Climate Change and Natural Resource Management in Africa

– land use, forestry and water challenges -

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Conference “Engaging with Africa on Climate Change”
Theme 3: Natural Resource Management
Brussels, Oct. 14th, 2011

Impact of climate change on agriculture, forests, water…

Climate change impacts on agriculture, water and forests

Climate change…

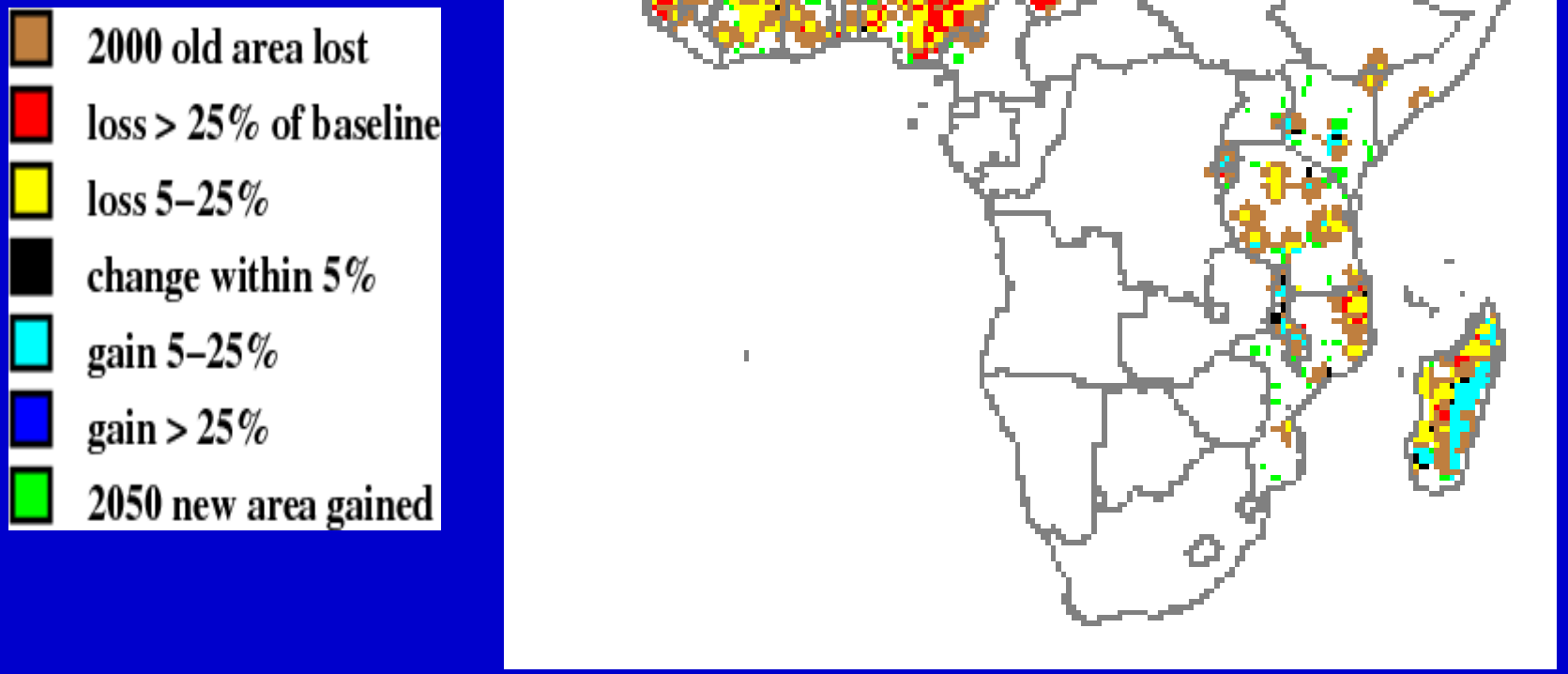
- Reduces agricultural production
- Makes food less secure and prices high
- Makes land use more important
- Makes water more scarce
- Threatens forests at the margins
- Increases the value of forests

And all that induces policy change

and high uncertainties remain at regional levels

Climate induced change in production in 2050:

Irrigated rice in Africa

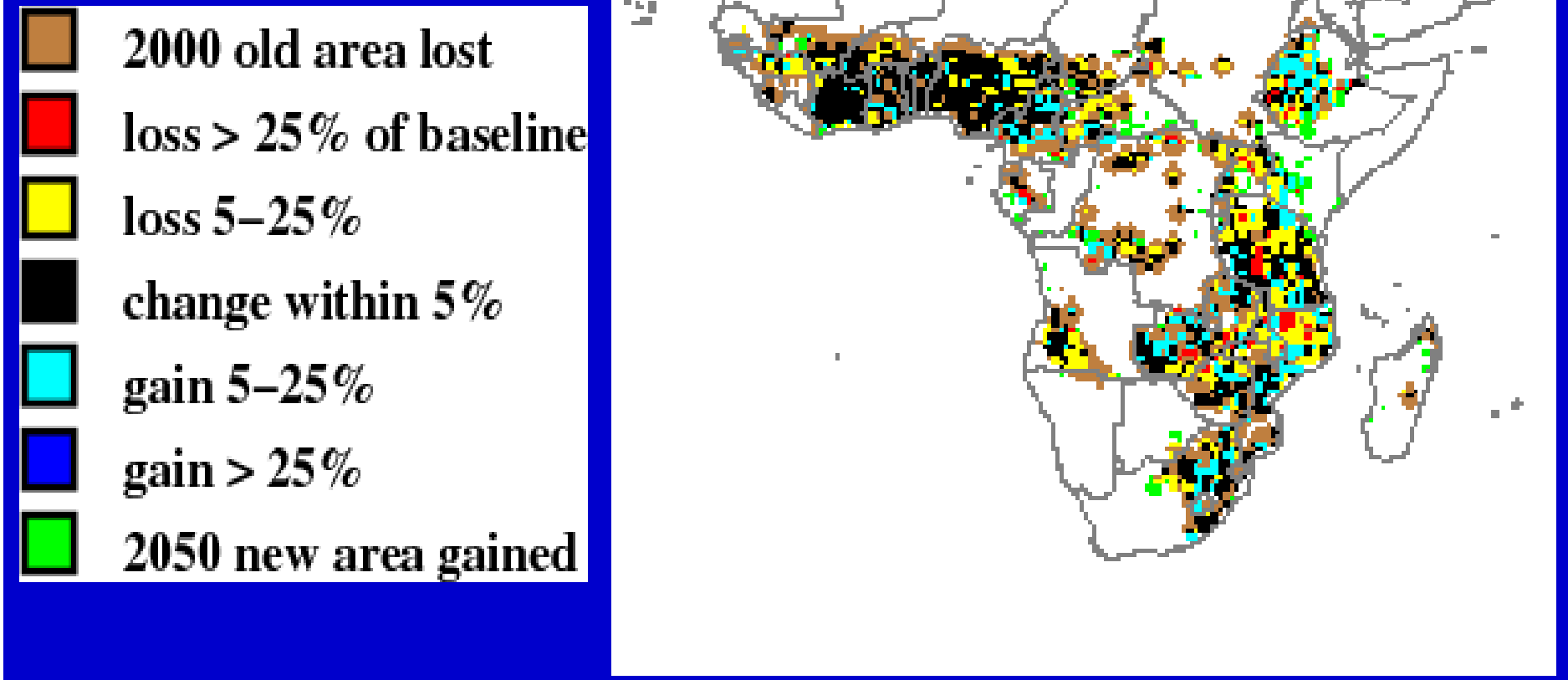


Global rice production = -27%

Source: Rosegrant 2009

Climate induced change in production in 2050:

Rainfed maize in Africa



Global maize production = -16%

Source: Rosegrant et.al. 2009

FARMERS KNOW

- 88% of farm households surveyed in Kenya noted that rainfall had decreased over the past 20 years
- 94% said average temperatures had risen
- 81% of surveyed farmers reported they had taken adaptive measures

Source: Claudia Ringler, IFPRI 2011

The options for responding to climate change in agriculture

1. Store grain
2. Facilitate migration or job change with skills
3. Diversify and increase production
4. Store water and irrigate more
5. Trade more
6. Accelerate innovation and science capacity

Strategy: best combinations of 1. – 7. over time adjusted to country and local context

Joachim von Braun, ZEF, 2011

The other way round:

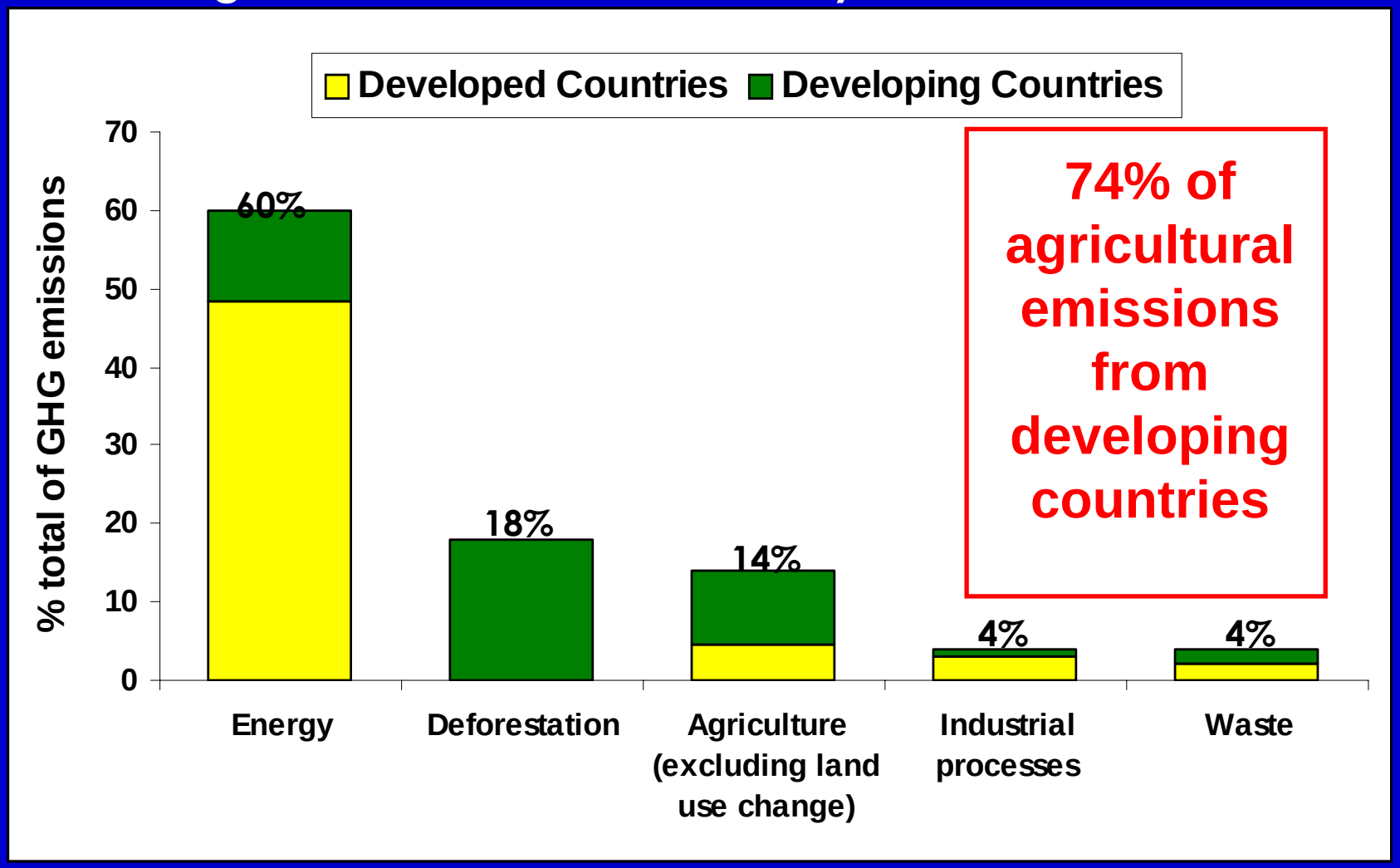
Impact of agriculture and forest change on climate…

Land use change in agriculture and forests impacts on climate change …

- Land use change often contributes to Green-House Gas emissions
- Livestock production adds to GHG but key for income
- Agriculture is one driver of deforestation
- Deforestation and forest degradation add to GHG

AGRICULTURE'S CONTRIBUTION TO CLIMATE CHANGE

Share of global total GHG emissions by source



Sources: World Resources Institute 2007; World Development Report 2008

FARMERS ARE AWARE…

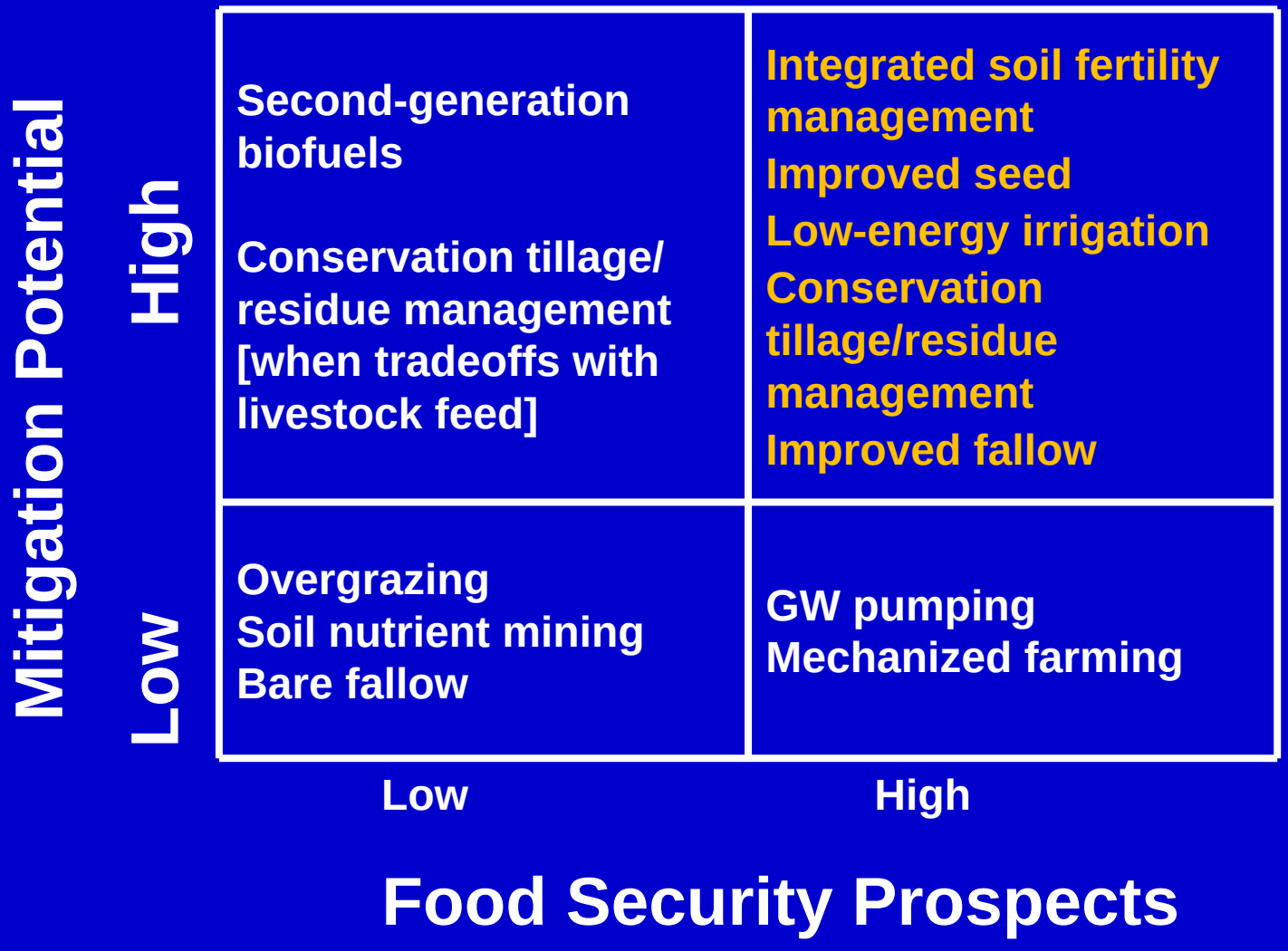
67% of in Kenyan farmers stated that they are aware that agriculture contributes to climate change

- **Extensive media reports**
- **Government campaigns and speeches related to climate change**
- **1st Ag Carbon Mitigation project located in Kenya**

Source: Claudia Ringler, IFPRI 2011

Strategy and policy

Tradeoffs between Mitigation and Food Security



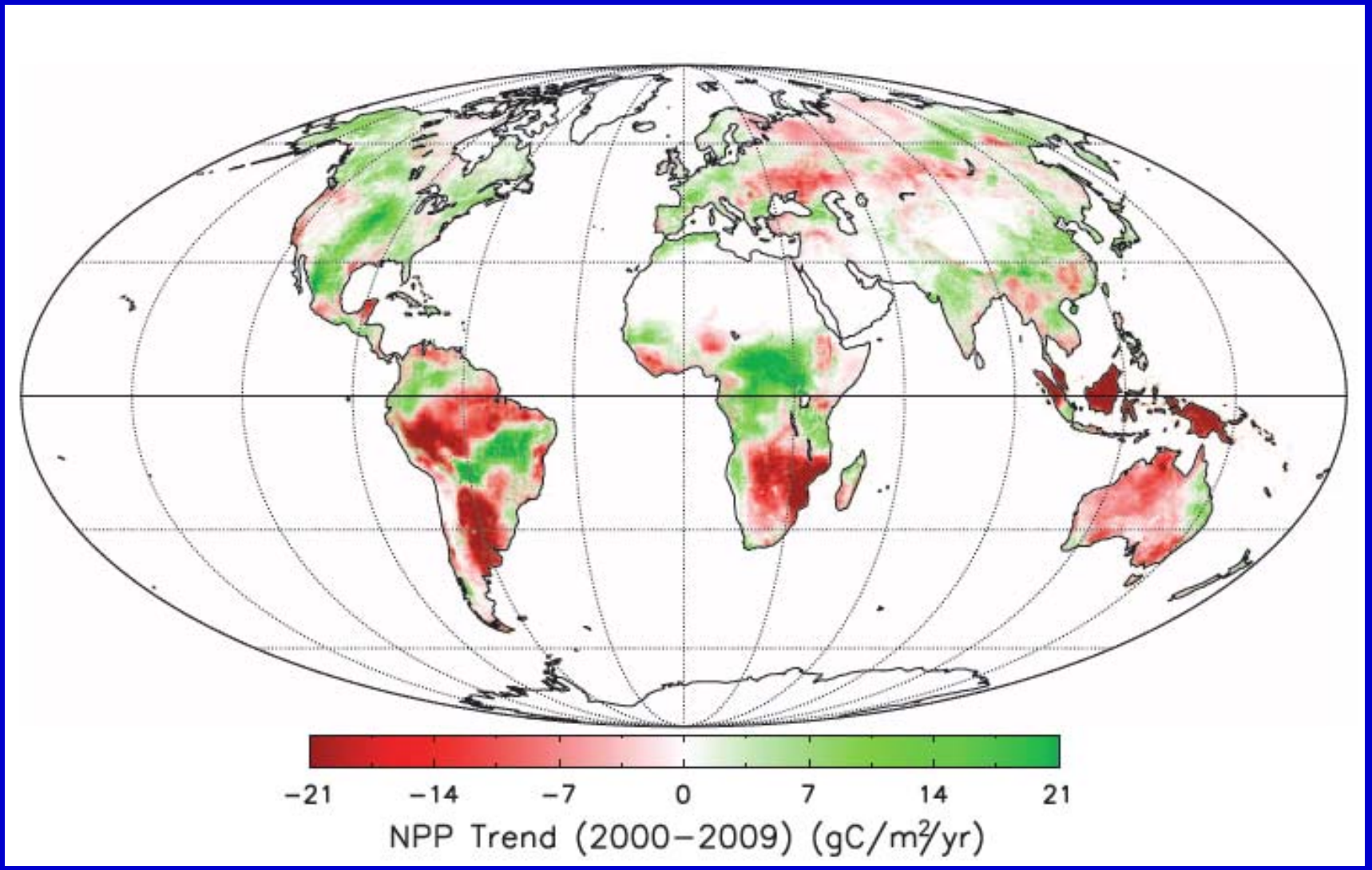
Source: Adapted from FAO (2009)

SYNERGIES BETWEEN ADAPTATION & MITIGATION & PROFIT

		Adaptation	Mitigation	Profitability
1.	Change in crop variety/ type	√	mixed	?
2.	Planting trees/agroforestry	√	√	?
3.	Soil Water Conservation	√	mixed	√
4.	Improved soil nutrient management	√	√	√
5.	Improved livestock feeding	?	√	√
6.	Irrigation	√	mixed	√
7.	Change in planting date	√	?	?

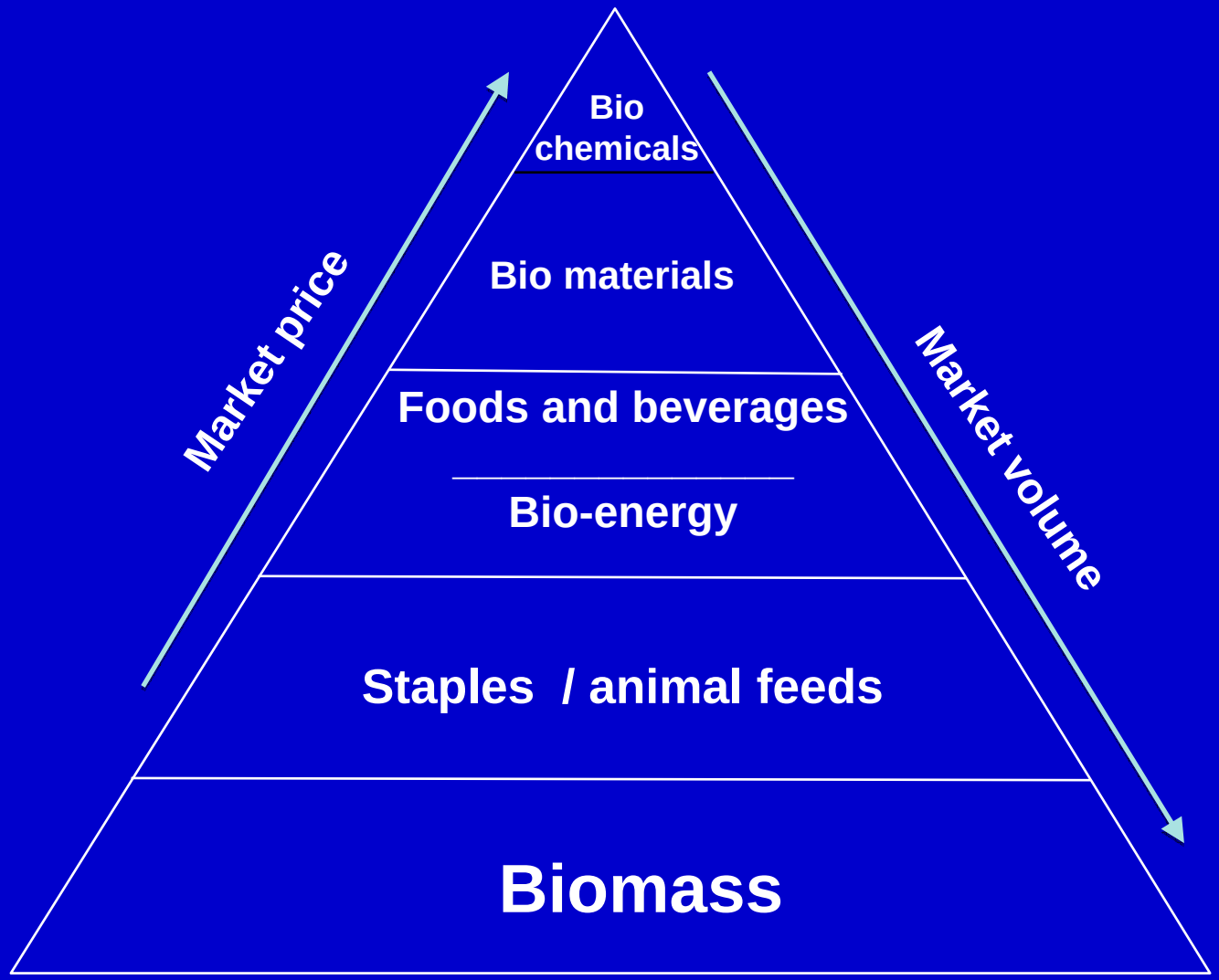
Source: Claudia Ringler, IFPRI 2011

Climate change revalues biomass and impacts on its global distribution – Africa may have advantage



Zhao, Running, Science, August 20, 2010

Bio-economy: the emerging sector with new value chains in "Green growth" - scope for Africa – Europe cooperation



Source: Bioeconomy Council, Germany, 2010

POLICY IMPLICATIONS

- ✓ **Climate smart agriculture and land use** (adapt, mitigate, profit; link to water, forest -- REDD+ -- community action in small farm and pastoralists)
- ✓ **Build research capacities and graduate schools** to strengthen domestic evidence-based negotiation capacity in Africa.
- ✓ Ensure that **agricultural and food security policies** in Africa explicitly include climate change adaptation and mitigation aspects

Climate diplomacy around natural resources

Africa – Europe

1. Europe to share climate change relevant **science** and to assist in building climate relevant university education capacity in Africa
2. Africa to facilitate **climate-smart agriculture and forestry** and sustainable production and utilization of biomass with priv. sector
3. Africa and Europe to facilitate more **open trade** in response to climate related market volatility

- Carbon markets (potentials for Africa) or taxes and

- *Adaptation funds (needed in Africa) with a strong focus on land and forests (***Green Climate Fund, Technology Mechanisms)**