

CLIMATE CHANGE in SSA

An insidious threat to Agricultural Development

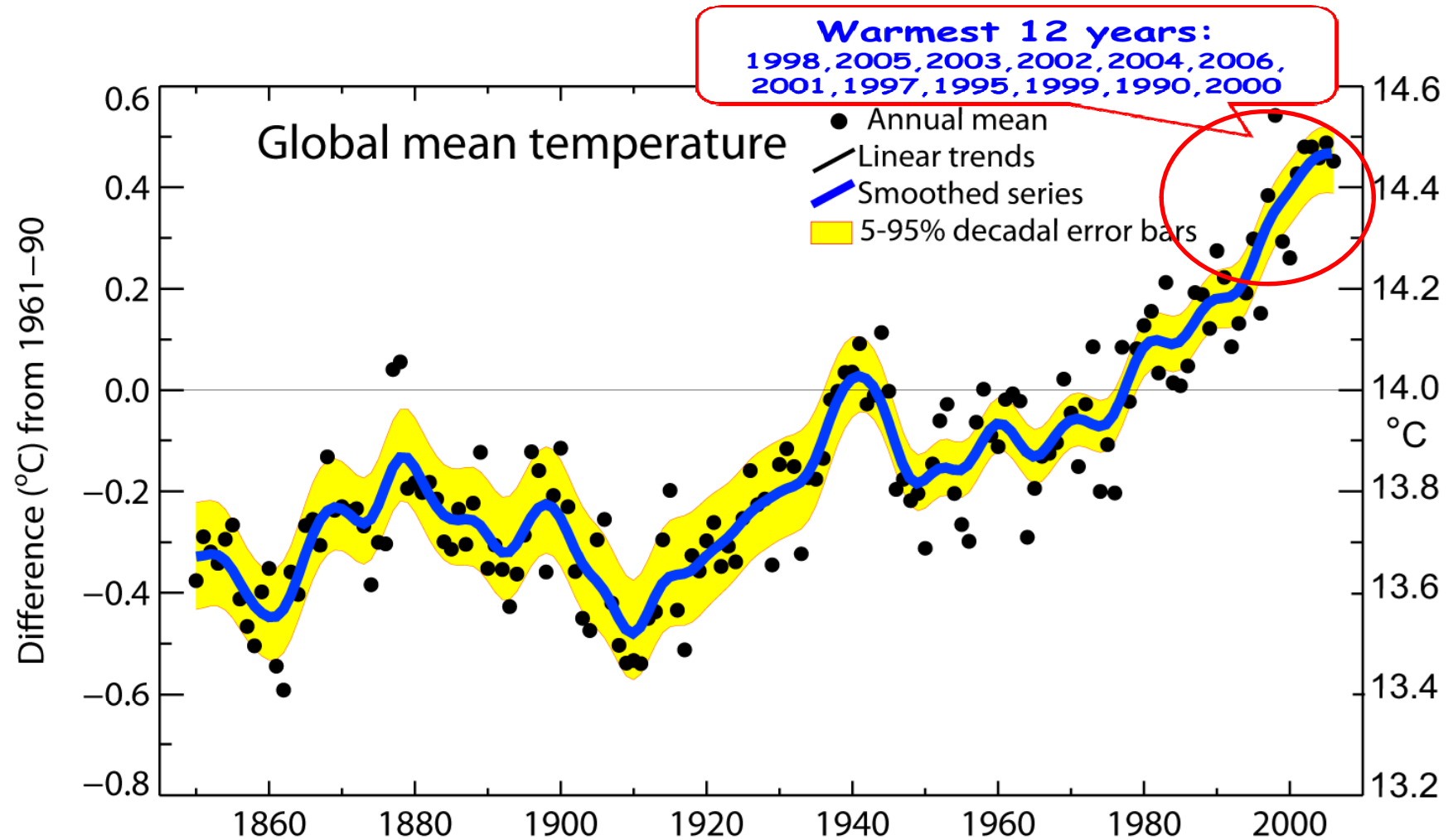
**EC HOT TOPIC SEMINAR
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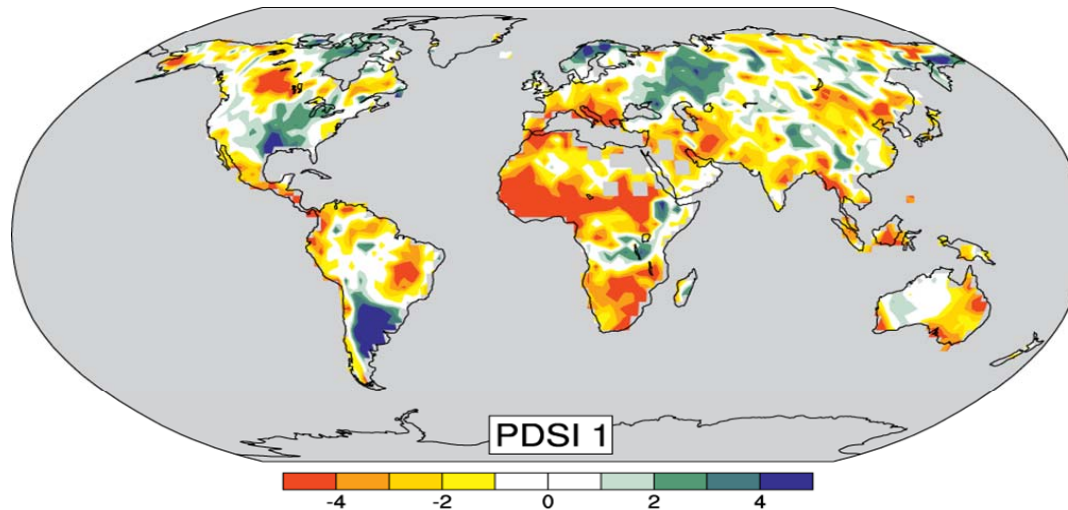
Global Mean Temperatures rising faster with time

World Meteorological Organization



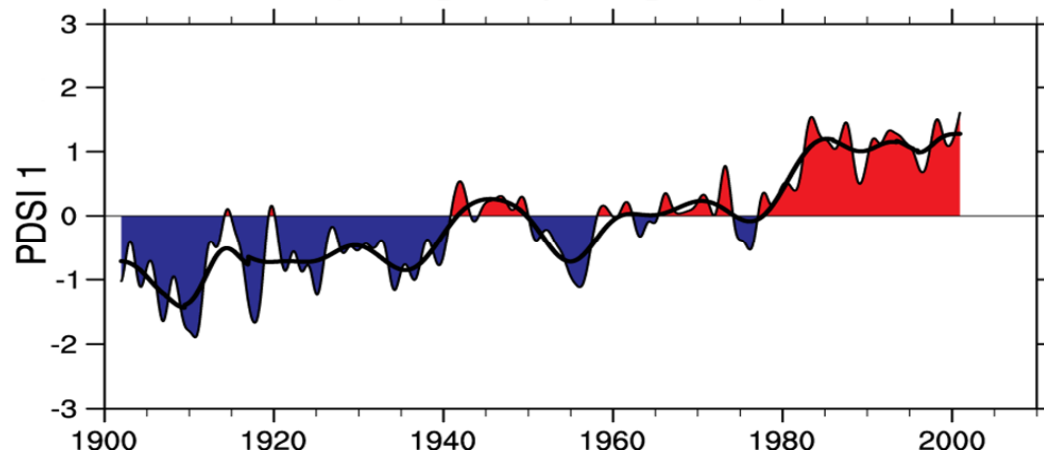
DROUGHT IS INCREASING IN MOST PLACES

1900 - 2010



Africa is most
affected by drought

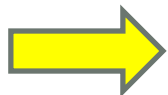
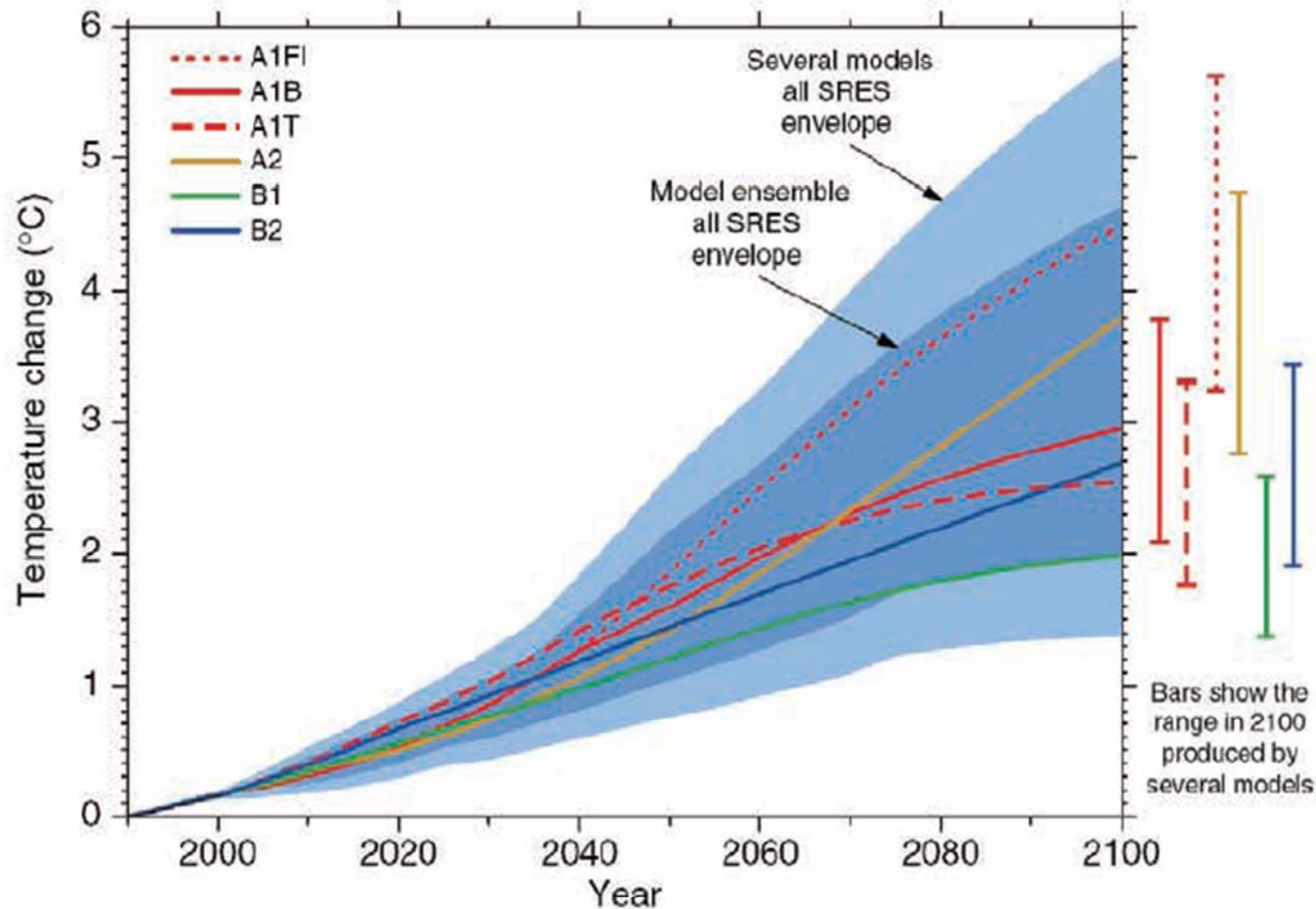
Monthly Palmer Drought
Severity Index (PDSI),
1900 to 2002 (top)



The time series (below)
accounts for most of the
trend in PDSI.

Long term scenarios for global temperatures

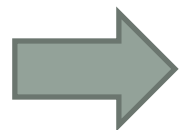
Special Report on Emissions Scenarios (SRES) (IPCC, 2000)



Scenarios say that massive changes in average temperatures will happen if GHG emissions are not drastically reduced.

A new approach of CC in agriculture is REQUIRED

- ❑ Most of international debate is on CC impact on natural resource ; Finance is mainly oriented on Carbon Trade to mitigate GHG emissions;
- ❑ In SSA CC will firstly affect development and agriculture and threat food security;
- ❑ Financing Climate Smart and Climate Resilient Agriculture is a priority. It should provide for adaptation and in turn for mitigation and not the other way around.



A combination of funding sources is needed!

ACTUAL UNDERSTANDING OF FORTHCOMING CHANGES IN SSA

Resource	Now to 20 years	20 to 50 years	50 to 100 years
Quantity of rainfall	Irregular	Declining	Drier regime settled
Number of rain days	Irregular	Less rains; more showers	Less predictable
Length of rainy season	Less predictable	Shortened	Shorter than now
Evaporation	Heat waves	Regularly increasing	Higher than now
→ THREAT	Water deficit/ excess	Increasing water deficit	Water shortage
Vegetation cover	Irregular biomass	Shift of species	New drier land cover
→ THREAT	Less soil cover	Less fodder – more erosion	New ecosystem
Run-off water	More flash drainage	Less average river flows	Water shortage
→ THREAT	Floods	Risks for low-land farming	Irrigation threatened
Pests and diseases	Blows of attacks	Less natural control	New bio-system
→ THREAT	Losses	Increased control costs	New set of problems

Short, medium and long term challenges

Programmatic approach and planning

Climate change  combined threats  aggregated responses


 **RESPONSE NEEDS TIME AND SHOULD BE ANTICIPATED**

□ *Now to 20 years = increased climate variability*

 Adapting breeds and production techniques – Security stocks

□ *20 to 50 years = severe + frequent climate disasters*

 Modifying vegetation cover to limit transpiration

 Modifying landscapes /infrastructures to tap water/ control floods

□ *50 to 100 years = clear climate shifts*

 Coping with new ecological conditions = new crops and livestock

New modifications of landscapes and infrastructures

New food systems linked with new farming systems

Population and Food demand growth

An Exposure For the next 30 years

SSA - millions	Mouths to feed	Agricultural population	Consumer/agric. people
2010	820	382	2.15
2040	1,467	587	2.78
Growth	1.79	1.38	1.29

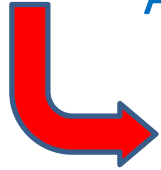
- Food availability per capita to increase by **30%** while food imports should decrease;
- Average production per agricultural people to increase by **90%** if imports levels stay;
- Degraded land (30% of cropped land) to be restored and land degradation controlled.



A POTENTIAL ADAPTIVE CAPACITY

Facing uncertainties on climate shifts

As far as risks and related impacts are uncertain

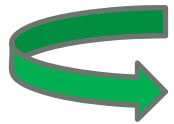


NO REGRET OPTIONS FOR AGRICULTURE

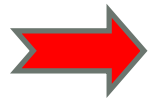
- Organizing professionals in agriculture
- Greening the land to reduce temperature and capture moisture
- Harvesting water from rains, air humidity and surface waters
- Improve water use efficiency through breeding and cropping
- Improve feed production / storage and animal husbandry
- Improve alert systems for pests and diseases
- Develop farms through investments, credit and capacity building
- Secure farmers' income through improved markets, insurances
- Develop production to consumption chains
- Secure food systems through diversification and stocks

Vulnerability – Adaptation – Development in Africa in the face of Climate Change

- **Vulnerability** = degree to which a system or a social group is susceptible to, and unable to cope with, adverse effects including variability and extreme events
- **Adaptation** = **Internally Organized + Externally Driven Transition** facing changes
- **Sustainable development** = sound expansion of economic and social systems improving people's satisfaction while preserving natural resources



Diversified Development Pathways for farming systems and livelihoods should be identified in a participatory manner.



Three components for an **Organized Transition** in agriculture through development pathways:

- ✓ **From Vulnerability to Resilience**
- ✓ **From Adaptation to Adaptation and Mitigation**
- ✓ **From a piece meal Adaptation to a Transformational Process**

A trilogy for transition in agriculture

□ Detailed/ Updated participatory diagnosis

- Actual conditions hampering progress and mid term changes
- Priorities for action and potentials for future remediation

□ Practical support to development pathways

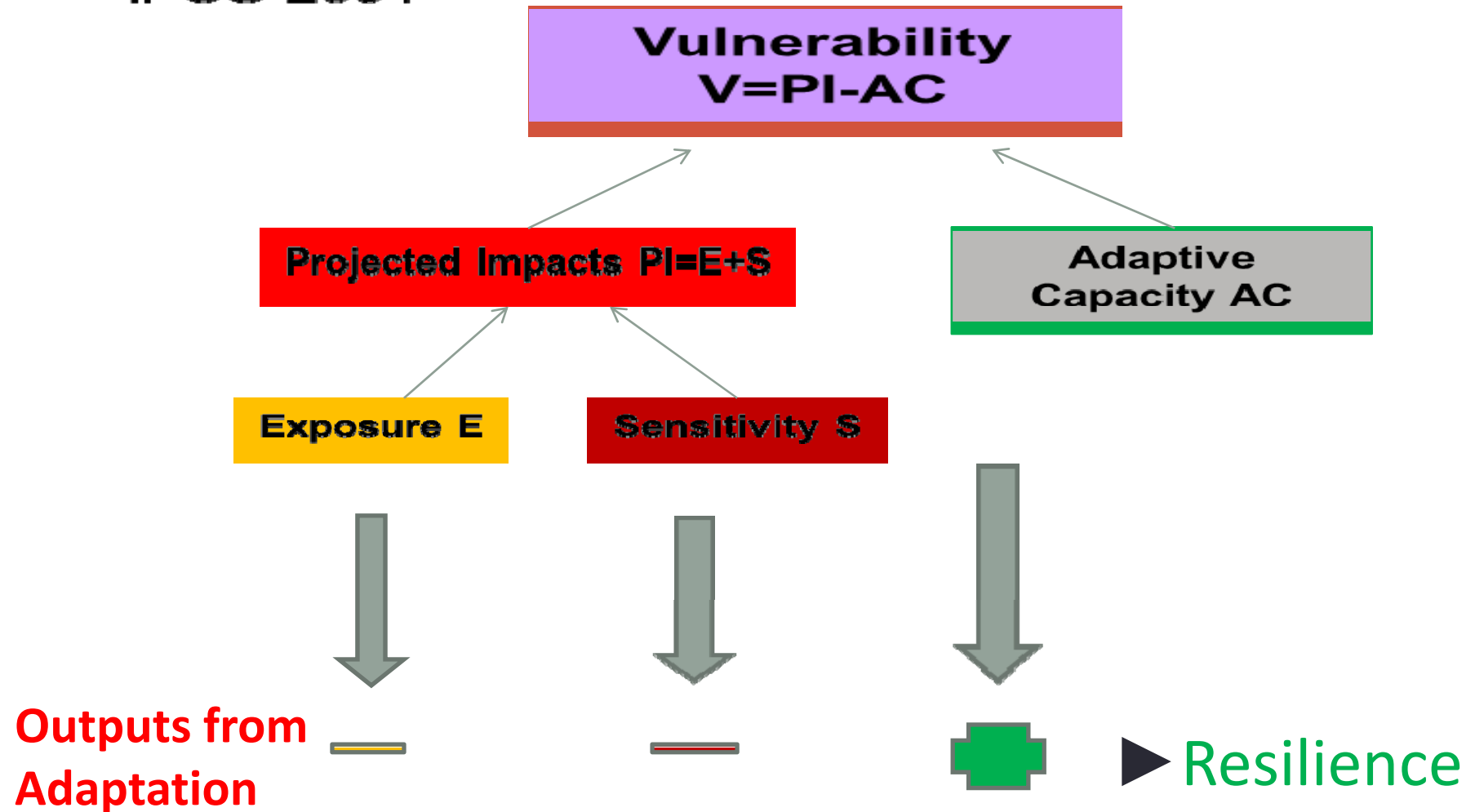
- Issues addressed at the scale they benefit people and serve markets
- Adequate resources and organizations
- Attitudes oriented through pedagogic drive
- Indigenous knowledge tapped for coping with local conditions
- Science for crisis management, solutions and impact assessment
- Planned Investments and effective financial systems

□ Partnerships

- Civil society organizations, farmers' organizations, private sector
- Government, public agencies, international cooperation

Components of vulnerability and adaptation

IPCC 2001



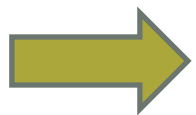
Vulnerability of African People to Climate Change

Vulnerability = results from constraints and limiting conditions that have hampered social & economic development so far.

Exposure = combination of external forces and internal lack of institutions, organizations and risks mitigating systems. Climate Change effects will be combined to market forces and geopolitical interests affecting SSA.

Sensitivity = poverty, food situation, lack of infrastructures

Improvement of the adaptive capacity = policy changes, budget allocation and shifts in international regulations

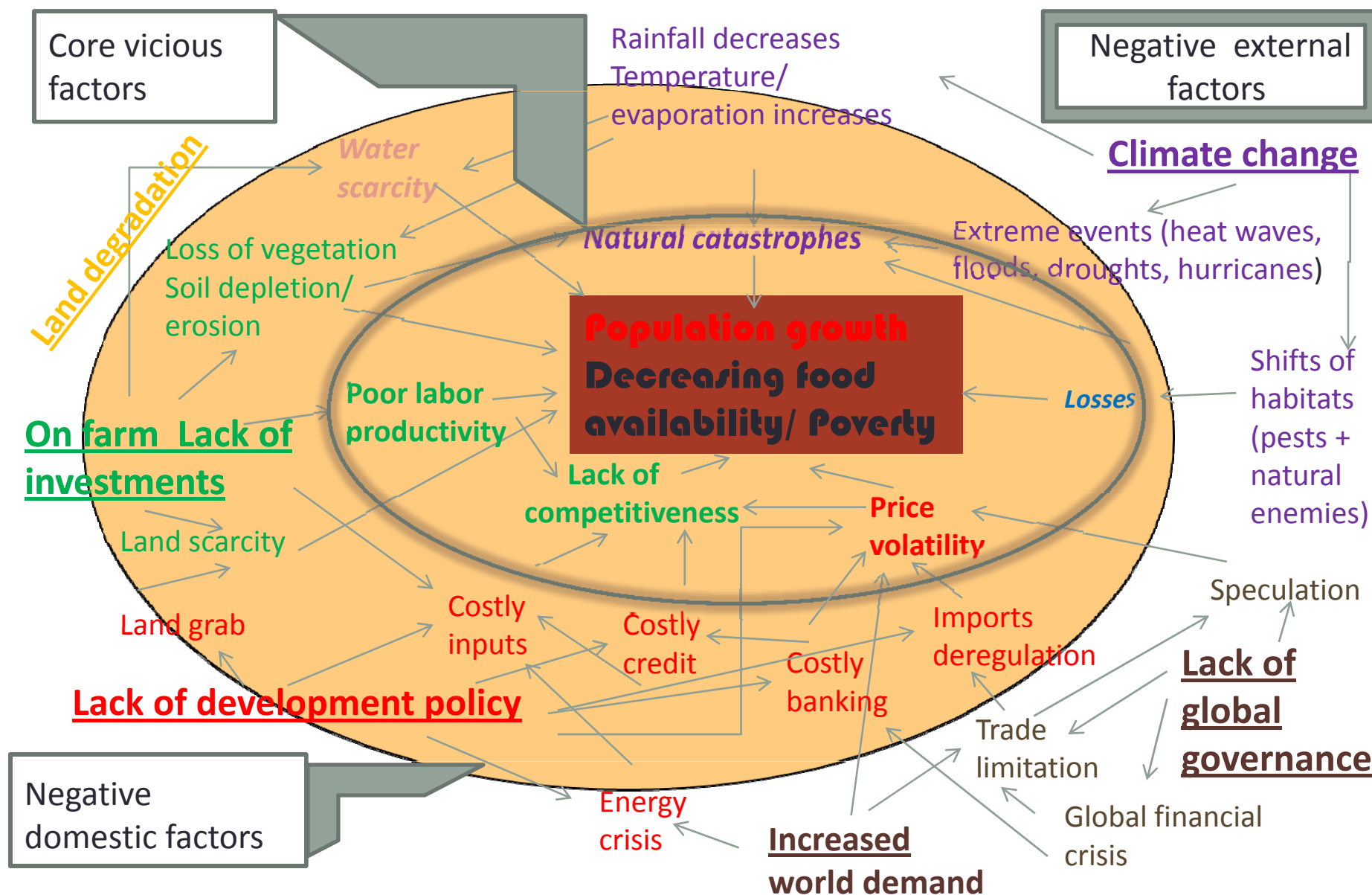


The capacity of the people is the main asset, fuelled by accurate information.

Actual exposure – sensitivity – adaptive capacity

	Exposure	Sensitivity	Adaptation capacity
Governance + Organization	Deregulation of trade	Inadequate regulations	Lack of regulatory arsenal
	Non tariff barriers	Poor institutions	Poor institutional development
	Energy costs – Food import costs	Poor equipment + infrastructures	Lack of investments
Market pressure on farming	Increased demand for products	Land scarcity/ land rights	No settlement plans
	Volatility for products prices Lack of markets stability	Poor farm equipment	No mechanization programs
		Narrow mix of crops & livestock	Poor AR&D and extension
		Lack of technical information	
	Foreign competition	Lack of competitiveness	Weak value chains
Finance and rural income	Increasing inputs prices	Poverty	No safety nets
	Increasing food prices	Food insecurity	Poor prices for farmers
	Currency devaluation / inflation	Lack of affordable credit	Expensive and rare credit
Climate Change	Shifting natural vegetation cover	Degraded lands	No land investments
	High temperatures – heat waves	Lack of organized bio-diversity	No land use policy and planning
	Less rains and less reliable	No alternative water sources to rains	No water harvesting policy
	Less water flows	Insufficient development of dams	Poor water policy and budget
	More floods	Lack of dykes and spilling areas	No policy, no budget
	Rising sea water/ Coastal erosion	Heavily populated areas	No policy, no budget
	Emerging pests and diseases	Lack of response capacity	Weak pest control strategy
	Emerging human diseases	Potentials for epidemics	Weak health maintenance

Actual negative interactions between Climate change, farmers' investments, policies and global governance



Key issues for a transformational process

Governance issues

Investments are the most powerful levers for adaptation.

Organizations and regulations provide for effective investments.

Public and private action are combined through conventions.

Change will accelerate in some 20 years = anticipation + planning.

Vision

Capital in agriculture is a national asset collectively supported.

Shift from subsistence to entrepreneurial farming is organized.

Production chains serve markets and remunerate stakeholders.

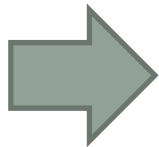
Enlarging the use of natural resource by agriculture is necessary.

Land use planning + regulated access to resource = built landscape

Risks management secures capital and income in agriculture.

Components for an adaptation agenda in agriculture

- Organized farmers entitled to monitor agricultural land and investments
- Accessible information systems and early warning;
- Land use planning giving access to harnessed resource and enforced;
- Land investments = greening, water harnessing, dykes, road access;
- Safety nets for the vulnerable – jobs creation : infrastructure and greening;
- On farm investment programs (land access, mechanization, storage, R&D);
- Fair + climate smart development of value chains;
- Financial systems (credit + insurance) providing for capital growth;
- Food security stocks fed by local production and secured through imports;
- Improved strategies and responses for emerging pests/ diseases.
- Fair protection against dumping and subsidized agricultural products



Joint public and private investments are promoted by innovative institutions and organizations.

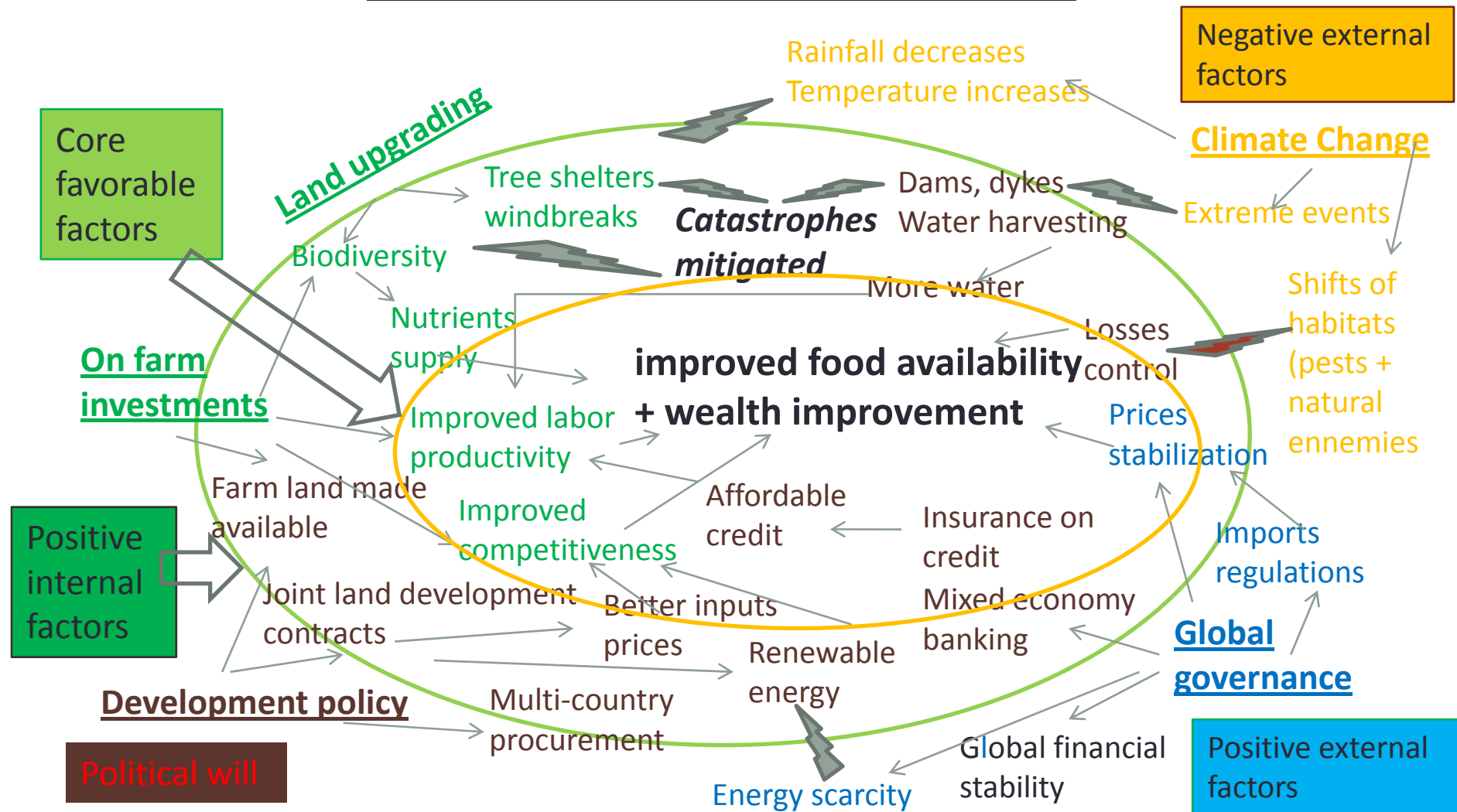
Poverty is a major limiting factor to change

- Annual economic growth = too low for reducing poverty
- Investment = the most powerful method for adaptation
- Poverty = jeopardizes investments for addressing adaptation
- Risks = maintain many rural people into poverty

Policies  harnessing risks + valuing opportunities to reduce poverty:


- *Social security nets; insurances; food for work schemes*
- *Land use planning giving access to harnessed resources*
- *Production chains development, credit, fair market access*
- *Institutional development and regulations*
- *Education, vocational training, social insertion*

in the face of Climate Change



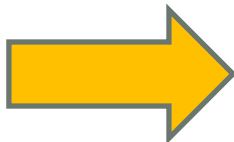
On Farm investment program

- Access to land within contract for mechanization + intensification
- Market development in connection to production chains
- Promotion of contract farming (prices and delivery conditions)
- Food security stocks linked to marketing through warrantage
- Local rural infrastructures (roads and bridges, water, storage)
- Encouragement to diversification of farming systems
- Support to the promotion of agro-forestry/ conservation farming
- Support to shift from extensive livestock systems to integrated livestock- cropping systems – reducing methane emissions
- Crop and livestock index based insurance systems
- Agricultural credit backed by insurance systems
- Extension providing education, information and problem solving

 **Adaptation to climate change is inserted into a steady process of agricultural development and fuelled by combined Public and Private Investment reducing poverty, backed by institutional progress.**

Farmers' organizations involved

- In applied research and development institutions
- In land use planning and extension of farming domain
- In the design/ planning of agricultural infrastructures
- In the local organization of farmers' equipment programs
- In the progress of production chains and regulation of prices
- In the substitution of imports by national production
- In the design of greening + water harvesting programs
- In the development/ management of food security stocks
- In the certification of contributions to adaptation /mitigation
- In the design of payments for ecological service



Strengthen farmers' organizations

Financing Mechanisms for Adapt/Mitigation – 5 years

Funding source	US\$/year/ha of community land	Objective
Government + donors EMPOWEREMENT	0.2	Information systems/ Education
	0.2	Land use planning
	5.0	Infrastructures (roads, warehouses,...)
CDM – REDD+ based on C fixation/ha + NAPA	6.0	Safety nets – Food for greening
	4.0	Greening the land – rehabilitation (5y)
	1.1	Production chains -timber, fodder, water
Government + private sector + donors CAADP	5.6	Harvesting water/ flood control
	15.2	On farm investment program
	0.1	Agricultural Biodiversity development
	0.2	Innovative production chains
Government + Banks	13.0	Insurances + financial services
Government + community	5.4	Enlarged food security stocks
TOTAL	56.0	Intensified, fitted, secured community

Policy support

- **Risks management through:**

Early warning and information

Safety nets; food security stocks; pests/diseases control; insurance

- **Investments** (harnessing water, roads, communication)

- **Institutions and enabling environment :**

Poverty alleviation by rural development programs

On farm investment programs

Land greening and biodiversity conservation programs

Contractual development of production to consumption chains

- **Negotiating fair relationships with international markets**

Food imports (quantities and price)

Inputs procurement

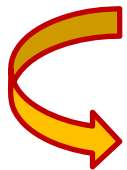


Strengthening capacity for policy

Increased financing capacity for states

Conclusions

- Addressing Climate Change should support the achievement of agricultural development and food security ;
- Adaptation and mitigation will take place through a revised CAADP process, incorporating NAPAS output;
- Smart combination of investments and regulations should mobilize public funding, private sector investments, farmers' investments in kind, sound policy, donors support and CDM + REDD funding;
- Significant budget should be allocated by all parties;
- Transparent sharing of added value is necessary.



THANK YOU

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