

Segundo Diálogo

Alianza Mexicana-Alemana de Cambio
Climático

Zweites Dialogforum

Deutsch-Mexikanische Klimaschutzallianz

Centro Histórico, México D.F. 24 de septiembre 2012

Climate change in rural Mexico

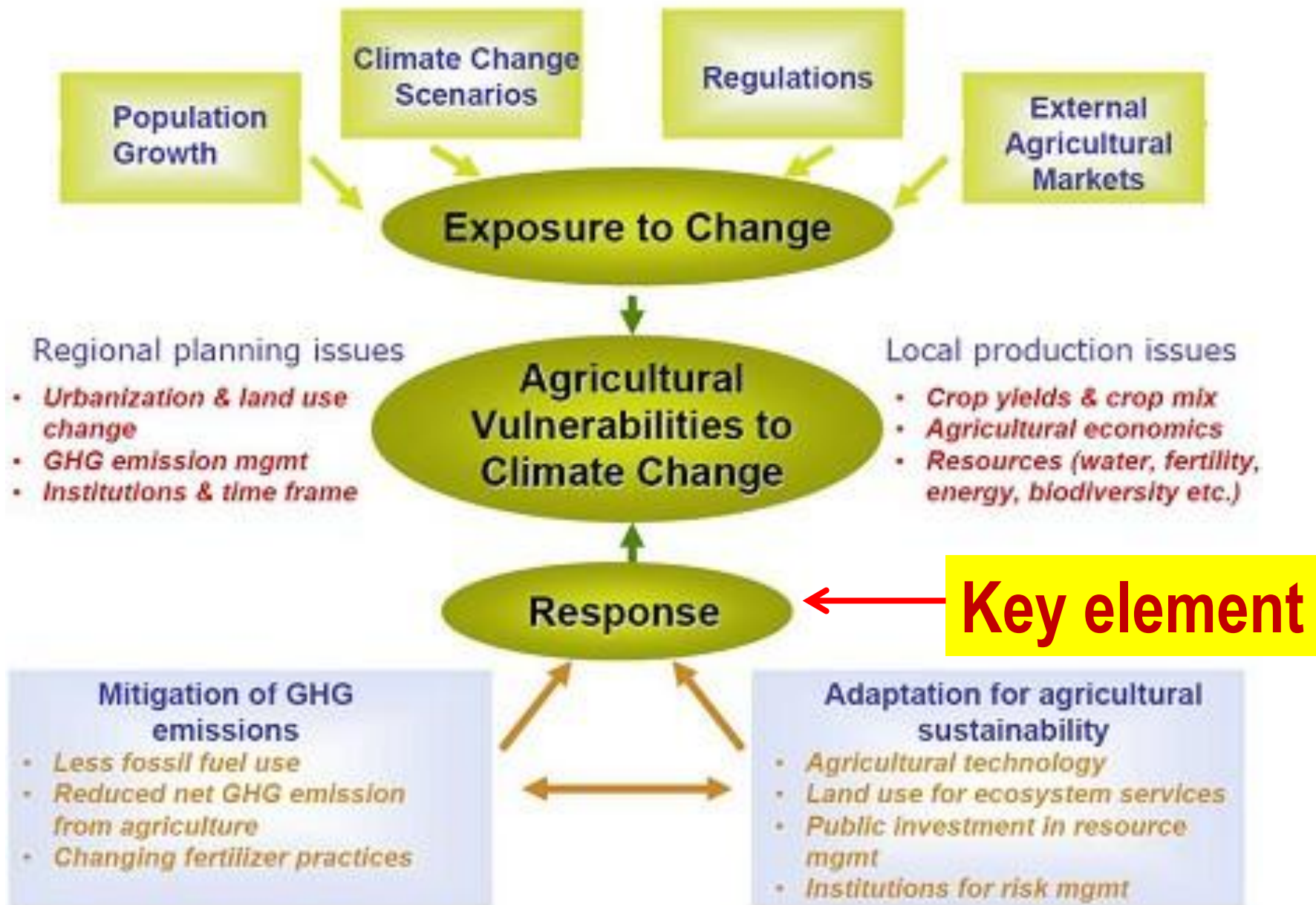
Progress and challenges

Klimawandel im ländlichen Mexiko Fortschritte und herausforderungen

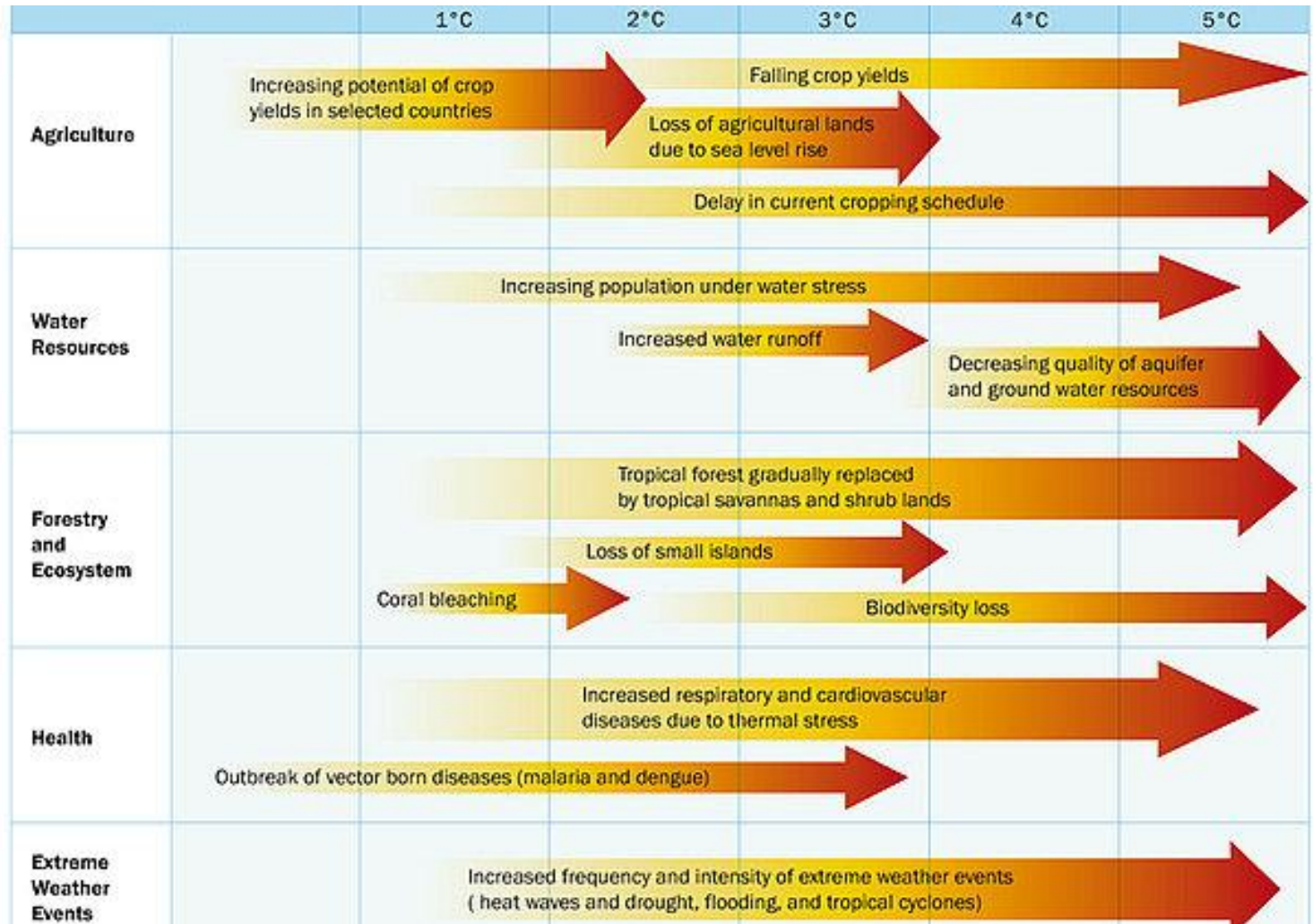
Dr. Lorenzo Alejandro López Barbosa

Universidad Autónoma Agraria Antonio Narro

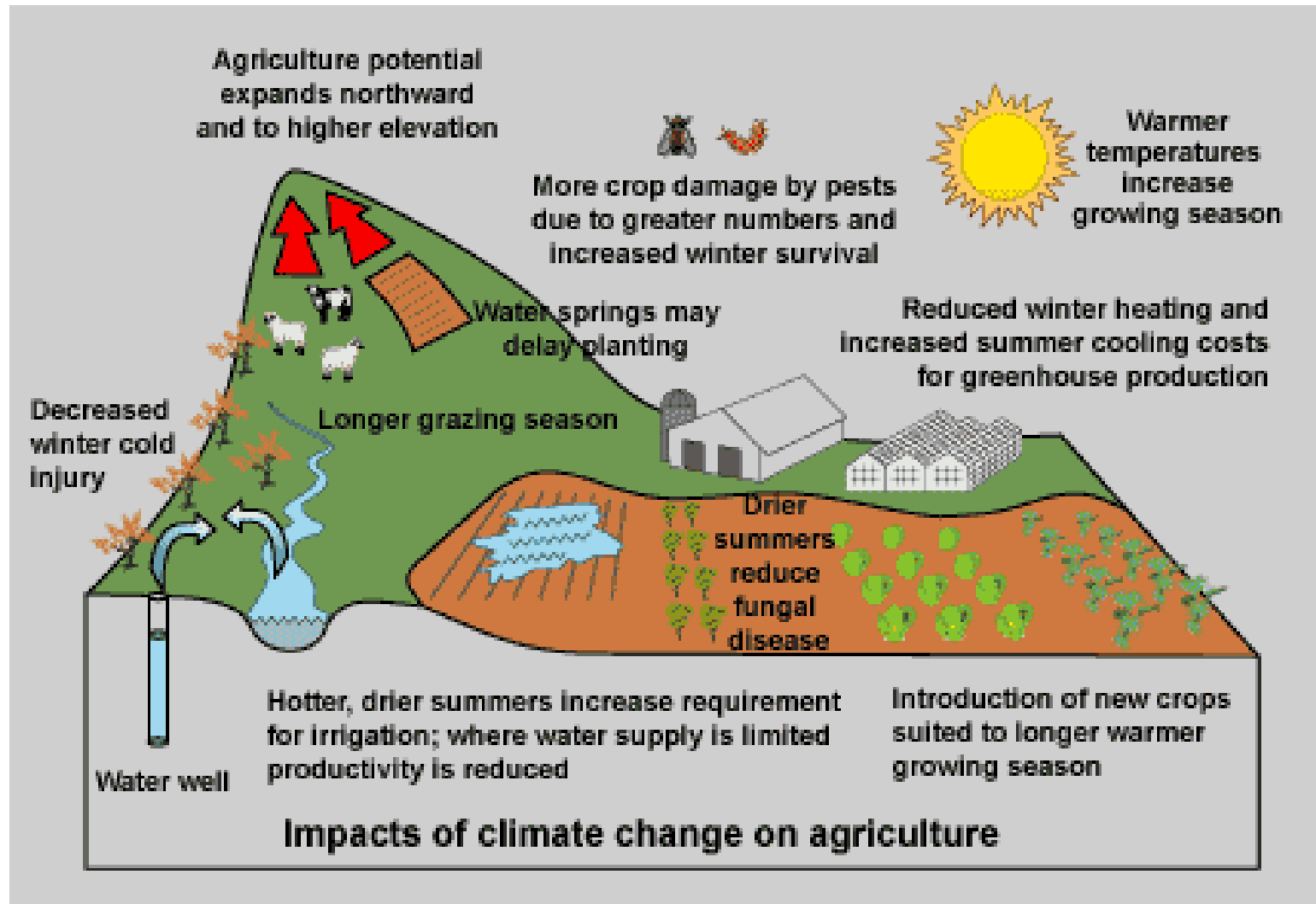




We know the effects



We know the impacts

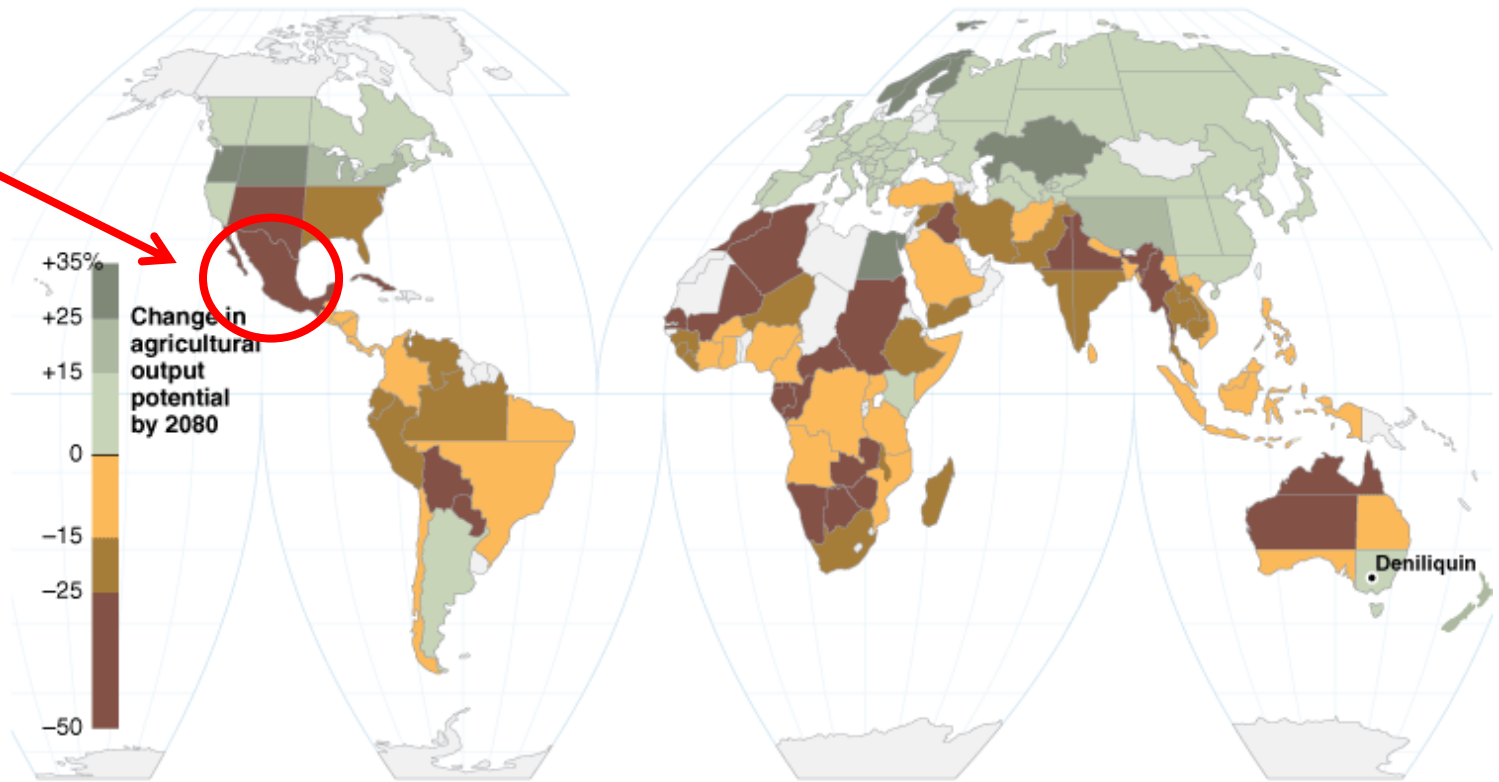
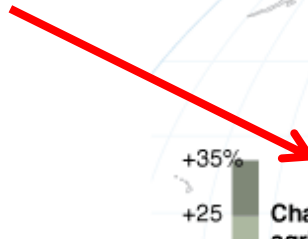


The forecasts are adverse

Farming in a Warmer World

Crop forecasts show that some countries farther from the Equator could benefit from a warmer world, but others would be worse off by 2080 if global warming were to proceed unchecked. Long-range forecasts vary widely; the following is a synthesis of available forecasts by country or region.

**Worse
More
than
25%**



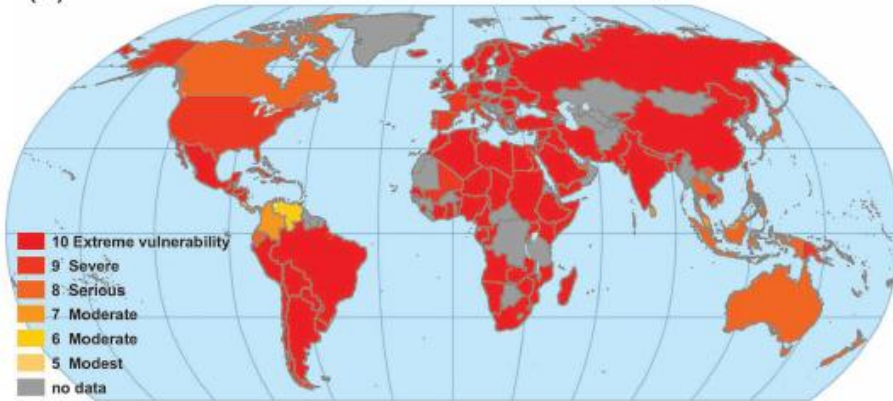
Note: These figures assume that crops grow faster because of higher levels of carbon dioxide in the air. But some scientists say that the actual effects of global warming could be worse than shown here, because the benefits of extra carbon dioxide may not appear if crops lack proper rainfall, proper soil and clean air.

Source: "Global Warming and Agriculture: Impact Estimates by Country," by William R. Cline, Peterson Institute, 2007.

Mexican agriculture is extremely vulnerable

(a)

Global Distribution of Vulnerability to Climate Change
Combined National Indices of Exposure and Sensitivity



Scenario A2 in Year 2100 with Climate Sensitivity Equal to 5.5 Degrees C
Annual Mean Temperature with Aggregate Impacts Calibration

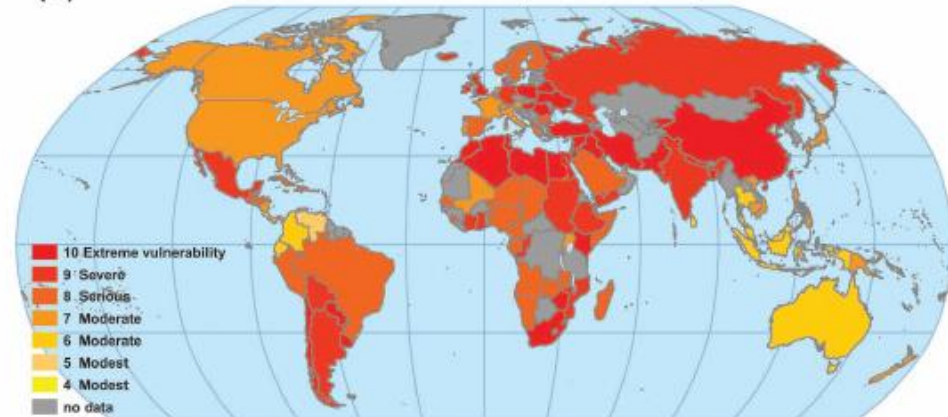
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Even in enhanced adaptative capacity

(b)

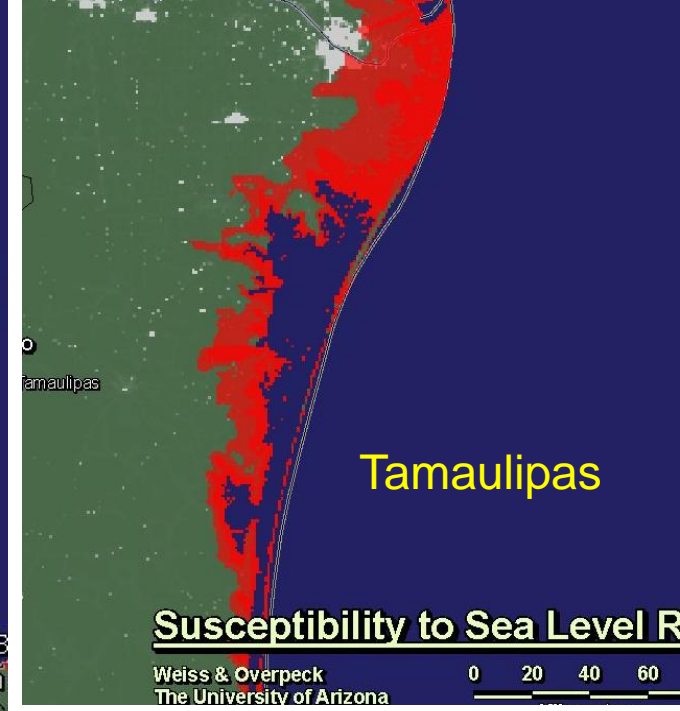
Global Distribution of Vulnerability to Climate Change
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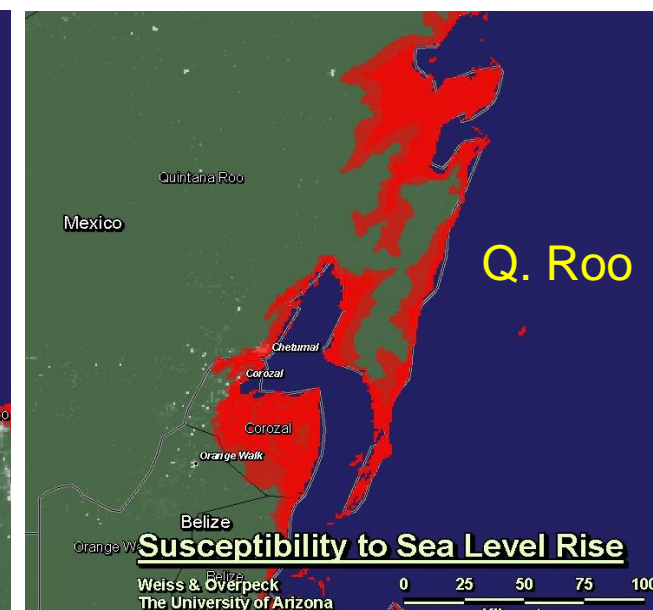
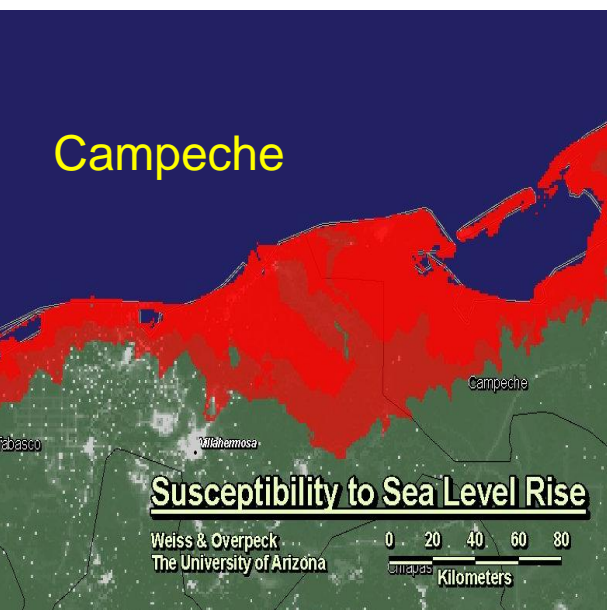
Scenario A2 in Year 2100 with Climate Sensitivity Equal to 5.5 Degrees C
Annual Mean Temperature with Aggregate Impacts Calibration and Enhanced Adaptive Capacity

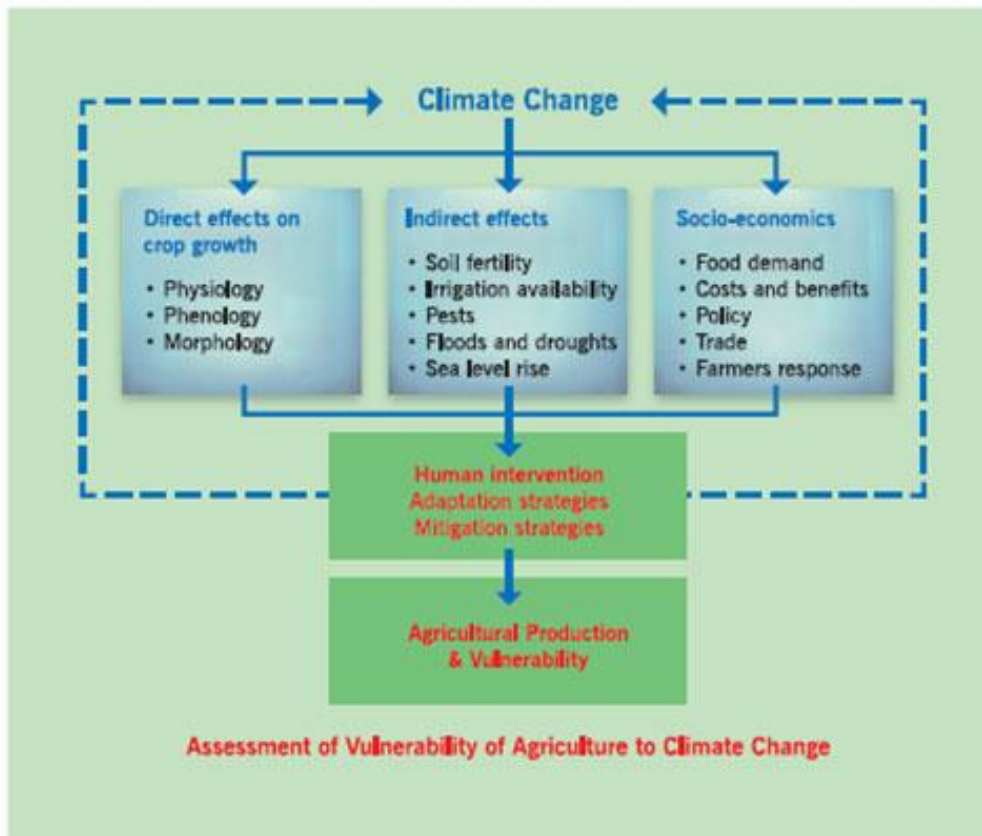
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Sea Level Rise 1-5 meters in different coastal areas of Mexico



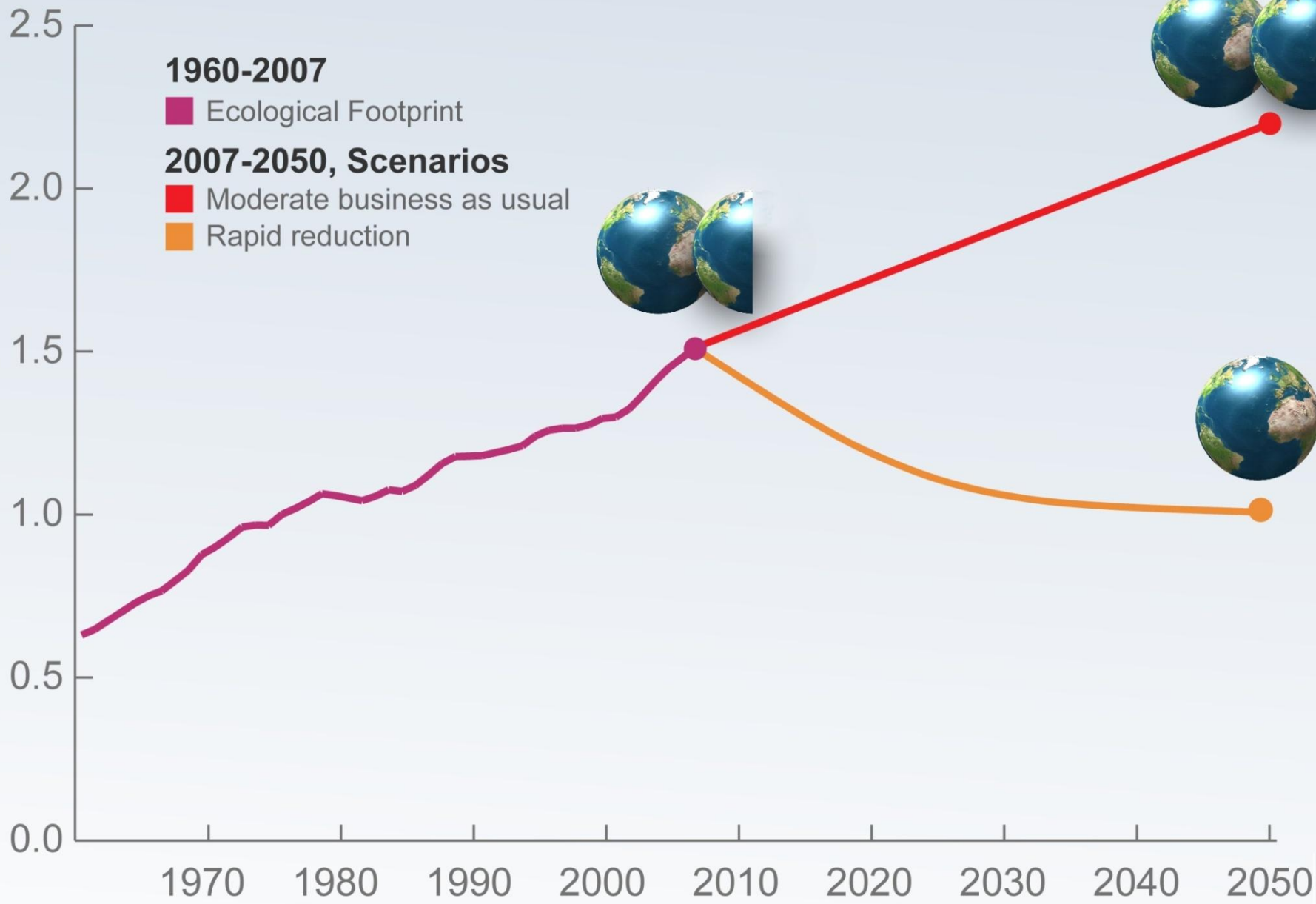


We have the scenarios

We make an innovation laws

We have the political decisions

The response to the climate change is the key element



y-axis: number of planet earths, x-axis: years
Year

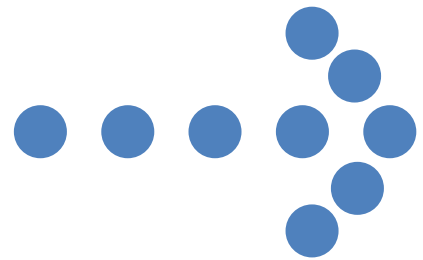
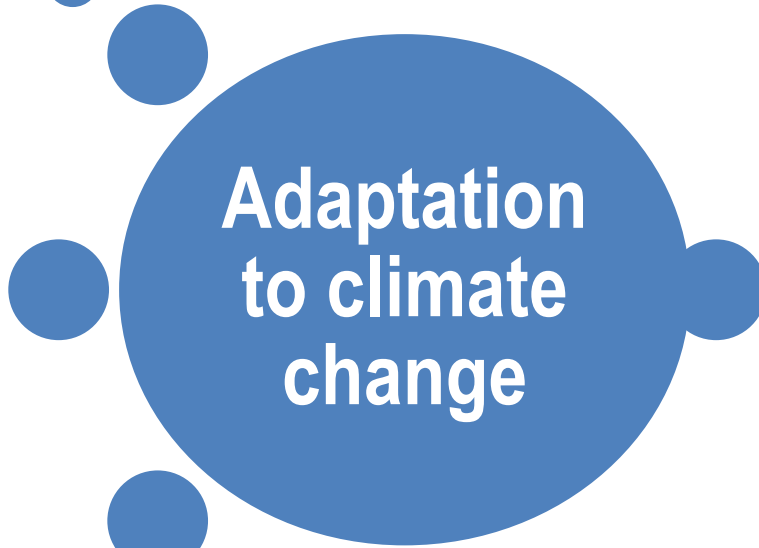
**Management of
diversity**

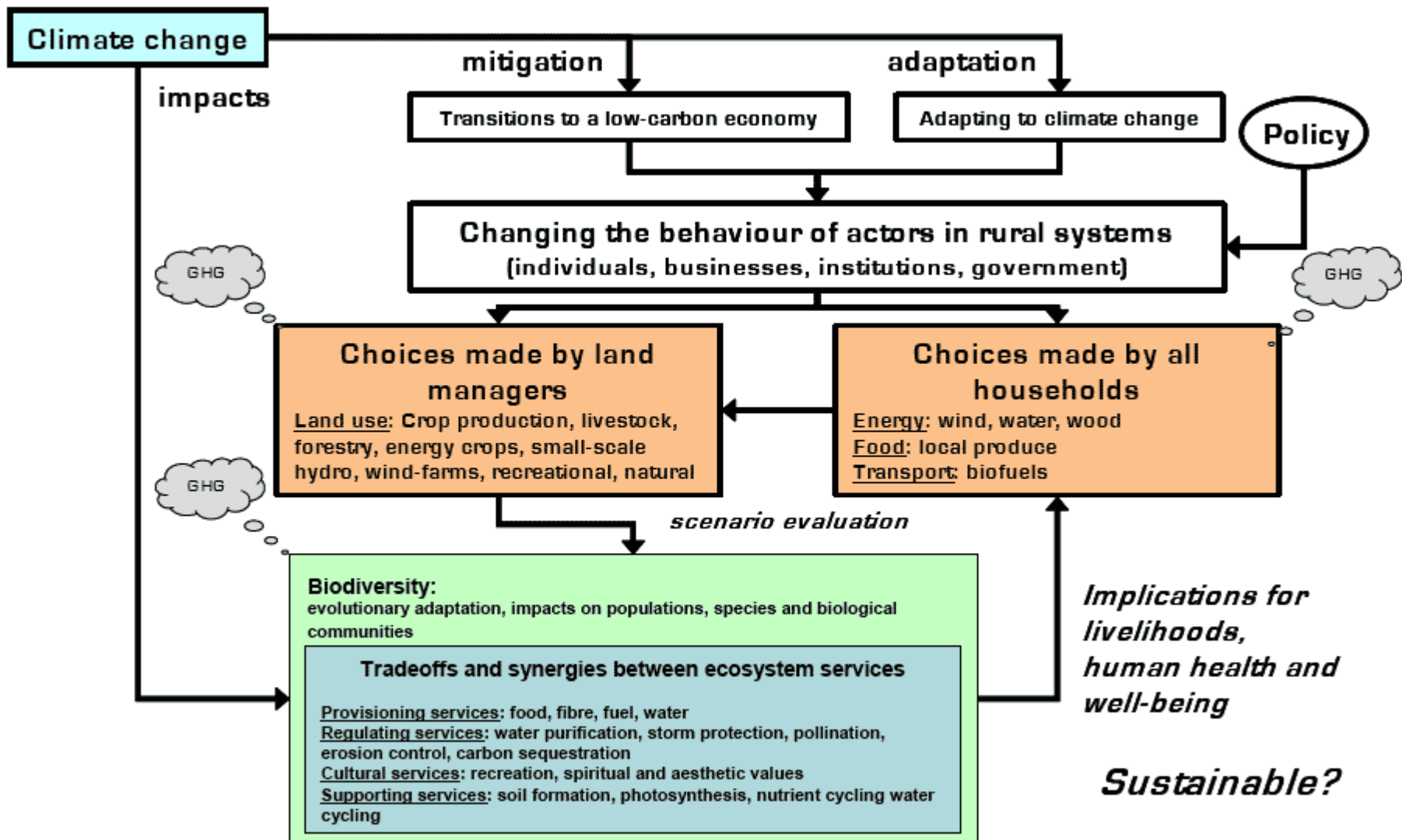


**Risk
management**



**Develop
capabilities**





The mexican rural reality is prepared to meet the challenges of a productive transition toward a low carbon technologies?

We have the right policies to promote it?

Maybe not enough

We need to anticipated **responses in the agroecosystems**

But

**The industrial agriculture (mechanization and inputs) is
higher mostly unsustainable ecological and energy**

**Mexican public politics, in the most cases, contribute to
this kind of agriculture...**

**Inefficient in irrigation, pesticides and the NO_x from soils
and agricultural burning, promote tropospheric ozone:
a "greenhouse gas" 280 times fainter than CO₂**



Actions for Adaptation to Climate Change

- Ensure water availability
- Reduce coastal vulnerability
- Reduce rural areas vulnerability
- Ecosystems and biodiversity conservation



Actions for carbon sequestration:

- **Management of soil organic matter**
- **Conservation agriculture**
- **Permanent soil cover**
- **Minimize mechanical disturbance of the soil,**
- **Crop rotation**
- **Integrated sustainable agroforestry (crops, pasture and trees)**
- **Use of marginal land and degraded forest production for fuel and forest plantations as carbon sinks**

We need a biomass high impact program

Conservation agriculture

Mitigates CC and strengthens the resilience of the most vulnerable farmers (the peasants) (Bauernschaft)

- Efficient use of **water** (at least 30% savings)
- Enrichment of **soils** (increased organic matter)
- Ability to **deal with extreme events** (reduces the risk of soil erosion and impact on crops by drought and rain)
- Carbon sequestration: **biomass** (biomasse)
- **Agrobiodiversity**: important for local adaptation and resilience

Adaptation and mitigation go hand in hand in the agriculture and fisheries:

Actions to reduce CO₂ emissions:

Reduce rates of change in land use, better fire control, alternatives to agricultural burning, emission reduction of commercial fishing, energy efficiency

Actions to reduce emissions of methane and nitrous oxide:

Improve nutrition of ruminant livestock, efficient management of livestock waste water and irrigation of rice fields, efficient application of nitrogen fertilizers, use of treated water for irrigation and groundwater recharge

We need to know

- Who? What?
- **WHY ARE VULNERABLE?**
- What is this "**seed**" of future vulnerability?
- Who are the "**actors**" of the potential measures?
- Those who receive "broadcast" and "education" change their decisions? Do **they participate in decision-making?**
- There are systems for monitoring and evaluation of the potential measures?

Two dangerous considerations

- In the scenario of the "acceptable limits" (eg 2 ° C increase in temperature or 2xCO₂).

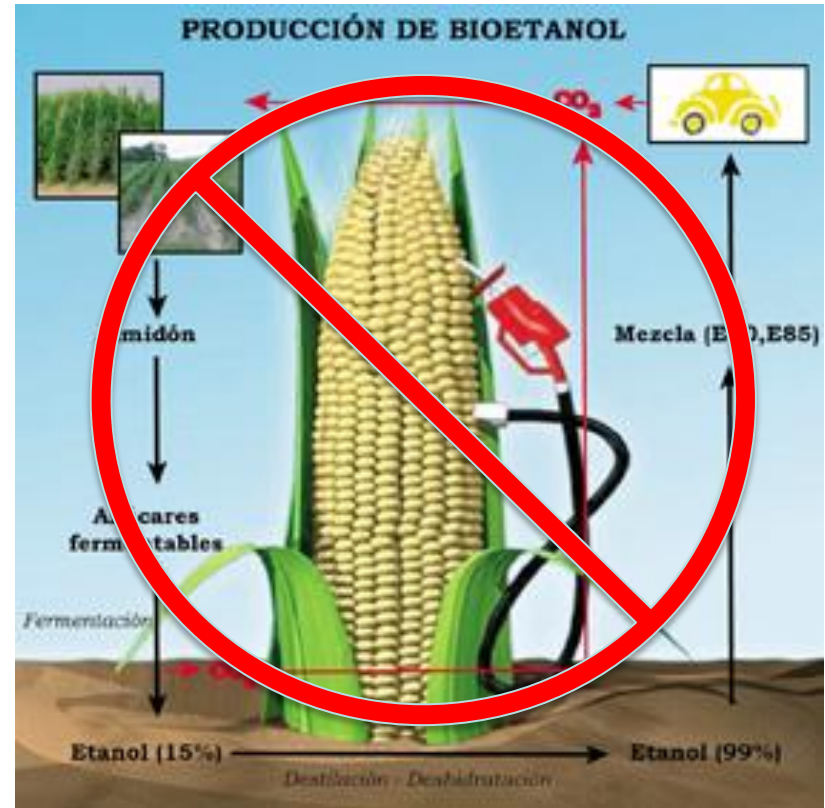
There is no certainty of what can happen in these circumstances (abrupt changes)

- It is noted that agriculture is a process "self-correcting" through "market forces" and farmers adapt to these forces.

Not in Mexican rural reality: bipolarized

... and

Meet the increasing demand of energy is a prerequisite for continued growth, and for that bioenergy can play a very important role...



However, its use must not endanger food security or the other planet's natural ecosystems

**We can not solve the problems we
have created, proceeding with the
same thinking that created them**

Agroecology

Permaculture

New professional

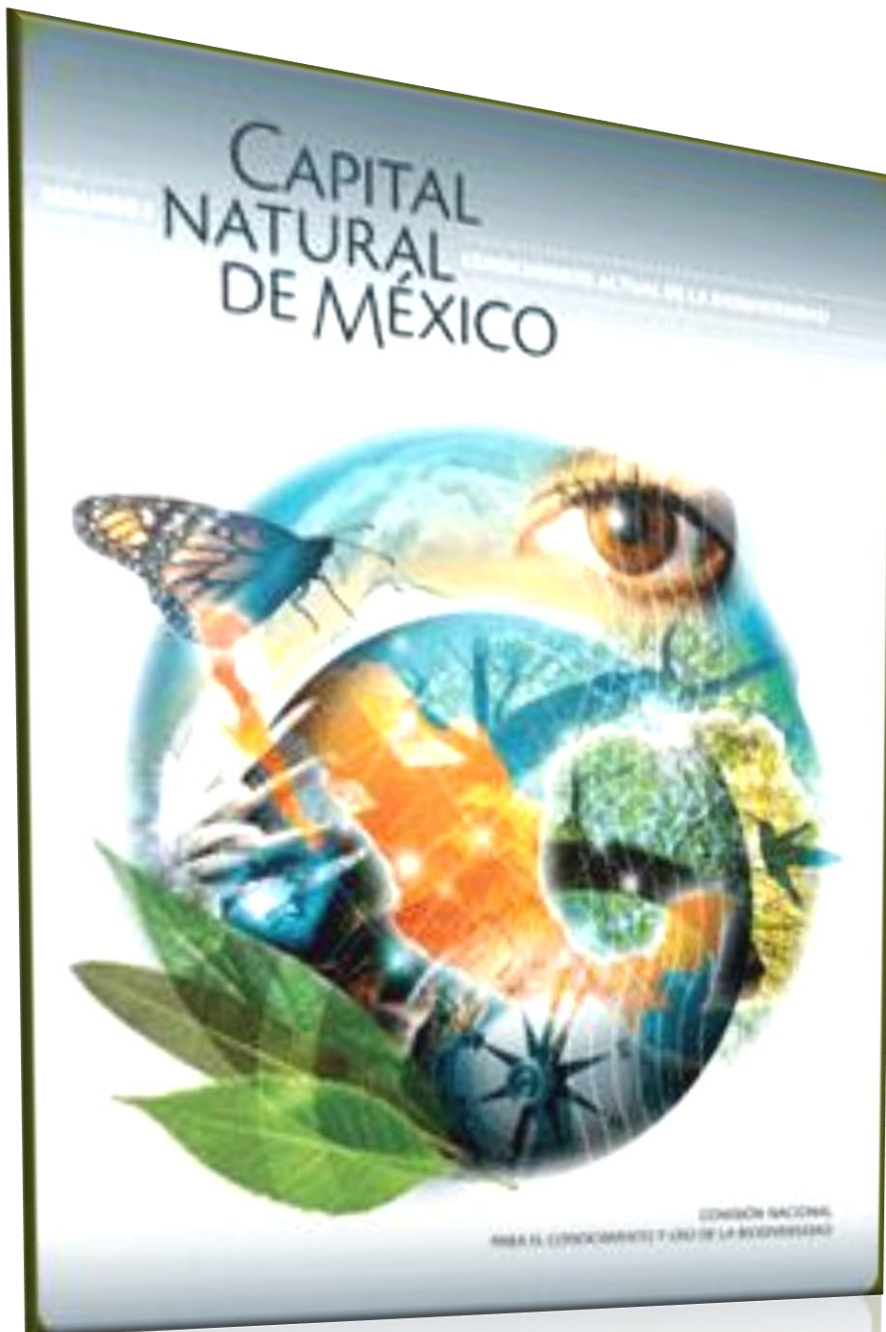
New political vision

Innovation actions

PECC. Adaptation in agriculture.

Objectives:

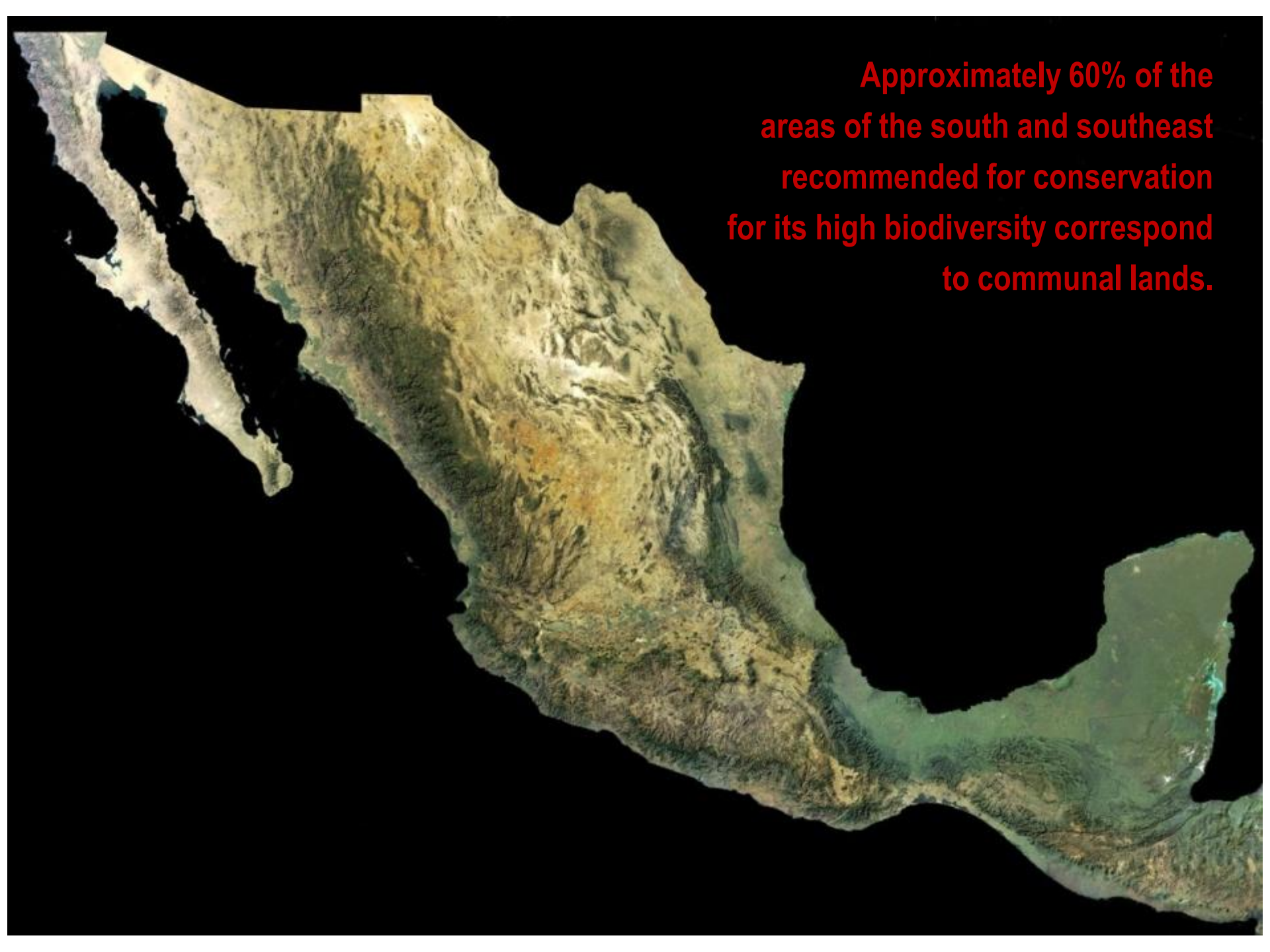
- 3.3.1) Reduce the vulnerability of the agricultural sector and ensure the country's agro-biodiversity to the impacts of climate change. (OGMs???)
- 3.3.2) Modernising irrigation infrastructure and agricultural land technify in coordination with users and local authorities. (Which type of technify????)
- 3.3.3 Increase knowledge on the impacts and vulnerability of agriculture to climate variability and climate change



80% of Mexico is under some form of management by rural communities.

Over 50% of all natural resources that currently exist in the Mexican territory are held by indigenous and peasant

Approximately 60% of the areas of the south and southeast recommended for conservation for its high biodiversity correspond to communal lands.





- **Adaptation strategies that include multiple factors**
- **Conservation agriculture**
- **Agrobiodiversity**
- **Agroecology**
- **Permaculture**
- **Carbon capture**
- **Education, education, education and more education**
- **Research with the peasants**

TECNOLOGY for them





Local markets



**Who really
knows???**

We need more local development



Local development should emphasize the need to base the development process, in knowledge and priority use of endogenous resources in each area

**Thank you
Vielen Dank**



**The main thing is to know the principles for
transformation with an adaptive approach**