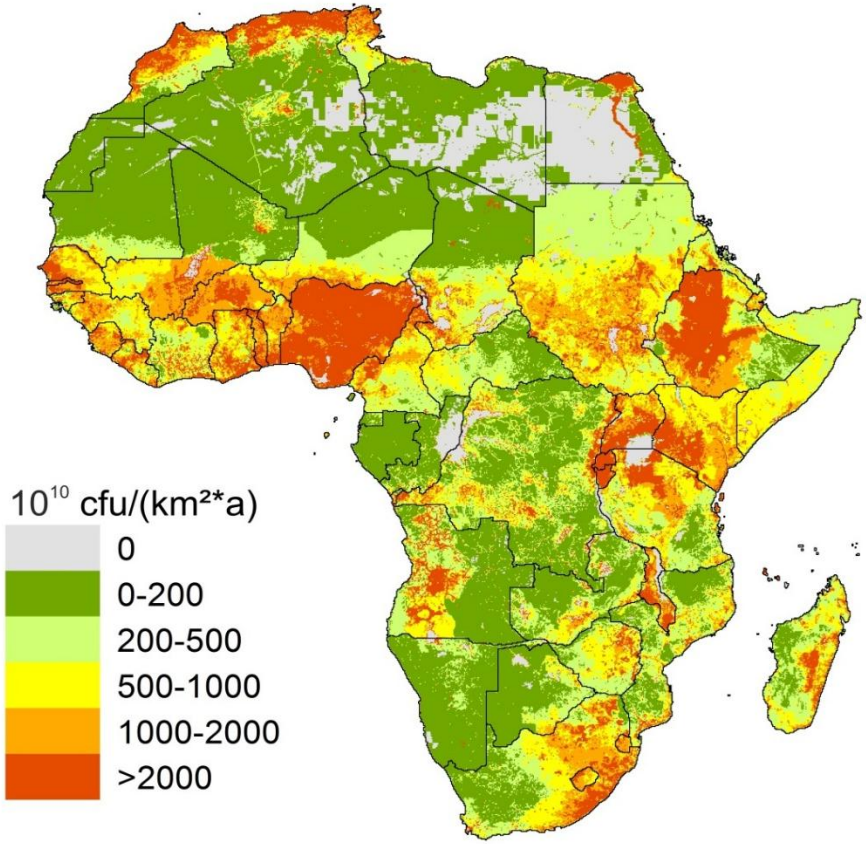
World Water Quality Assessment Modeling Results (3)

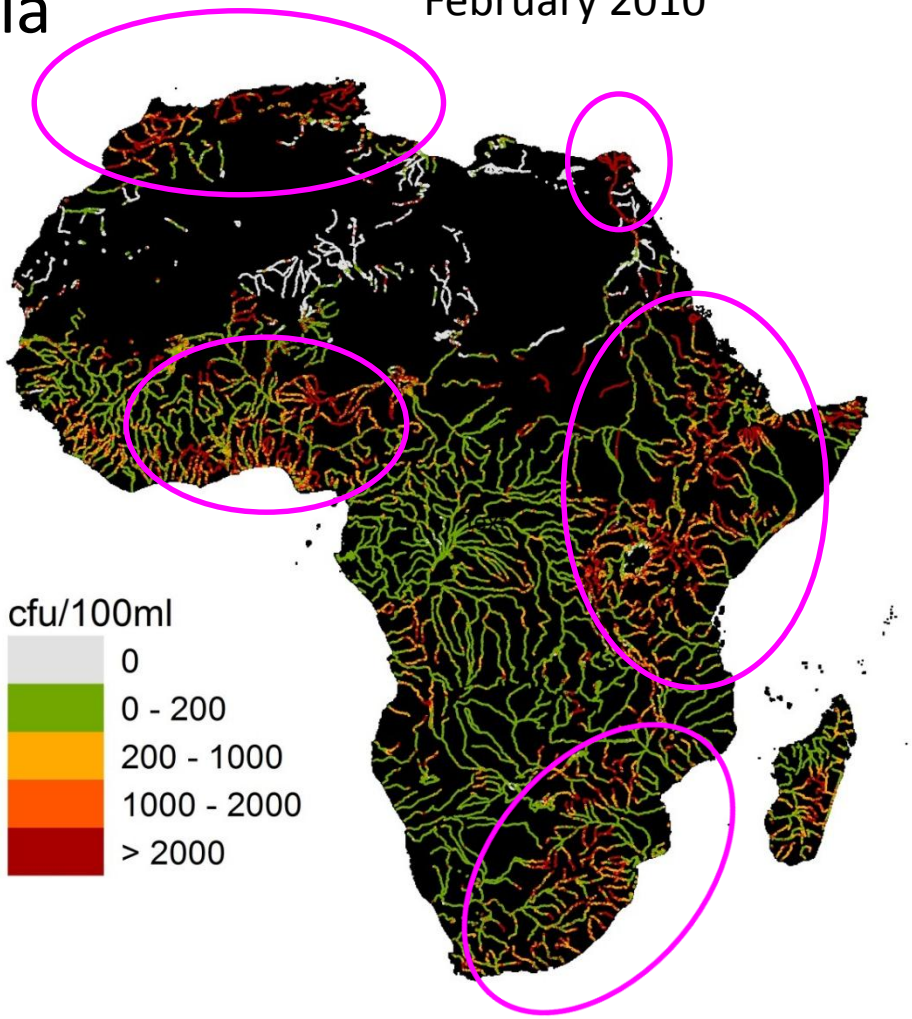
- First time:
  - Computing loads of organic pollution and bacterial contamination for each river basin in Africa (grid cell basis)
  - Calculation of BOD and coliform levels for all rivers in Africa
  - Geographic comparison of BOD and fecal coliform loadings in Africa
  - Estimation of hot spot water pollution areas in Africa

World Water Quality Assessment Modeling Results (4)

Loadings: Fecal coliform bacteria

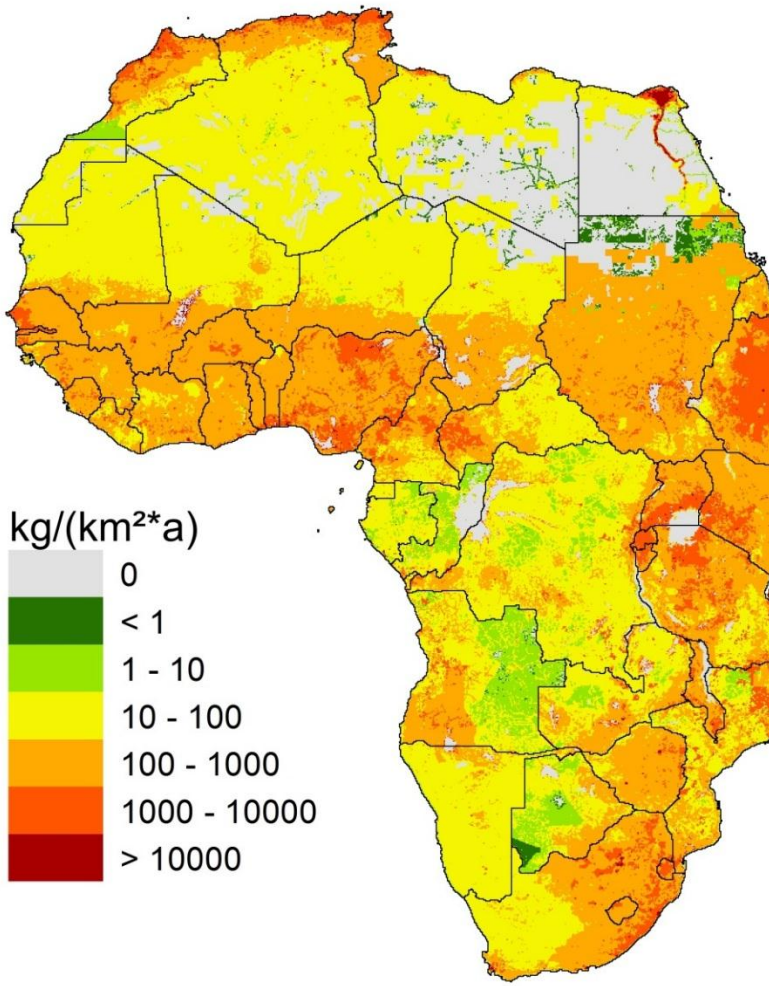
February 2010





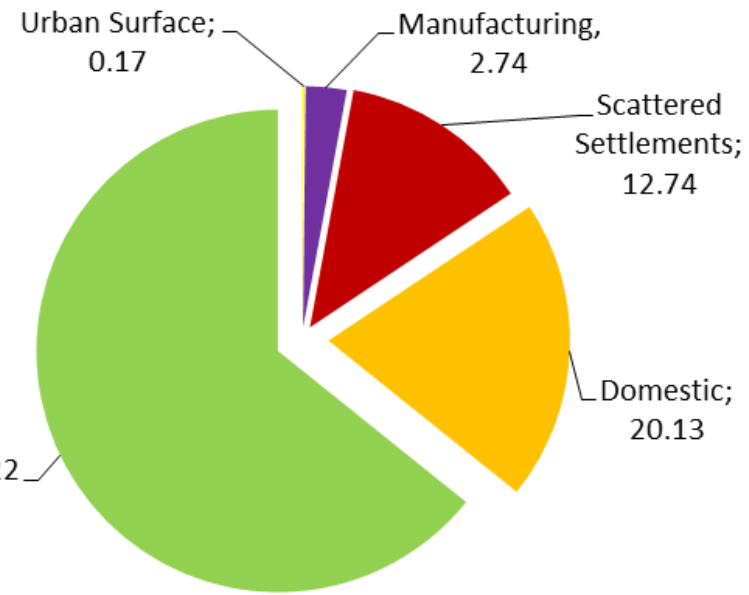
Human and animal input

World Water Quality Assessment Modeling Results (4)

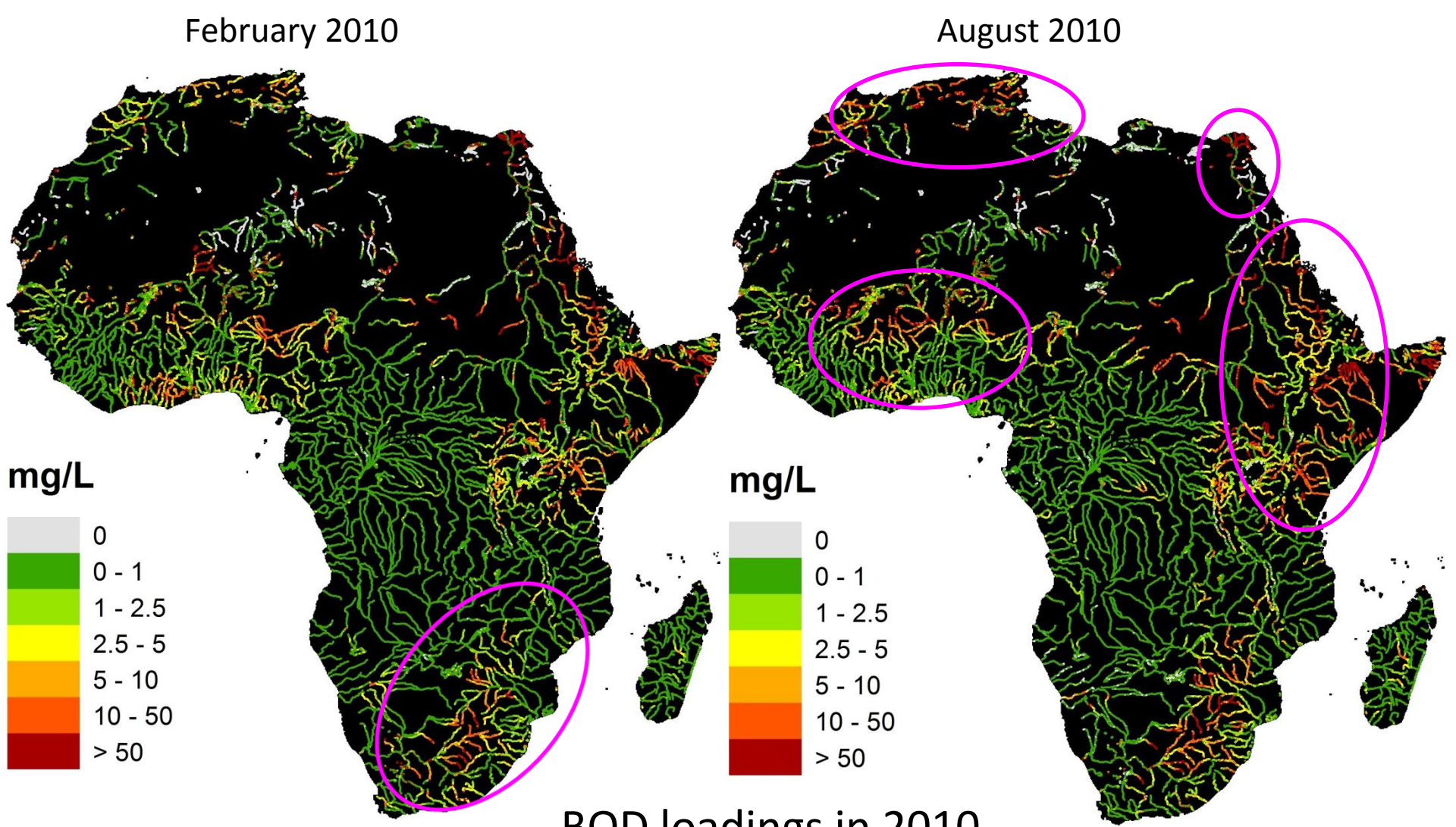


BOD loadings in 2010

~ 8.5 million tons



World Water Quality Assessment Modeling Results (5)



BOD loadings in 2010

World Water Quality Assessment Summary

- Hot spot areas: 17% of population living at big rivers with bacterial contamination >1000cfu/100ml in Africa
- Magnitude of BOD loading uncertain (manure runoff)
- Most important source of BOD: manure runoff; least important: urban surface runoff
- Source profile of BOD loadings vary greatly between countries (e.g. Somalia: manure runoff; Egypt: urban domestic)
- Total BOD loads steadily increased in Africa between 1990 and 2010 (increasing population, livestock, connectivity)
- High potential to provide policy-relevant overview of water quality issues for Africa and other regions

World Water Quality Assessment Next Steps

- Further improvement of estimates for Africa
  - getting regional feedback (obervatories)
- Extension of estimates to Asia and Latin America
- Extension of estimates to include:
  - other water quality parameters (total dissolved solids, total N, total P, water temperature)
  - Lakes
- Apply water quality guidelines as thresholds
- Merger of model-driven & data-driven analyses: threats to human health & inland fisheries (food security) and policy responses

UNEP Policy Support
IWQGES – Objectives (1)

OP 1: ‘Requests the Executive Director, in partnership with Governments, scientific institutions, United Nations agencies and other relevant stakeholders, particularly those from developing countries, to develop *International Water Quality Guidelines for Ecosystems* that may be **voluntarily used** to support the development of national standards, policies and frameworks **taking into account existing information** while integrating, as appropriate, all relevant aspects of water management’.
(February 2013)

UNEP Policy Support
IWQGES – Objectives (2)

The Guidelines are envisaged to be:

- Non prescriptive and provide the basis for improving national frameworks
- Provide guidance on
  - How to set up (local/national/regional) standards
  - Addressing enforcement of standards
- Address the diversity of country regimes, challenges and eco-systems
- Link water quality data and management for improving water quality for ecosystems

UNEP Policy Support
IWQGES – Objectives (3)

The IWQGES build on existing Guidelines and will be

- A framework providing a set of scientifically sound and politically viable parameters, indicators and possible threshold values
- Be necessarily broad, have a coarse resolution
- Contain checklists and sections in a “cookbook” style
- Present case studies and examples for regional approaches : “Regional specificity guarantees regional use”

UNEP Policy Support IWQGES – Ecosystem Heath Focus (1)

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- Identify the water quality conditions that sustain healthy aquatic ecosystems and human uses
- Move management action towards the protection and quality improvement of ecosystem health
- Unpack generic vision statements about ecosystem health - What would a healthy ecosystem look like?
  - Is it safe to drink?
  - Does it have abundant fish or many fish species?
  - Is it safe to eat the fish?
- Establish more specific ecosystem health goals
  - Select appropriate indicators
  - Set targets and benchmarks
  - Establish thresholds of concern
  - Use to report on success

UNEP Policy Support IWQGES – Ecosystem Heath Focus (2)

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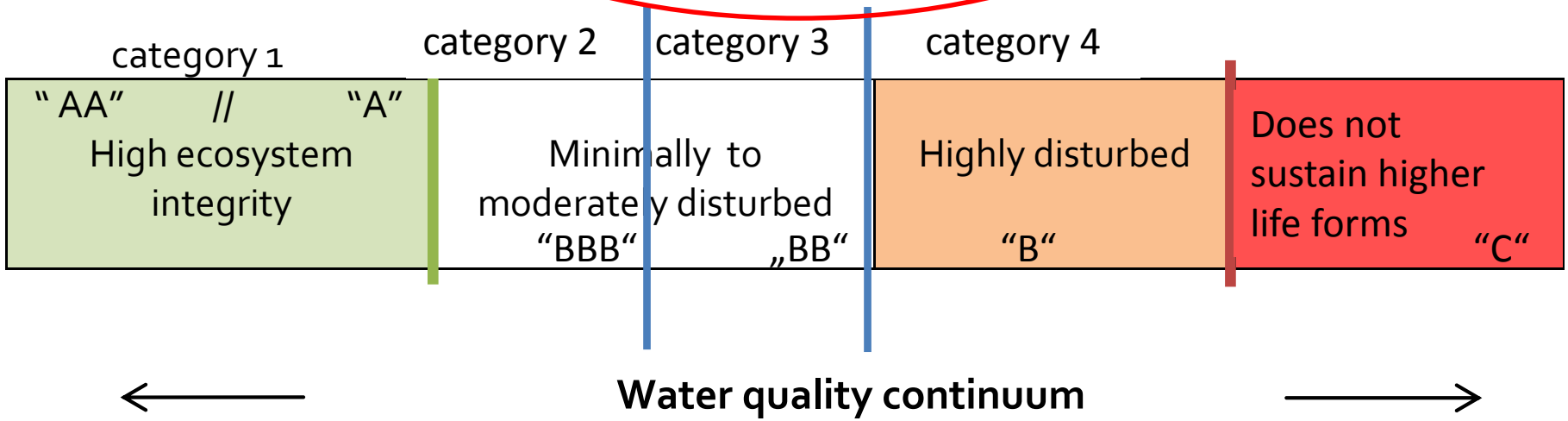
Tradeoffs between ecosystem integrity/ functions and uses



Establish thresholds, benchmarks -> aspirational values, level of risk

UNEP Policy Support
IWQGES – Next Steps

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a
- Mobilization/ inception phase (May-Dec, 2013)

b
- Development of Draft Guidelines (Jan-Dec, 2014)

c
- Global and regional consultations on Draft Guidelines (Jan-Dec 2015)

d
- Finalization and approval of Guidelines (Jan-June 2016)

e
- Outreach, dissemination and capacity building (post mid-2016)

f
- Monitoring and improvement of approved Guidelines (post mid-2016)

UNEP Policy Support
Global Compendium on Water Quality Guidelines

Objectives :

- provide an overview of existing global, regional, national, catchment level water quality guidelines, and how they are applied
- Guide decision makers on water quality suitable for different uses - promote efficient use of water resources
- Reducing water use conflict by using water smarter
- Platform to share information and enhance knowledge on water quality
- Will be a reference to development of International Water Quality Guidelines for Ecosystems

Expected results:

- Improved access by officials to information on water quality requirements for different water uses to promote efficient water use.
- Establishment of a network of water quality experts promoting the use of water of different qualities for different purposes.

UNEP Policy Support
Monitoring Mechanisms

New Joint Initiative UN-Habitat / WHO / UNEP

- UN-Water umbrella
- Building on existing initiatives (JMP, GLAAS, GEMS-Water, …)
- Focus on :
  - Water Resources Management
  - WASH
  - Geodata
  - Wastewater and water quality
- Development of Task Forces

Thank you!

Contacts :

Eric.Hoa@unep.org
Thomas.Chiramba@unep.org
Aruwa.Bendsen@unep.org