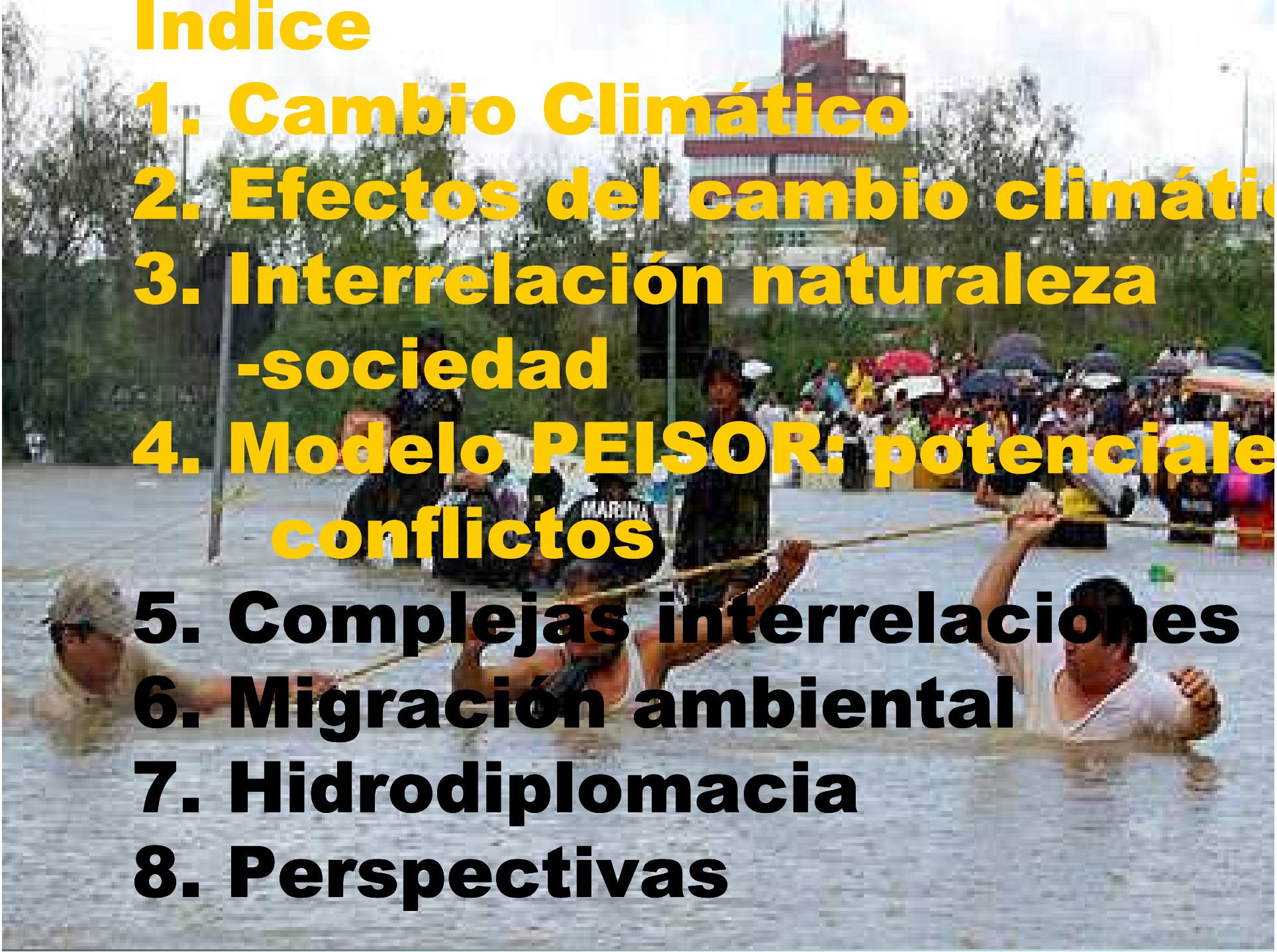


**Simposium: Manejo comparado de cuencas hidrológicas; incertidumbre
climática, vulnerabilidad ecológica y conflicto social
Torreón, 17-20 de agosto, 2009**

Cambio Climático y Conflicto Social: Geopolítica, Diplomacia y Guerra por Agua

**Úrsula Oswald Spring
CRIM-UNAM
UNU-EHS, Cátedra sobre
Vulnerabilidad Social**

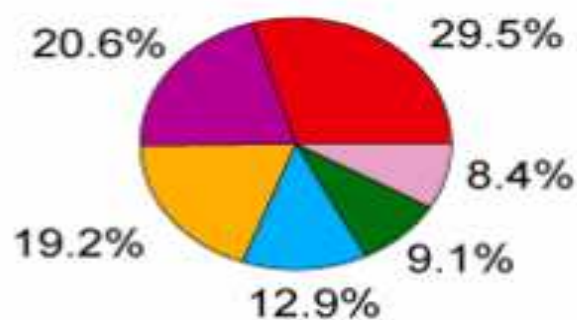
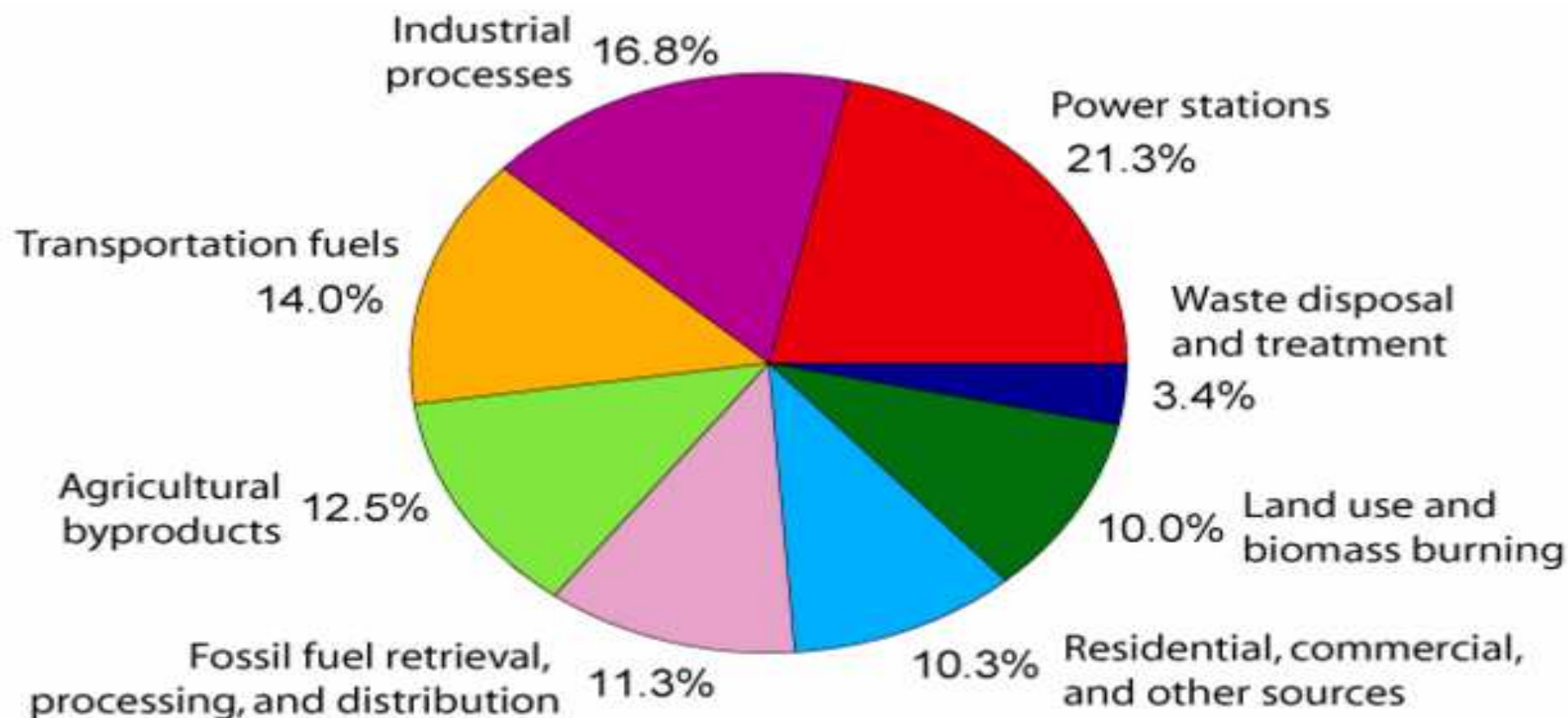
Indice

- 1. Cambio Climático**
 - 2. Efectos del cambio climático**
 - 3. Interrelación naturaleza
-sociedad**
 - 4. Modelo PEISOR: potenciales
conflictos**
 - 5. Complejas interrelaciones**
 - 6. Migración ambiental**
 - 7. Hidrodiplomacia**
 - 8. Perspectivas**
- 
- A background photograph showing a tug-of-war competition taking place in a flooded urban area. Several people are wading in the water, pulling on a rope. A large crowd of spectators is visible in the background, some holding umbrellas, suggesting it might be raining or has recently rained. The scene is outdoors with trees and buildings visible in the distance.

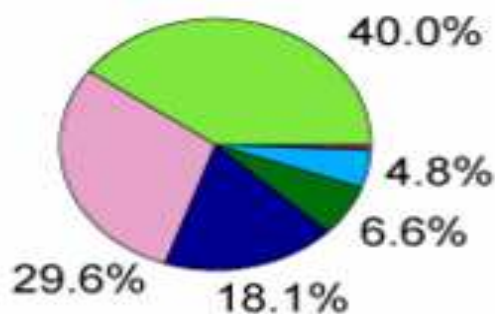
1. Cambio climático y sus efectos

- 1. Aumento en la temperatura; ondas de calor y frío**
- 2. Aumento en el nivel del mar**
- 3. Tempestades e inundaciones**
- 4. Desertificación, pérdida de fertilidad de suelos y erosión**
- 5. Incendios forestales por sequía e inducidos**
- 6. Cambios irreversibles ambientales y destrucción de ecosistemas**
- 7. Afectación del bienestar, alimentación, producción, seguridad del agua y calidad de vida**
- 8. Aumento de migración de países pobres afectados**
- 9. Conflictos en zonas delicadas**
- 10. Posible cambios de gran dimensión (Amazonas, Corriente del Golfo, monzón en Asia, etc.)**

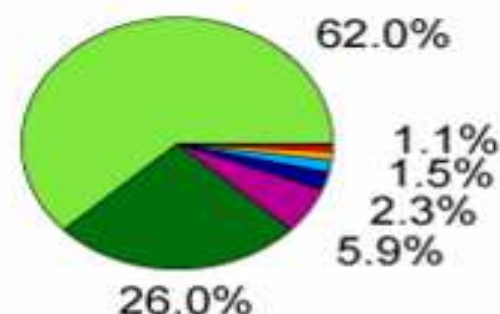
Emisiones de Gases de Efecto Invernadero/Sector



Carbon Dioxide
(72% of total)



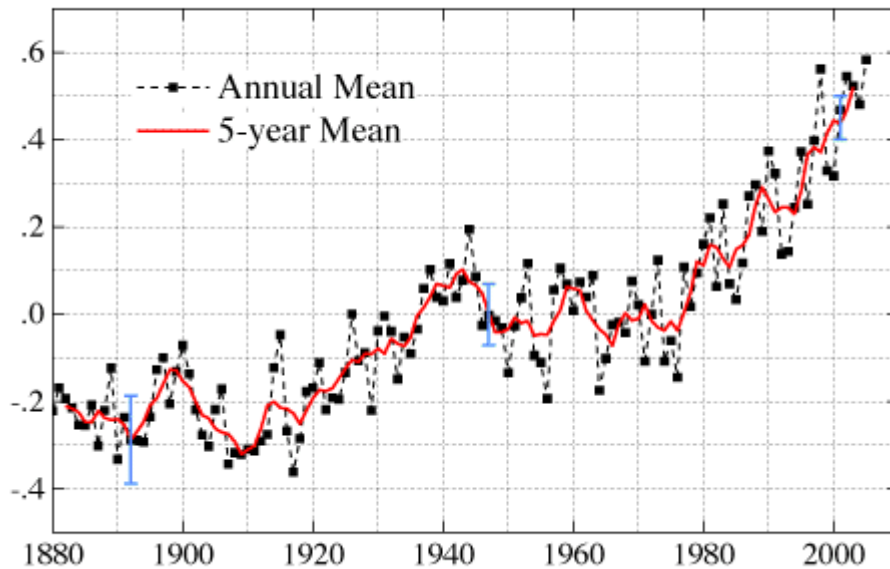
Methane
(18% of total)



Nitrous Oxide
(9% of total)

2. Efectos del CC: Variabilidad de temperatura en la superficie

(a) Global-Mean Surface Temperature Anomaly (°C)

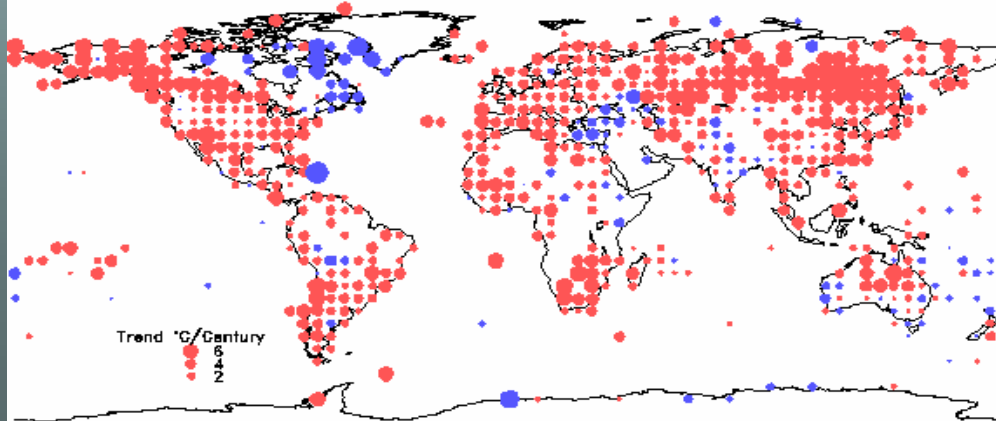


Temperatura global observado
1880-2005

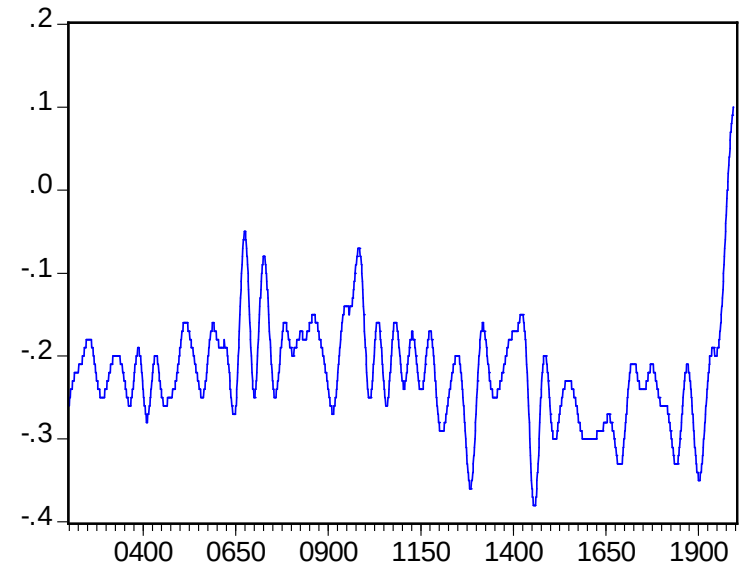
+0.74C en 100 años

Casi el doble en 50 años

Trends of surface temperature (1973–1993)
Global Historical Climate Network (GHCN)

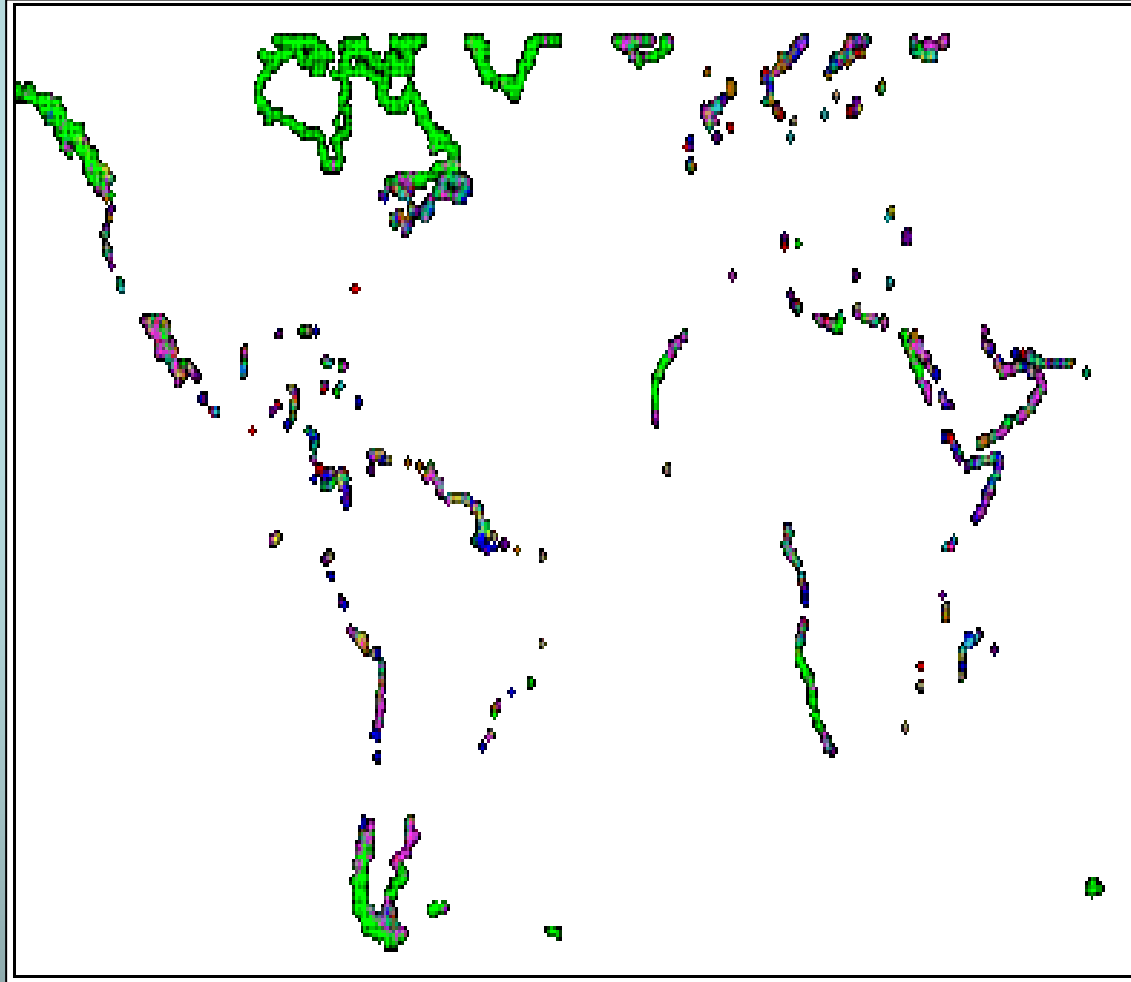


Temperatura Global

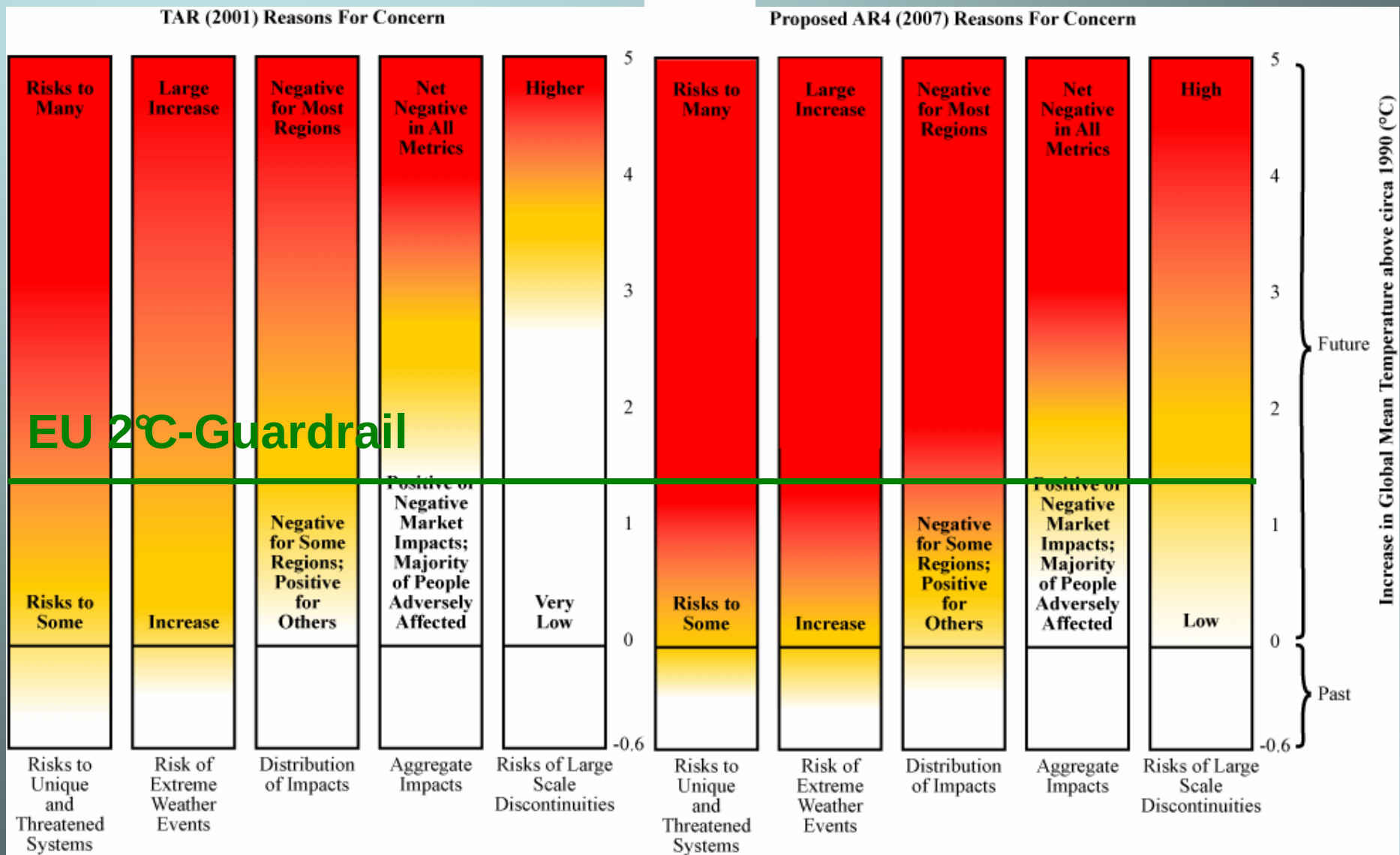


Reconstrucción de la temperatura
durante los últimos 2000 años
IPCC 2007

**Aumento en
el nivel del
mar afecta
costas
particular-
mente
Yucatán y
el Golfo**



Riesgos: Datos actualizados 2007



(Smith et al. 2009 PNAS)

Impactos asociados al aumento de temperatura entre 1980-1999

	0	1	2	3	4	5°C
WATER	Increased water availability in moist tropics and high latitudes Decreasing water availability and increasing drought in mid-latitudes and semi-arid low latitudes Hundreds of millions of people exposed to increased water stress					
ECO-SYSTEMS	Increased coral bleaching Most corals bleached Widespread coral mortality Terrestrial biosphere tends towards a net carbon source as: 15% 40% of ecosystems affected Increasing species range shifts and wildfire risk Ecosystem changes due to weakening of the meridional overturning circulation					
FOOD	Complex, localised negative impacts on small holders, subsistence farmers and fishers Tendencies for cereal productivity to decrease in low latitudes Productivity of all cereals decreases in low latitudes Tendencies for some cereal productivity to increase at mid- to high latitudes Cereal productivity to decrease in some regions					
COASTS	Increased damage from floods and storms About 30% of global coastal wetlands lost Millions more people experience coastal flooding each year					
HEALTH	Increasing burden from malnutrition, diarrhoeal, cardio-respiratory, infectious diseases Increased morbidity and mortality from heat waves, floods, droughts Changed distribution of some disease vectors					

Deterioro del suelo y cambio climático (DLDD)

- **Proceso de desertificación, degradación de suelos y sequías (DLDD): degradada 15% a 24% de superficie de Tierra.**
- **Círculo vicioso: DLDD, migración forzada, crisis políticas y conflictos amenazan seguridad nacional e internacional**
- **Agravados por:**
 - **pobreza (sobre-pastoreo y sobreuso de tierras)**
 - **Expansión agricultura comercial**
 - **Sobreexplotación acuíferos en tierras secas.**

Cambios en productividad de alimentos

potential yield change [%]

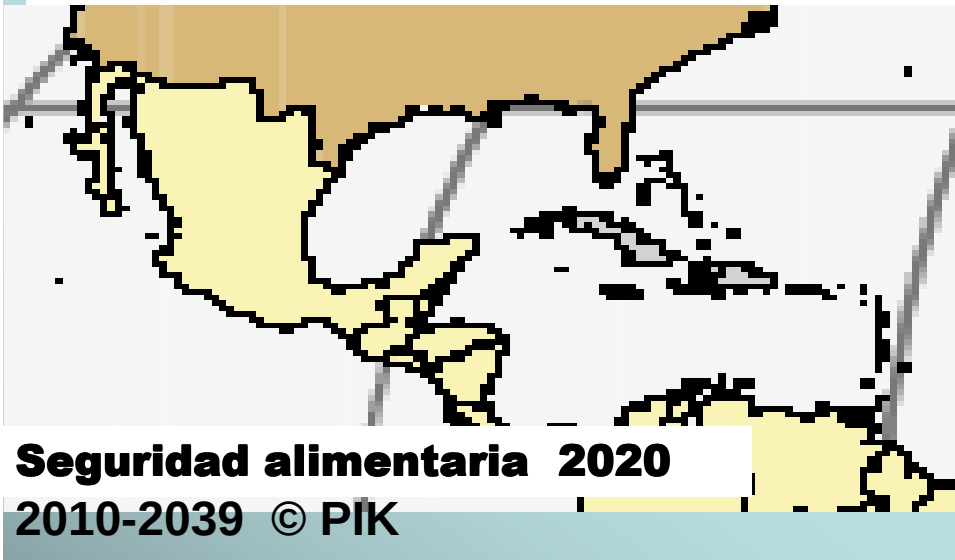
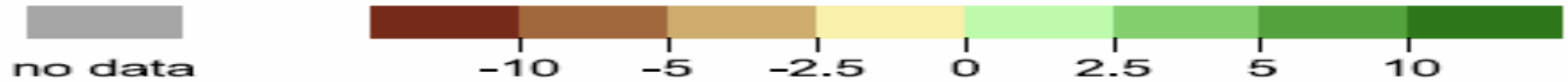
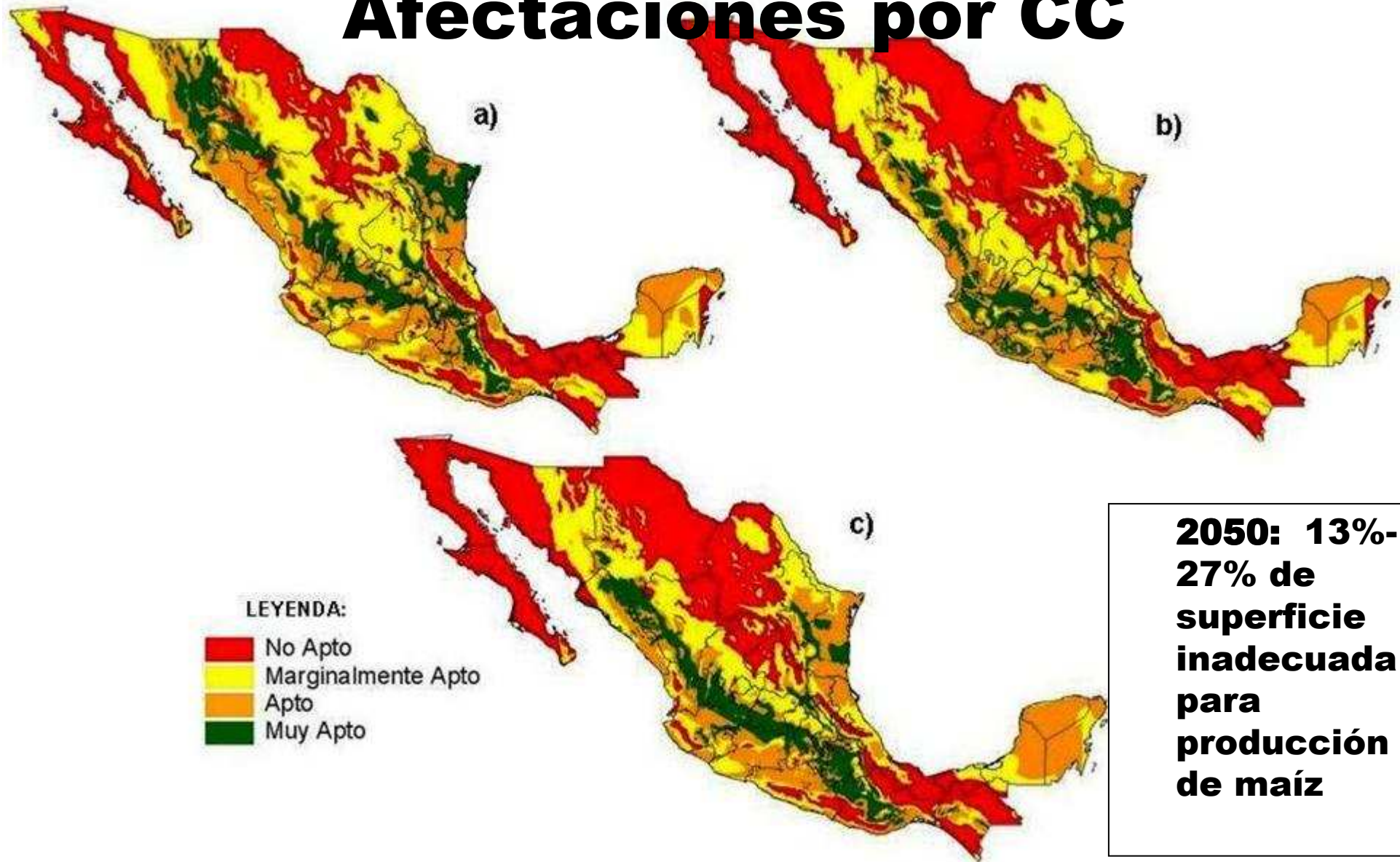


Figura 9
Desertificación en la República Mexicana



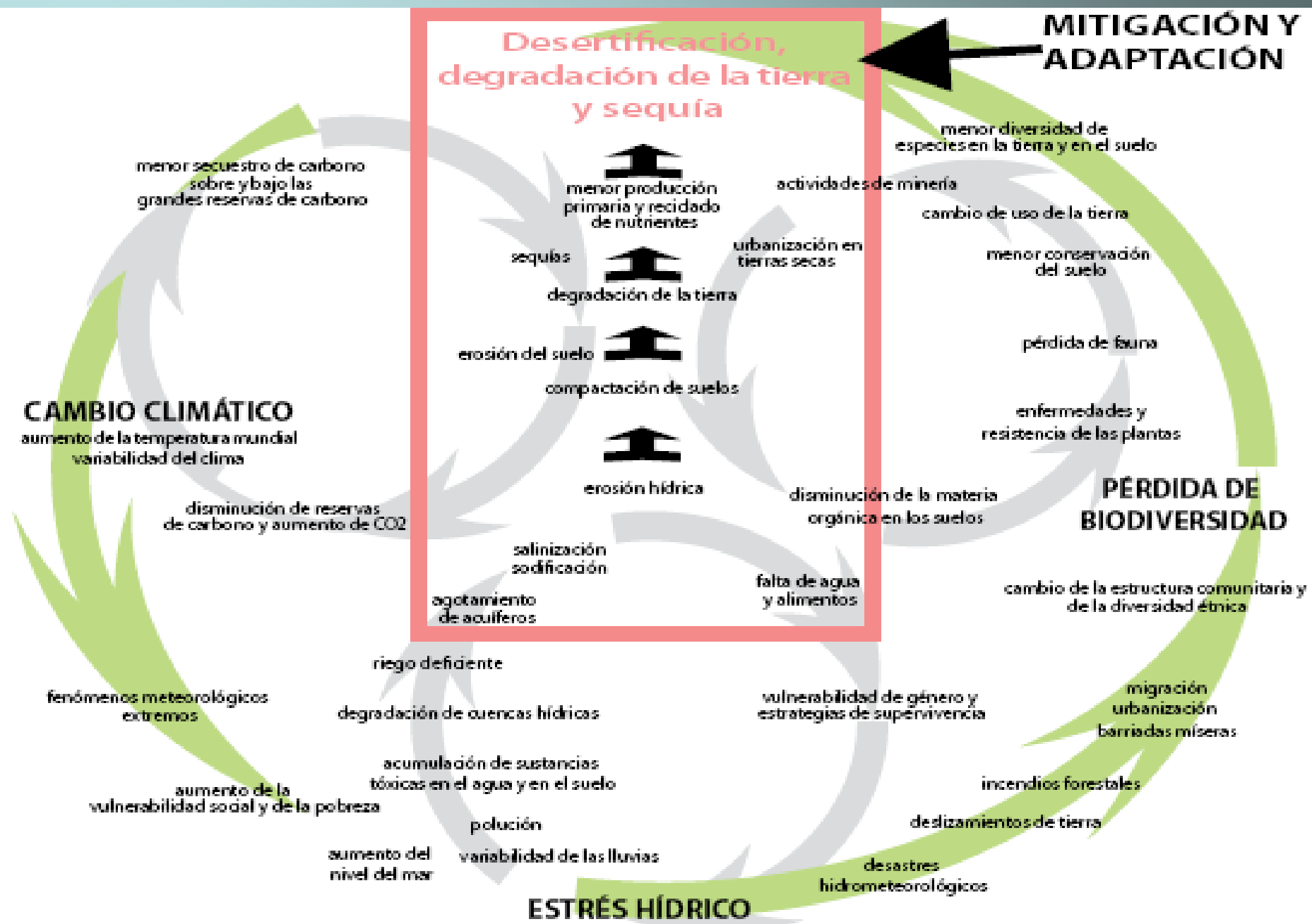
Fuente: Secretaría de Desarrollo Social-Comisión Nacional de Zonas Áridas.
Plan de Acción para Combatir la Desertificación en México (PACD-MEXICO), 1994.

Afectaciones por CC

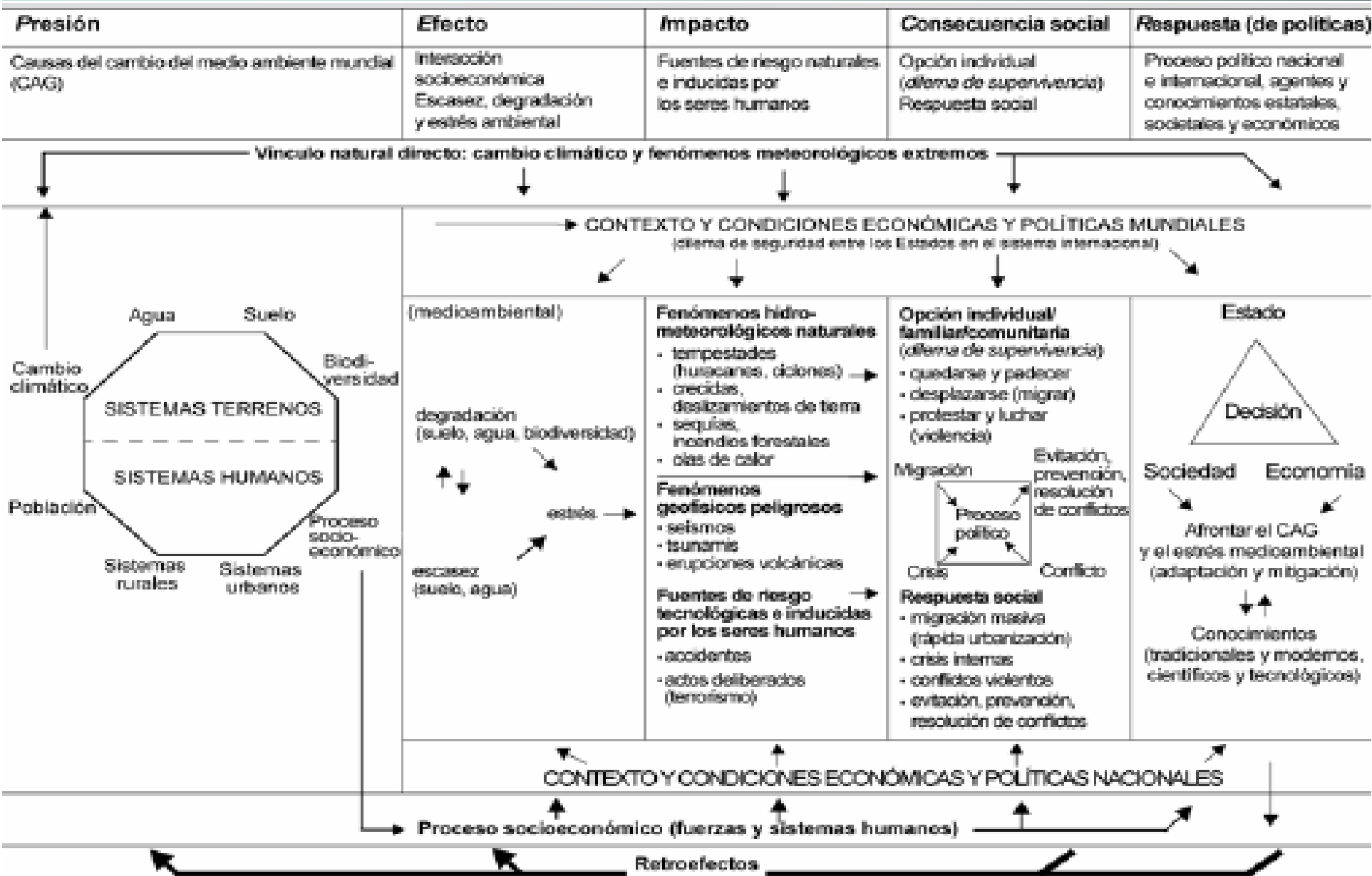


Monterroso, A. G, Rosales, 2006.

3. Interrelación naturaleza-humanos



4. Modelo PEISOR (Brauch/Oswald, 2009)



Pobreza
Hambre

Desertificación
DCDD

Migración
Interna
y Externa

Conflictos

Complejas
Interrelaciones

The diagram consists of a large light green circle with a thick border. Inside this circle, there are four curved lines that divide the space into four quadrants. Each quadrant contains a text label: 'Pobreza Hambre' at the top, 'Desertificación DCDD' on the left, 'Migración Interna y Externa' on the right, and 'Conflictos' at the bottom. In the center of the diagram, there is a dark green square with a lighter green cross inside it. The cross has four arrows pointing towards the corners of the square. Overlaid on this central square is the text 'Complejas Interrelaciones' in white, bold, sans-serif font. The word 'Complejas' is on the top line and 'Interrelaciones' is on the bottom line.

Protestas por aumento en alimentos

UNREST OVER FOOD

This map records some of the worst recent violence – where people died or large numbers protested – wholly or partly in response to rising food prices. Other, lesser outbreaks occurred in West Africa. Even Wal-Mart in the United States rationed rice and Italian consumers protested over the price of pasta.

MEXICO

Jan 2007: 75,000 protest against a 400% rise in tortilla prices.

HONDURAS

Apr 2008: Thousands of activists, students and farmers block highways and rally against high food prices and free trade.

PERU

Feb 2008: Farmers strike. May 2008: 1,000 women hang pots outside Congress. Jul 2008: One-day national strike.

HAITI

Apr 2008: Food price riots leave 4 dead. Prime minister sacked. Aug 2008: More violence erupts.

MOROCCO

200 injured in bread protests.

SENEGAL

Apr 2008: 1,000 march; many with empty rice sacks.

MAURITANIA

Nov. 2007: 1 killed in riots. May 2008: More violence; president sacks govt over slow response. Aug 2008: Coup ousts president.

EGYPT

Apr 2008: 2 die in major bread riots; army is ordered to start baking bread.

CAMEROON

Feb 2008: Riots leave 24 dead.

GUINEA

Jan 2007: 130 killed in 18-day national strike.

ARGENTINA

Mar-Apr 2008: 3-week farmers' strike over new export taxes on soy and other products.

SOUTH AFRICA

Aug 2008: National day of protest and strikes. 25,000 march through Johannesburg.

UZBEKISTAN

Sep 2007: Food protests erupt in the capital, Tashkent, and the Fergana region.

INDIA

Sep 2007: At least 6 die in mob attacks on West Bengali rice sellers in rationing protests. Aug 2008: Food riots follow flooding in eastern India.

BANGLADESH

Apr 2008: 20,000 textile workers riot over wages and food prices.

YEMEN

Sep 2007: Tanks called in, 4 killed, in 5-day riots over wheat prices.

SOMALIA

May 2008: 10s of 1,000s protest at doubling of food prices; 2 killed.

MOZAMBIQUE

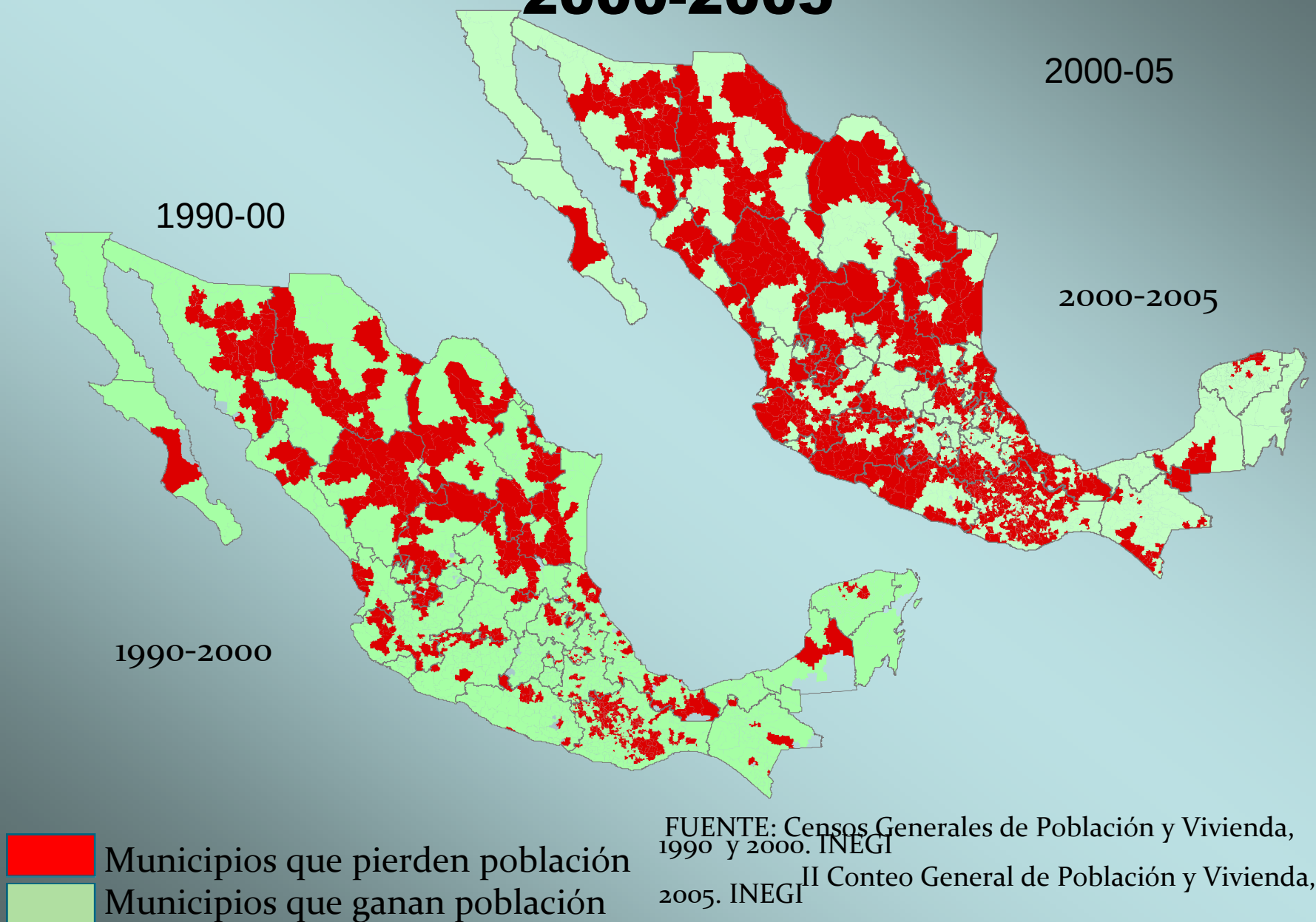
Feb 2007: 8 killed in food and fuel protests.

INDONESIA

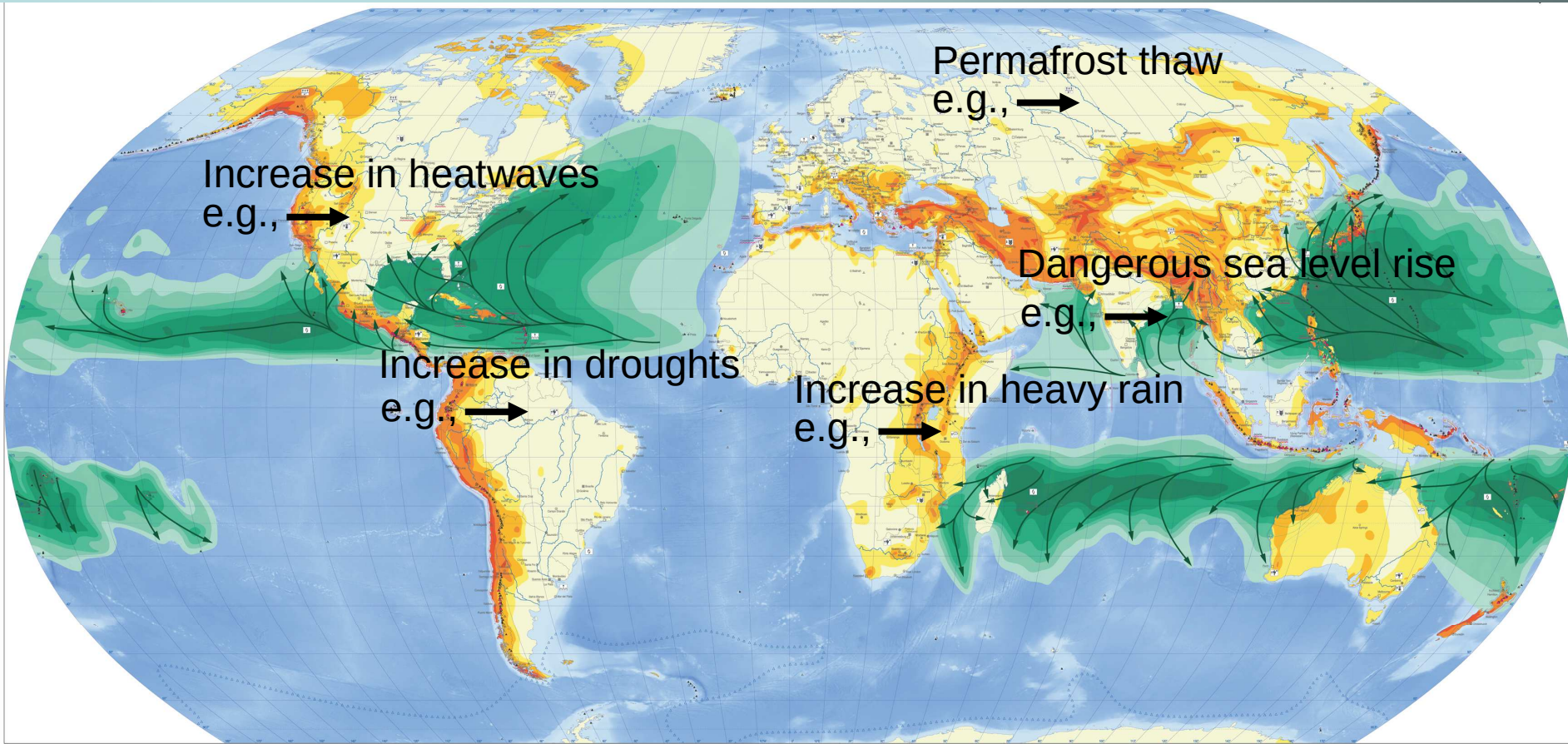
Jan 2008: 3,000 rally in Jakarta to demand action on soybean price, which doubled in a year.

Sources: Al Jazeera, Antara News, AP, BBC, Bloomberg, Institute for War and Peace Reporting, International Business Times (India), New York Times, Reuters, The Times (South Africa)

6. Migración y despoblamiento: 1990-2000 y 2000-2005



Asentamientos Humanos, Cambio Climático y Desastres: potenciales rupturas



Earthquakes

Zone 0: MM V
Zone 1: MM VI
Zone 2: MM VII
Zone 3: MM VIII
Zone 4: MM IX

MM: modified Mercalli scale

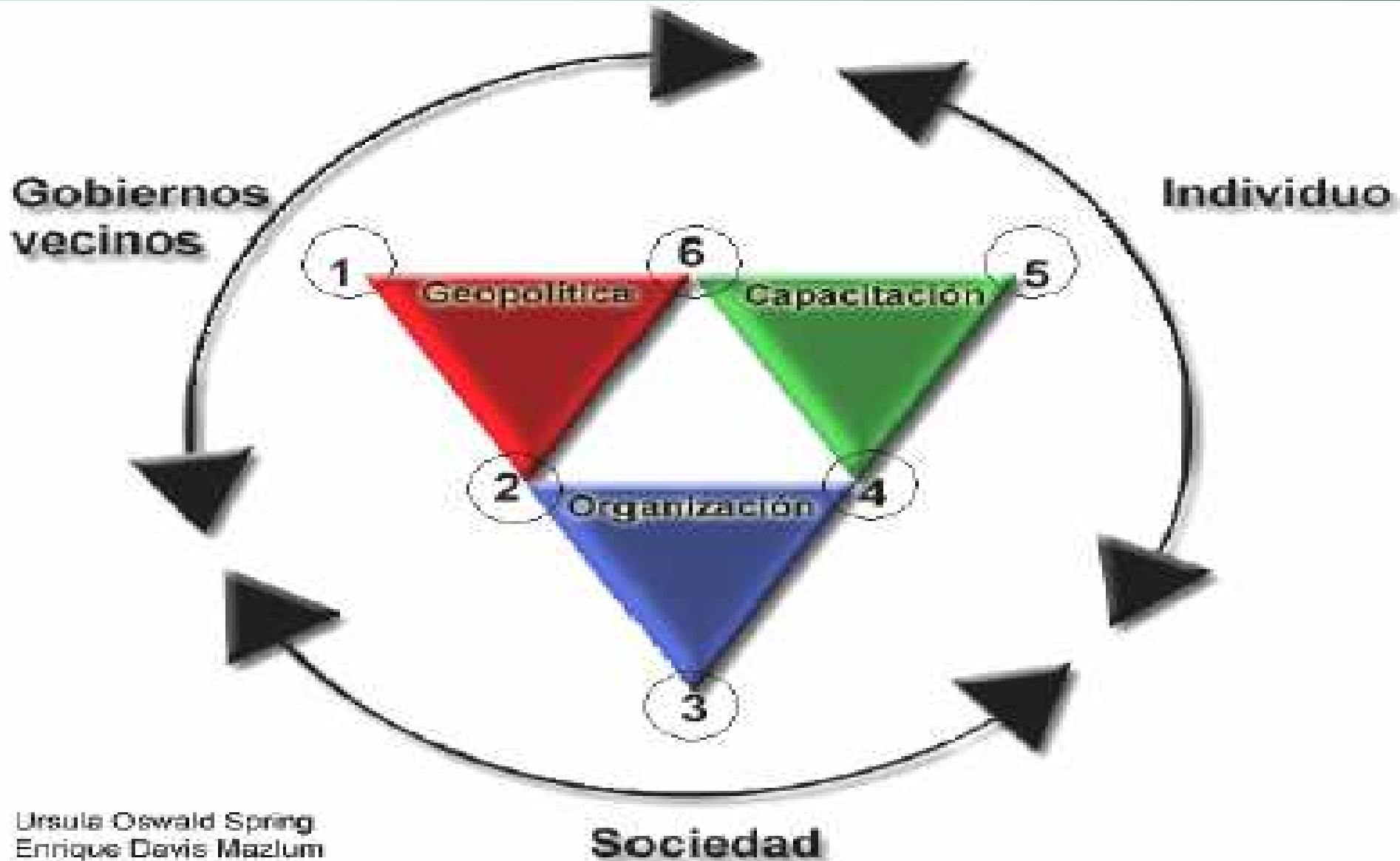
Tropical Hurricanes

Zone 0: 76–141 km/h
Zone 1: 142–184 km/h
Zone 2: 185–212 km/h
Zone 3: 213–251 km/h
Zone 4: 252–299 km/h
Zone 5: ≥ 300 km/h

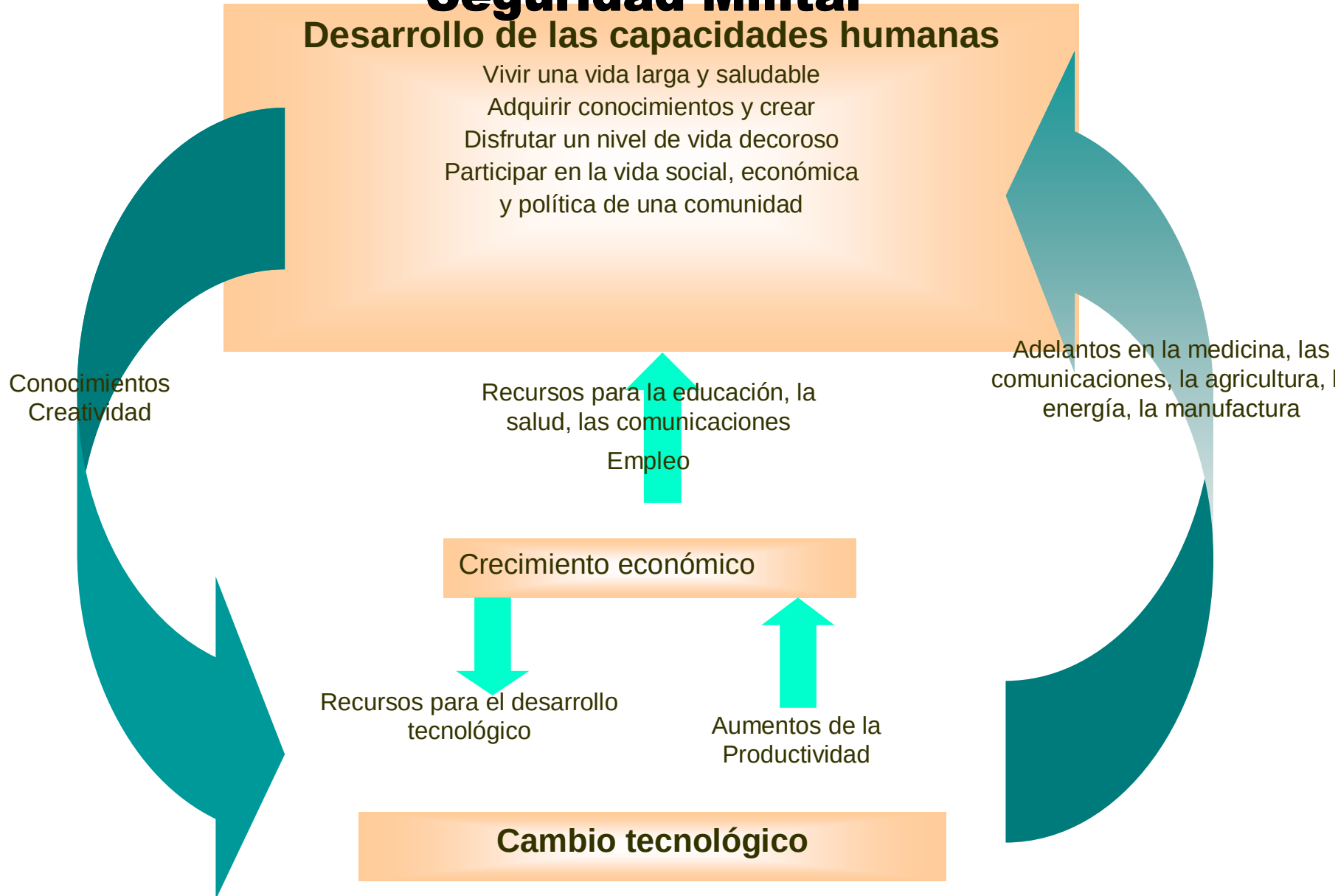


Münchener Rück
Munich Re Group

Conflictos y Acuerdos: Hidro-Diplomacia



8. Perspectivas: Política Científica de Seguridad Humana, de Género y Ambiental: HUGE en lugar de Seguridad Militar



Políticas de Planeación



**Muchas gracias por su
atención**

uoswald@gmail.com

**[http://www.afes-press.de/
html/download_oswald.html](http://www.afes-press.de/html/download_oswald.html)**