

Climate Change and Water in Africa: A Strategic Perspective

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Millennium Development Goals

➤ Goal # 7:

Ensure Environmental Sustainability



Millennium Development Goals

- Goal # 7:


Ensure Environmental Sustainability

- What does “sustainability” mean in the context of water resources?




What is sustainable?

a sustainable water resource is defined as a “**flux of water that is managed** with the objective of maintaining the **availability and quality** of water for as long as the **current climate prevails**”, Eltahir (1999)

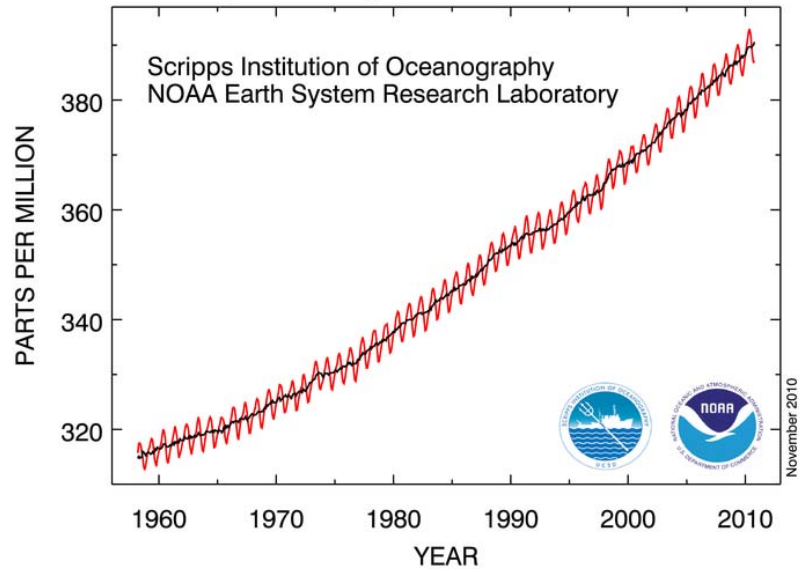
The background of the slide features several concentric, light blue circular ripples that resemble water droplets or raindrops, scattered across the lower half of the page.

What is sustainable?

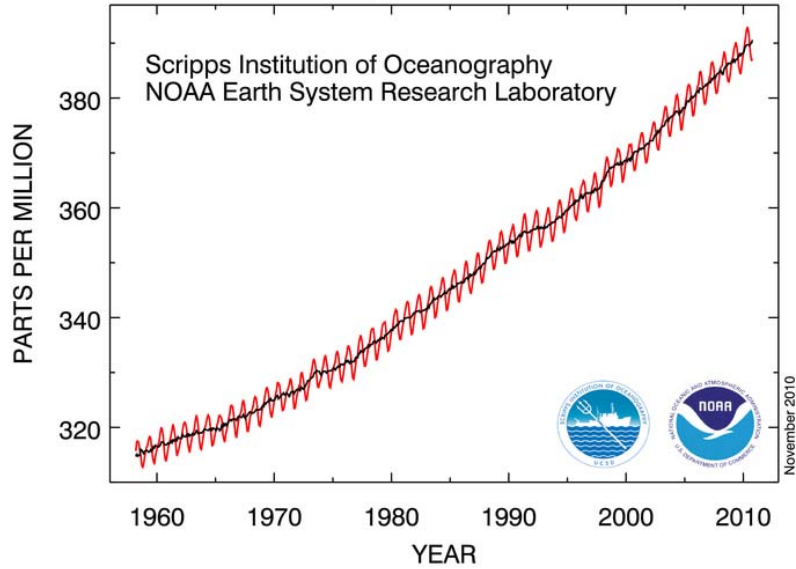
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Atmospheric CO₂ at Mauna Loa Observatory

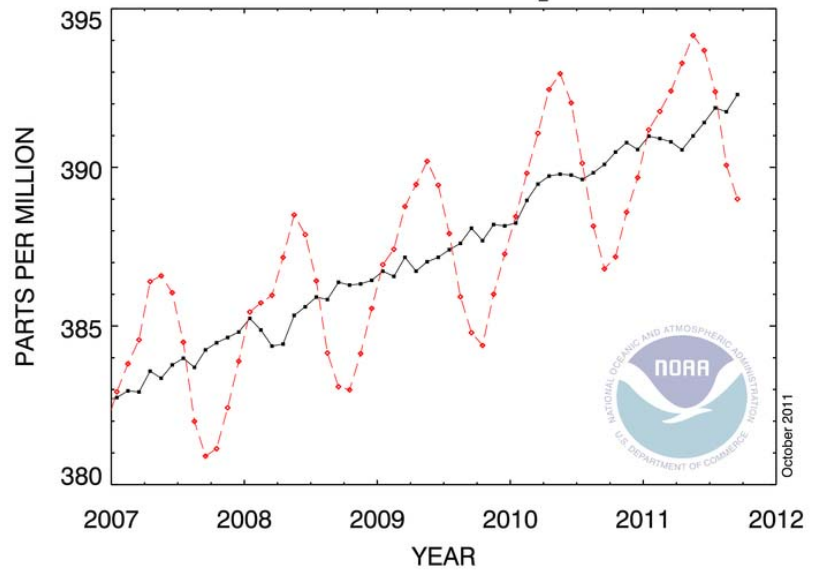


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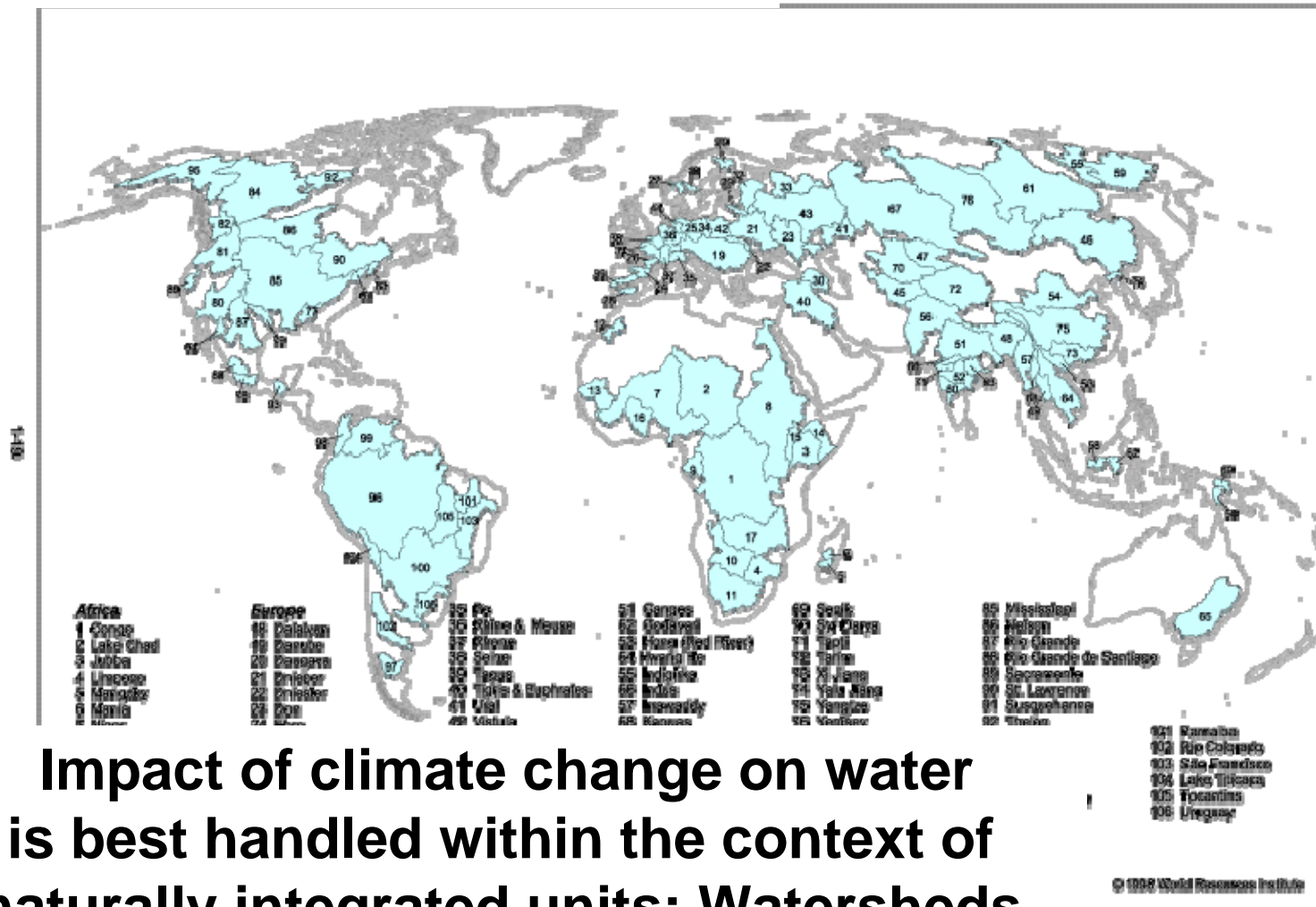


**Climate Change
problem is not
going away!**

RECENT MONTHLY MEAN CO₂ AT MAUNA LOA



Global Map of Primary Watersheds



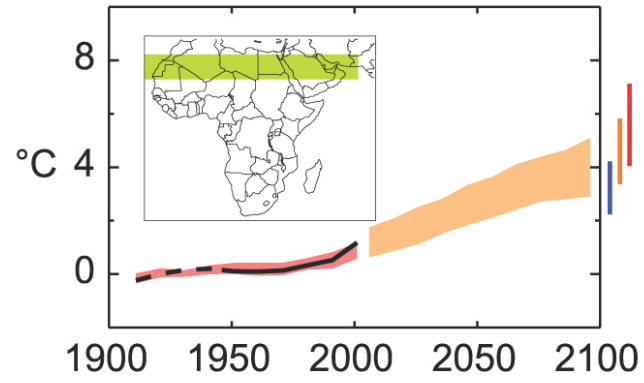
Impact of climate change on water is best handled within the context of naturally integrated units: Watersheds

Impact of Climate Change on Water Resources in Africa

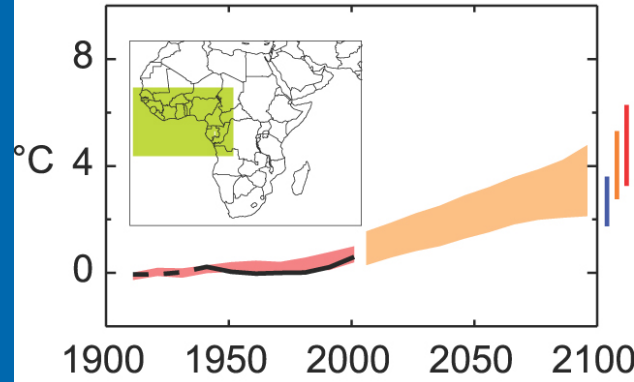
- While global models seem to agree in predicting warming of surface temperature over this region, the same models disagree on even the sign of the predicted changes in rainfall and hence river flow.



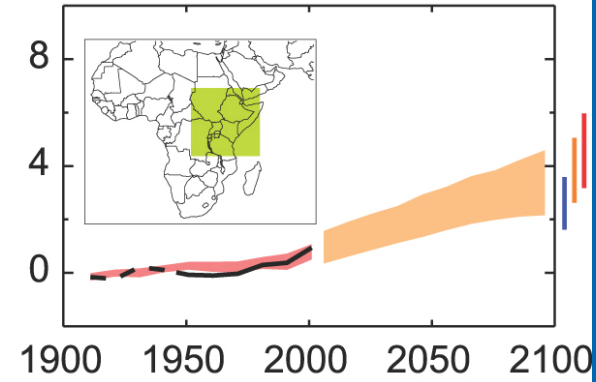
SAH



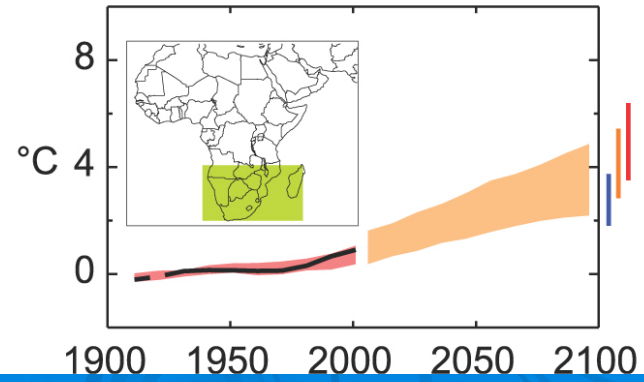
WAF



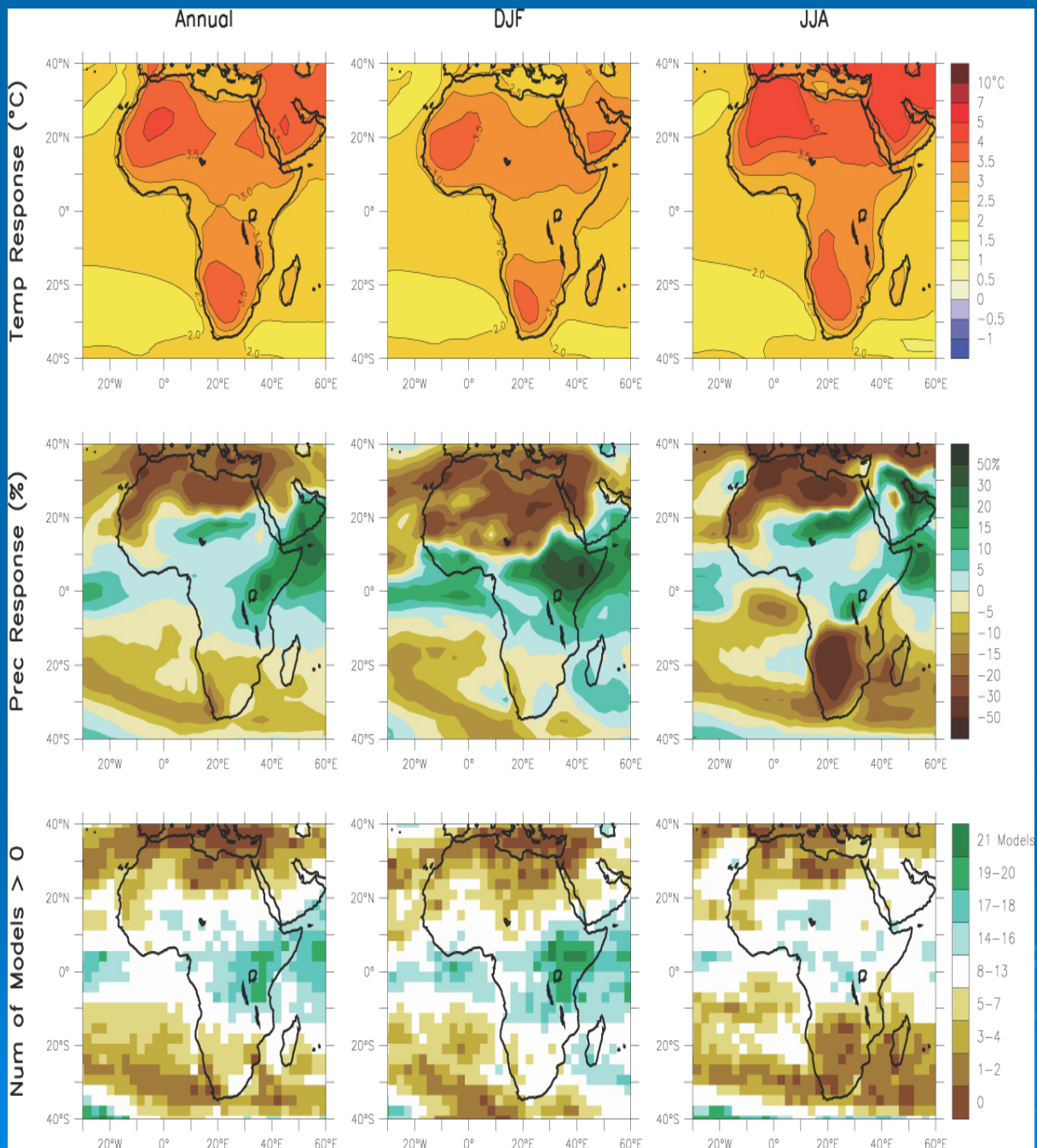
EAF



SAF



(Boko et al, 2007).



(Boko et al, 2007).

Impact of Climate Change on Water Resources in Africa

- When it comes to the future of water availability in Africa, our best answer would remain uncertain for years to come.



How can we approach the issue of Climate Change in the context of African river basins, given this uncertainty?



APPROACH

Here we recommend

- a proactive approach that consciously seeks to avoid any future surprises, relative to climate change in Africa;
- a new approach that is based on natural integrated hydrologic units defined by African river basins.

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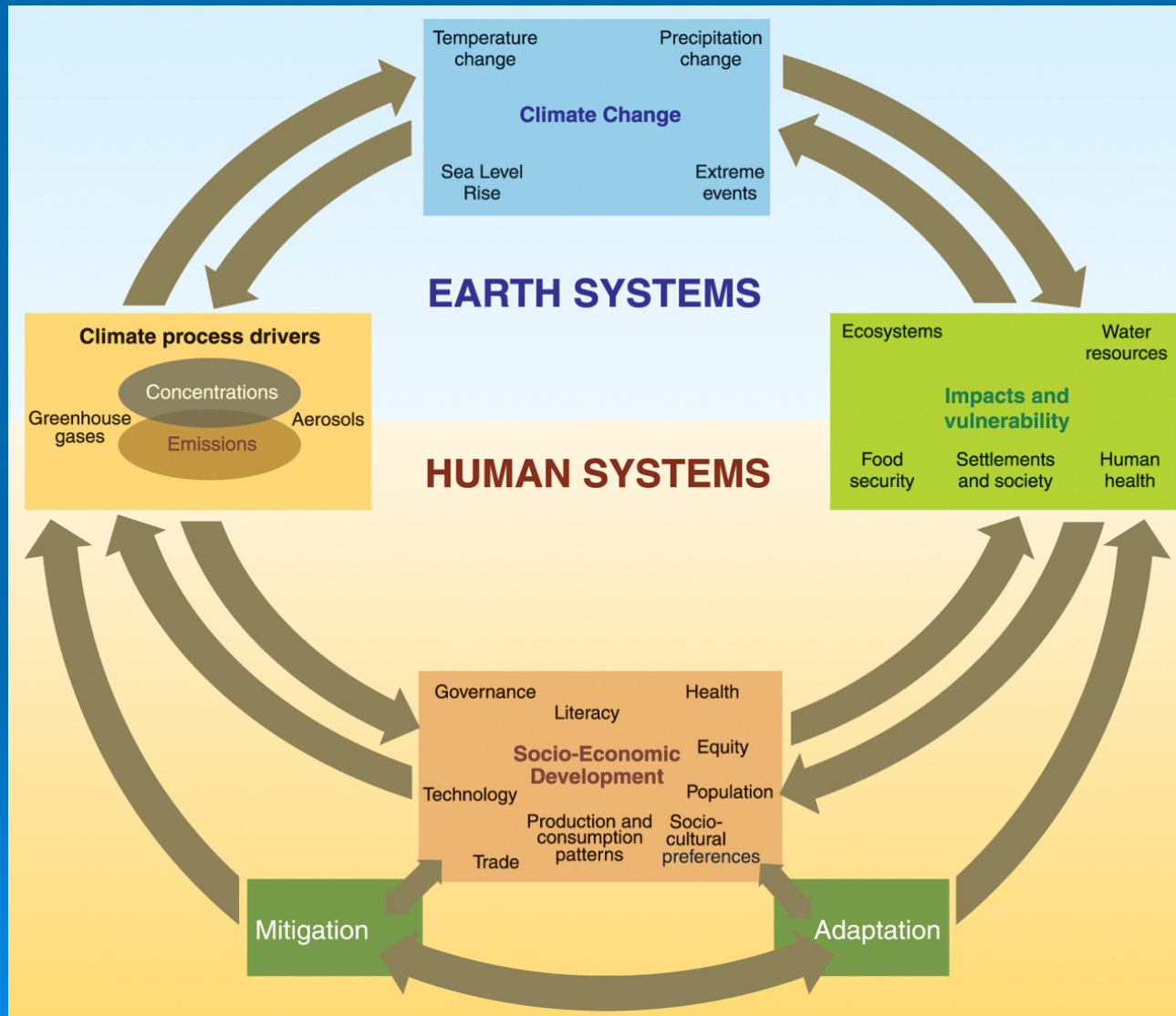
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 - flexible since it needs to evolve as climate change predictions become more certain;
 - low cost which is always desirable, and more so given the level of uncertainty;
 - likely to achieve multiple objectives, beyond the issue of climate change.

Climate Change Processes




New Strategy

- An approach that is based on 5 pillars and addresses:
 - Prediction,
 - Adaptation,
 - Mitigation,
 - Potential opportunities, and
 - Education

New Strategy

- (1) improvement of regional predictions through local development and use of the new class of **regional climate models**; and enhancement of upper atmospheric observations networks

New Strategy

- (2) development of the regional capacity for adaptation through:
- (i) minimization of irrigation water losses which should help to alleviate water shortages in the event of decreased flow, and
 - (ii) addition of new reservoir storage capacity that can be used to manage water better in the event of increased flow;
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New Strategy


(3) limited good faith efforts in mitigation of climate change by combating anthropogenic deforestation and desertification in the region;

New Strategy

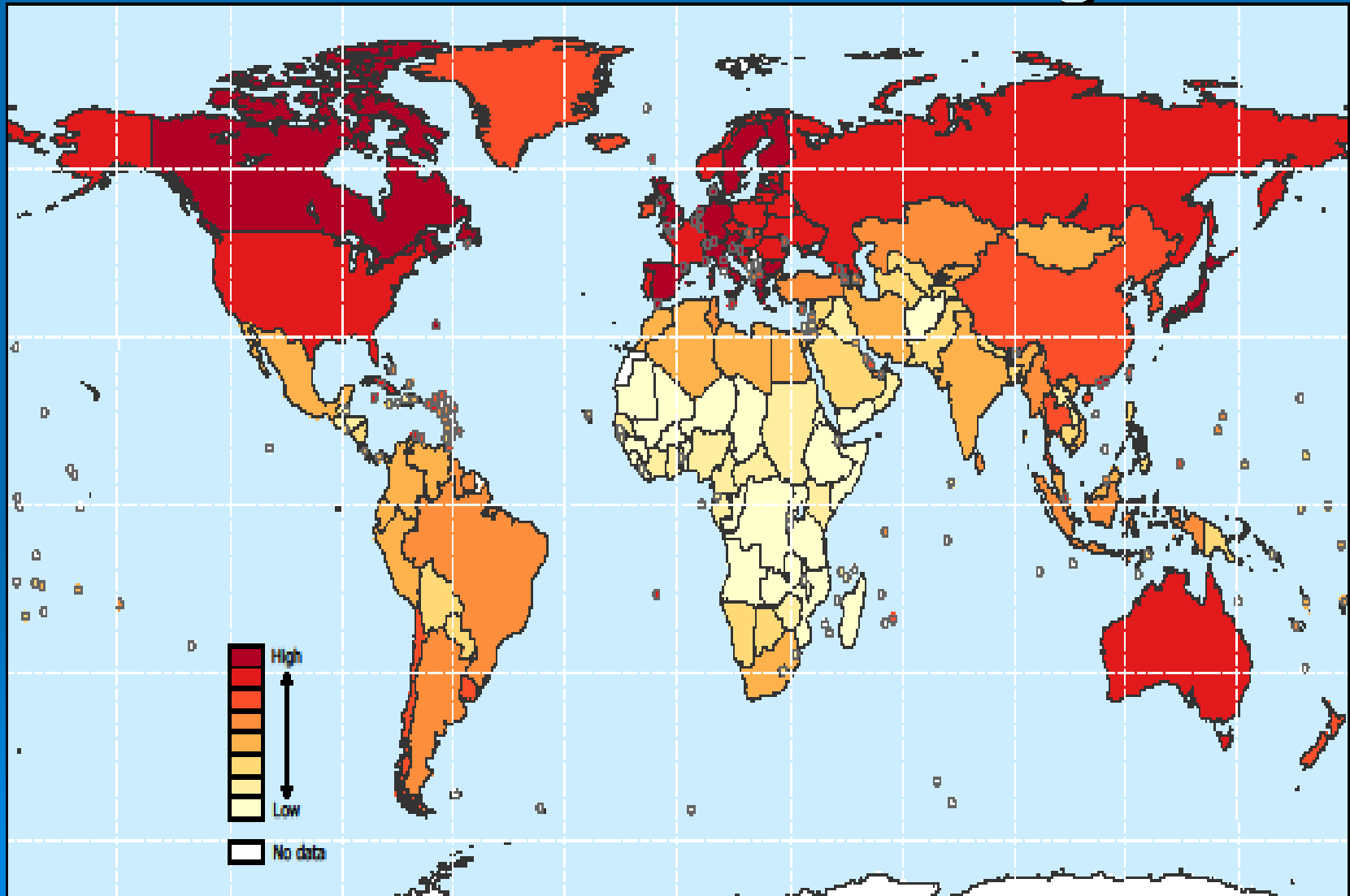
- (4) vigorous pursuit of the opportunities available:
- (i) through the **Clean Development Mechanism** (CDM) of the Kyoto Protocol to get certified emission reductions (CER) for any new hydropower project in Africa, and
 - (ii) through new international compensation schemes that may be developed in the future

New Strategy

(5) enhanced efforts in education, research, and outreach to prepare the next generation of scientists, engineers, and policy makers who will deal with the issue of climate change as impacts become more evident and models become more accurate.



Elephant in the room: Africa has the Lowest Median Age



Thank you

The support of Eastern Nile Technical Regional Office (ENTRO) in development of a Nile Basin-specific version of this strategy is acknowledged.

