Development, energy and climate change: supporting Africa in addressing the challenge

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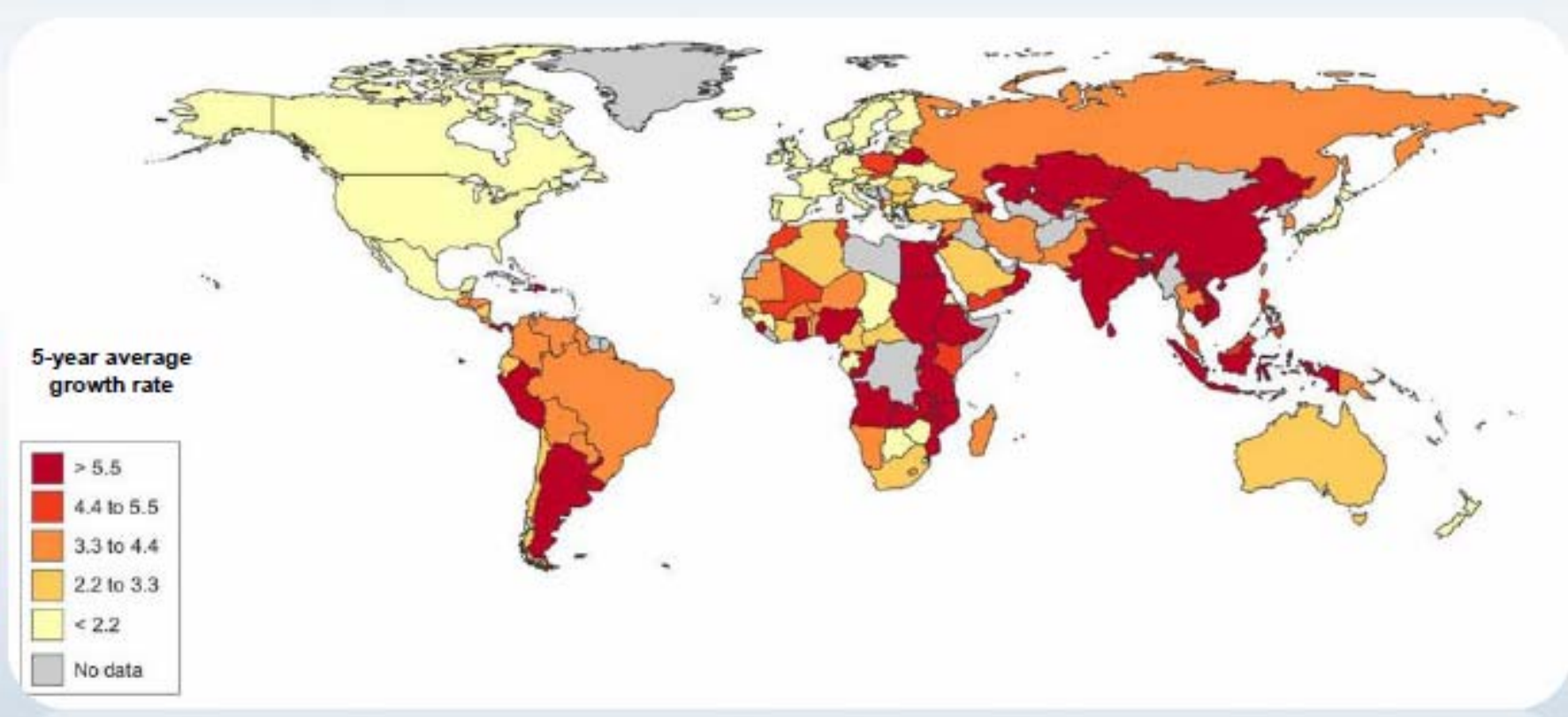
The World Bank
October 2010

Outline

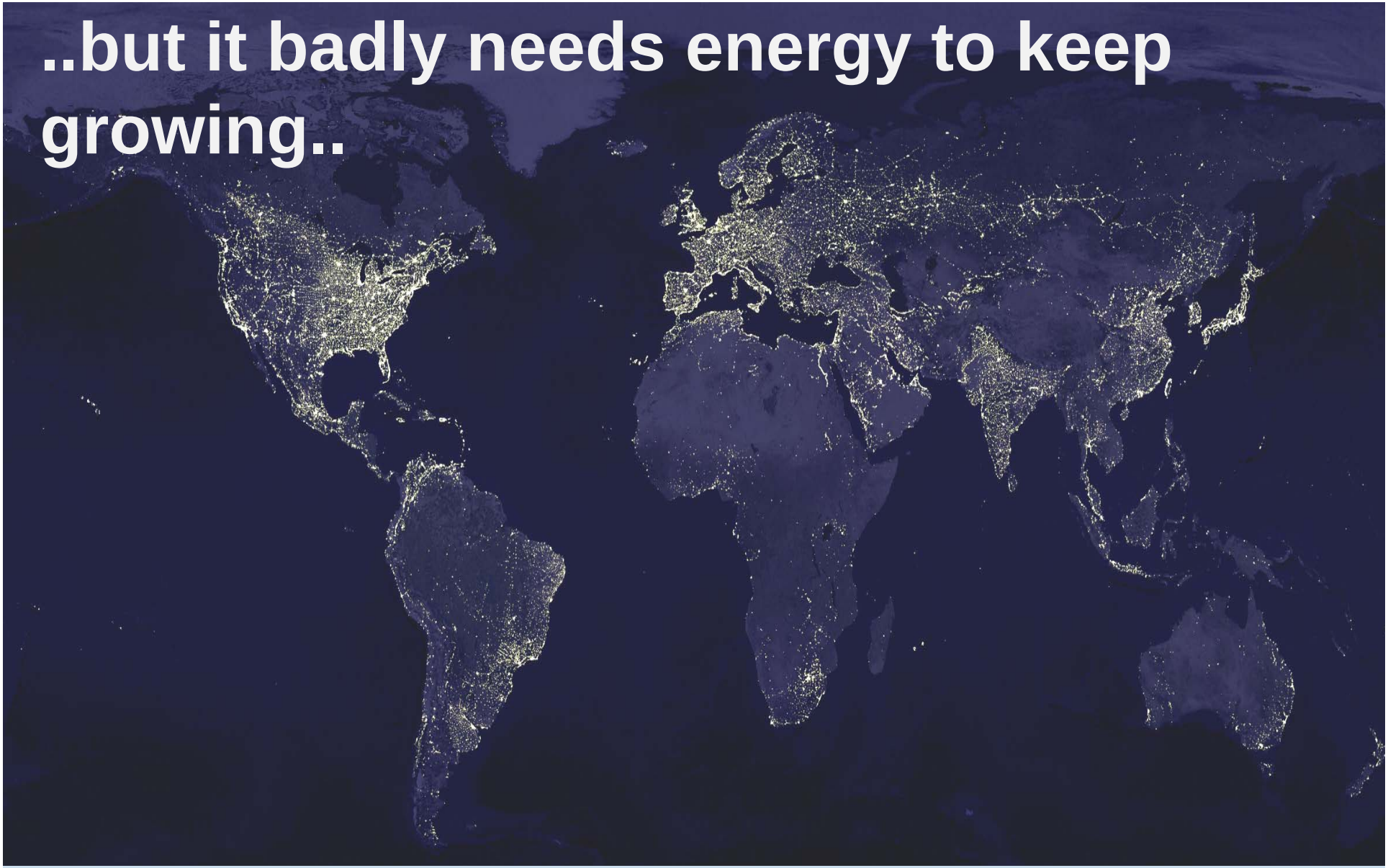
1. Context
2. The role of development cooperation: the case of the World Bank
3. Strategic issues for discussion

Context

Africa hosts several new poles of growth…



..but it badly needs energy to keep growing..



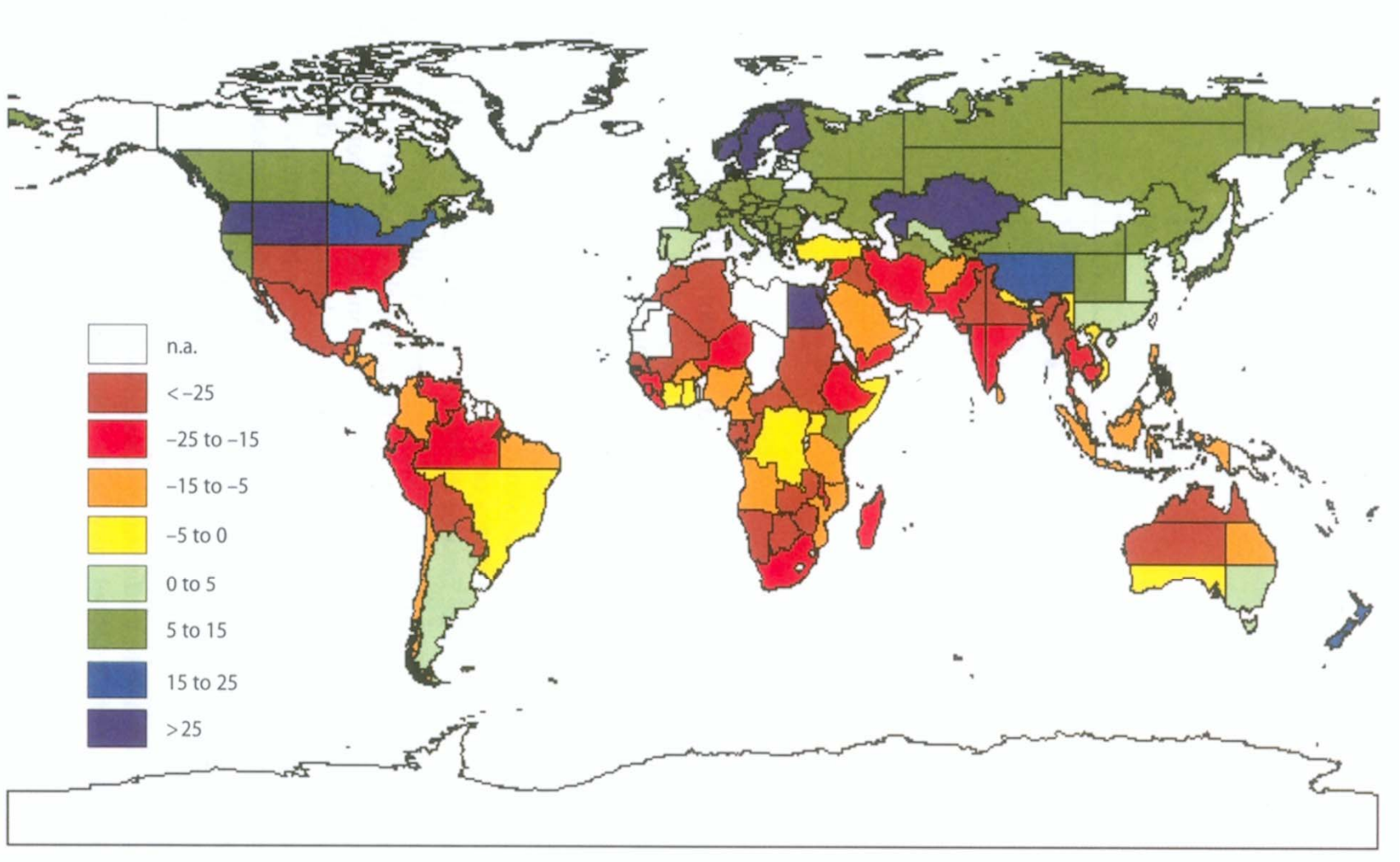
560 million sub-Saharan Africans lack access to electricity

Earth at Night
More information available at:
http://antwrp.gsfc.nasa.gov/apod/ap001127.html

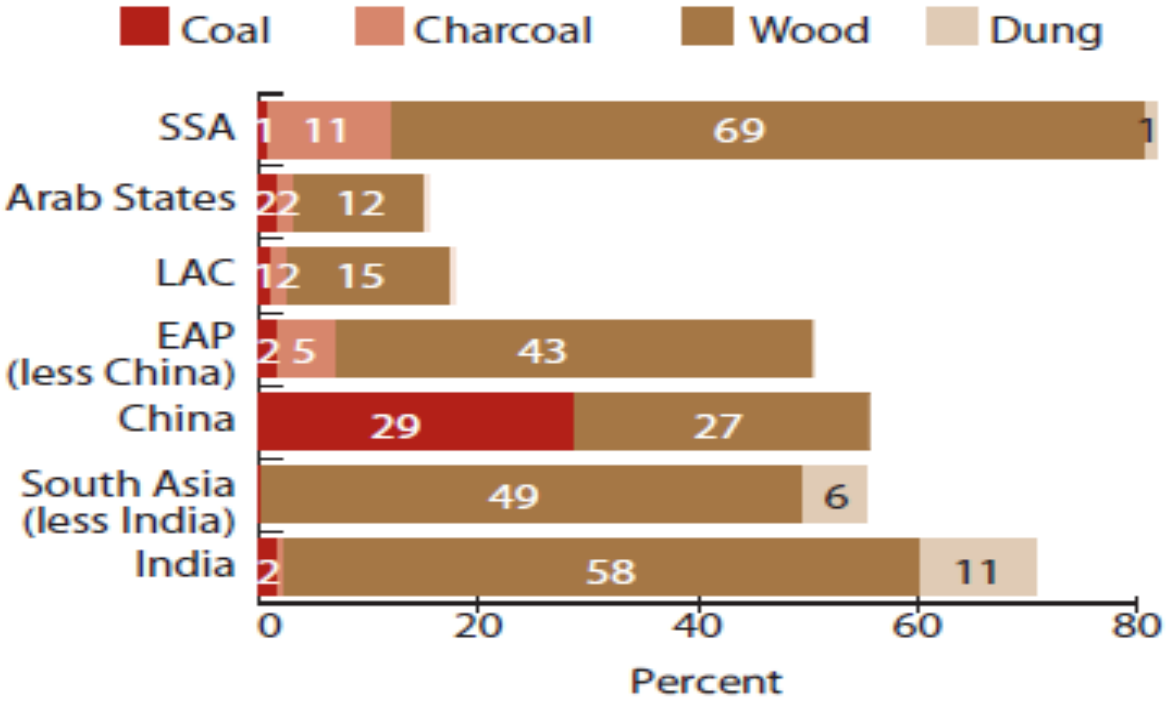
Astronomy Picture of the Day
2000 November 27
http://antwrp.gsfc.nasa.gov/apod/astropix.html

..and is severely threatened by the climate of the future

Projected Percentage Change in Agricultural output in 2080

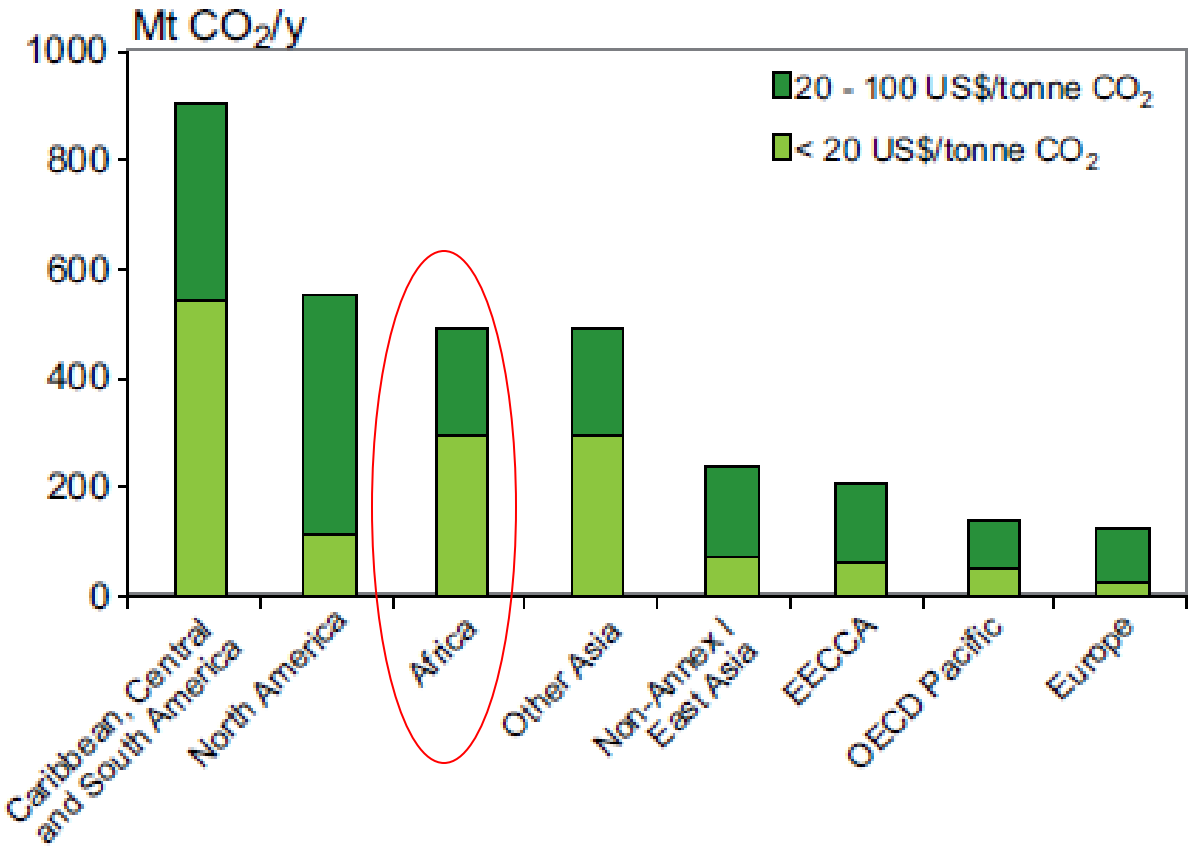


Africa relies heavily on biomass as source of energy…



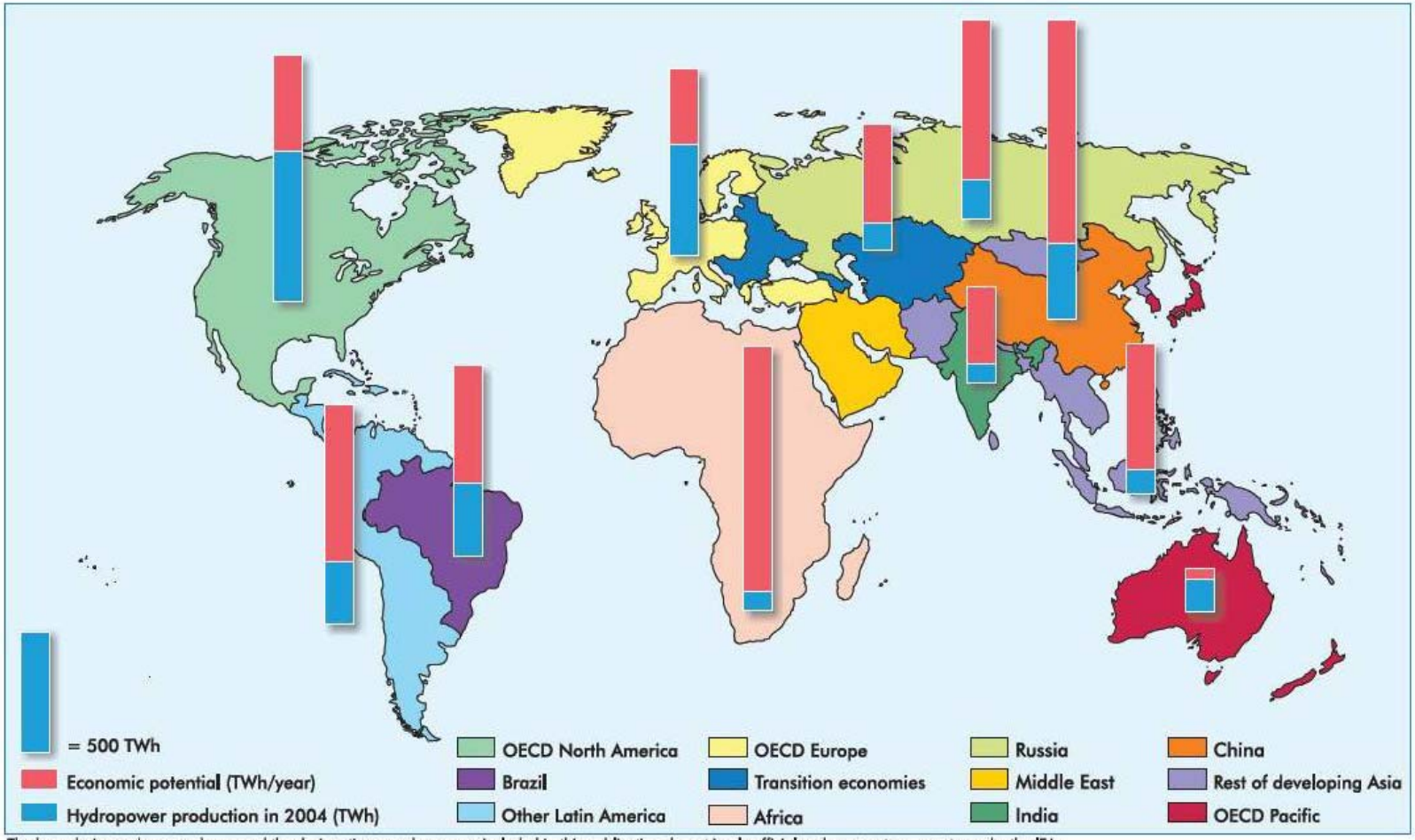
..but Africa's forests holds a large mitigation potential

Annual economic mitigation potential in the forestry sector by world region and cost class in 2030



Source: IPCC, 2007

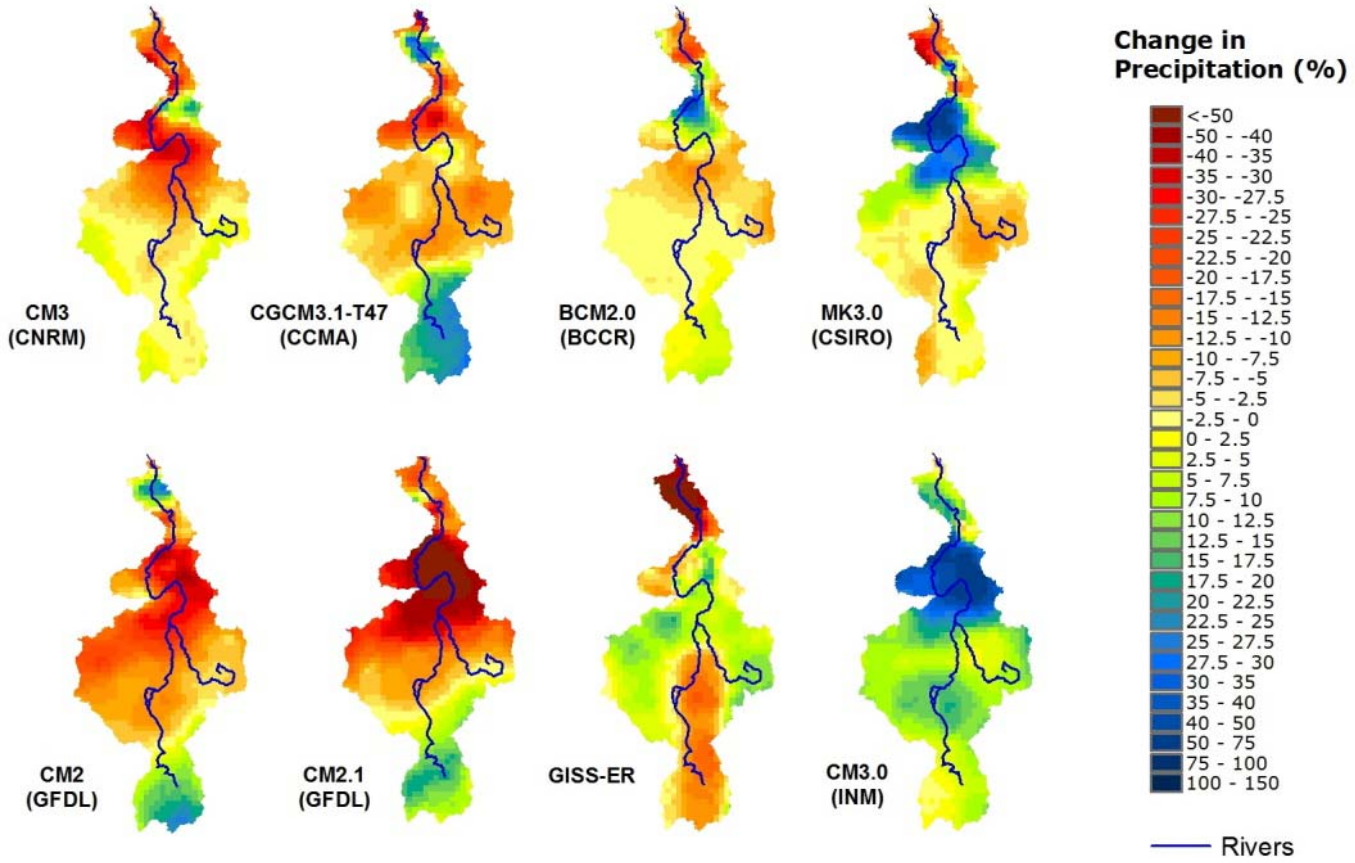
Africa is has a huge hydro-power potential..



The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.

..but it confronts large uncertainty on the climate of the future

Nile Basin: Scenarios of rainfall changes in 2050 from different climate change models



This map shows the precipitation change projected by the considered climate model, under the A2 scenario for 2040 - 2069 as compared to 1961 - 1999. Map displays gridded data (cell size=0.5dd).

Sources: WCRP's CMIP3 (Meehl et al. 2007), downscaled by Maurer et al. (2008), rivers (Aquastat, FAO, 2006).

The role of development assistance: the case of the World Bank

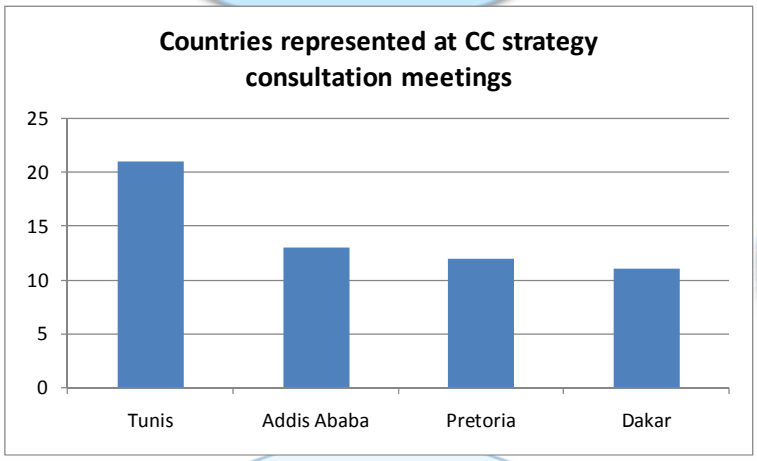
Strategy: results of extensive consultation process

1: Integrate adaptation and climate risk into development

2. Take advantage of development opportunities with mitigation co-benefits

3. Focus on knowledge and capacity development

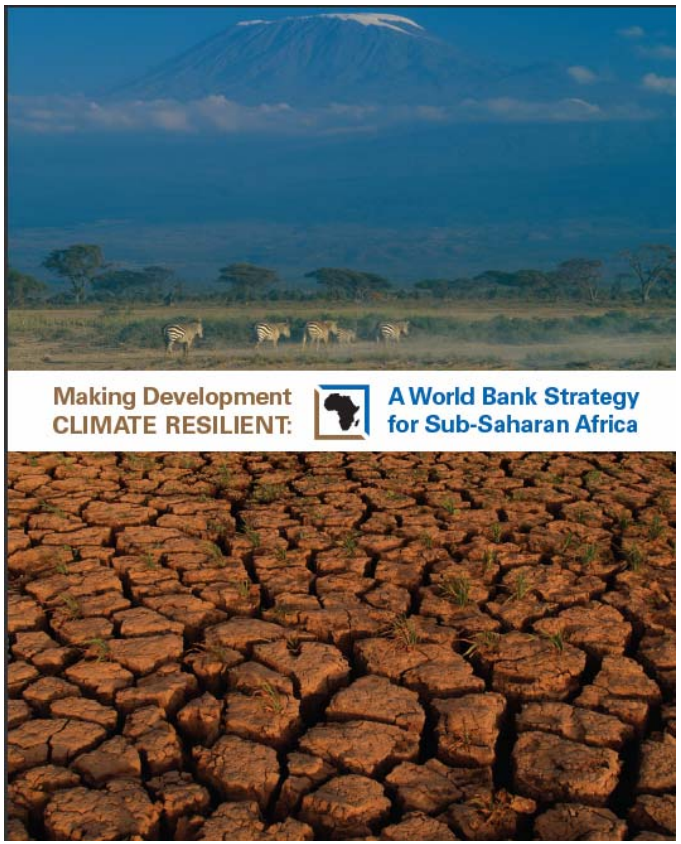
4. Scale up financing opportunities



- Four consultations meeting (May-June 2008)
- Over 50 countries represented
- Over 300 people attending

The Strategy: four Pillars

1. *Integrate adaptation and climate risk management into development*
2. *Seize mitigation opportunities*
   - Synergies adaptation –mitigation
   - Land management, energy and transport
3. *Knowledge and capacity development*
   - Data, knowledge and capacity for better climate risk management
4. *Scale up financing*
   - IDA main platform, but also
   - Adaptation Fund, Climate Investment Funds (CIFs), and other instruments



Strategy progress: at a glance

- **Strategic policy dialogue**: integration of CC in CASs, CPSs, e.g. Nigeria, Ethiopia, Burkina Faso and Cameroon
- **Analytical work**: over 40 tasks planned or under way in FY09-FY12 to address critical knowledge gaps
- **Investment operations:** 60% of FY10 projects support activities that contribute –directly or indirectly- to the implementation of the regional climate change strategy (preliminary estimates)

Energy and climate work: a synopsis

Area	Realized in FY09-10	Planned for FY11-12
Energy Efficiency	1 million efficient cooking stoves and 5 million CFLs displacing diesel fuel in Ethiopia	i. Further expansion of stoves and CFL distribution
Renewable energy	i. Bumbuna HPP in Sierra Leone (50 MW) ii. Bujagali HPP in Uganda (250 MW) iii. Felou HPP in Mali, Senegal and Mauritania (59 MW) iv. Geothermal in Kenya (280 MW) v. RE credit line in Tanzania	i. Rusumo Falls HPP (regional) ii. Geothermal in Ethiopia and Kenya iii. Hydropower in Mali
Lighting Africa Program	i. Several pilots in Kenya, Ghana	i. Expand to Ethiopia, Mali, Senegal, Tanzania, etc.
Climate risk management in policy dialogue	i. South Africa through CTF ii. Botswana CPS	i. Botswana low carbon growth strategy
Carbon finance deals	i. 7 projects in 5 countries (Uganda, Rwanda, Mali, Kenya, Senegal)	i. 5 projects targeted in 3-4 countries

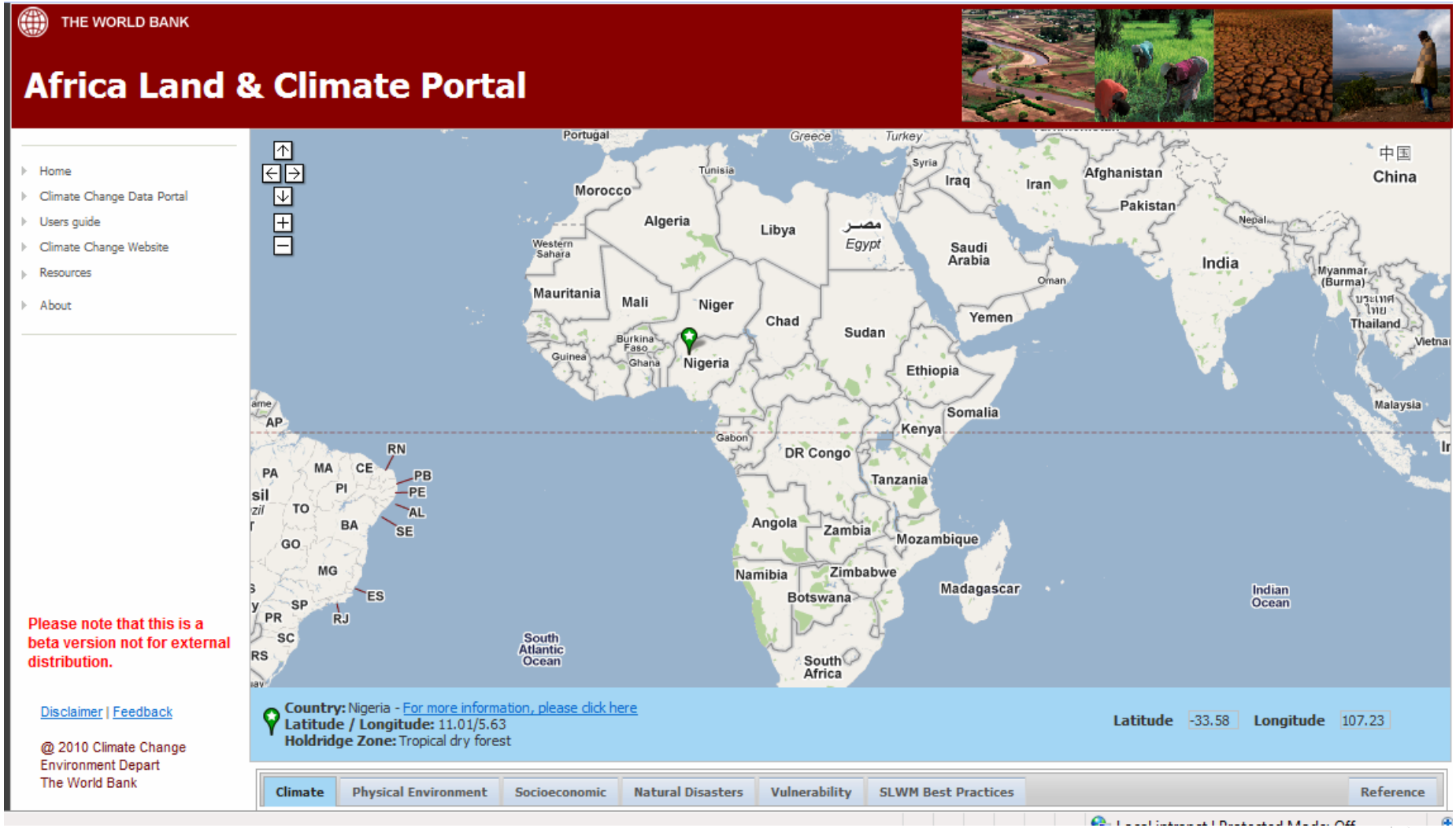
Niger Basin: *integrating climate into energy/ water investment plans*

- $8.3b 20 year **Sustainable Development Action Plan (SDAP)** - investments in storage, irrigation, hydropower, transport, water supply, fisheries, environment, capacity-building
- Request from Heads of State - Bank supporting Niger Basin Authority on a **climate risk assessment** of the SDAP
- **Innovative methodology** - establish system performance indicators and examining their vulnerability to **climate risks** (both from the historical variability record and climate change scenarios)

Nigeria Climate Change Assessment (WB/ UNDP)

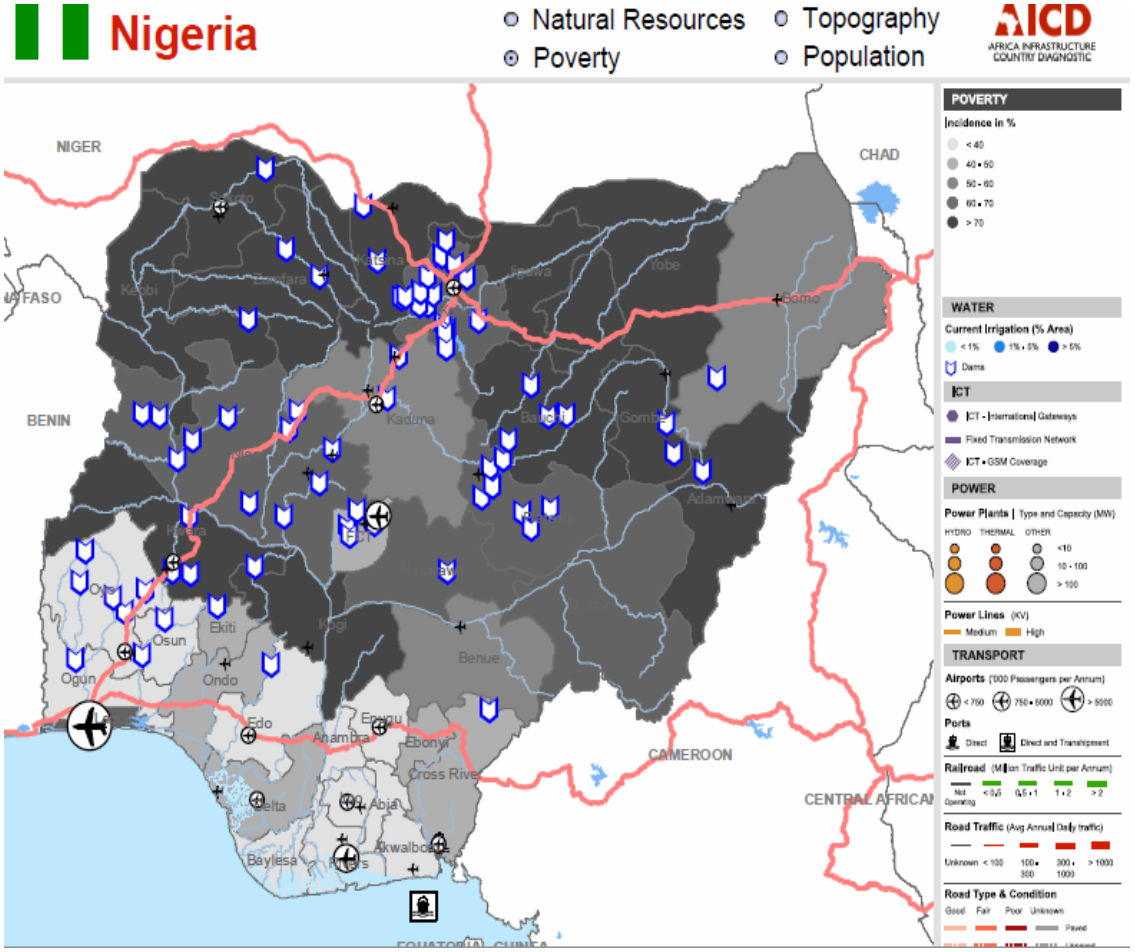
1. Develop a solid knowledge platform on
   - Low carbon growth options → NAMA (?)
   - Risks to growth from climate variability and change (Agriculture, Water, Hydro; Lagos)
2. Provide underpinning for follow-up financial assistance by the donor community
   - Climate-risk lending operation (World Bank)
   - Support from the Global Environment Facility, under GEF-5
   - Climate-finance instruments (e.g. Copenhagen Green Fund)

Making climate data accessible for internal and external use



Addressing the CC/ Infrastructure nexus

- Africa Infrastructure Country Diagnostic (AICD): data platform on power, water, transport and ICT infrastructure in SSA
- Adding a climate overlay to evaluate cc implications for:
  - Water storage needs
  - Cost of expanding/ maintaining road networks
  - Power generation and regional trade



For further information

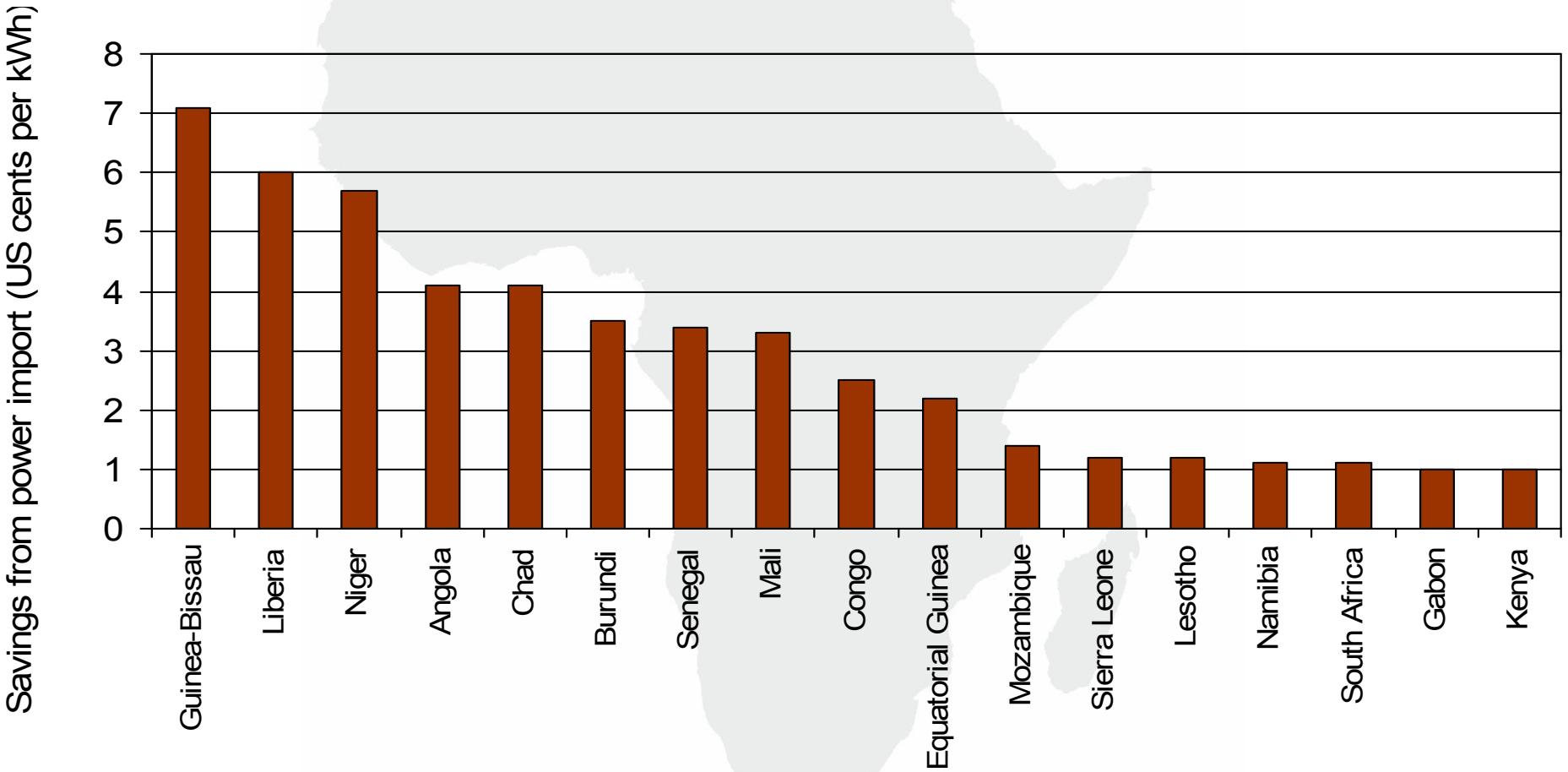
http://beta.worldbank.org/content/africa

http://www.infrastructureafrica.org/

http://sdvmd1.worldbank.org/climateportal/
(under development)

A few strategic issues for today's discussion

Regional power trade can deliver energy at low cost…

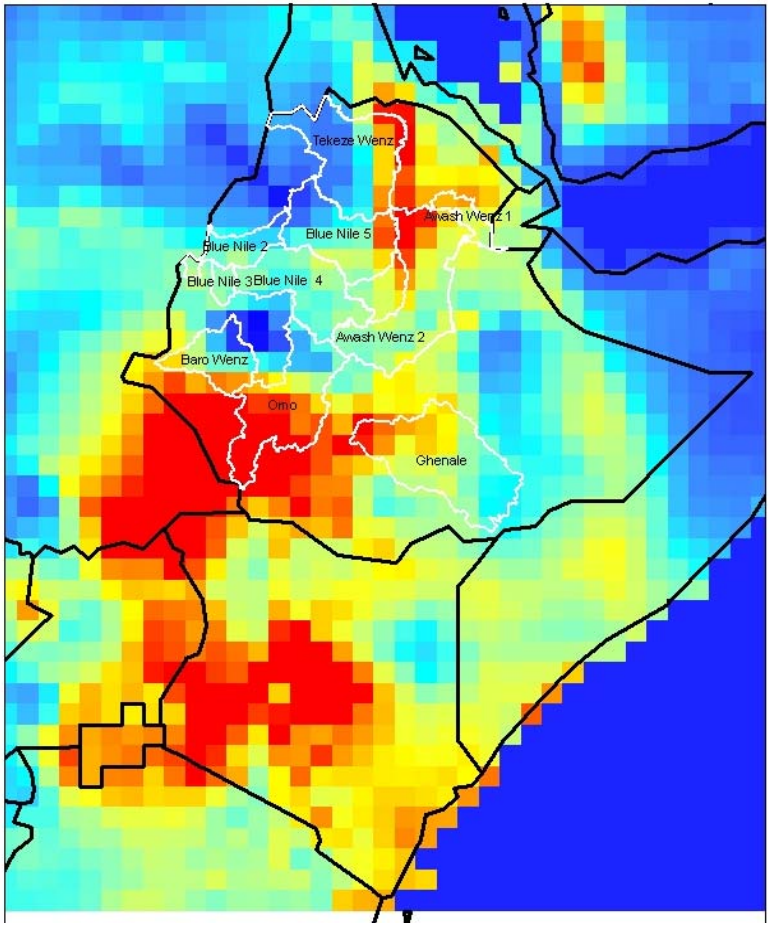


AICD
AFRICA INFRASTRUCTURE COUNTRY DIAGNOSTIC

…and to manage climate risks..

- **Potential benefits of the Ethiopia and Kenya interconnection**
- **Through hydrologic complementarity, could contribute to hedge hydrologic risks and contribute to increase total "firm energy" of the join system**

Hydrologic Complementarity

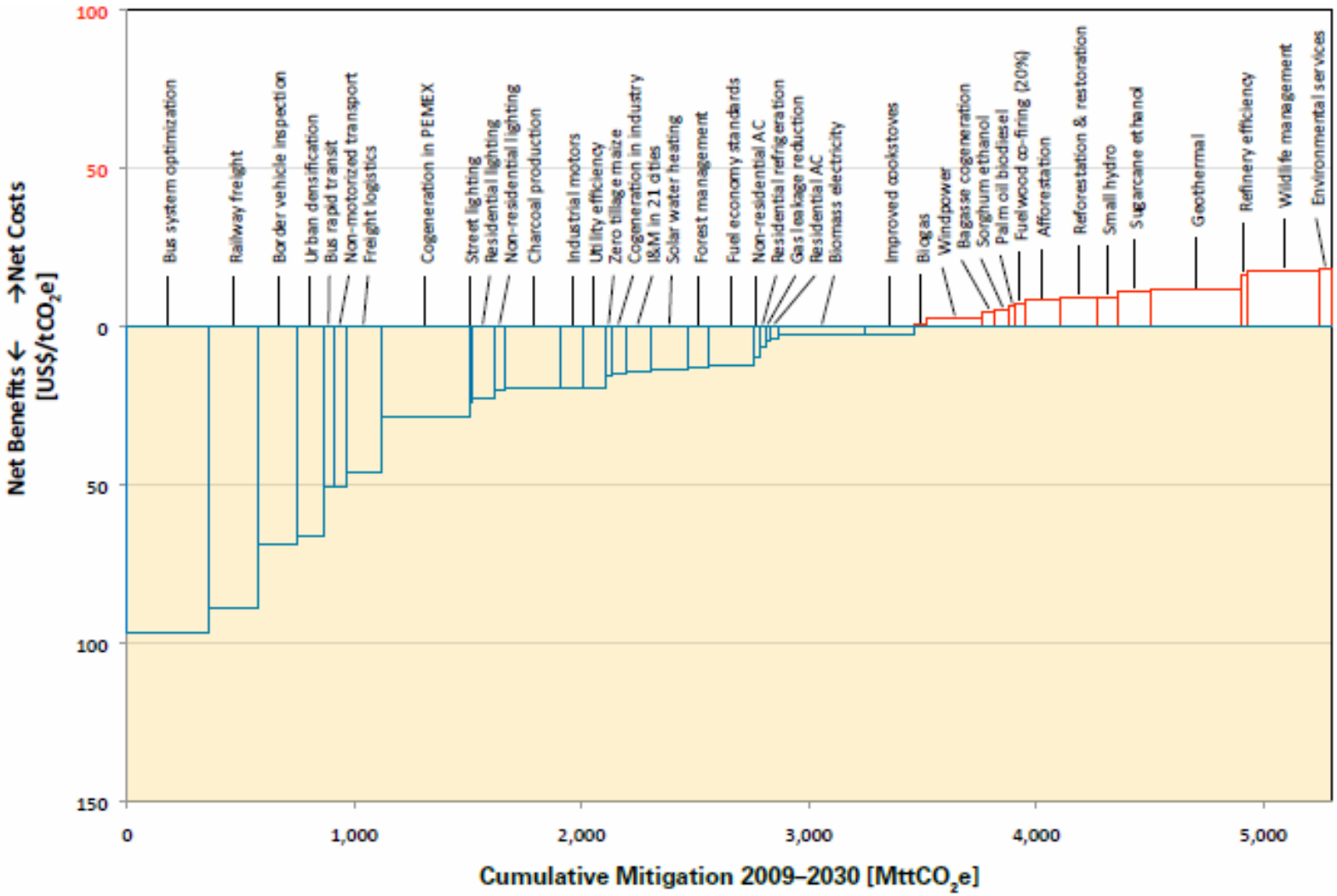


Red to blue = higher to lower hydrologic risk

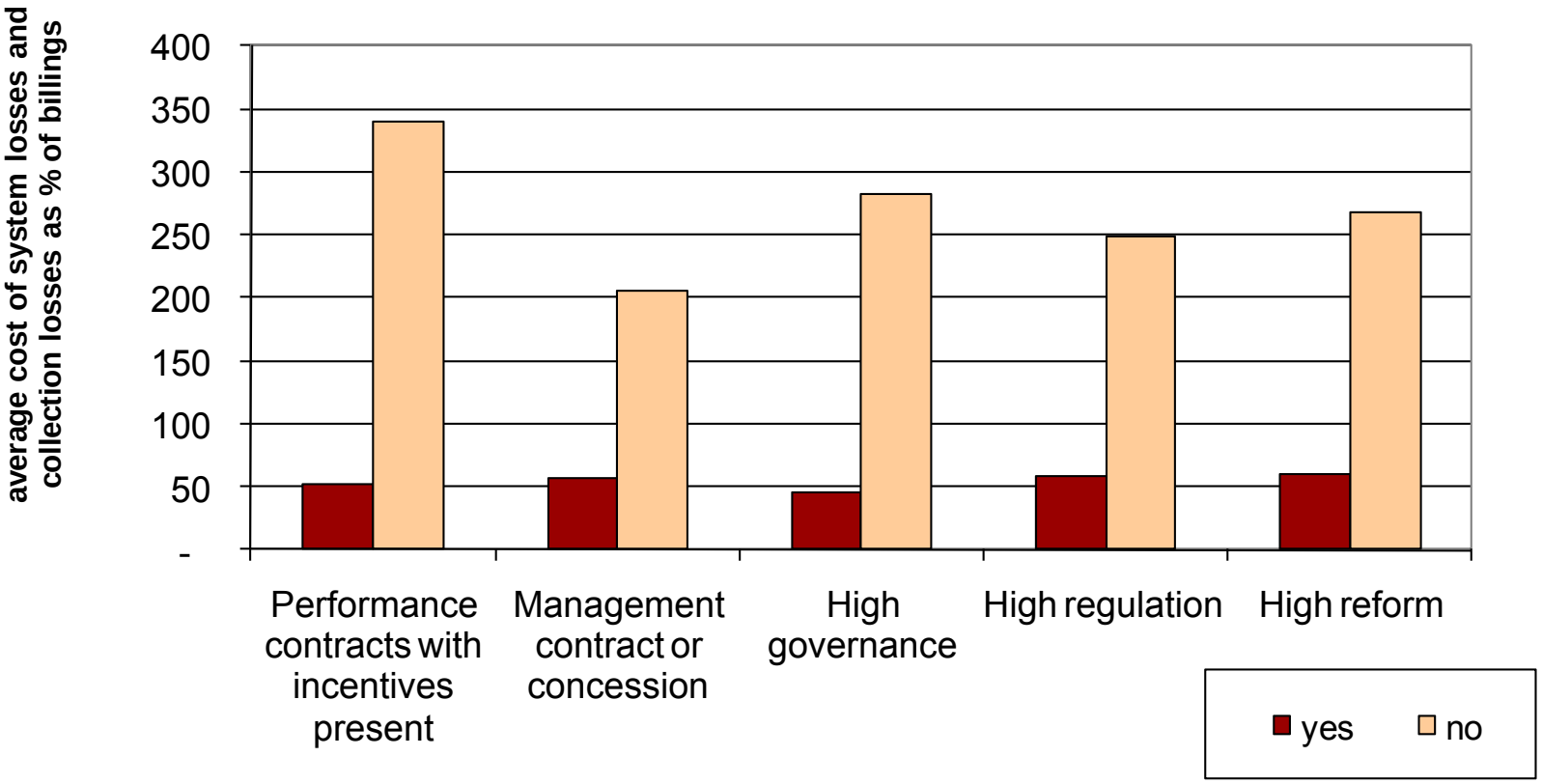
Shows potential for lowering risk through interconnecting systems in Ethiopia and Kenya

Growing low carbon: need for planning tools..

Mexico – marginal abatement cost curve



..but also for sector reform and governance



..and finally, the financing challenge

- To address the access gap, Africa needs to build
  - 7,000 MW of generation capacity per year
  - More than five million new power connections per year
  - An extensive transmission network
- The annual financing requirements are staggering
  - Spending needs: US$40.6 bn/yr
  - Existing spending: US$11.6 bn/yr
  - Efficiency gap: US$5.9 bn/yr
  - Financing gap: US$23.6 bn/yr
- And doing this in a low carbon, climate resilient way is likely to require more resources