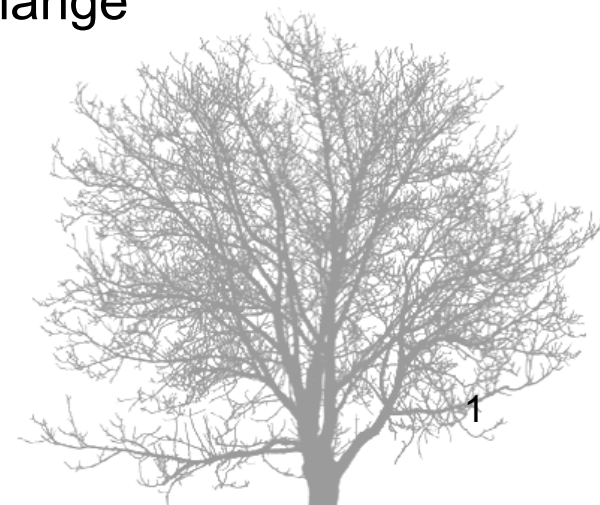




ClimDev-Africa

# Infrastructure and Climate Change

Raffaello Cervigni  
Regional Coordinator for Climate Change  
The World Bank

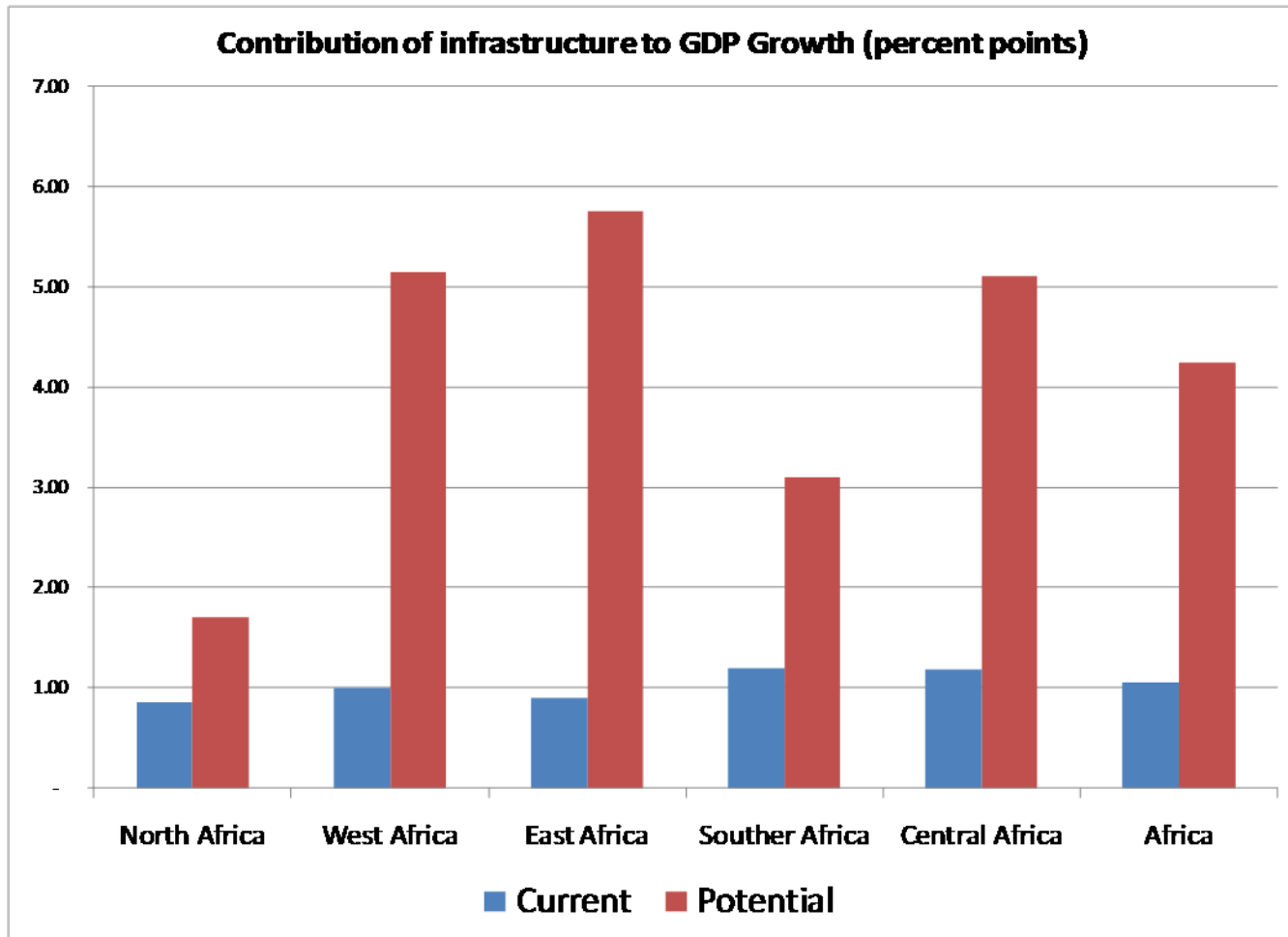


# Contents

1. The context: infrastructure, growth and funding gap
2. Effects of climate change: what do we know
3. A closer look: new initiative UNECA-World Bank

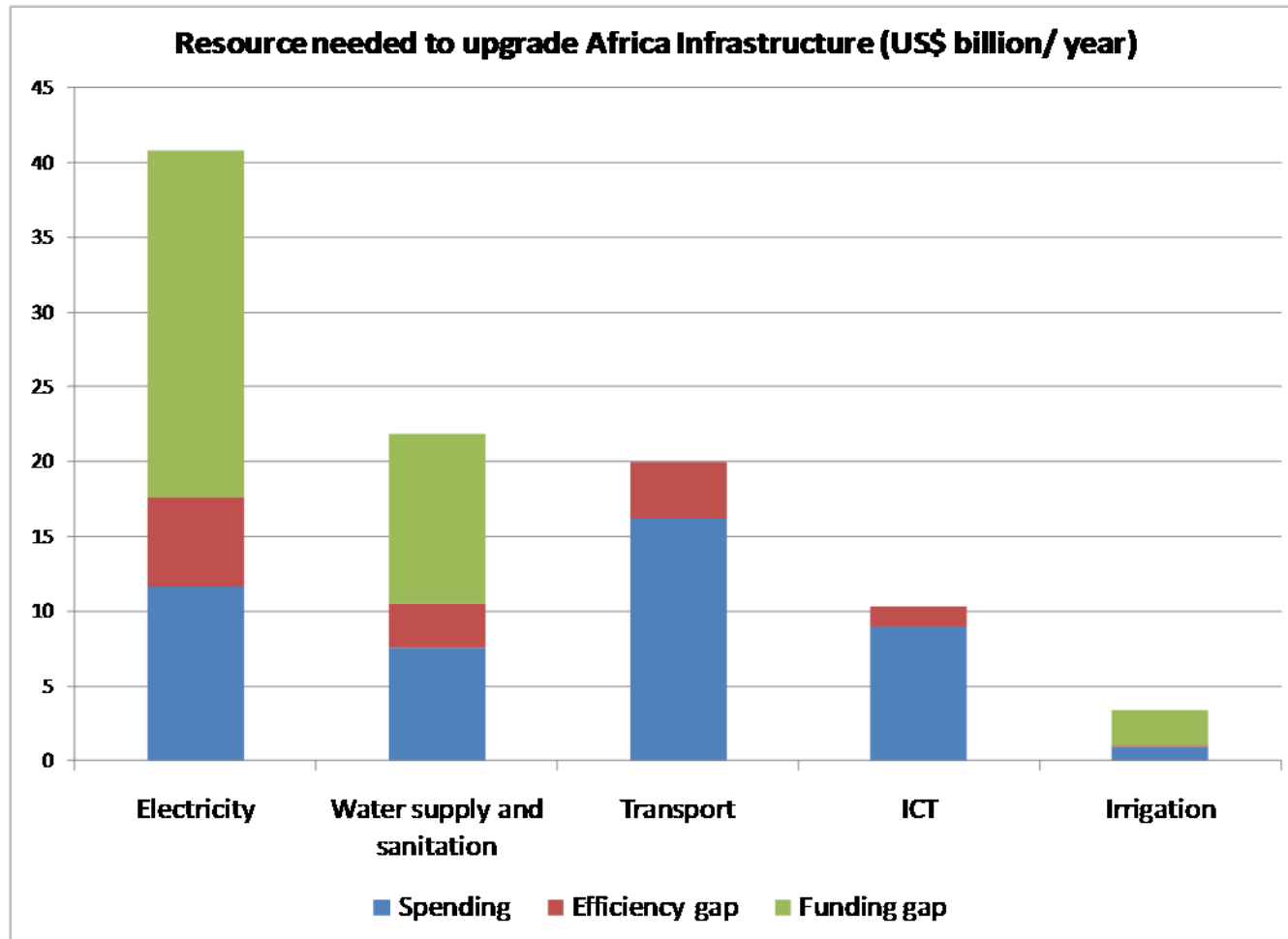


# Infrastructure could boost Africa's growth four-fold...



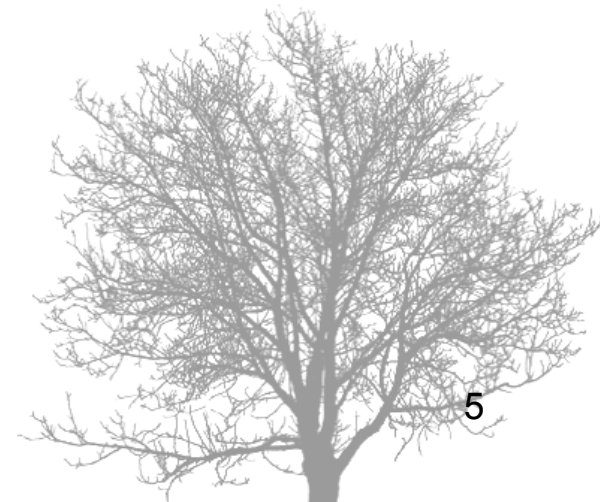
Source: Africa Infrastructure Country Diagnostic (AICD)

# ..but there is a \$50 billion gap to fill...

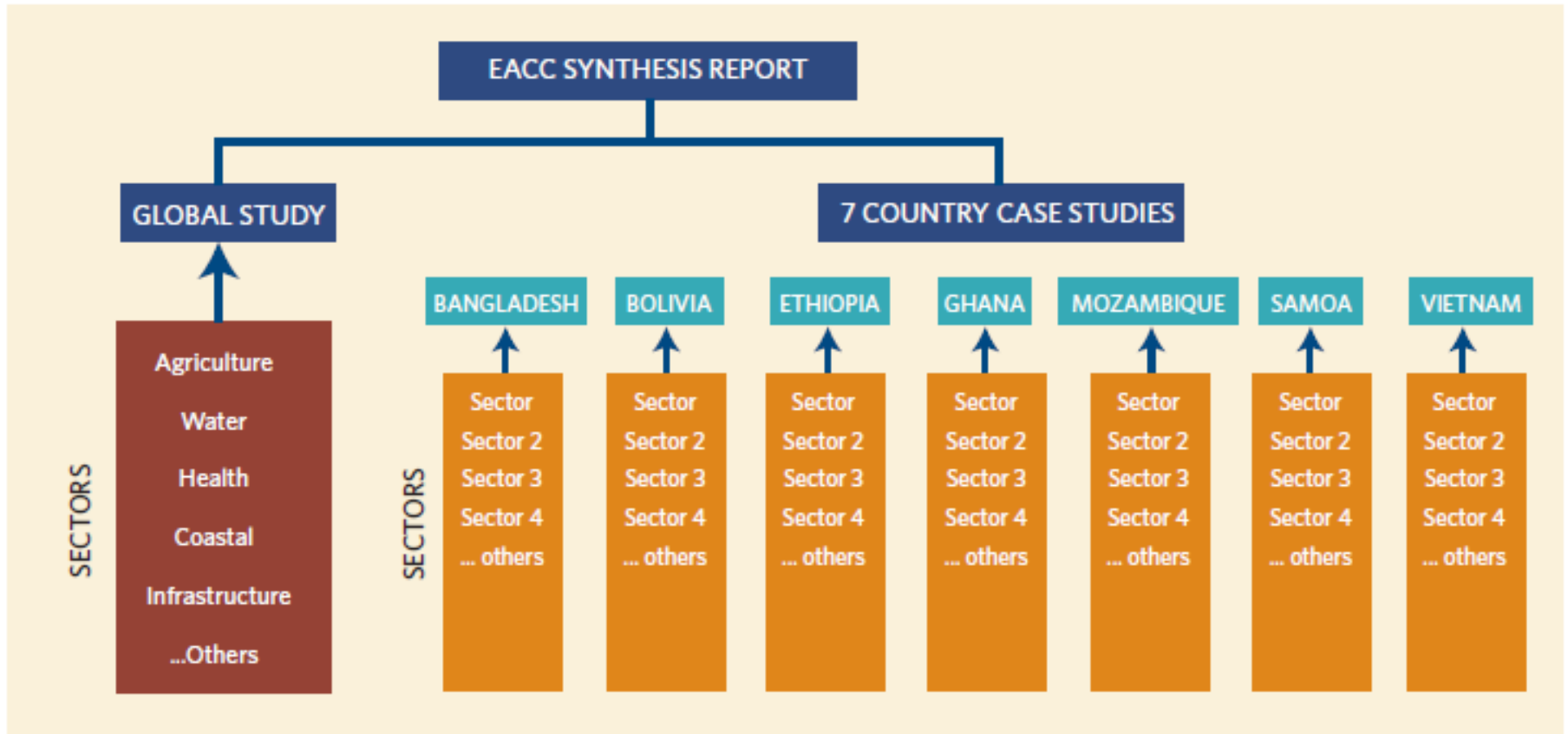


Source: Africa Infrastructure Country Diagnostic (AICD)

# WHAT HAPPENS WITH CLIMATE CHANGE?



# Economics of Adaptation to Climate Change (2010):

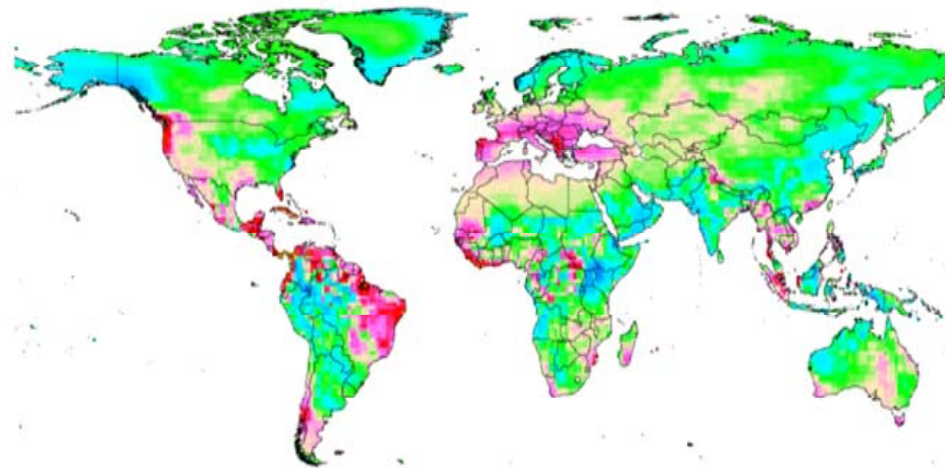
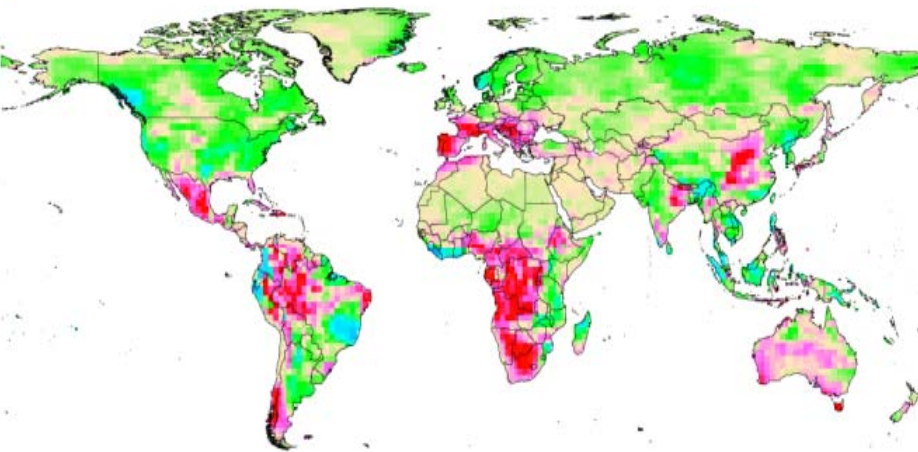


by looking at extremes of climate models  
(for a 2°C warmer world...)

**Change in average annual precipitation, 2000 – 2050**

**CSIRO (DRY)**

**NCAR (WET)**



**A2 SCENARIO**

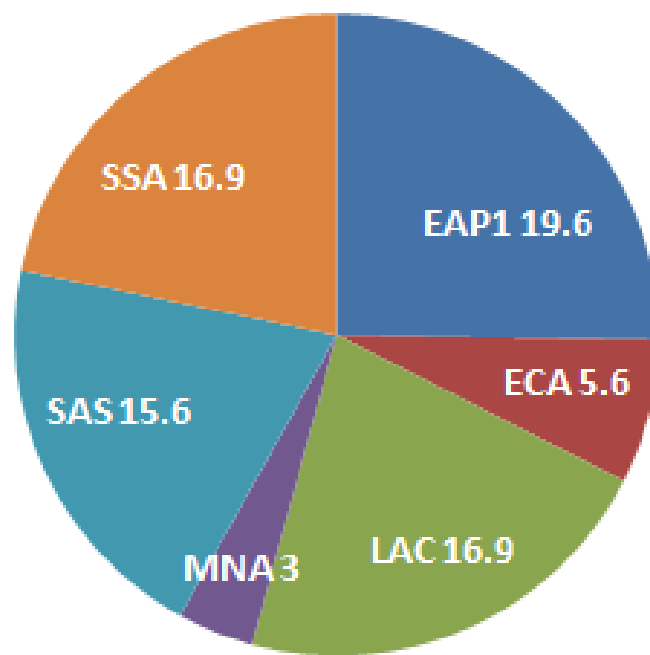
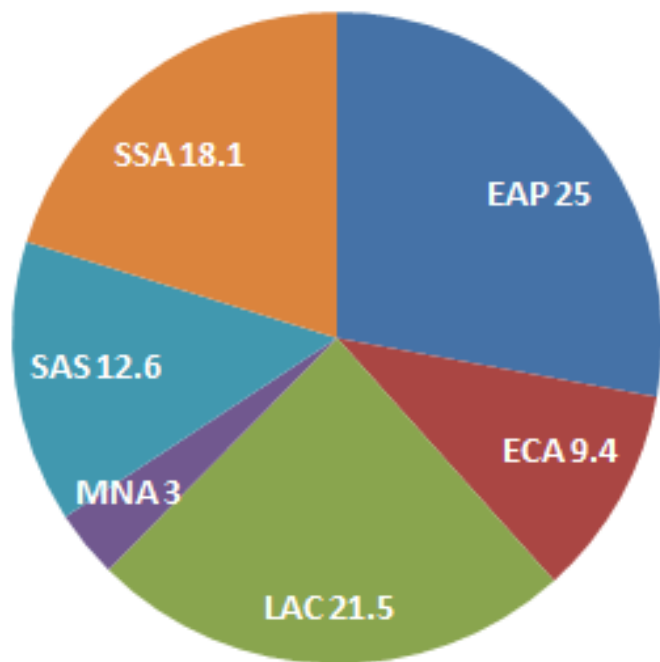


# ..World Bank EACC estimated adaptation costs≈\$18 billion/ year...

Annual Costs of Adaptation: by Region, 2010 – 2050, US\$ Billion

**Wet Scenario – 89.7**

**Dry Scenario – 77.6**



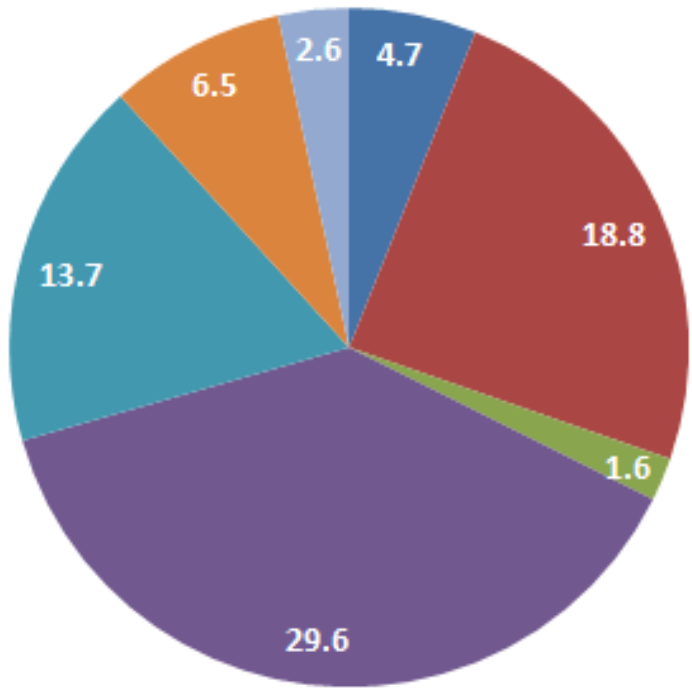
2005 constant prices, 0% discounting



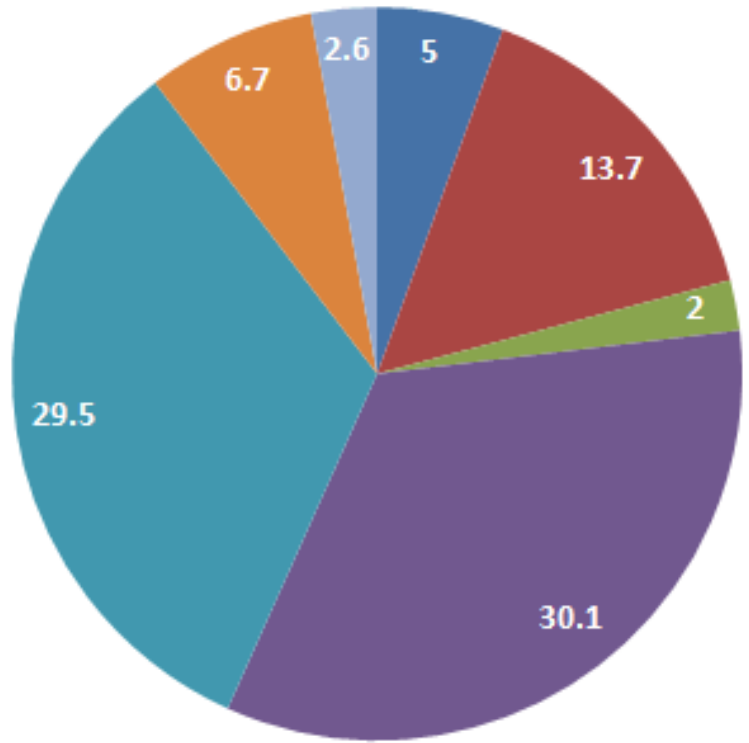
Source: World Bank Analysis



# ...broad scope of assessment...

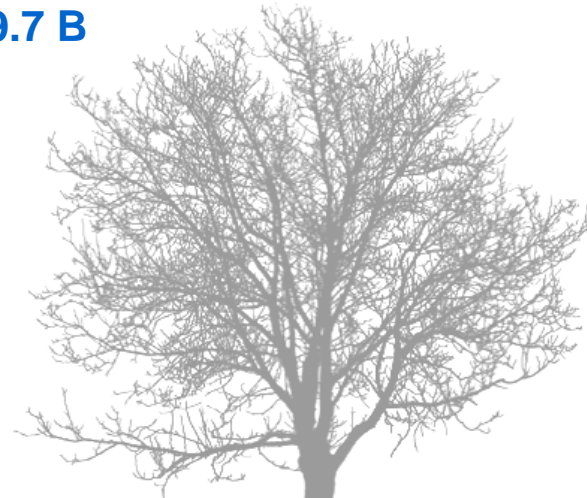


**Dry \$77.6 B**



**Wet \$89.7 B**

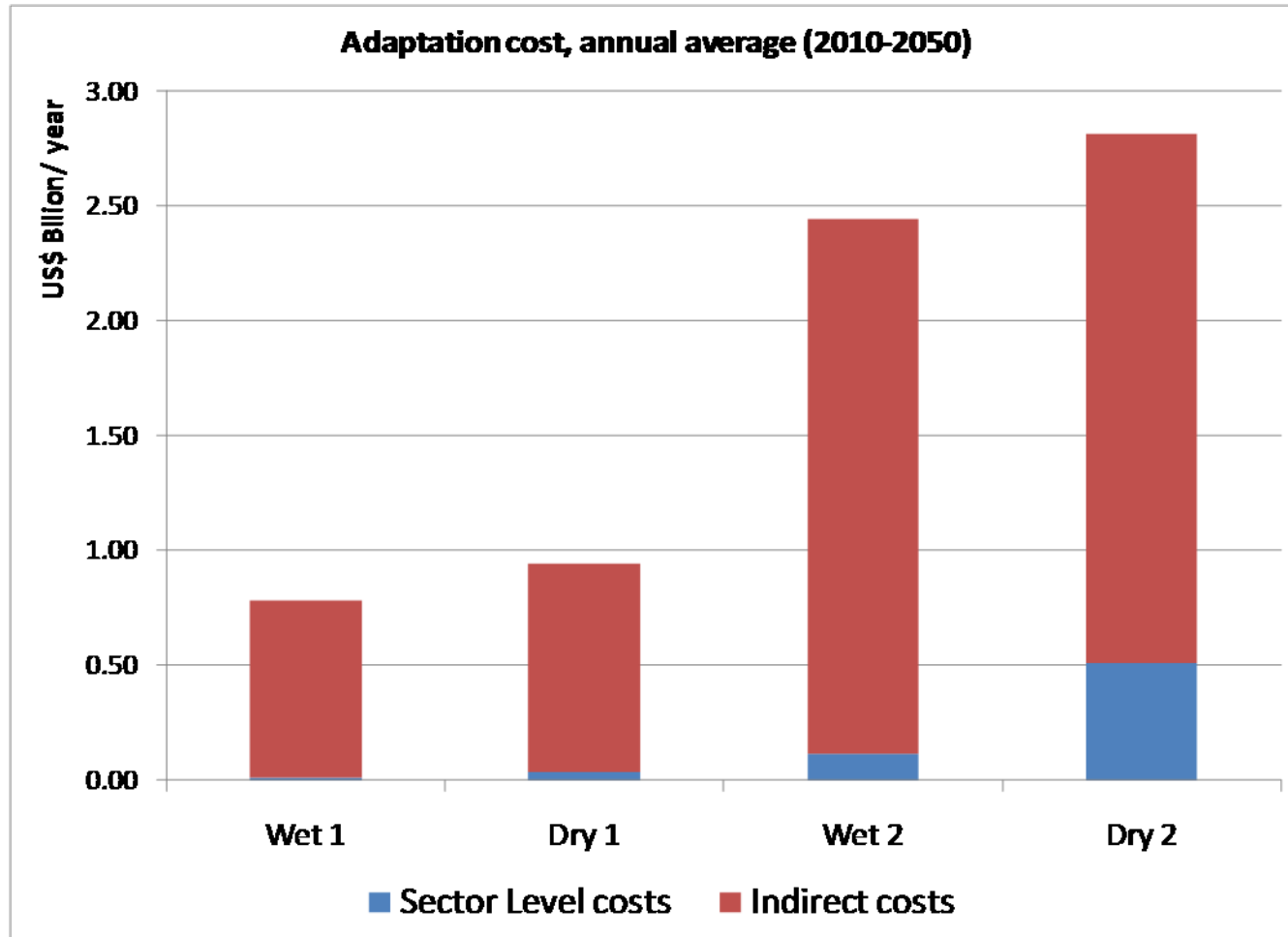
- Agriculture
- Water Resources
- Health
- Coastal Protection
- Infrastructure (urban, transport)
- Extreme Weather Events
- Fisheries



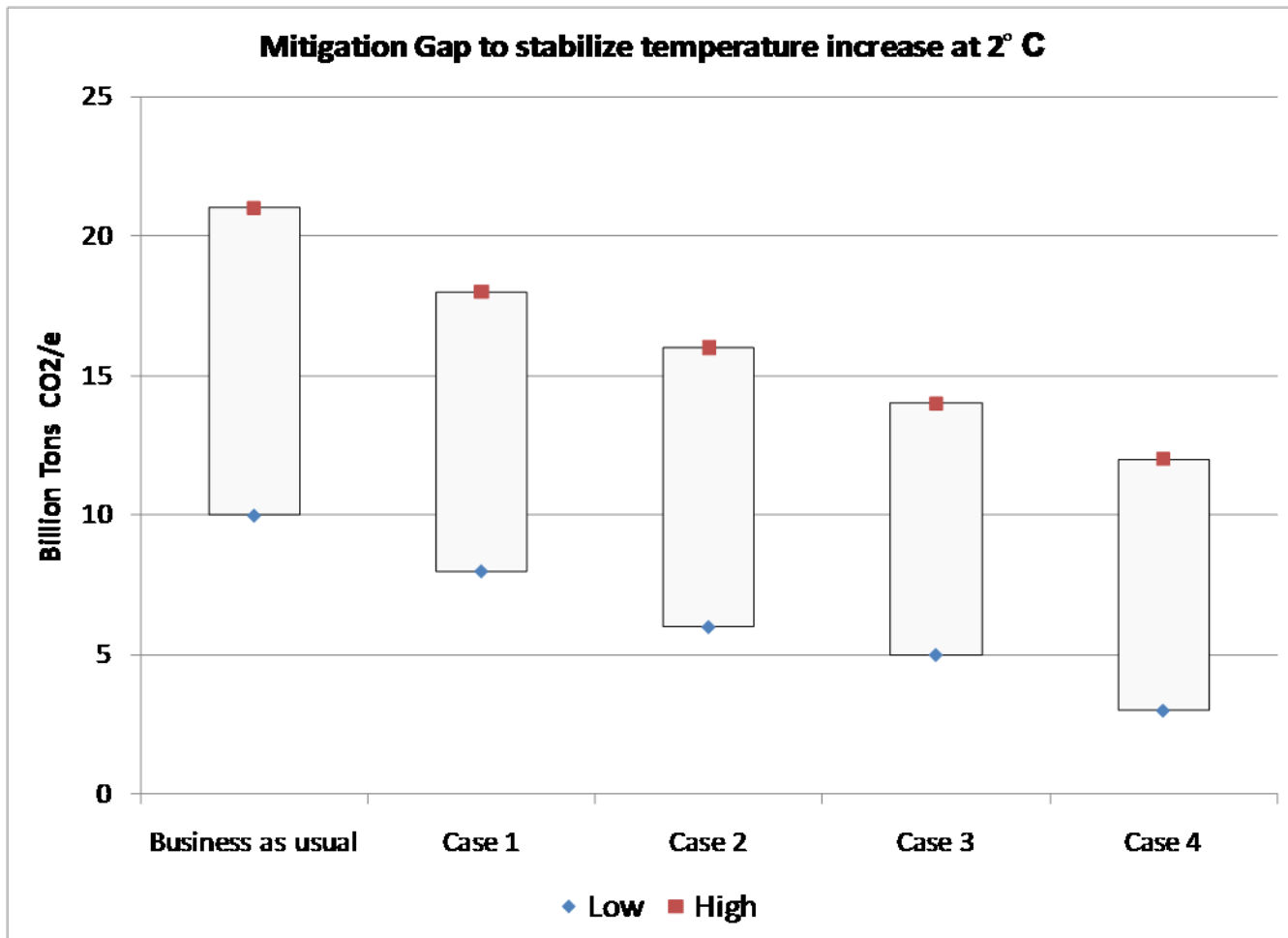
Source: World Bank Analysis

# ..but global figures can under-estimate national costs

Ethiopia Total Cost: indirect components more important than sector-level ones



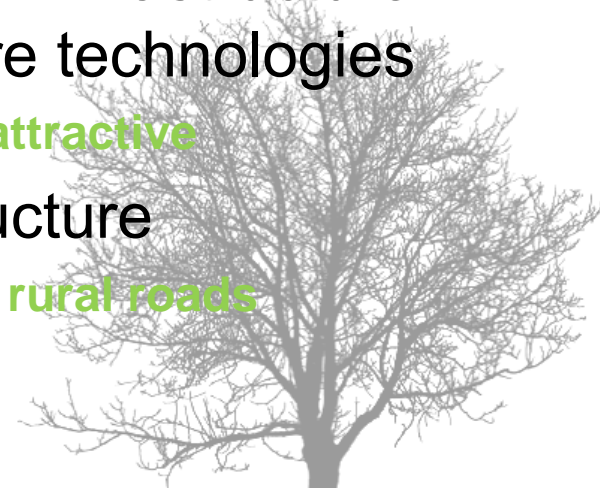
# Also, need to broaden analysis to a wider range of climate outcomes



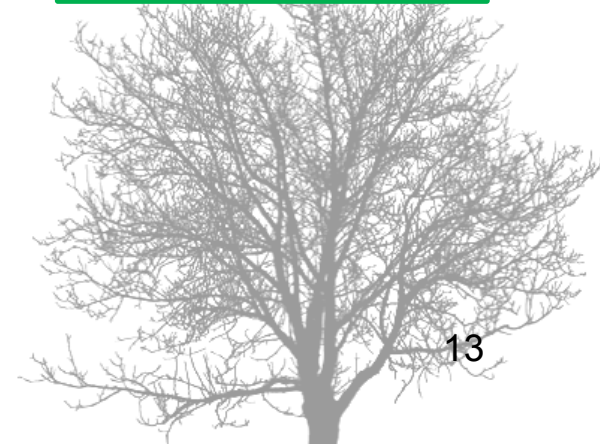
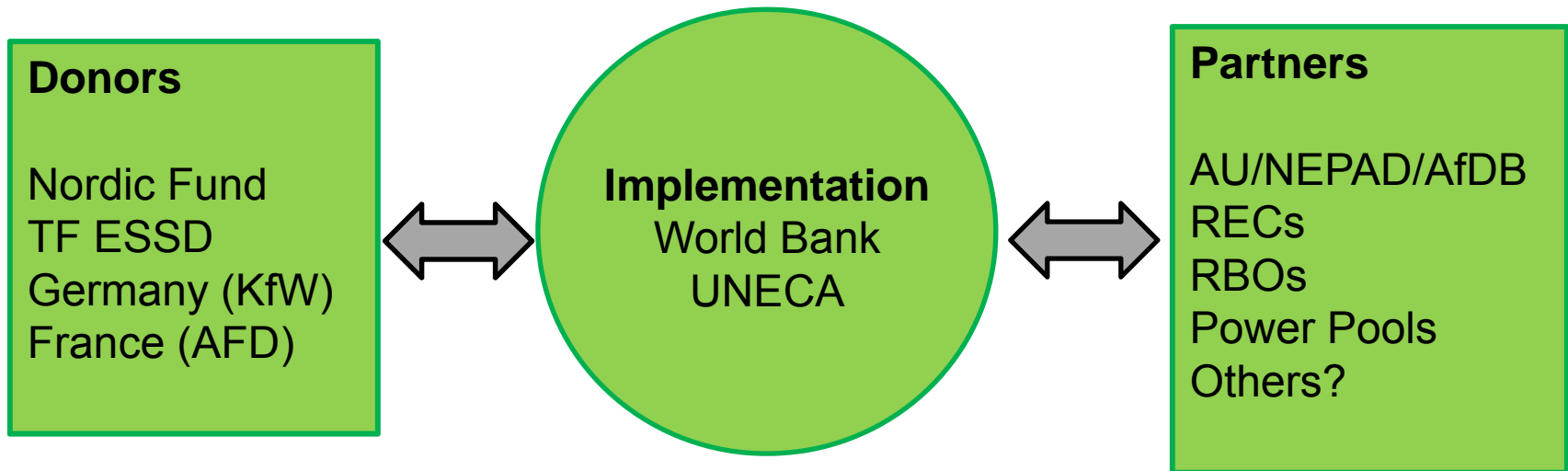
Source: UNEP, Emission Gap report (2011)

# How does climate change affect infrastructures?

- More frequent extreme events → the cost of meeting a given infrastructure reliability standard can be expected to increase
  - e.g. more storage may be needed to keep flood risk at existing levels
- More frequent damages to infrastructure → change in optimal investment-maintenance balance
  - e.g. reduces the traffic threshold for which paving becomes optimal
- Changing performance of different types of infrastructure → effects on optimal choice of infrastructure technologies
  - e.g. a drier climate may make hydro-power less attractive
- Altering the pattern of demand for infrastructure
  - e.g. changes in crop patterns will affect need for rural roads

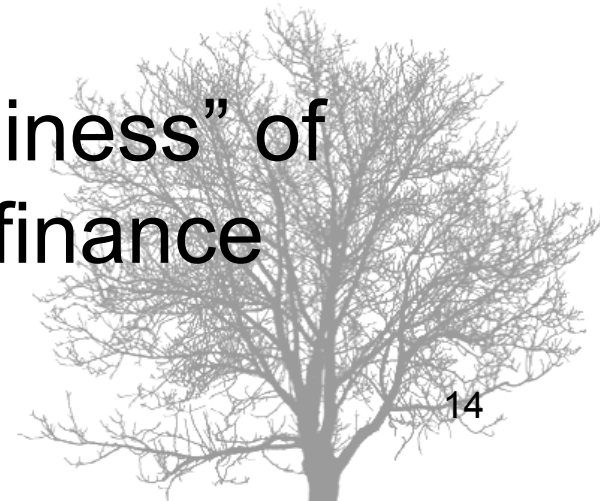


# Support investments in Africa's infrastructure under a future uncertain climate: proposed new analytical work



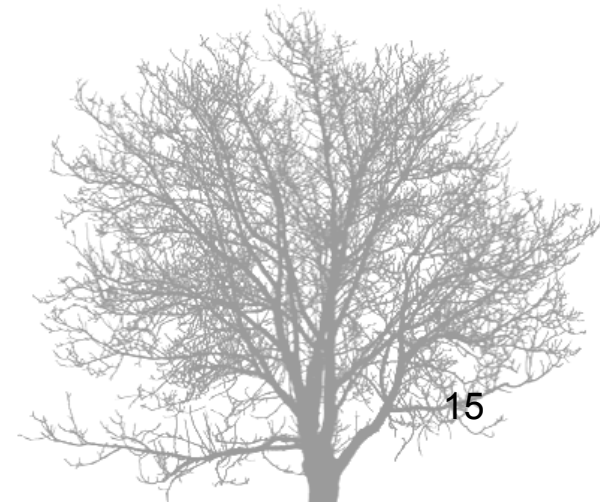
# Objectives

- Estimate range of impacts
  - unit costs
  - design standards
  - demand patterns
- Develop framework for robust investment decisions
- Enhance the “investment readiness” of African to help attract climate finance



# Scope

- Climate analysis framework
- River basin hydrological analysis
- Downstream uses
  - Roads
  - Hydro-power
  - Irrigation
  - (Water supply)
  - (Flood control)



# Building on river basin modeling work...

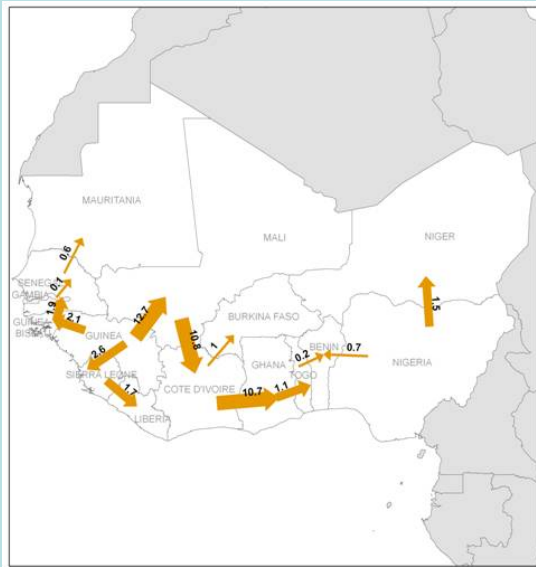
- E.G.: Niger basin
- Request from Heads of State - Bank supporting Niger Basin Authority on a **climate risk assessment** of the SDAP
- \$8.3b 20 year **Sustainable Development Action Plan (SDAP)** - investments in storage, irrigation, hydropower, transport, water supply, fisheries, environment, capacity-building



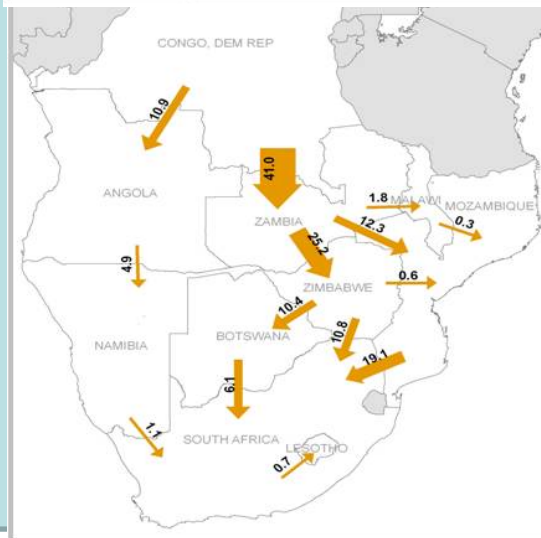
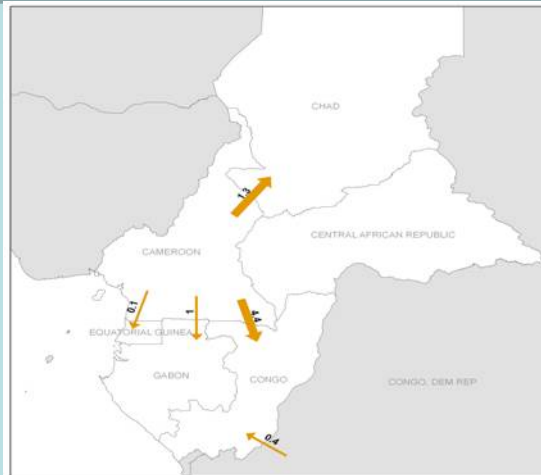


# ...and on existing models for power pools

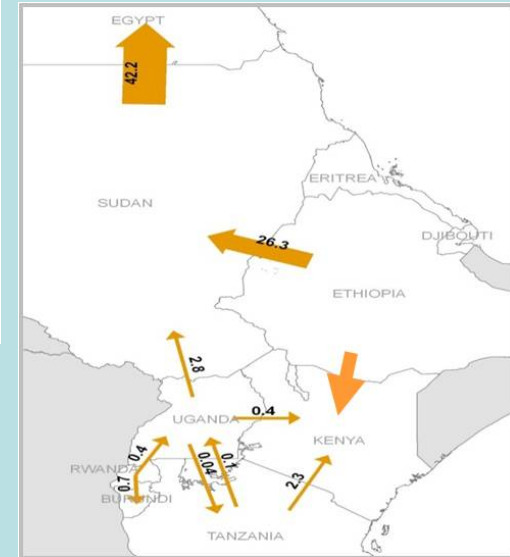
## Central Africa



## West Africa



## East Africa



## Southern Africa

Source:



Thank you

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