

Why water resources management is central to the adaptation challenge

Adaptation to climate change in developing countries: a land and water management challenge

Convenors: AusAid, GWP, DHI

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***Water Management, Water Security
and
Climate Change Adaptation:
Early Impacts and Essential Responses***

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Key message:

- **Water is the primary medium through which climate change will impact people, ecosystems and economies**
- **Water resources management should therefore be an early focus for adaptation to climate change**
- **It does not hold all of the answers to adaptation; a broad range of responses will be needed**
- **But water is both part of the problem and an important part of the solution**
- **It is a good place to start**

Framing the issue

- **Objective: Achieve and sustain water security,**
- “... harnessing water’s productive potential and limiting its destructive potential”
- a focus for adaptation strategies
- a framework for action
- CC will make it harder to achieve, sustain water security

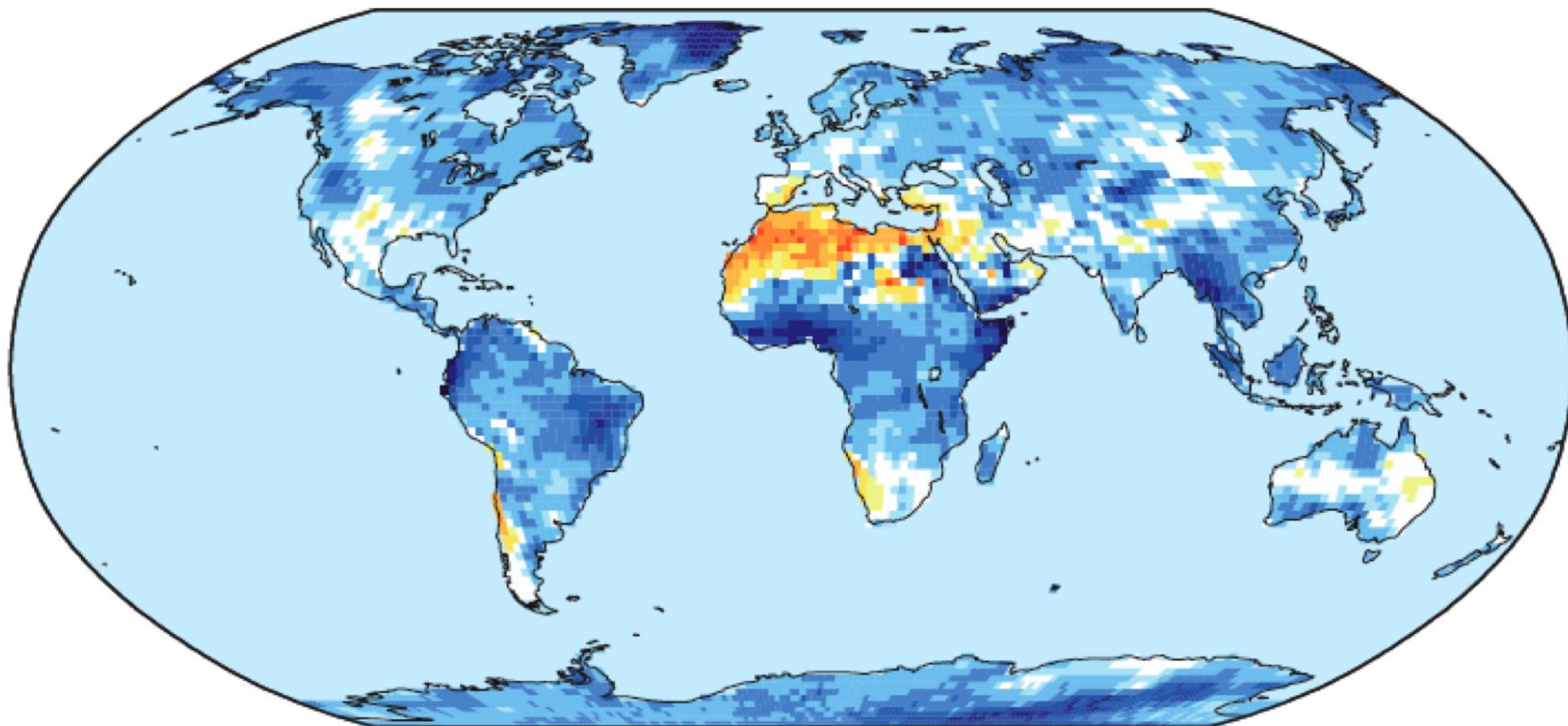
Framing the issue

- Overall impacts of climate change on freshwater resources expected to be negative in many, but not all, places
- Much that is not yet well understood
 - Beyond increased temperatures and rainfall changes to effects on river flows and groundwater recharge
 - Specific challenges of snow and glacier melt
 - Impacts on water quality
- Need to understand dynamics of current variability as well as future climate change
- Enhanced capacity to respond to these dynamics enables better water resources management.

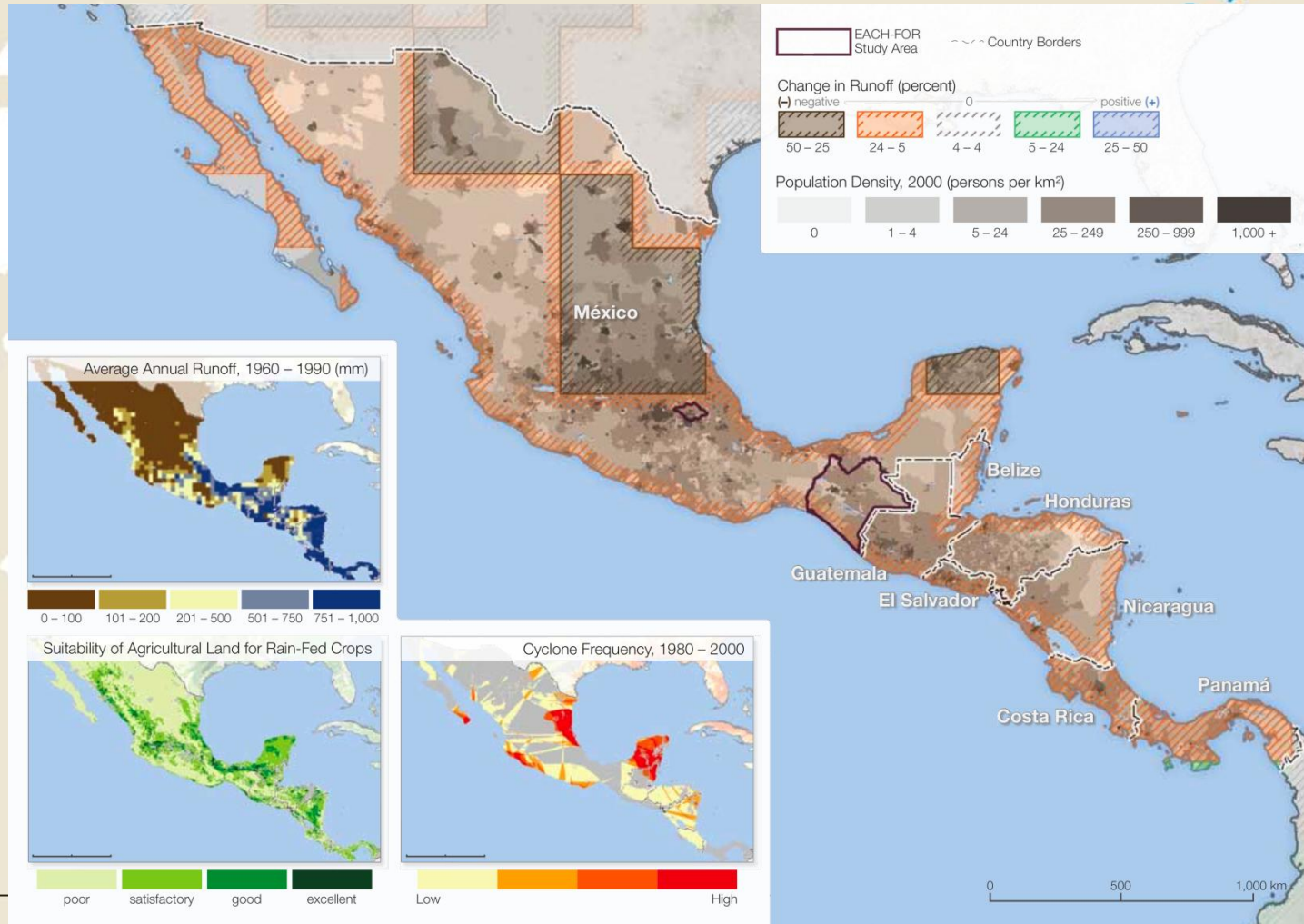
Climate change challenges for water management

- **Understanding the physical science**
 - Changing rainfall
 - Leveraged effects on runoff and streamflow
 - Temperature, evaporation and aridity
 - Impact on groundwater recharge and storage?
 - Dynamics of glacier and snow melt
 - Implications of more frequent “extremes”
- **Monitoring hydrological change – the data gap**

Percentage changes in annual extreme precipitation



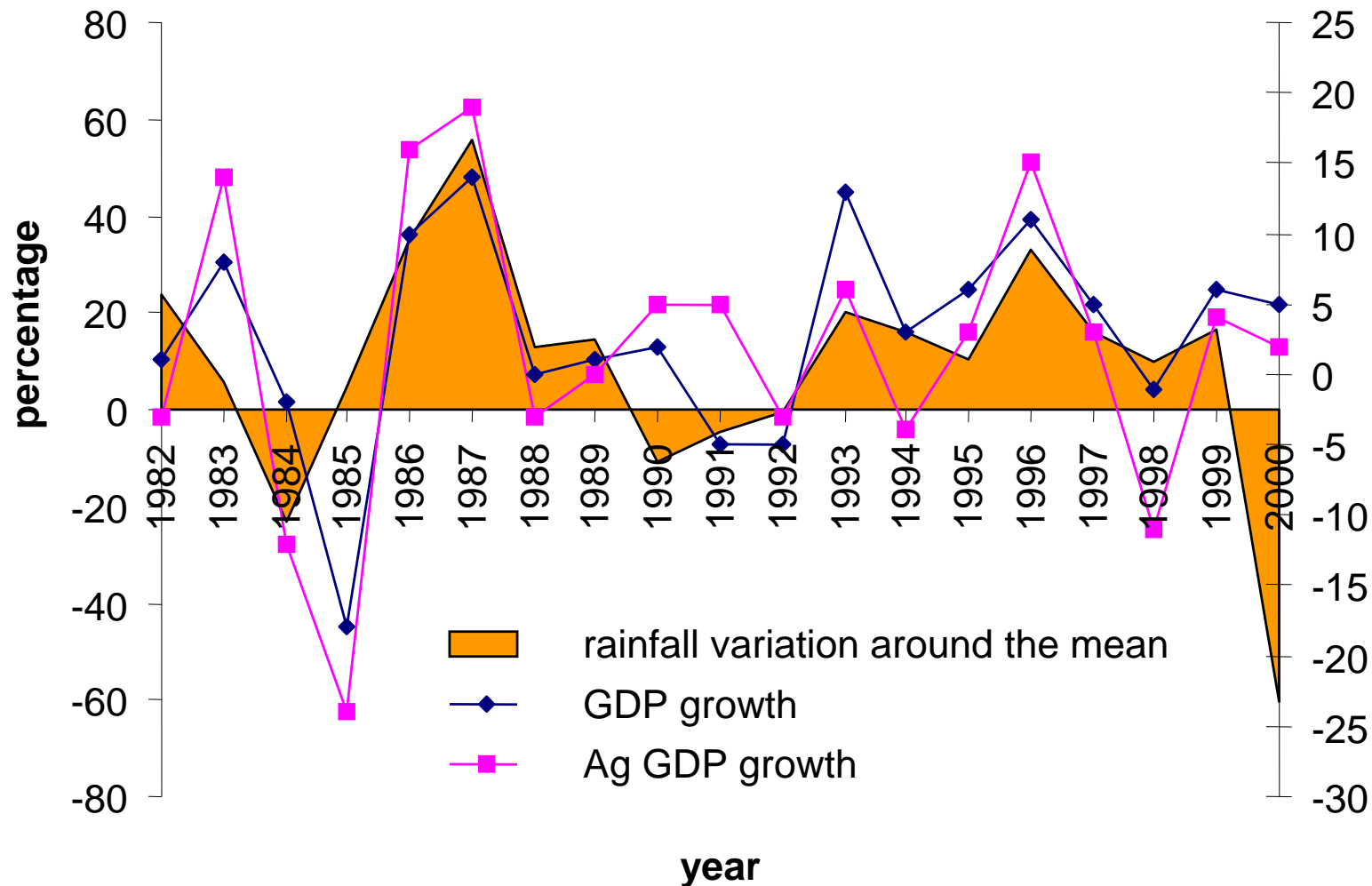
Projected changes in runoff by 2080 for Mexico and Central



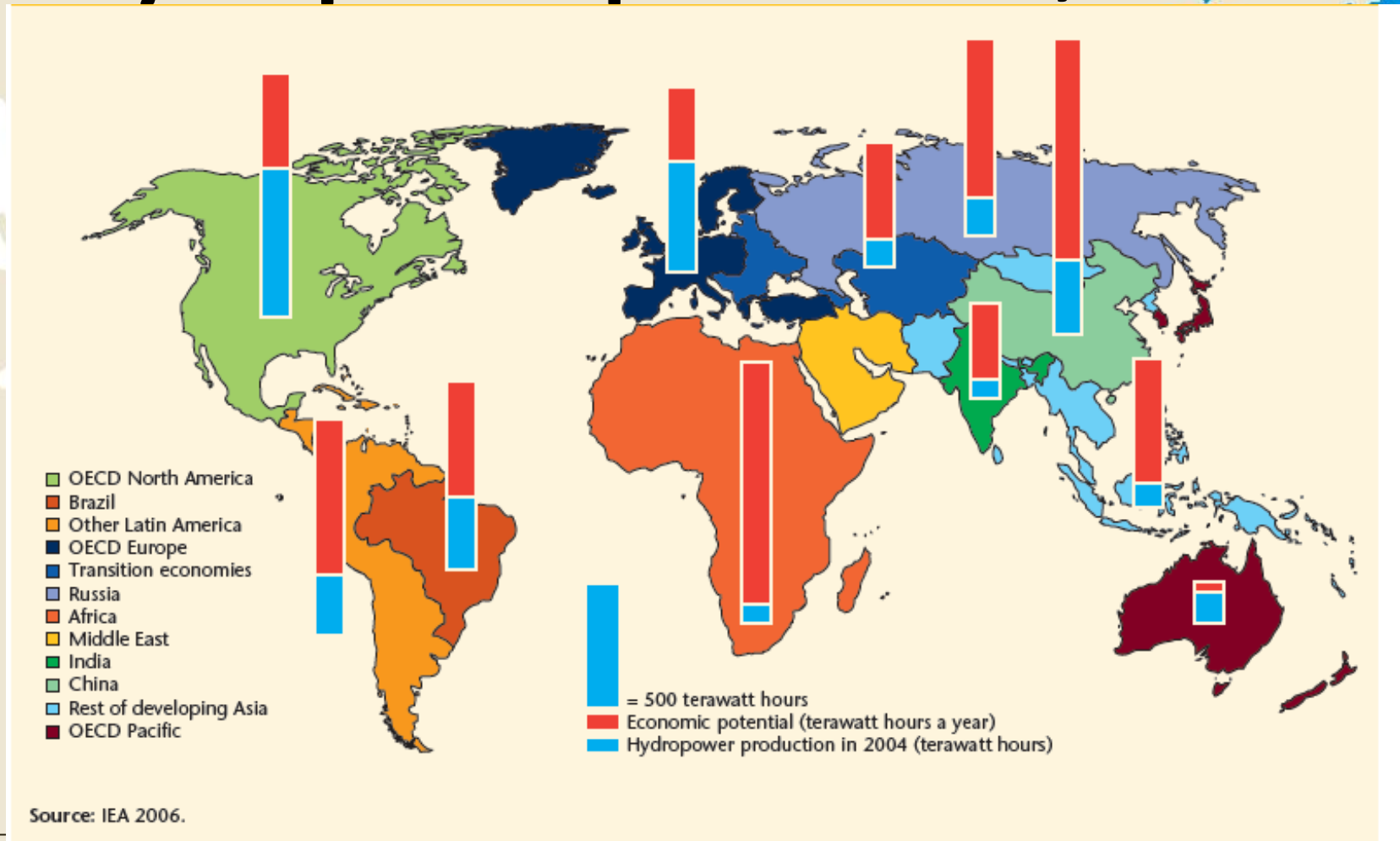
Climate change challenges for water management

- **Social and economic dynamics**
 - Variability and development
 - Disaster vulnerability
 - Urban challenges
 - Industry, trade and competitiveness
 - Food and agriculture, the critical challenge
 - Investing in reliability
 - Hydropower opportunities and threats
 - Ecosystem sacrifices
- **Overall challenge : through water, climate change will drive structural changes in societies and their economies**

Ethiopia: Rainfall, GDP and Agricultural GDP



World potential and current hydropower production, 2004



Climate change challenges for water management

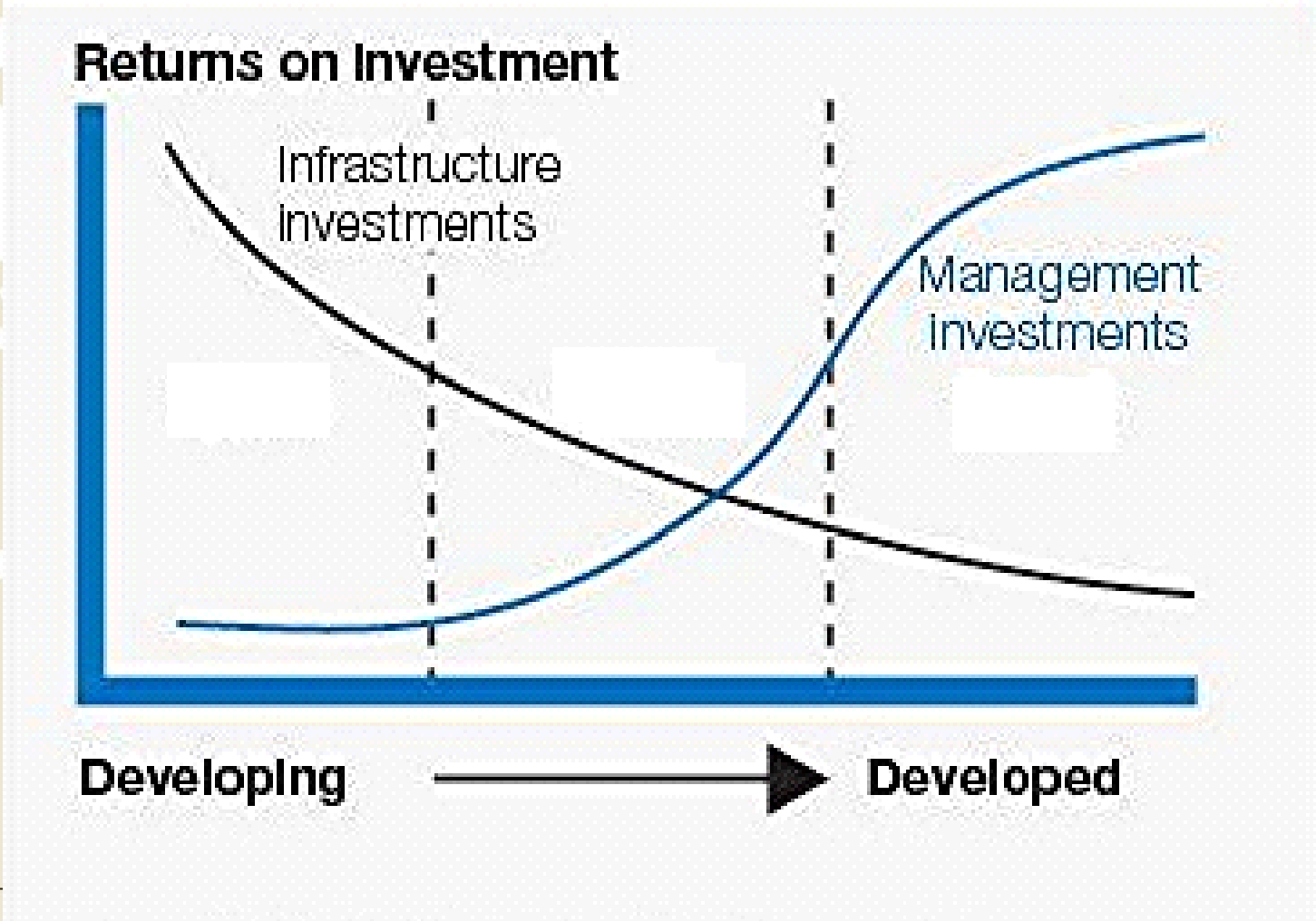
- **Compounding factors, other drivers**
 - Population growth
 - Economic development and consumption change
 - Technology
 - Urbanisation and land use change
 - Climate mitigation strategies!

- **Uncertainty and timing a major issue**

Climate change adaptation through better water management

- **Water security, a first objective but also a framework for adaptation**
- **Achieve it through integrated water resources development and management**
- **Way to institutionalise adaptation**
- **Will include investments, hard and soft**
- **Balance and sequence – the art of adaptation**

Balancing and sequencing infrastructure and management



Conclusions

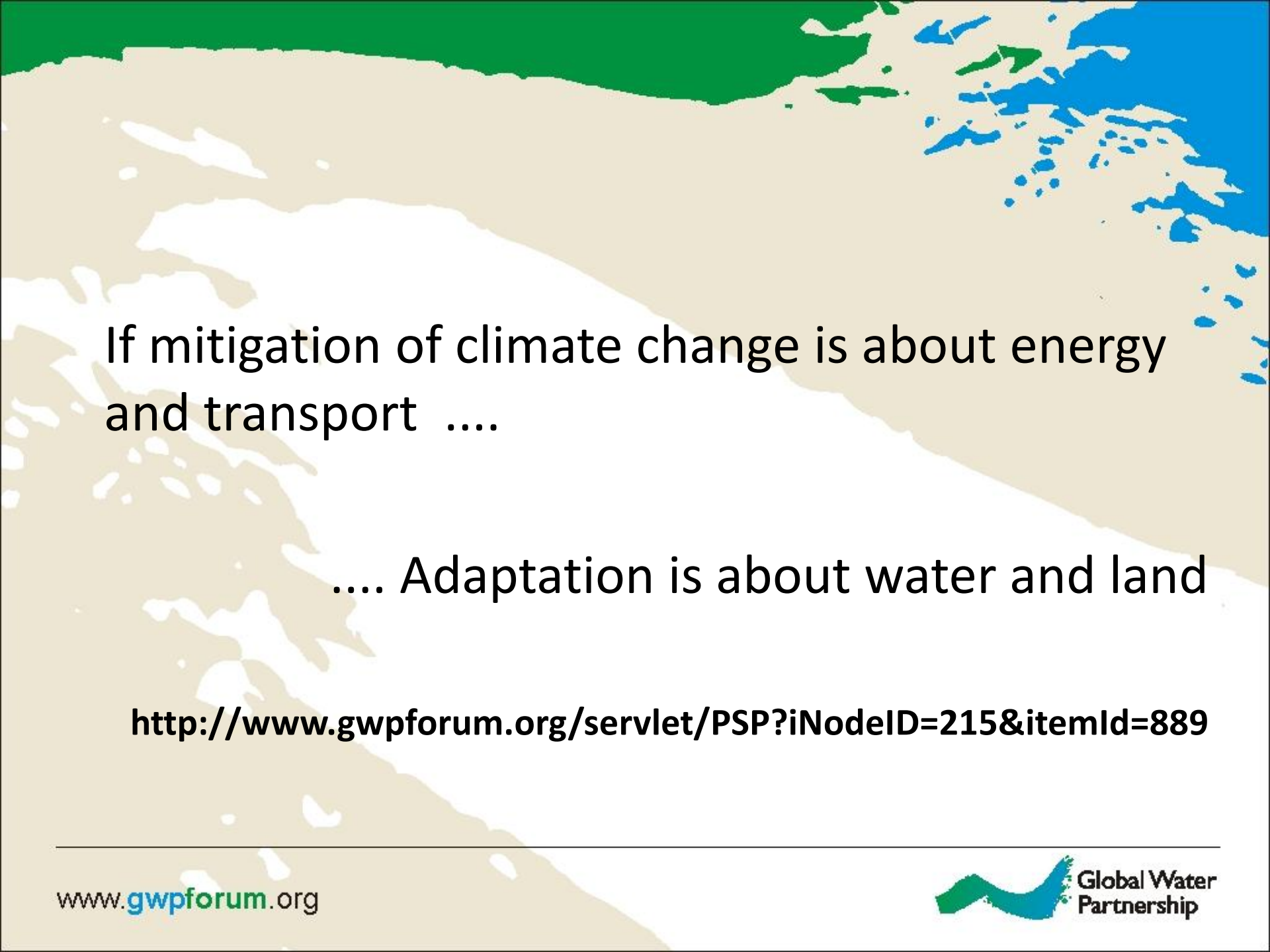
- The long time horizons and great uncertainties associated with climate change call for adaptation responses that can deliver immediate benefits, while building robust, adaptive institutions designed to ensure enduring resilience
- Investments in water resources development and management provide just this; they are, by nature, investments in adaptation

Conclusions

- A focus on achieving and sustaining water security provides immediate benefits, particularly for underserved and vulnerable poor populations, as well as greater capacity to manage future risks
- Today's investments in water security should be seen as an explicit part of a coherent longer-term strategy for adaptation that will build a more resilient world in the future

Conclusions

- Support needed for core water resources management information systems, institutions and investments
- Avoid fragmented initiatives that weaken core
- Align with aid effectiveness principles
- Approach offers durable, efficient framework for water security and mainstreaming adaptation in national development efforts



If mitigation of climate change is about energy
and transport

.... Adaptation is about water and land

<http://www.gwpforum.org/servlet/PSP?iNodeID=215&itemId=889>