

# The Climate Agenda in Africa: combining knowledge and finance

**Raffaello Cervigni**

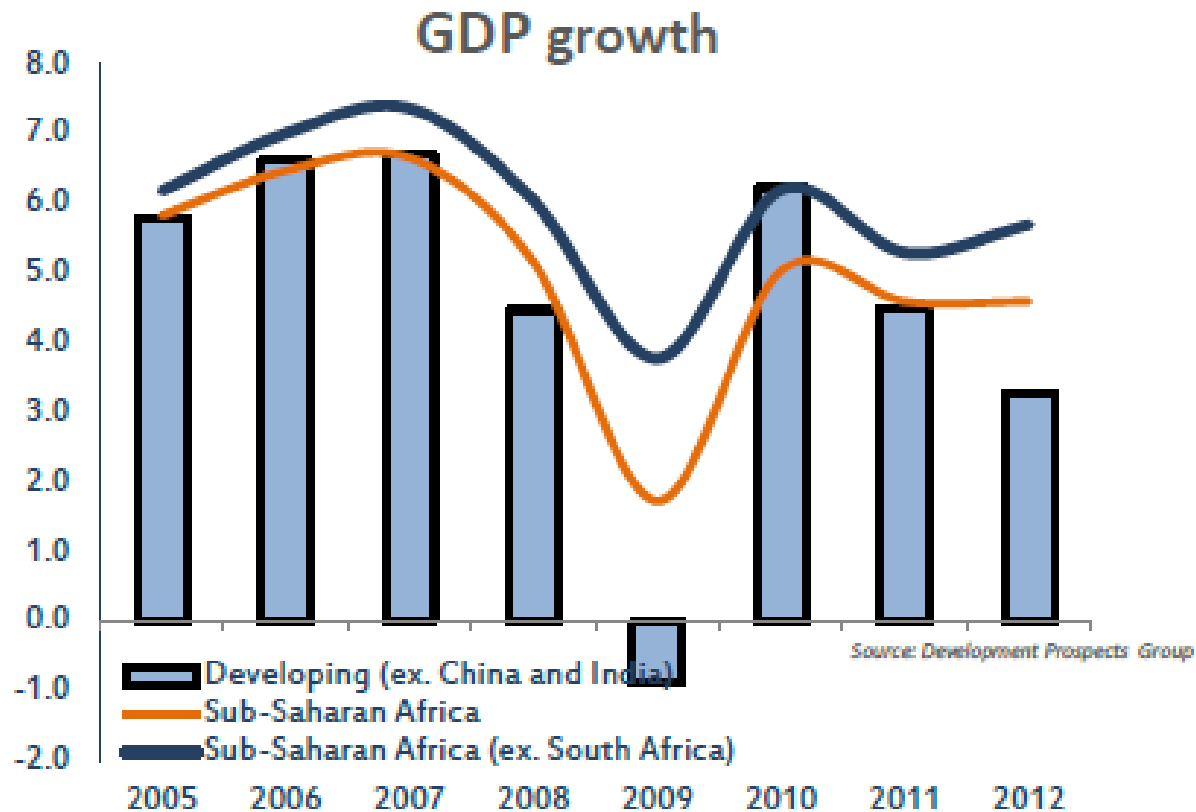
**Lead Environmental Economist and  
Regional Climate Change Coordinator  
Africa Region, The World Bank**

# Key messages

1. Africa's development prospects have been improving
2. To keep growing, Africa needs to address key challenges
3. Many of these challenges are closely linked to the climate agenda
4. Addressing the climate/ development linkages requires climate-smart financing...
5. ...but also relevant analytical work
6. There is a big applied research agenda still to be addressed

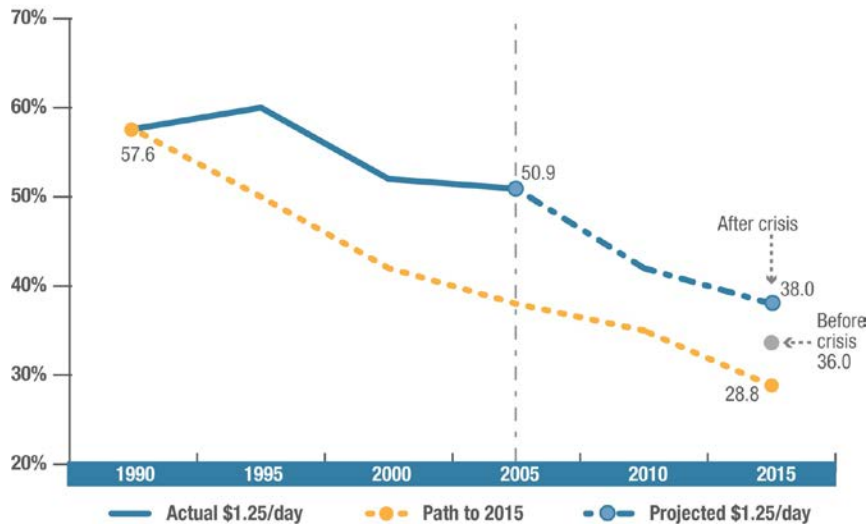
Message 1:  
Africa's development prospects  
have been improving

# Africa's development prospects are improving: growth..

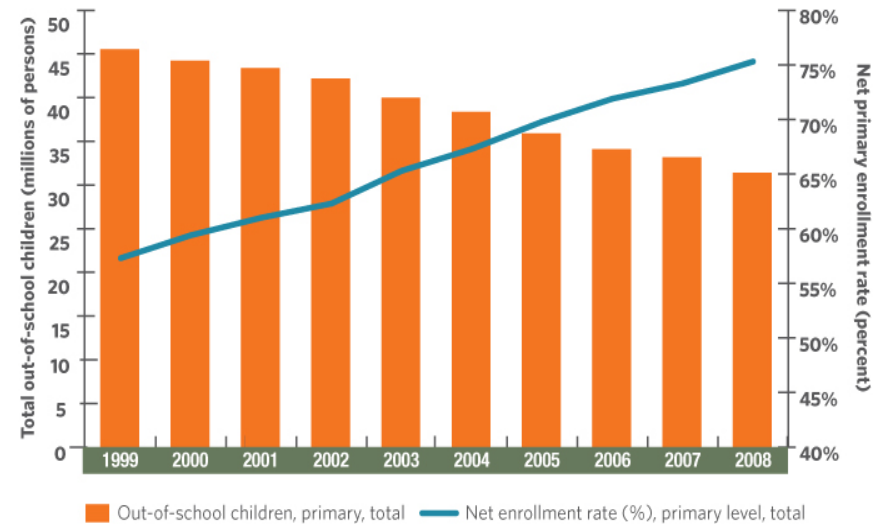


# .. Human Development indicators...

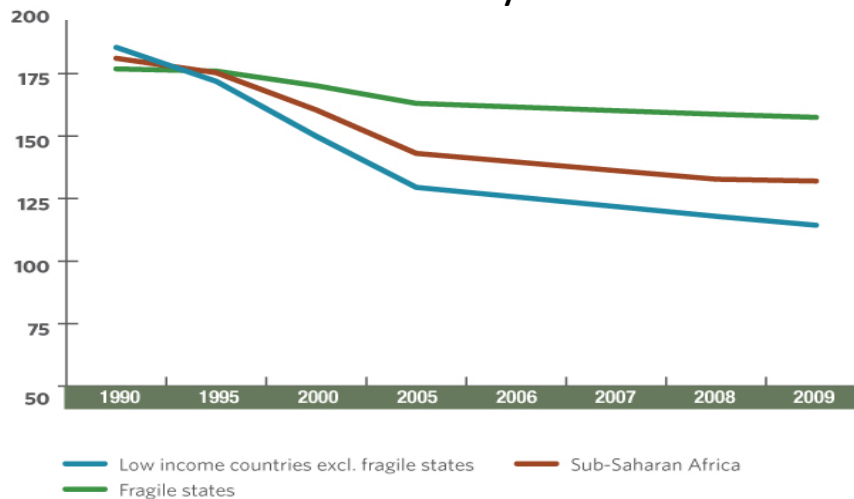
## Population living under \$1.25/day



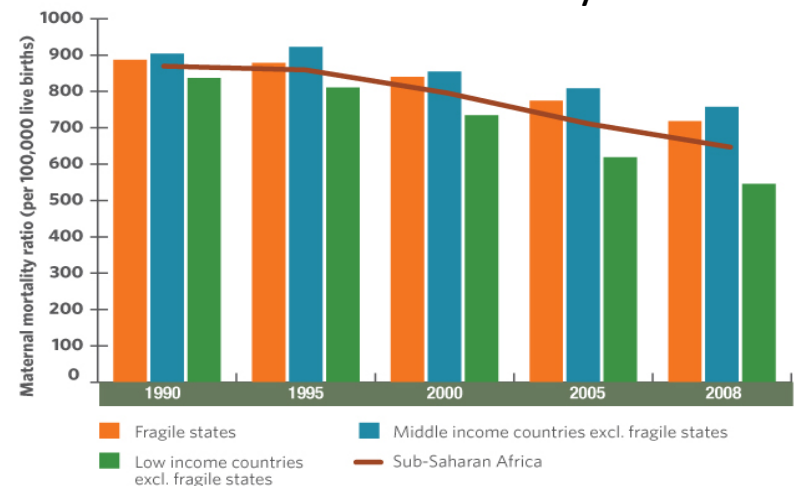
## Primary school enrollment rates



## Child mortality rates

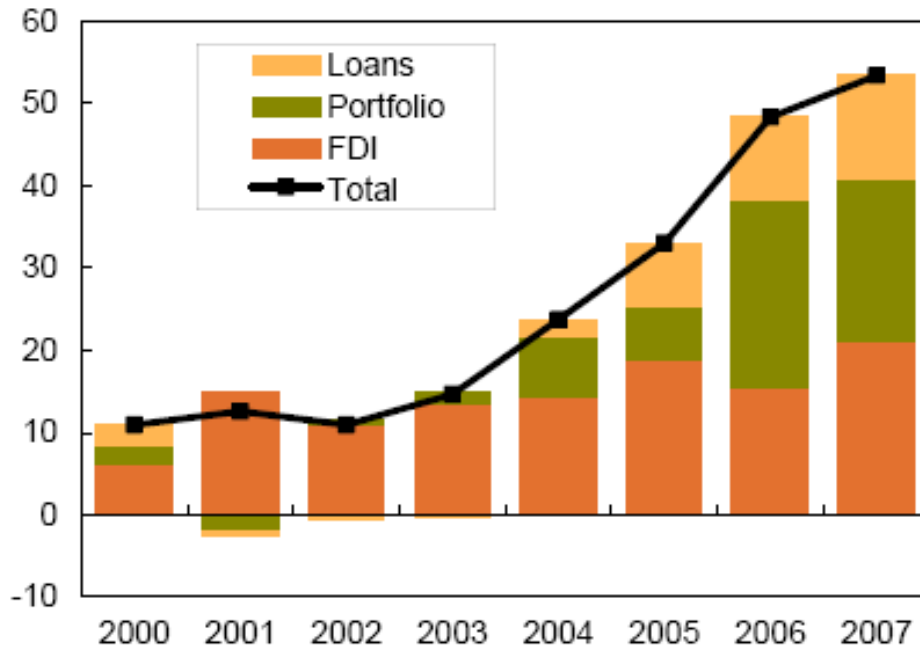


## Maternal mortality ratio



# ..and business environment

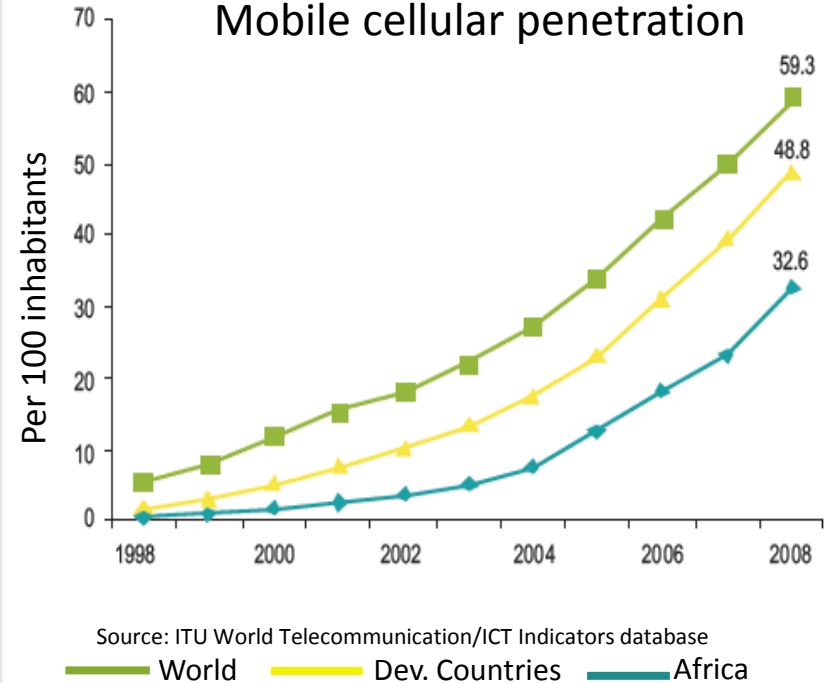
Private Capital Inflows  
(Billions of US Dollars)



Rwanda is top reformer of business regulations

Source: Doing Business 2010

Mobile cellular penetration



ICT Growth in Africa and the world, 2003-2008

	CAGR (%)		
	Fixed Phone lines	Mobile cellular subscriptions	Internet users
Africa	2.4	47.0	30.6
World	2.5	23.0	17.0

Message 2:

To keep growing, Africa  
needs to address key challenges

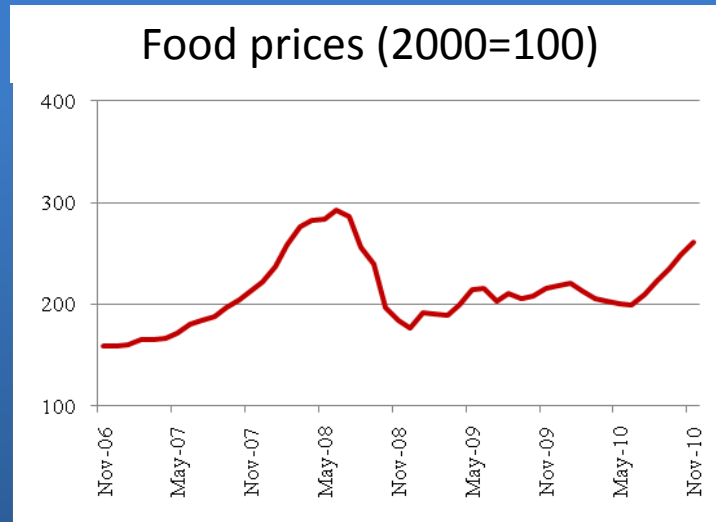


# Scale up infrastructure

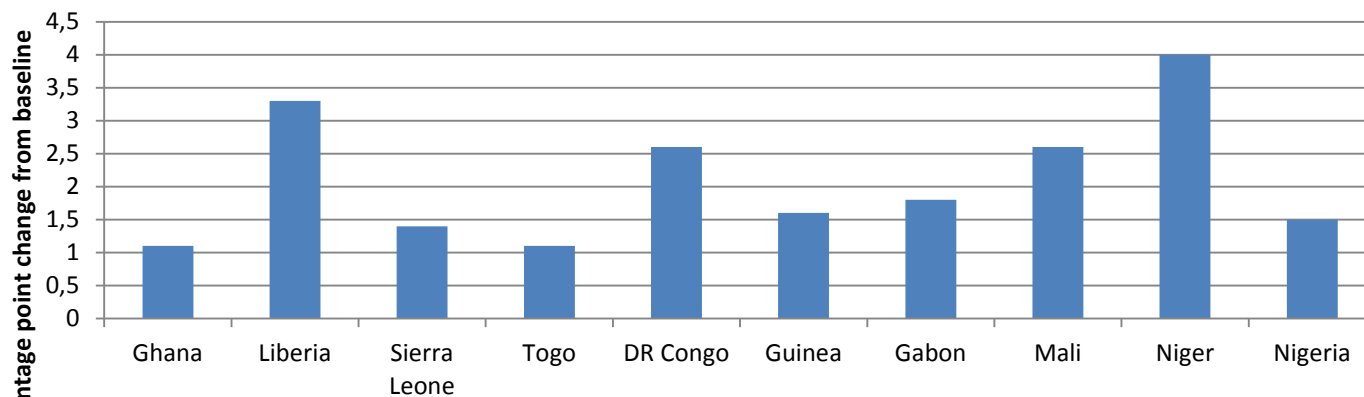
*560 million sub-Saharan Africans lack access to electricity*



# Overcome vulnerability to shocks

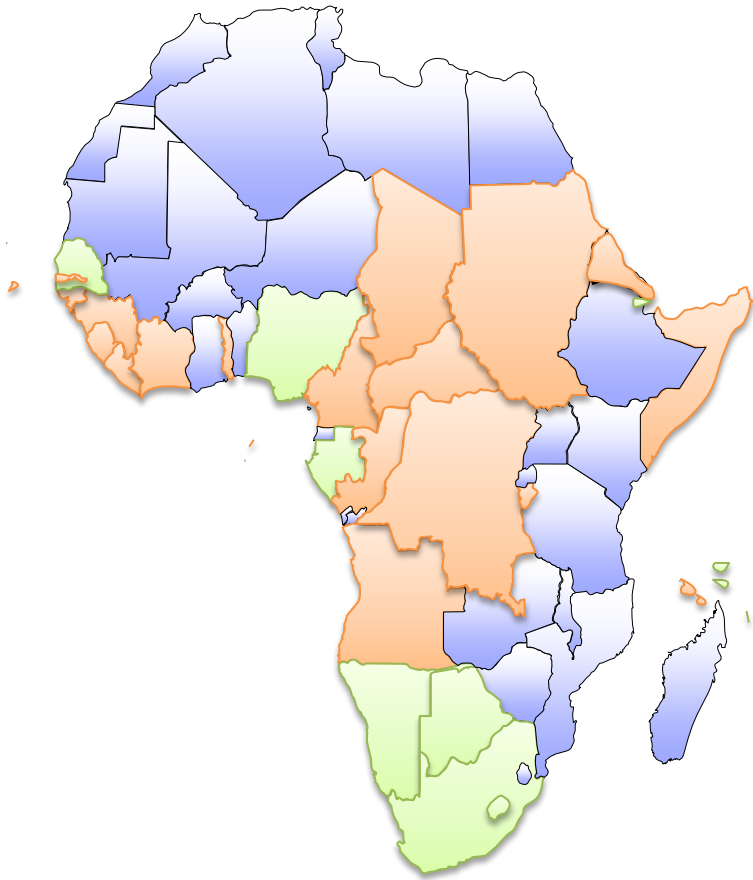


## Poverty increase from baseline (in percentage points) due to a 25% increase in food prices



Source: Wodon et al. (2008). "Potential Impact of Higher Food Prices on Poverty: Estimates from a Dozen West and Central African Countries", Policy Research Working Paper 4745.

# Address conflicts



Fragile States

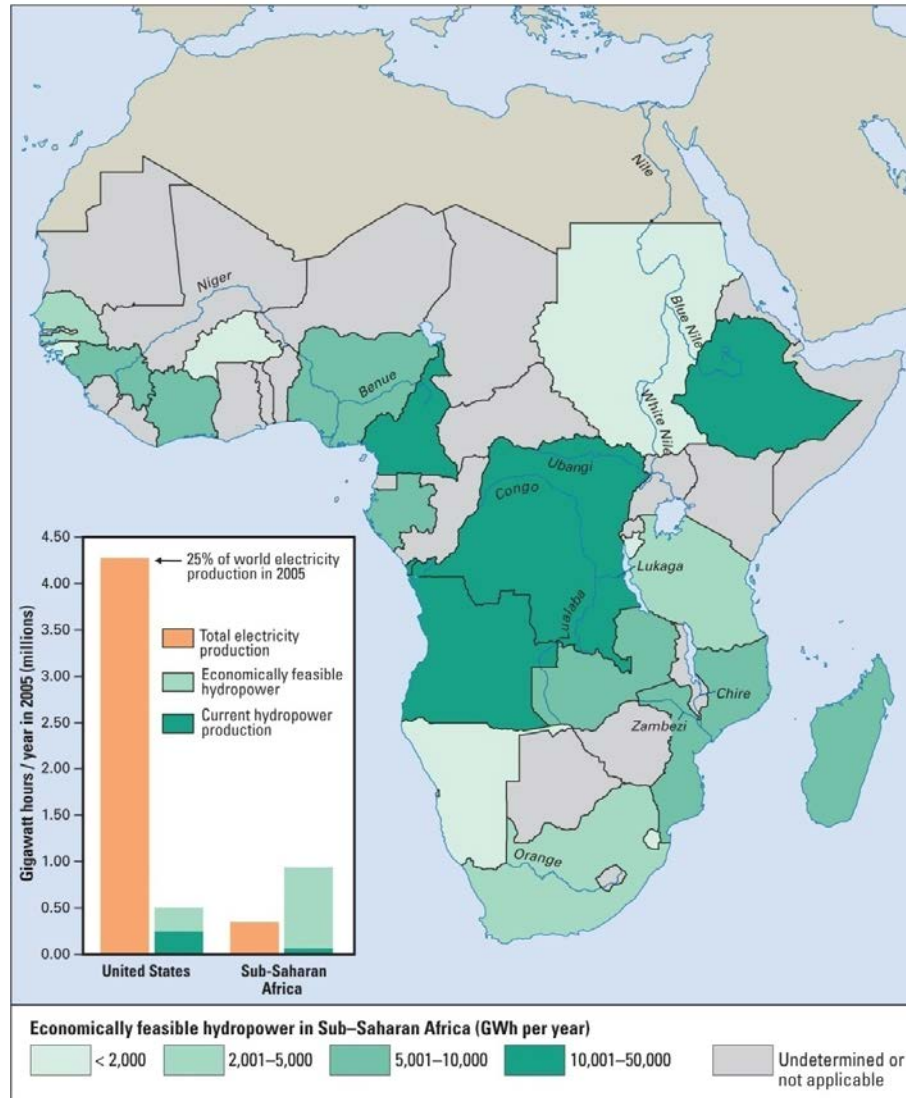
Middle-Income Countries★

Fast-and-slow-growing low-income countries

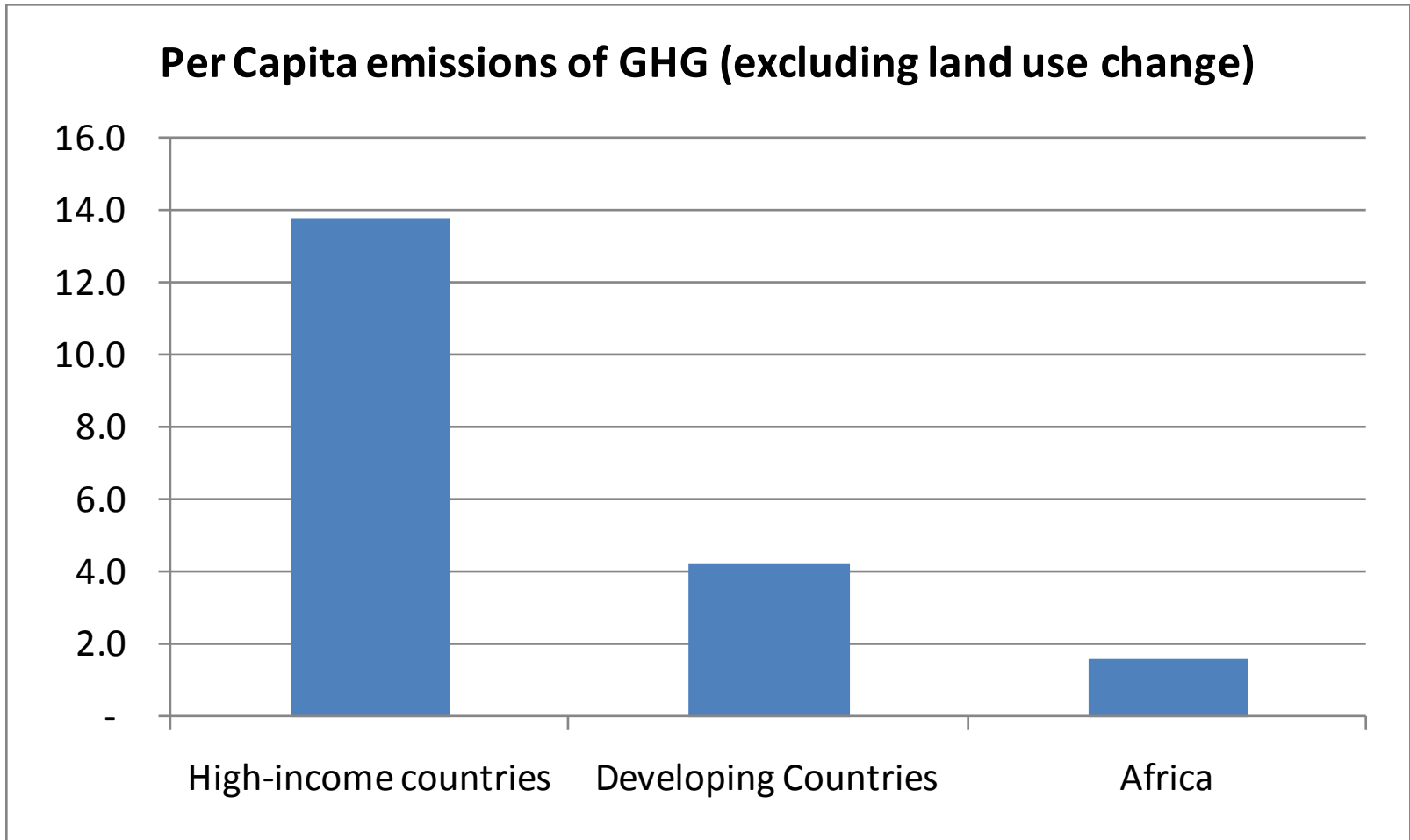
## Message 3:

Many of Africa's development priorities are closely linked to the climate agenda

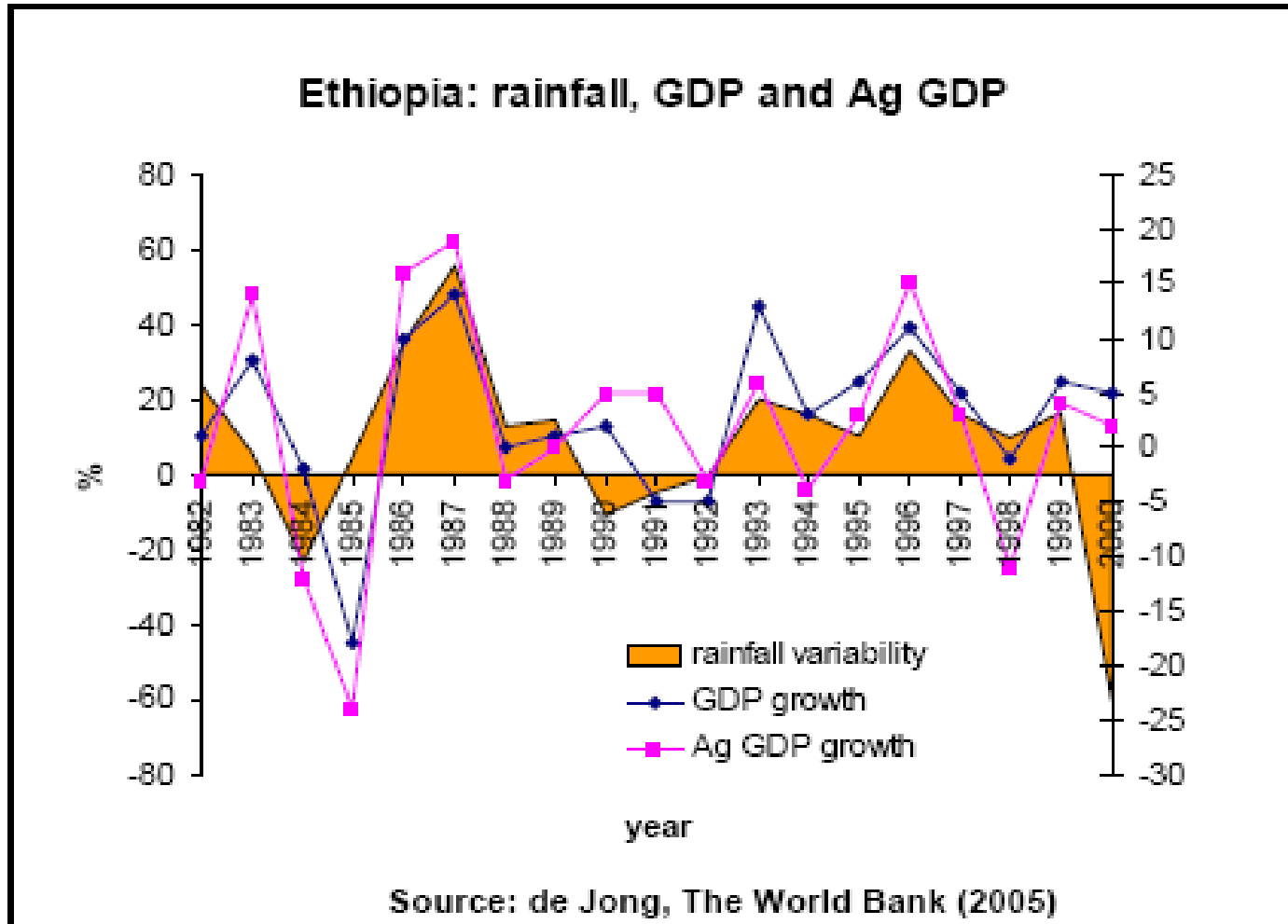
# Africa has a large (and untapped) low carbon potential



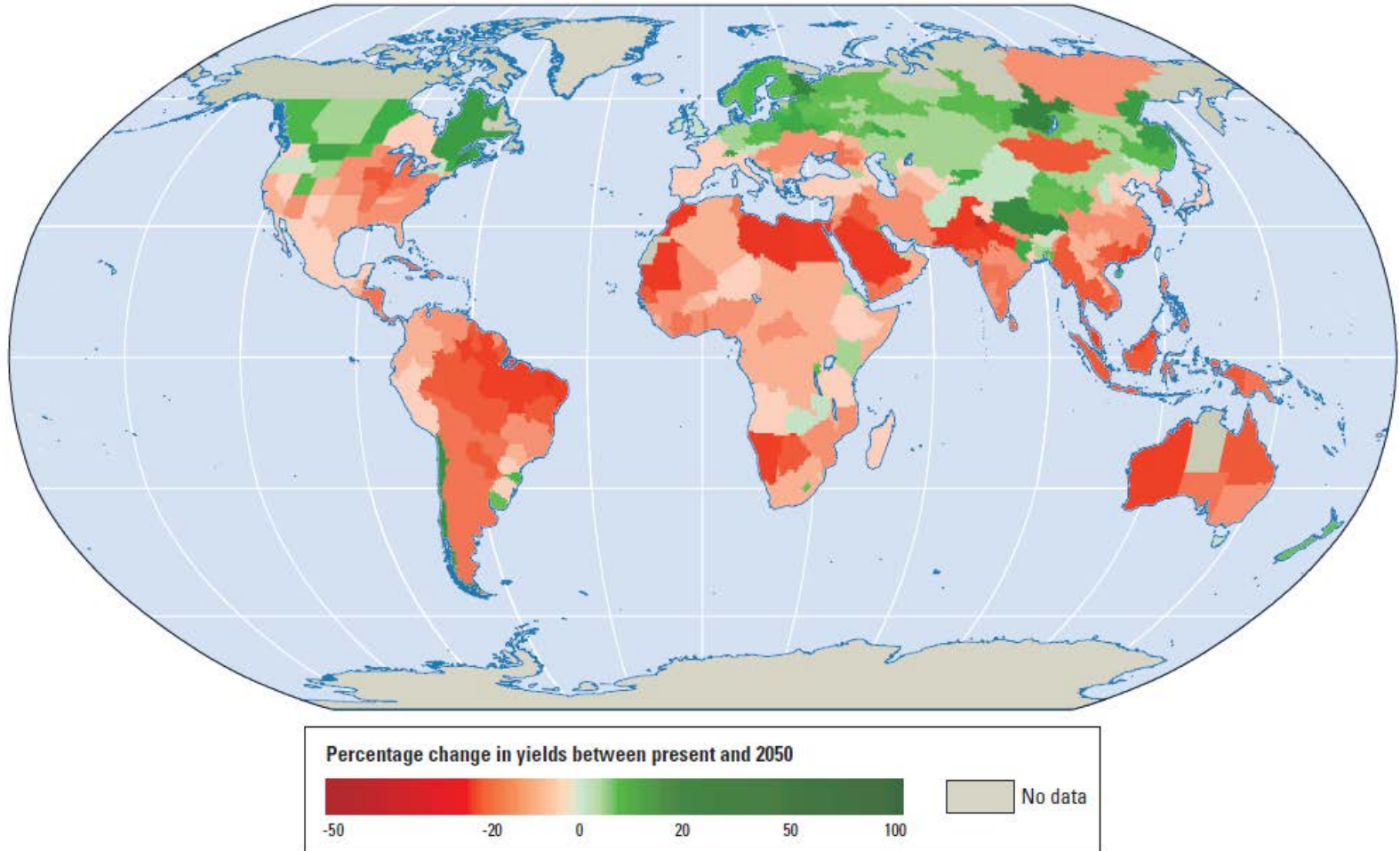
**..but the entry point can not be “mitigation”**



# Sustaining growth requires handling current climate variability...



...and preparing the continent for future change



**Message 4:**  
**Addressing the climate/ development linkages requires climate-smart financing**



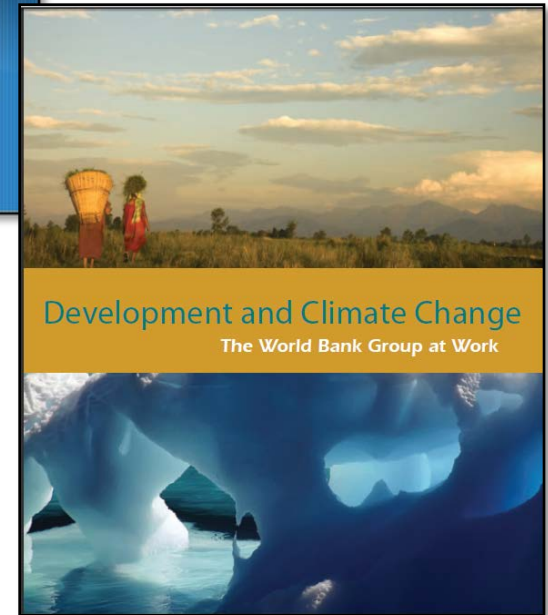
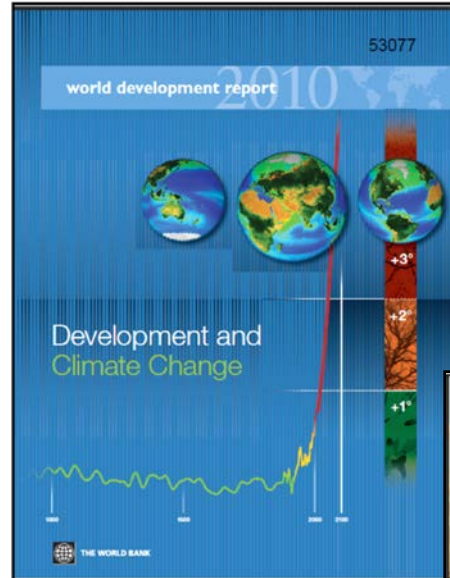
# The World Bank and Climate Change

## Mission

- Act Now
- Act Together
- Act Differently

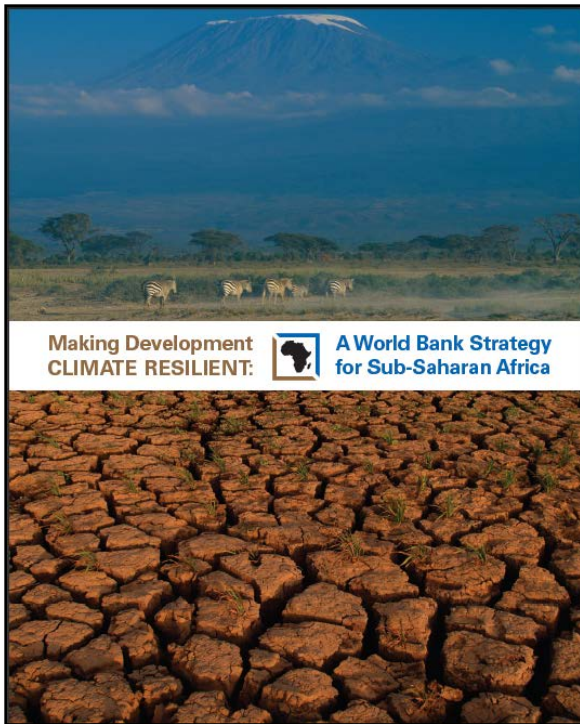
## Role

- Development organization
- Global Facilitator



# The World Bank and Climate Change in Africa

*Regional engagement: Climate Change Strategy for Sub-Saharan Africa*

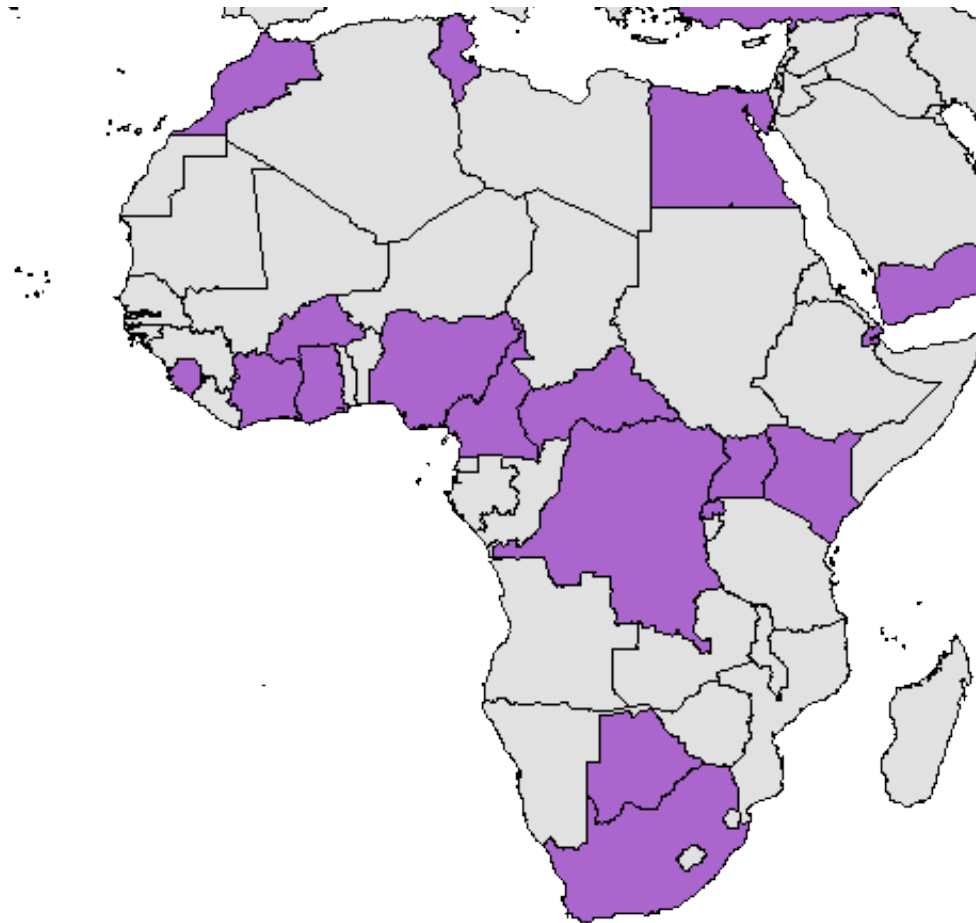


## 4 Pillars of Action:

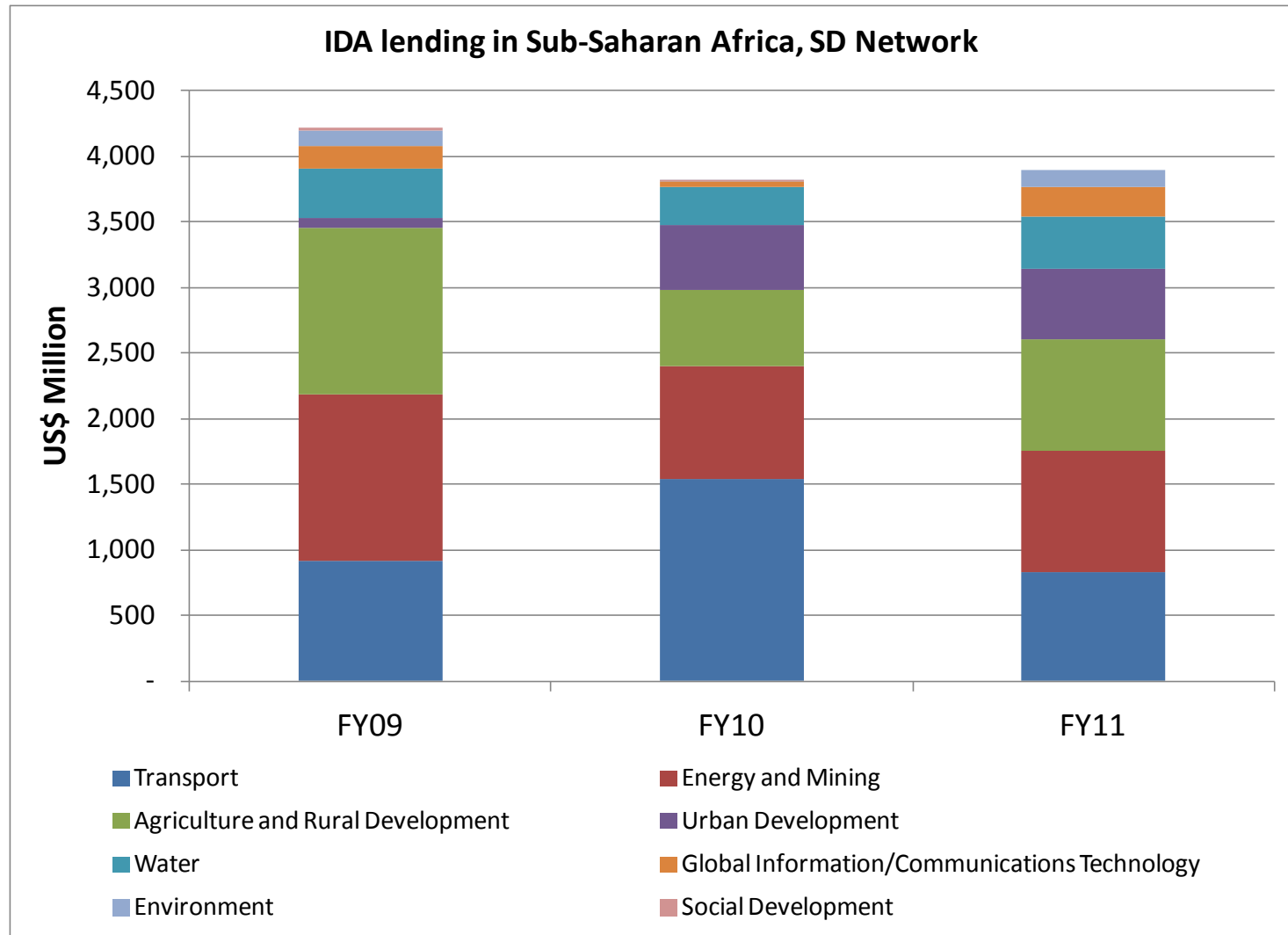
1. Make adaptation and climate risk management a core component of development
2. Seize mitigation opportunities
3. Knowledge and capacity development
4. Scale up financing

# How is the Regional Strategy being implemented?





*Climate Change is being integrated into country strategies...*

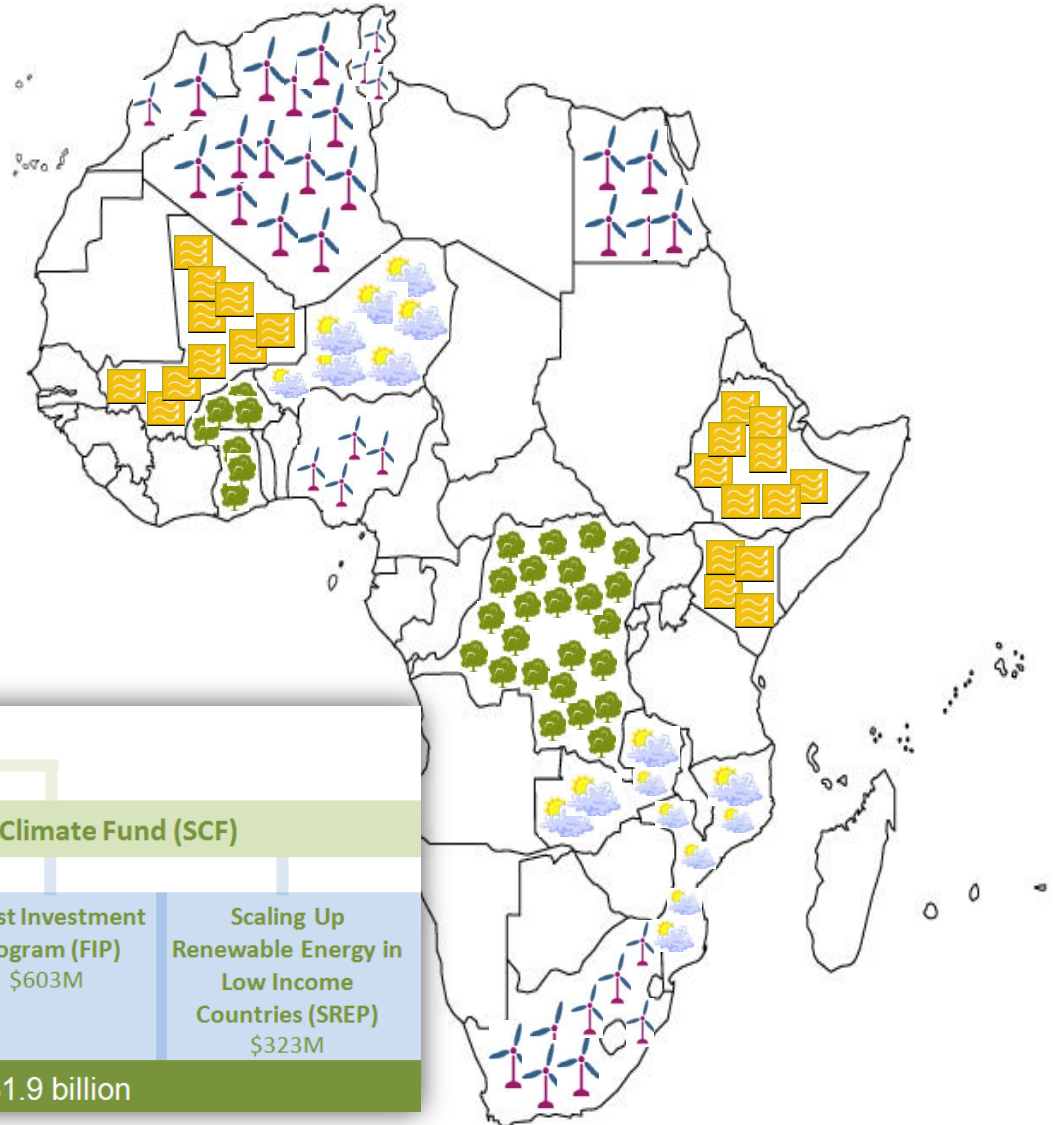


..so that regular Bank financing can support climate action..



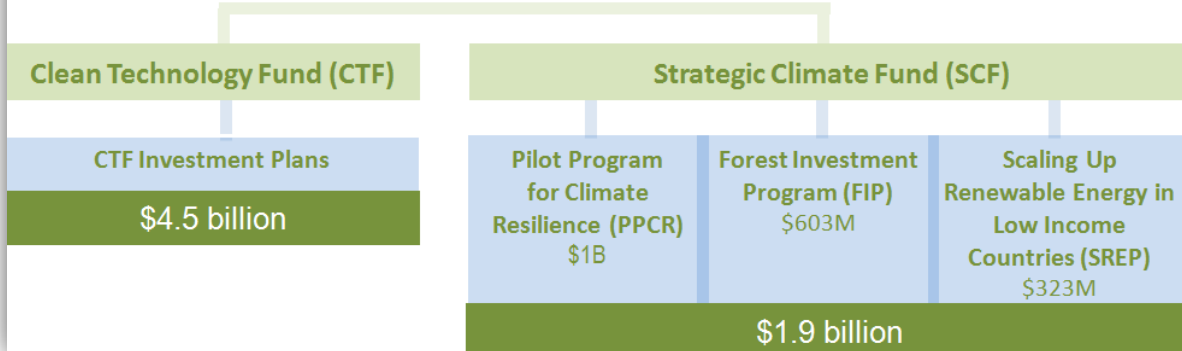
# ..and underpin efforts to mobilize climate finance

LEGEND		
	Scaling Up Renewable Energy Program in Low Income Countries	Ethiopia, Kenya, Mali
	Forest Investment Program	Burkina Faso, Dem. Rep. of Congo, Ghana
	Pilot Program for Climate Resilience	Mozambique, Niger, Zambia
	The Clean Technology Fund	Algeria, Arab Rep. of Egypt, Morocco, South Africa, Nigeria (*)



(\*) In Nigeria, the CTF investment plan has been cleared by the TF committee, but funding is not yet confirmed

## Climate Investment Funds



# Areas of Work: Agriculture and Natural Resource Management



## Comprehensive Africa Agriculture Development Programme (CAADP)

- Review of climate smart agriculture actions under CAADP



## Kenya Agricultural Carbon Project

- Supporting the adoption by small-holder farmers of triple wins agriculture practices



## The Sahel and West Africa Program (SAWAP)

- Integrated approach to deliver higher yields, reduce degradation of terrestrial carbon pools, and secure ecosystem resilience through Sustainable Land Management (SLM)

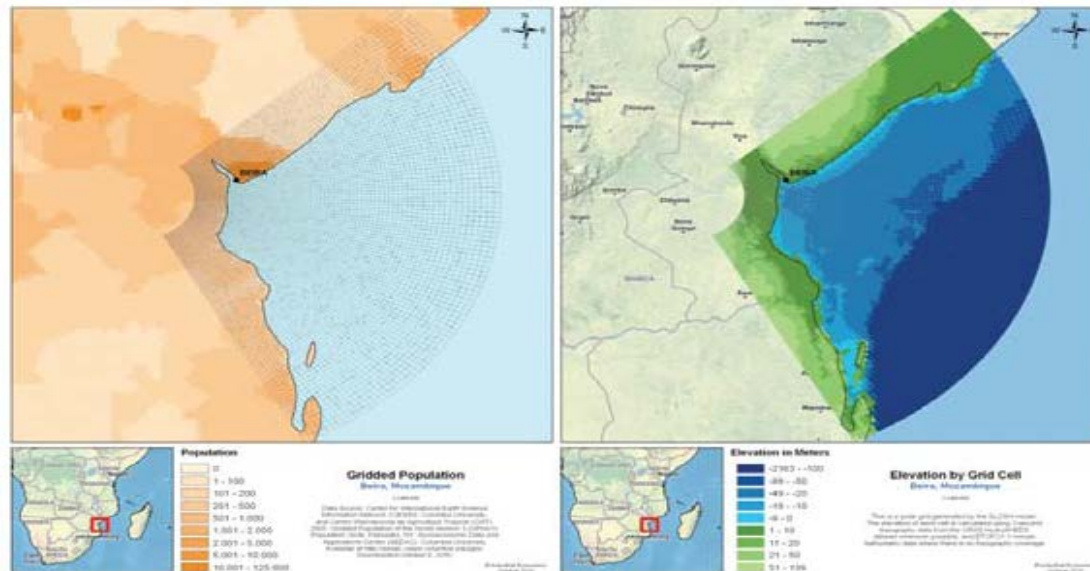


# Areas of Work: Urban Development

## Mozambique Cities and Climate Change (\$120 m)

- Strengthening Municipal Capacity to Enhance Resiliency to Climate Related Risks

*Beira's population in low-lying areas*



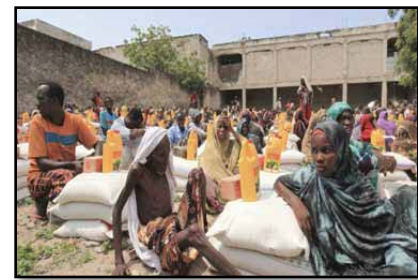
# Areas of Work: Disaster Risk Management

## National plans for Disaster Risk Management

- Burkina Faso, Ethiopia, Ghana, Mali, Malawi, Mozambique, Senegal and Togo

## Ethiopia Productive Safety Net Program (\$480 million World Bank financing)

- Improved response to droughts and other events affecting food security





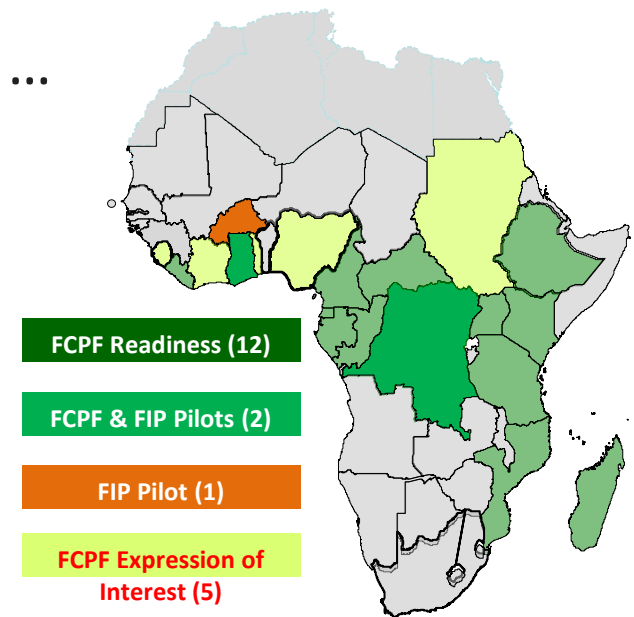
# Areas of Work: Mitigation: Forests & REDD+

## Direct support to countries on REDD+ Readiness as well as support activities :

- **Research & Analytical work:** Analysis of deforestation trends, forest carbon stocks ...
- **Technical assistance**
- **Investments**

## Financing instruments

- Forest Carbon Partnership Facility (FCPF)
- Forest Investment Program (FIP)
- IDA/IBRD investments
- Trust Funds (incl. Global Environment Facility)



# Areas of Work: Transport

## Lagos Bus Rapid Transit project (\$100 m)

- Reducing congestion, creating jobs and reducing carbon emissions by 20%



## Areas of Work: Energy

### Lending for renewables and energy efficiency

- \$1 billion in FY10, (World Bank + IFC)

### Lighting Africa initiative

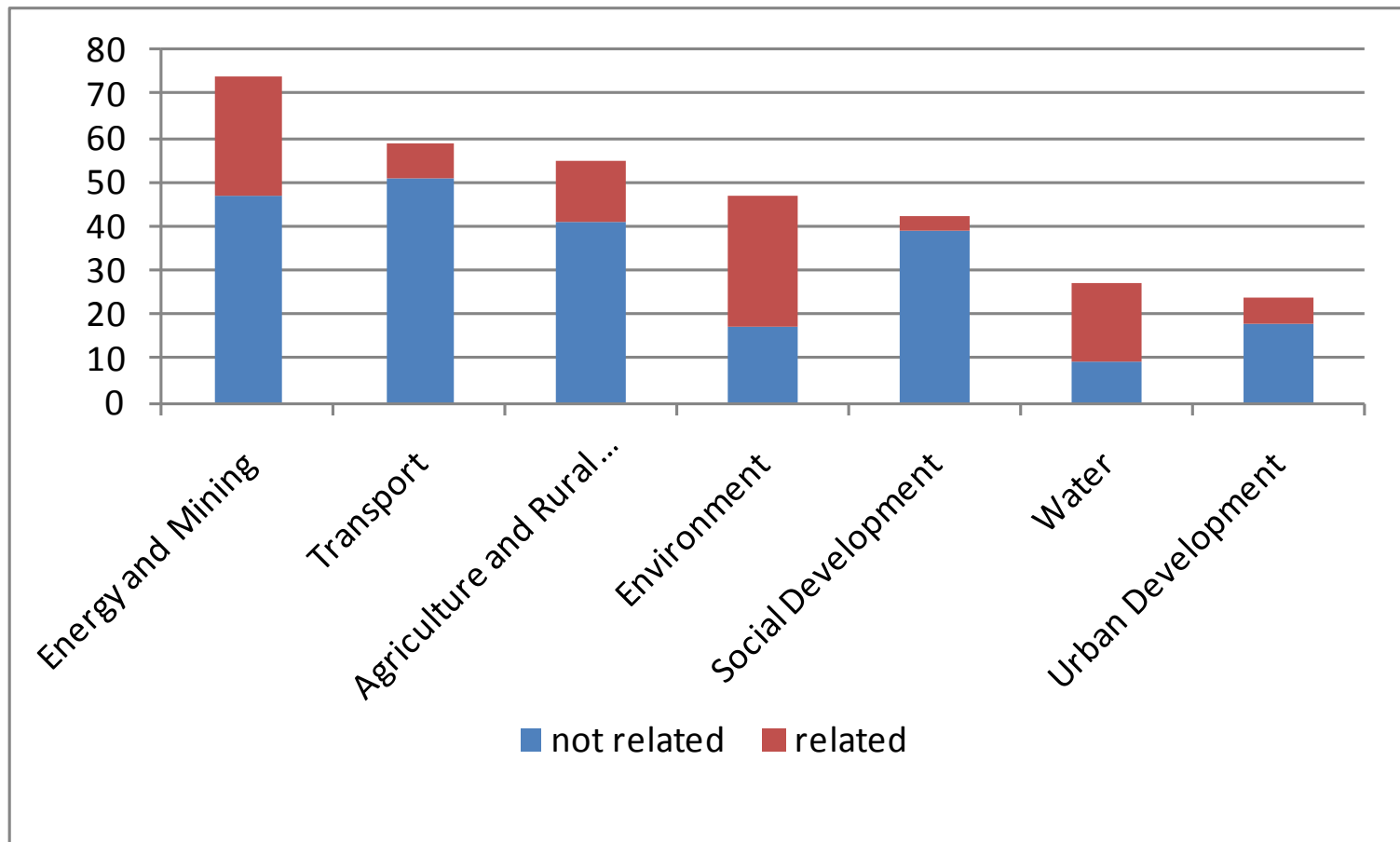
- Targets 250 million Sub-Saharan Africans by 2030 through high-tech compact fluorescent lamps (CFLs) and light-emitting diodes (LEDs) powered by renewable energy sources and mechanical means

### Promoting geothermal energy developments in the east Africa rift valley



**Message 5:  
To inform financing,  
relevant analytical work is key**

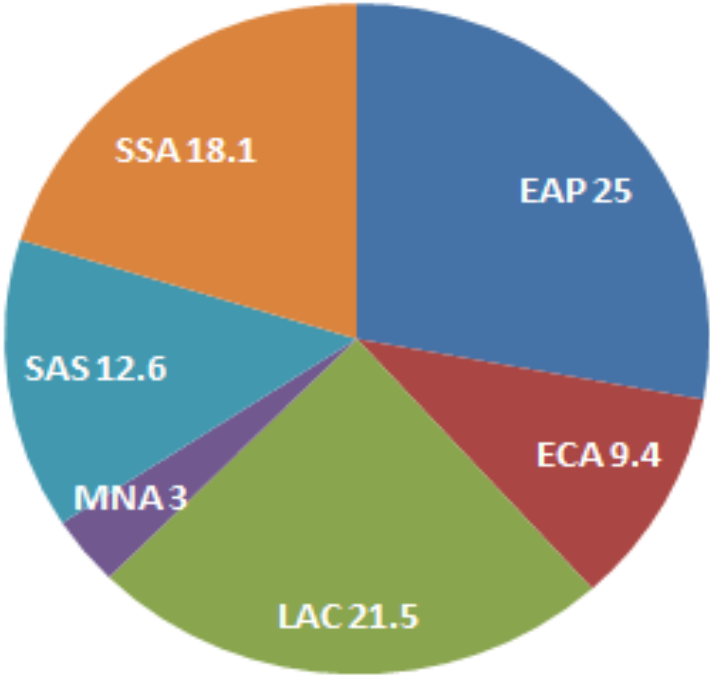
## Analytical Work: Overview...



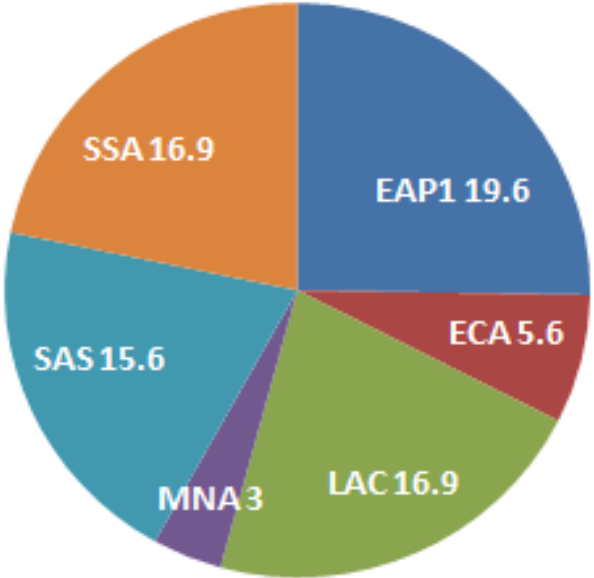
*In FY 09-12, over 100 tasks (1/3 of total) in 34 Sub-Saharan countries in several areas of the AGN research agenda*

# Global reports, e.g. economics of adaptation to climate change...

Wet Scenario – 100.0



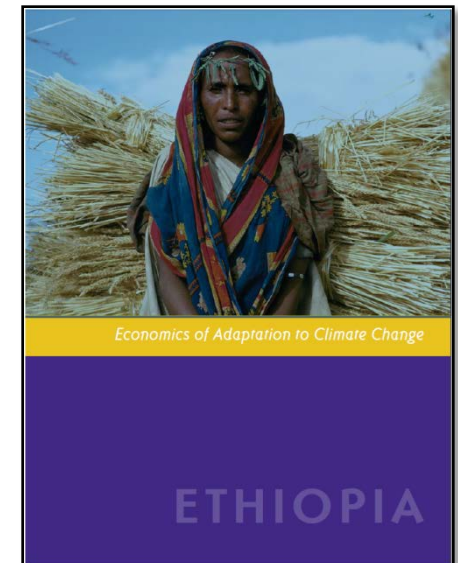
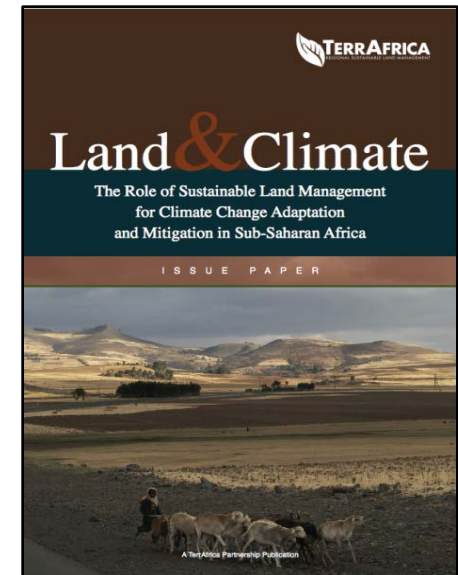
Dry Scenario – 75.0



- East Asia and Pacific, EAP
- Europe and Central Asia, ECA
- Latin America & Caribbean, LAC
- Middle East and North Africa, MNA
- South Asia, SAS
- Sub-Saharan Africa, SSA

## ... and country/ sector specifics studies

- Climate Change implications for water resources, land management, transport
- Economics of Adaptation to climate change (Ethiopia, Ghana, Mozambique)
- Drivers of deforestation in the Congo Basin
- Climate Risks Analysis in Niger Basin
- Climate Change and Infrastructure (building on AICD)
- **Climate Change Assessment in Nigeria**



# Nigeria Climate Change Assessment

## The Vision: Nigeria Vision 20:2020

- Making Nigeria the 20th largest economy of the World by 2020

## The Challenges

- Nigeria is already vulnerable to climate variability in the agricultural and livestock sectors
- Climate variability also adversely impacts Nigeria's efforts to achieve energy and water security
- Rapid scale-up of power production, gas development and roads (all needed to achieve vision 20:2020 goals) might lead to higher carbon emissions and local environmental degradation

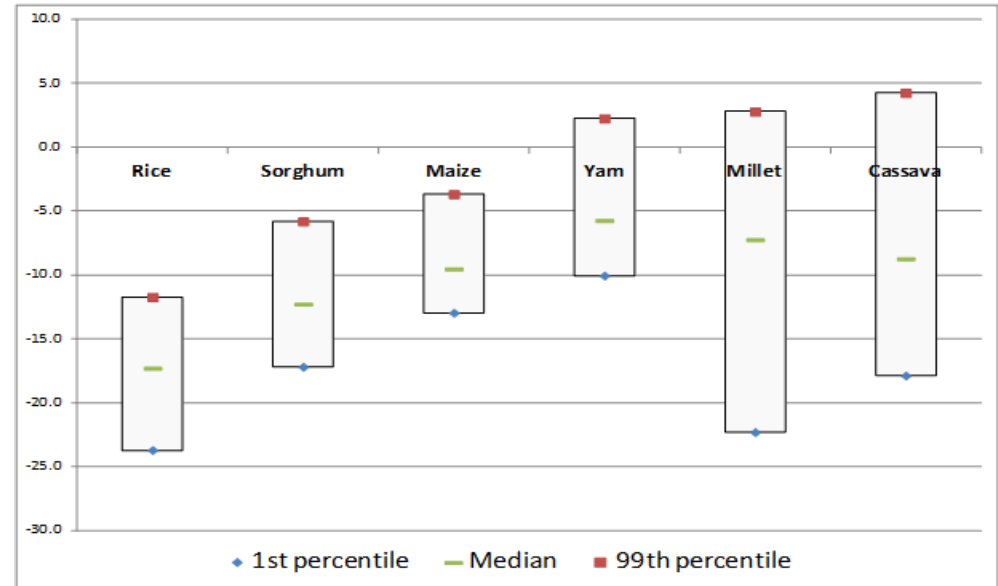
## The Opportunities

- Many agriculture technologies exist for increasing yields, enhancing climate resilience and reducing emissions
- Low carbon options in power, oil/ gas and transport can deliver national benefits (including lower net costs of energy provision, savings in gas extraction, reduced congestion and improved air quality)

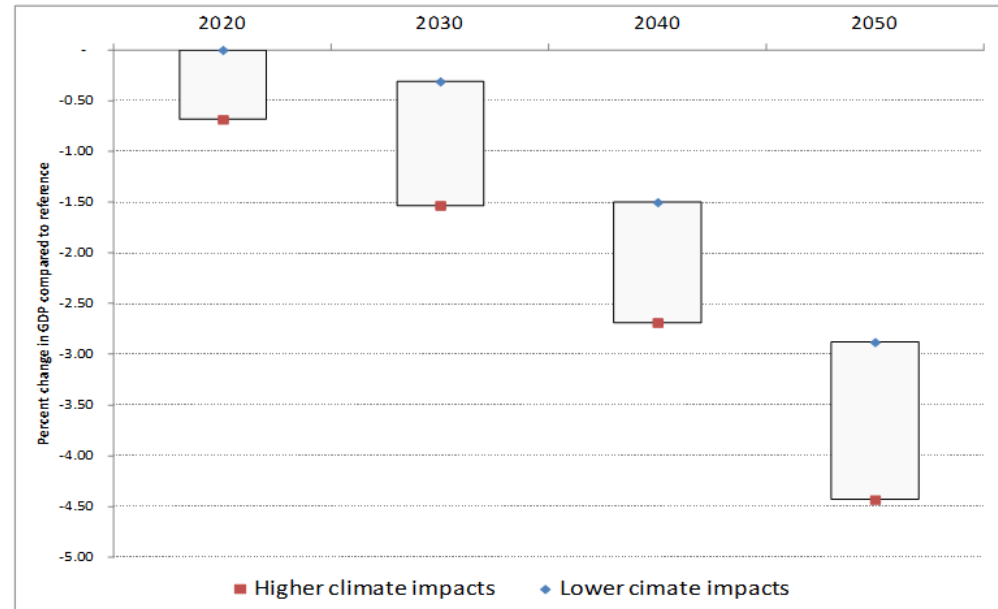


# Quantifying climate change impacts on agriculture..

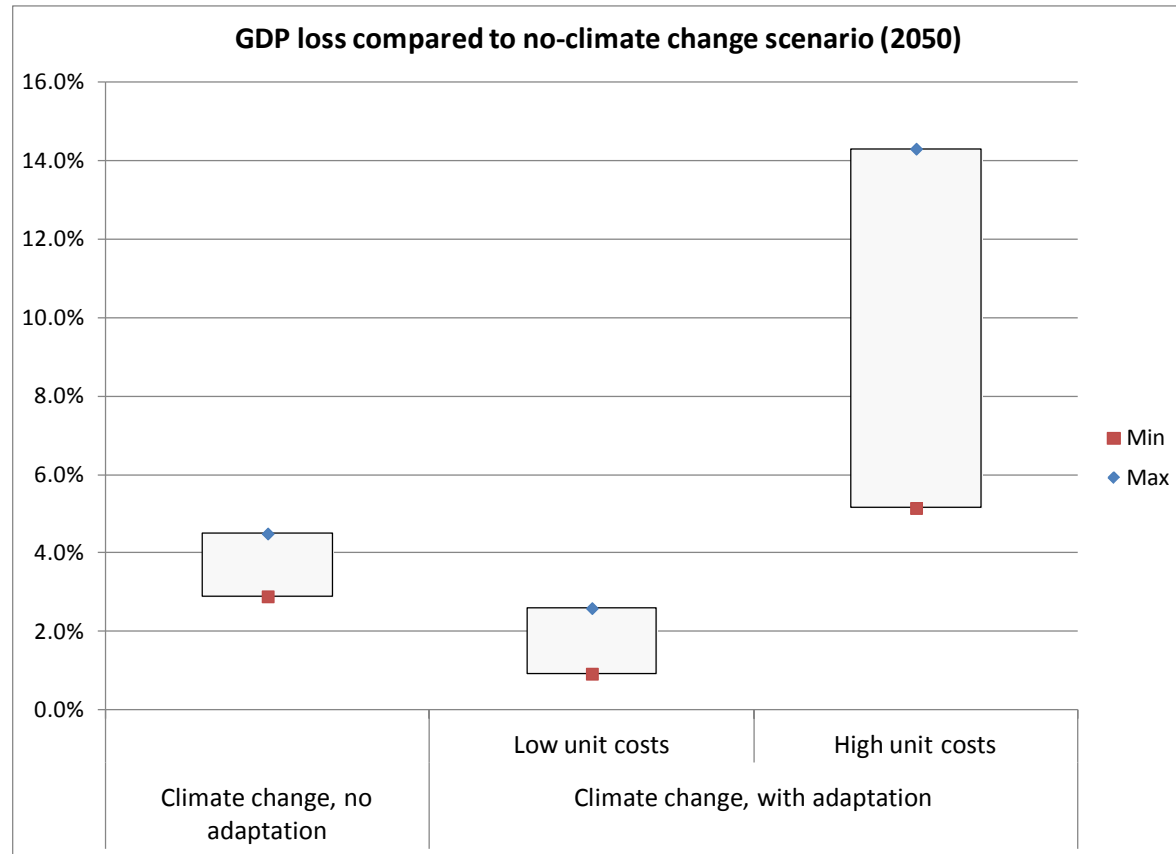
- In physical terms:  
loss in yield by 2050...



- ..and in economic terms  
(loss of GDP compared to  
a no-climate change  
reference scenario)

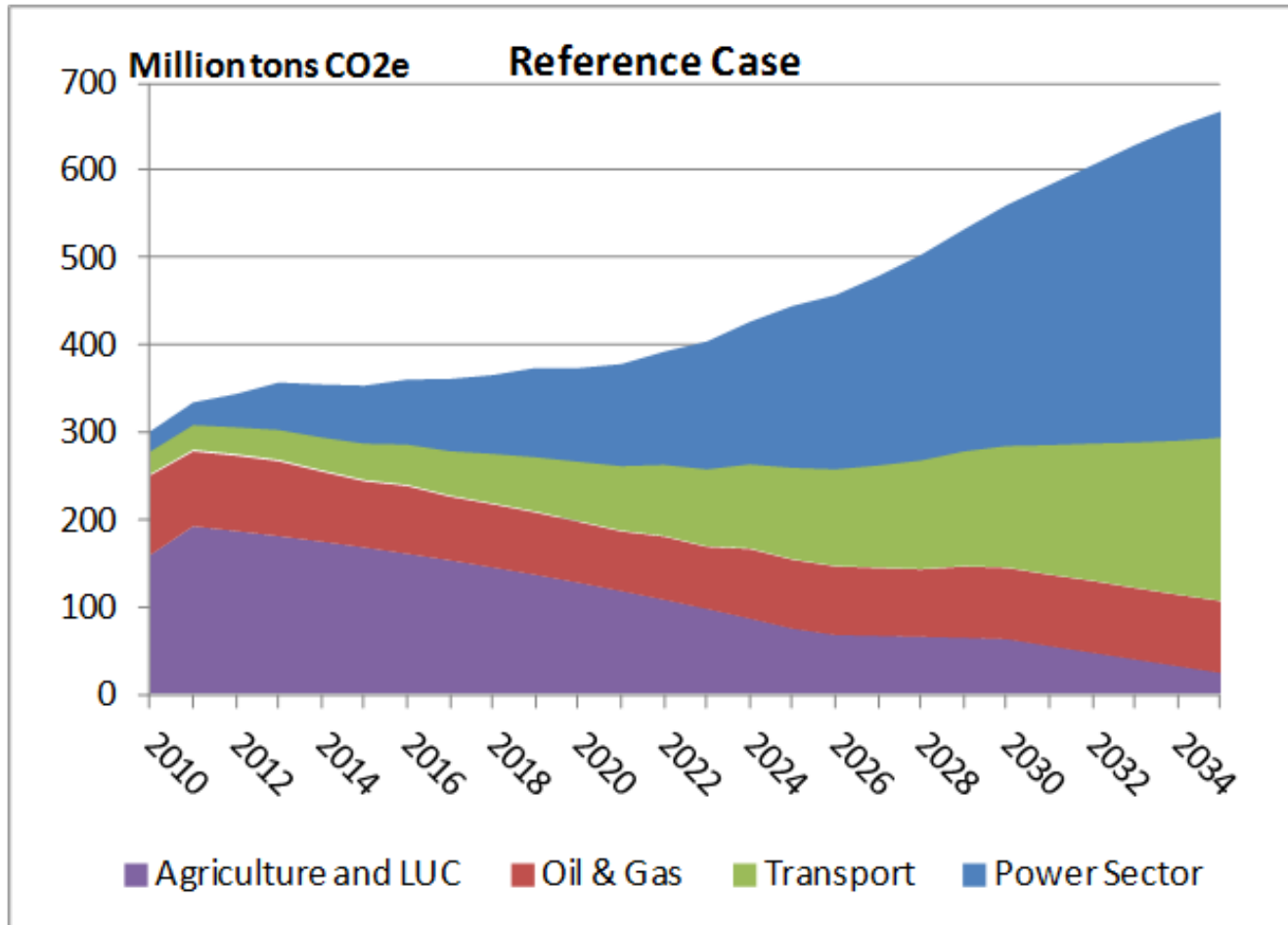


# ..and identifying cost-effective adaptation solutions



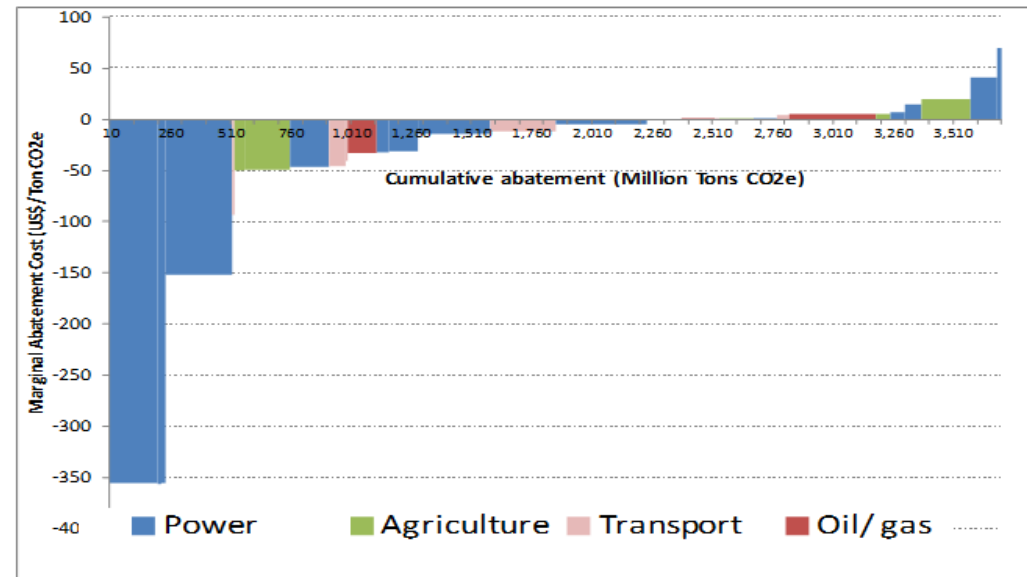
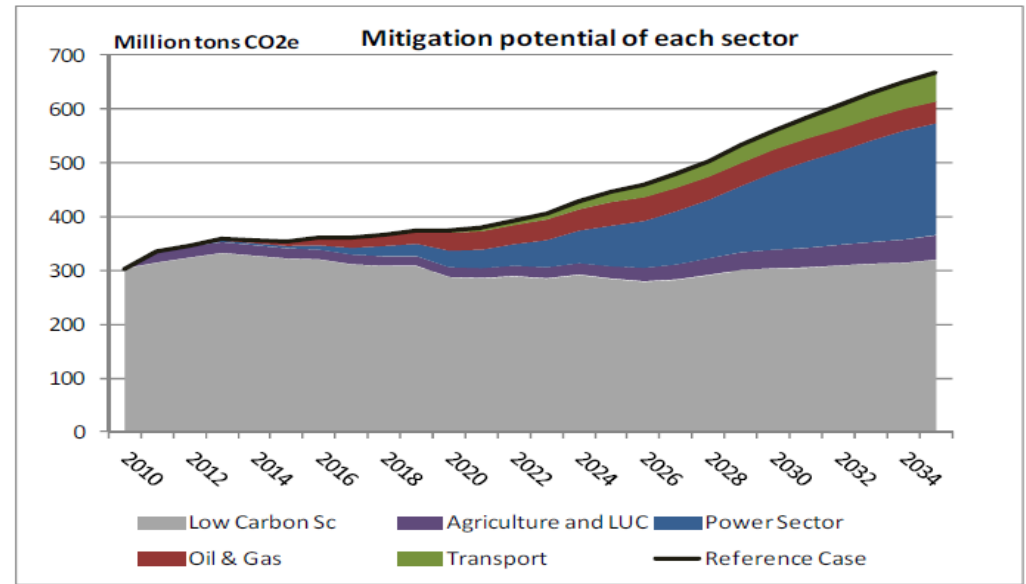
Note: the adaptation strategy analyzed includes a combination of higher climate resilience practices for rain-fed areas (shift of the sowing dates, conservation/ organic agriculture, inorganic fertilizers), and expansion of irrigation. Adaptation cuts GDP losses in half, but only if unit costs (in Nigeria often diverging from African norms, particularly in irrigation) can be kept in check

# Low Carbon analysis: estimating reference emissions...



# ..and options for low carbon development

- In physical terms (technical abatement potential): about 3.7 billion Tons CO<sub>2</sub>\_e could be avoided over 25 years
- ..and in economic terms (marginal abatement cost): about 2.4 billion tons CO<sub>2</sub>\_e could be abated with net benefits for Nigeria



## **Message 6:**

**There is a big applied research agenda  
still to be addressed**

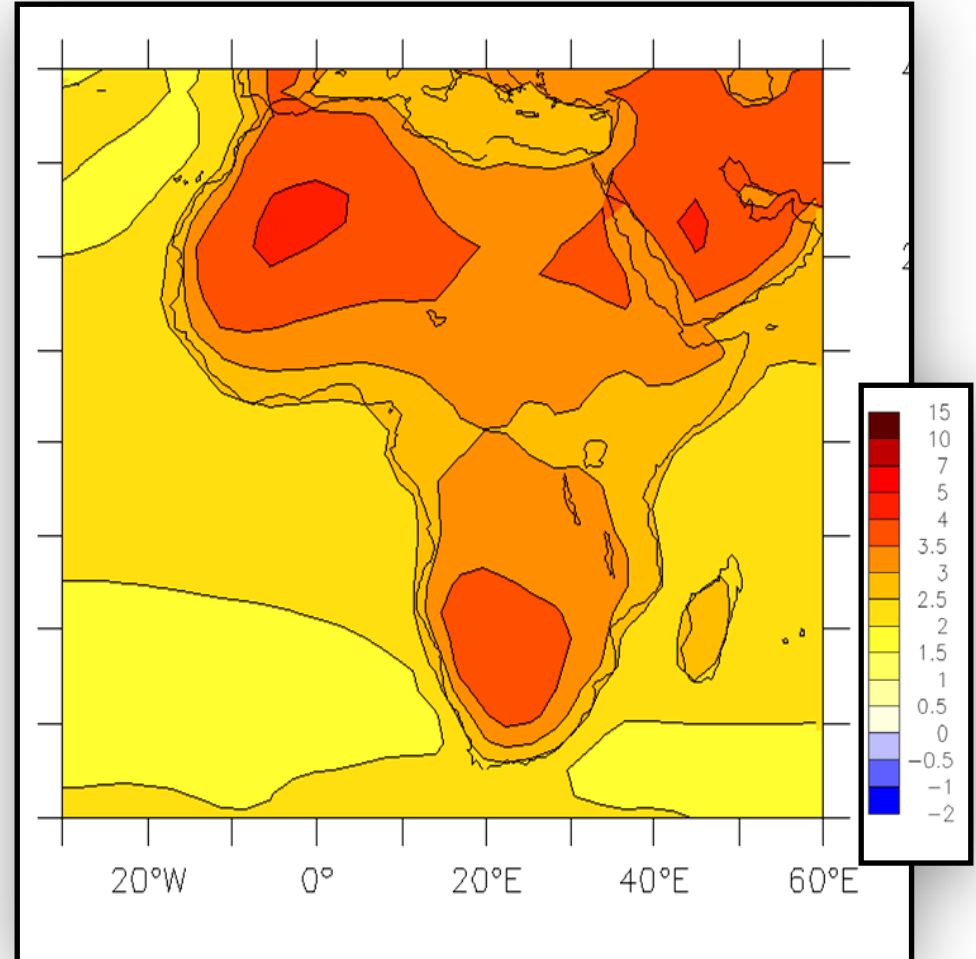
# Three key areas

1. Further integrate climate into development strategies and program (e.g. infrastructure)
2. Step up efforts into highly vulnerable areas (e.g. dry lands)
3. Integrate low carbon in the mainstream of Africa's energy agenda

In all of these, partnership with science / applied research organizations is key

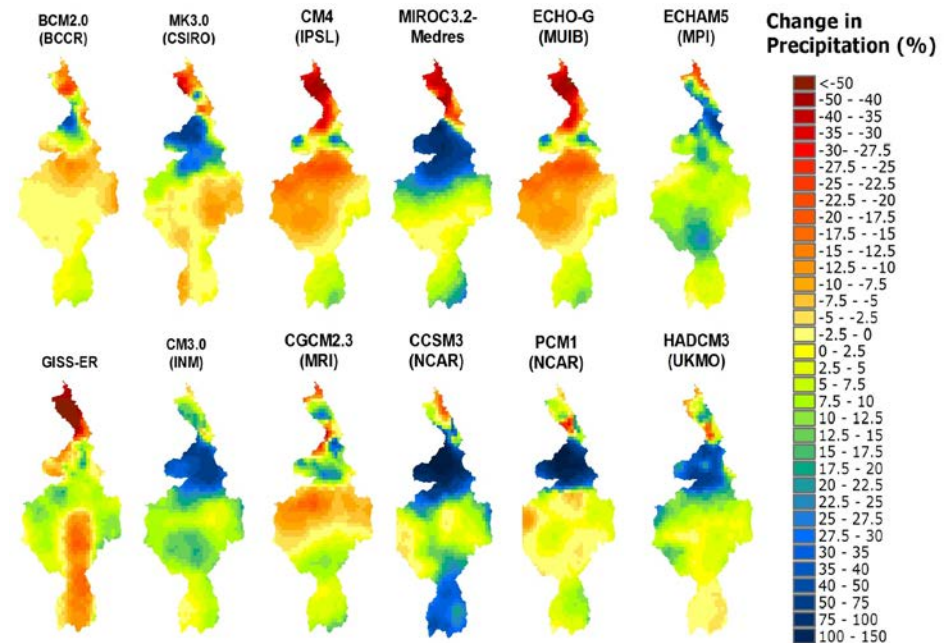
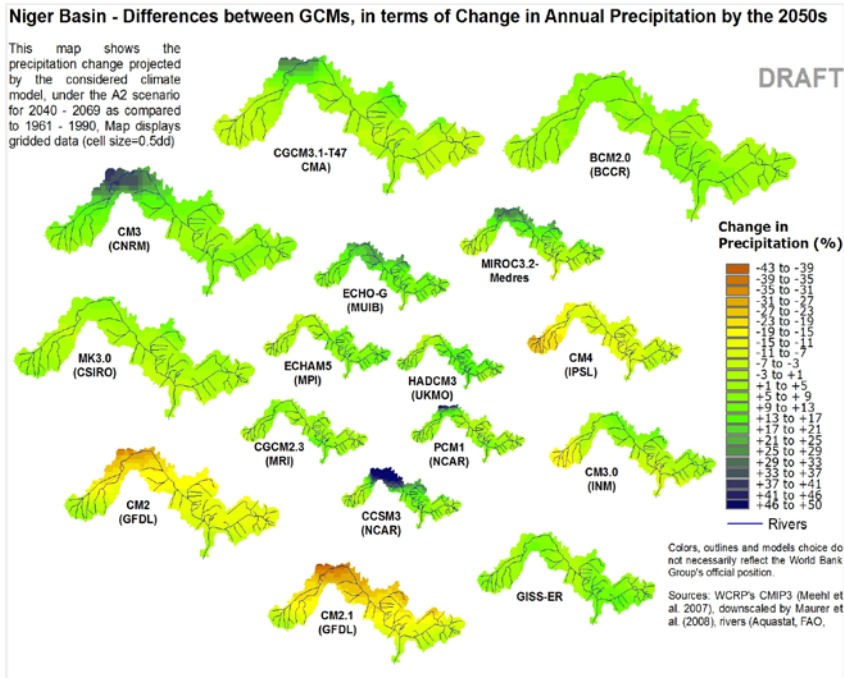
# New science suggests larger and less predictable impacts...

- Average annual temperature will increase in 2<sup>nd</sup> part of century between 2 and 4 degrees
- Extreme events more frequent and severe by mid century
- Bank has commissioned new Flagship report on 4 degree world:
  - Africa stands out as highly vulnerable and in some (drier) parts agriculture will no longer be viable



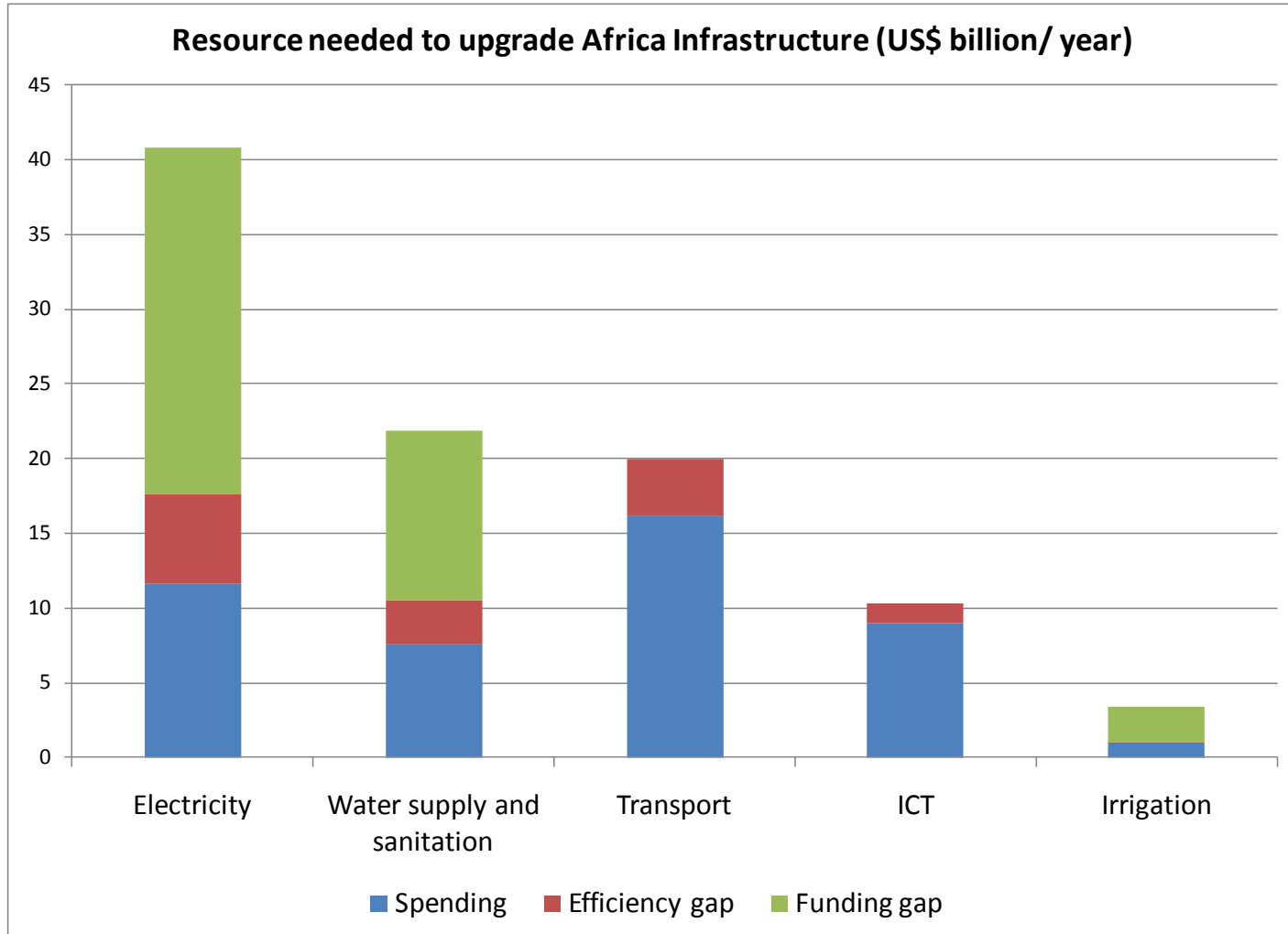
# ..and highlight the urgency to mobilize science to cope with climate uncertainty...

## Precipitation projections across climate models (Niger and Nile basins)





# ..to enhance the resilience of the infrastructure Africa badly needs to support growth



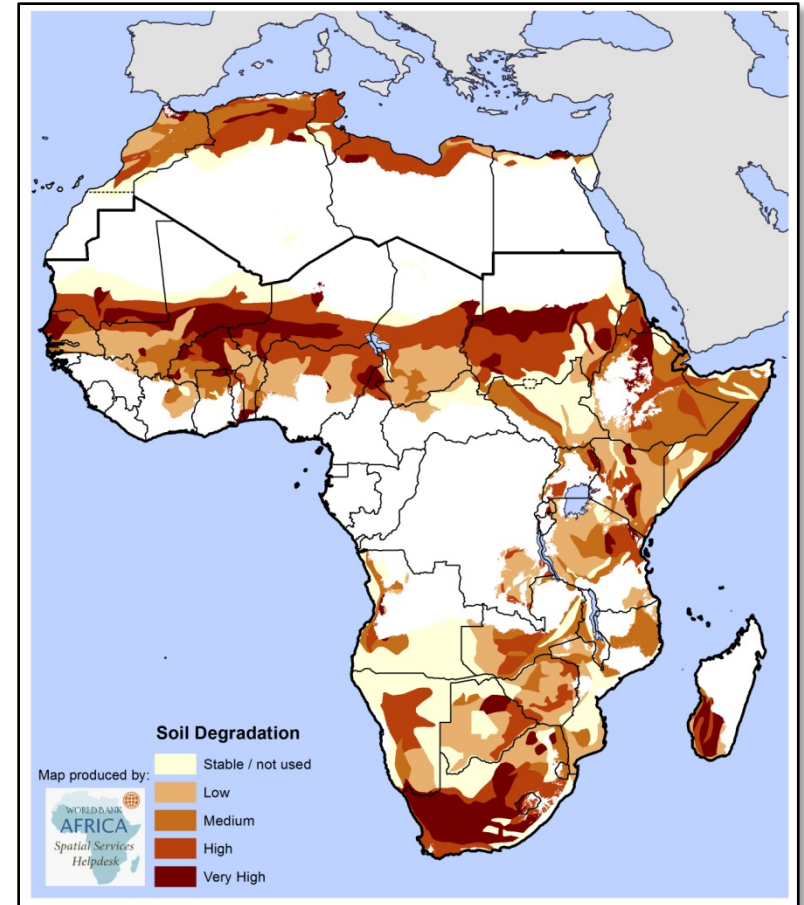
Source: Africa Infrastructure Country Diagnostic (AICD), 2008

MAKE *ROBUST* RATHER THAN OPTIMAL DECISIONS:  
MAJOR BANK REPORT UNDER PREPARATION



# Enhance resilience of dry lands...

- Weather shocks on dry lands growing in incidence
  - Over 2 M people has increased from 20% (1970s) to 90% (2000s)
- Vulnerability is compounded by land degradation
  - Over 3% of Africa's agricultural GDP is lost annually—equivalent to US\$ 9 billion per year—as a direct result of soil and nutrient loss
- Social conflict – inflamed by poverty and income shocks

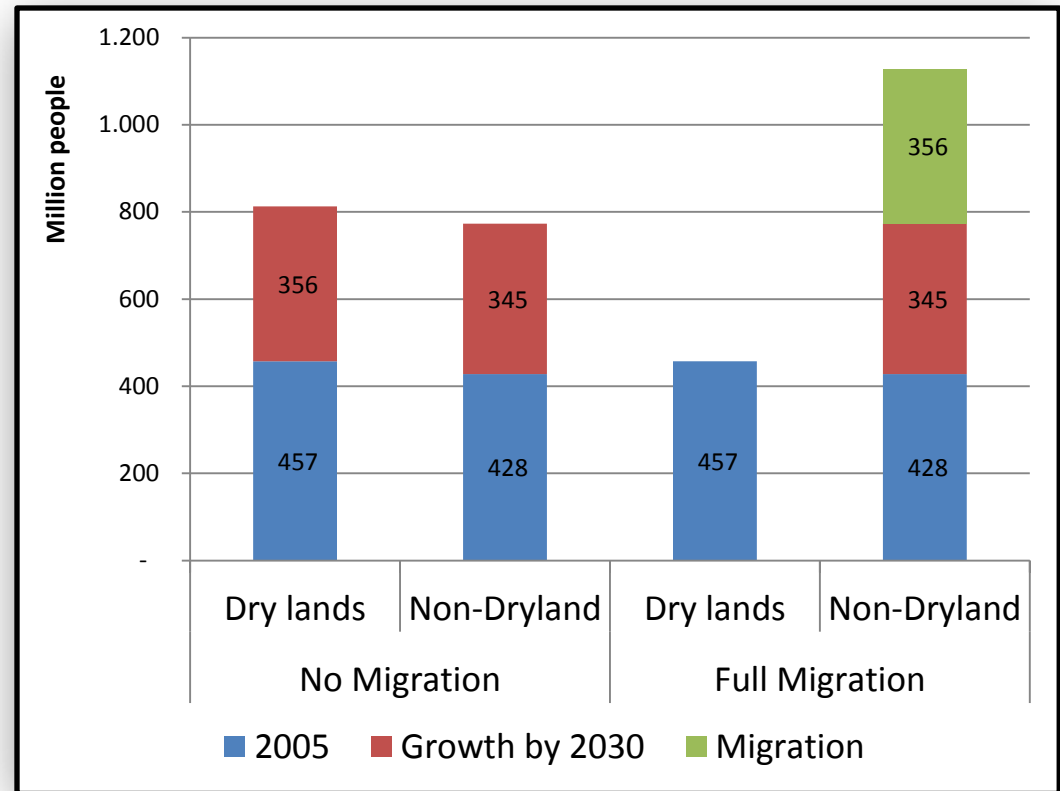


Source: UNEP/ISRIC, Global Assessment of Human-induced Soil Degradation (GLASOD), 1990.



# ..where climate is one among several drivers of change

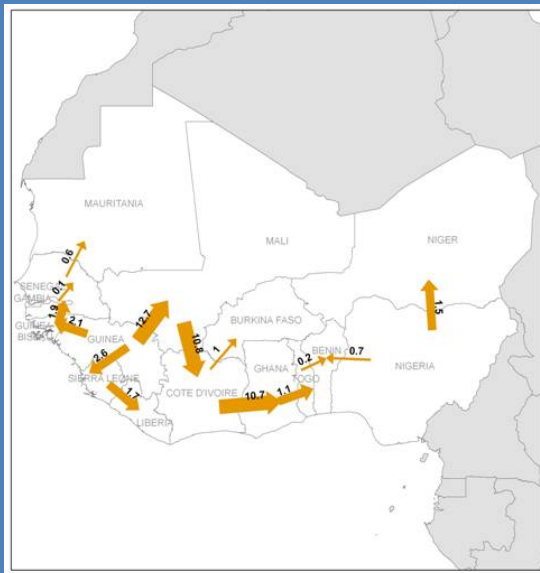
- Assuming no mobility, by 2030, some 350m people will be added to the existing population of dry lands (many of which have already a limited carrying capacity)
- In a full migration scenario, population outside of dry lands jumps to over 1 billion people
- The actual outcome will probably be somewhere in between



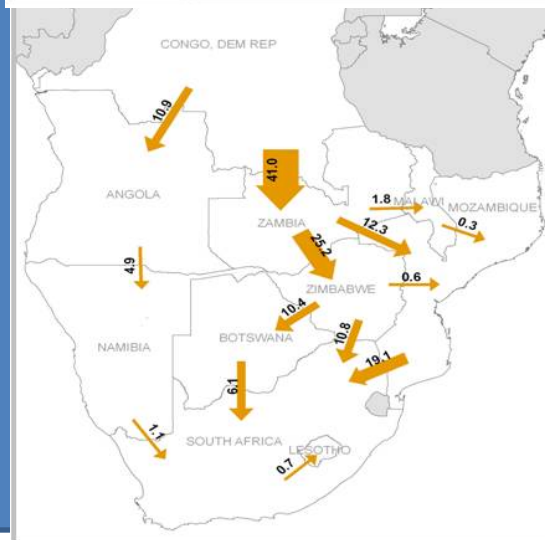
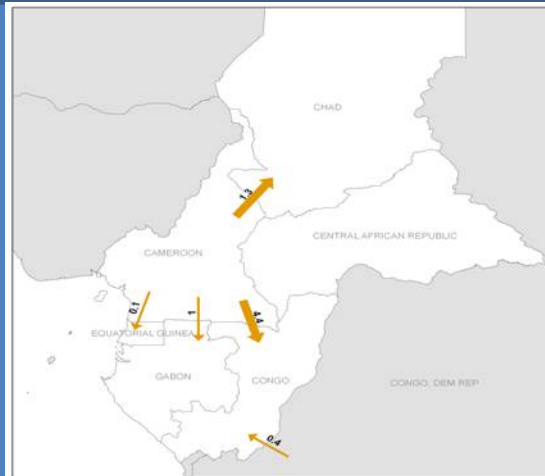
Source: Author calculations based on LandScan 2005 (ORNL).

# Integrate low carbon into the power pool development process

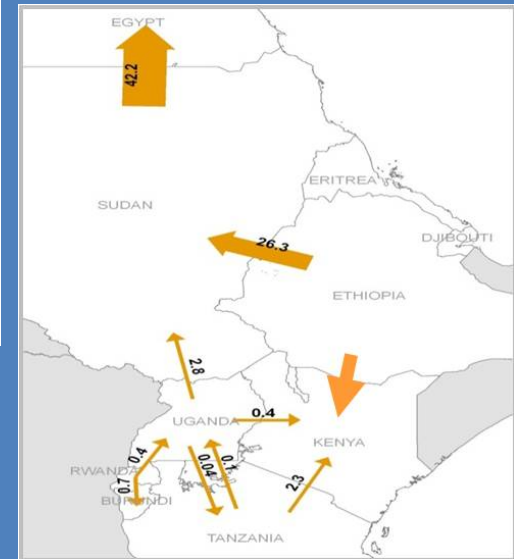
Central Africa



West Africa



East Africa



Southern Africa

Source:

# For more details on our work

- **World Bank Climate Change Activities in Africa**

<http://climatechange.worldbank.org/content/africa>

- **Climate Risk and Adaptation Country Profiles**

[http://sdwebx.worldbank.org/climateportal/home.cfm?page=country\\_profile](http://sdwebx.worldbank.org/climateportal/home.cfm?page=country_profile)

- **Climate finance options**

<http://www.climatefinanceoptions.org/cfo/node/189>

- **Economics of Adaptation**

<http://climatechange.worldbank.org/content/economics-adaptation-climate-change-study-homepage>

- **Africa Infrastructure Country Diagnostic**

[www.infrastructureafrica.org/](http://www.infrastructureafrica.org/)