



CLIMATE CHANGE

Meaning, Causes, Effects, Adaptation And Mitigation
The Role of The Teacher

Venue:

The Wesley College of Education, Kumasi Ghana

5th May 2010

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OUTLINE OF PRESENTATION

Understanding "climate change" and its causes

Evidence of a changing climate

What are the consequences?

International efforts

what should we do? The role of the educationist.



UNDERSTANDING “CLIMATE CHANGE” AND ITS CAUSES

GLOBAL WARMING OR CLIMATE CHANGE?

The phrase “climate change” is growing in preferred use to “global warming” because it helps convey that there are changes in addition to rising temperatures.



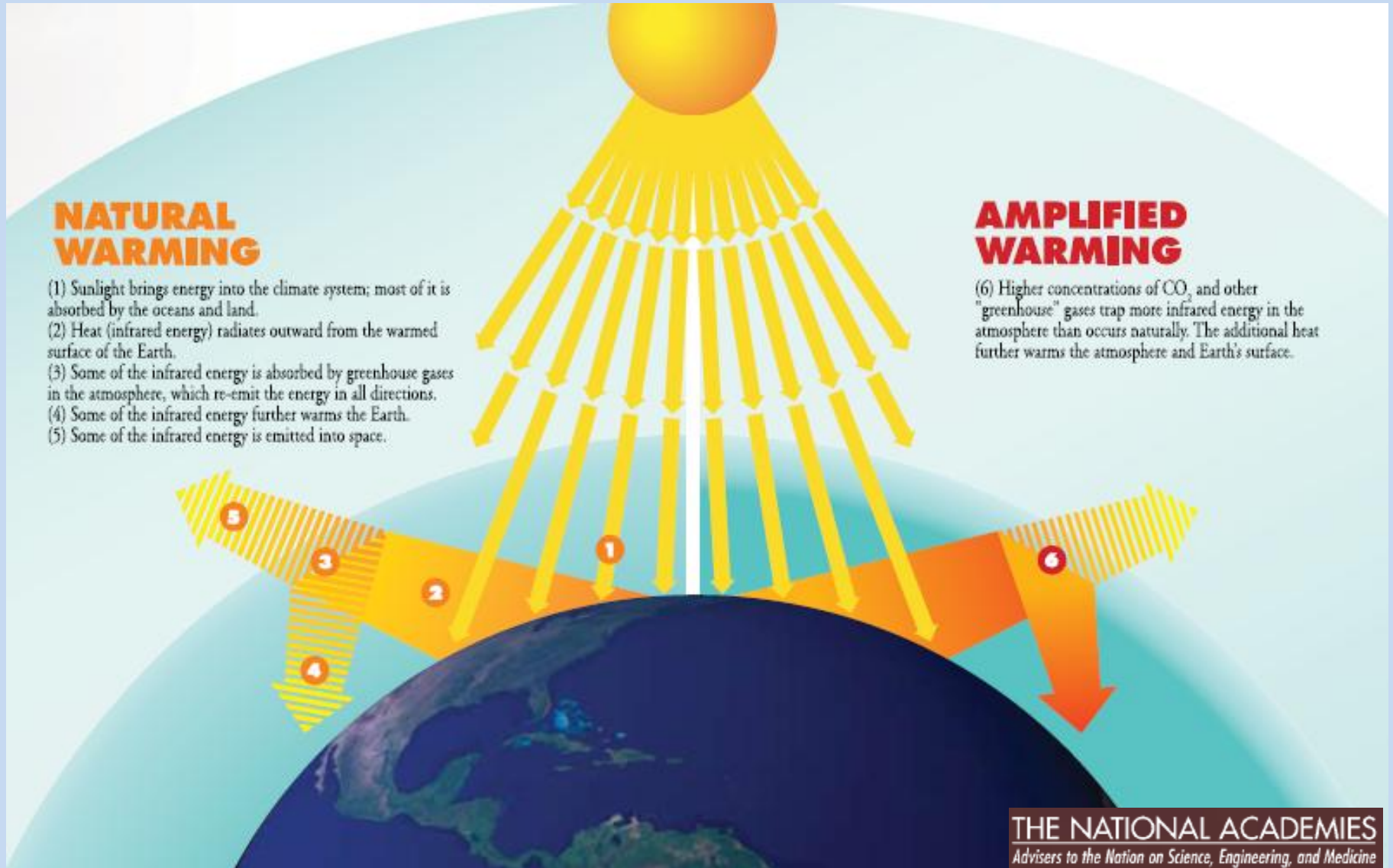
UNDERSTANDING “CLIMATE CHANGE” AND ITS CAUSES

NATURAL WARMING

- (1) Sunlight brings energy into the climate system; most of it is absorbed by the oceans and land.
- (2) Heat (infrared energy) radiates outward from the warmed surface of the Earth.
- (3) Some of the infrared energy is absorbed by greenhouse gases in the atmosphere, which re-emit the energy in all directions.
- (4) Some of the infrared energy further warms the Earth.
- (5) Some of the infrared energy is emitted into space.

AMPLIFIED WARMING

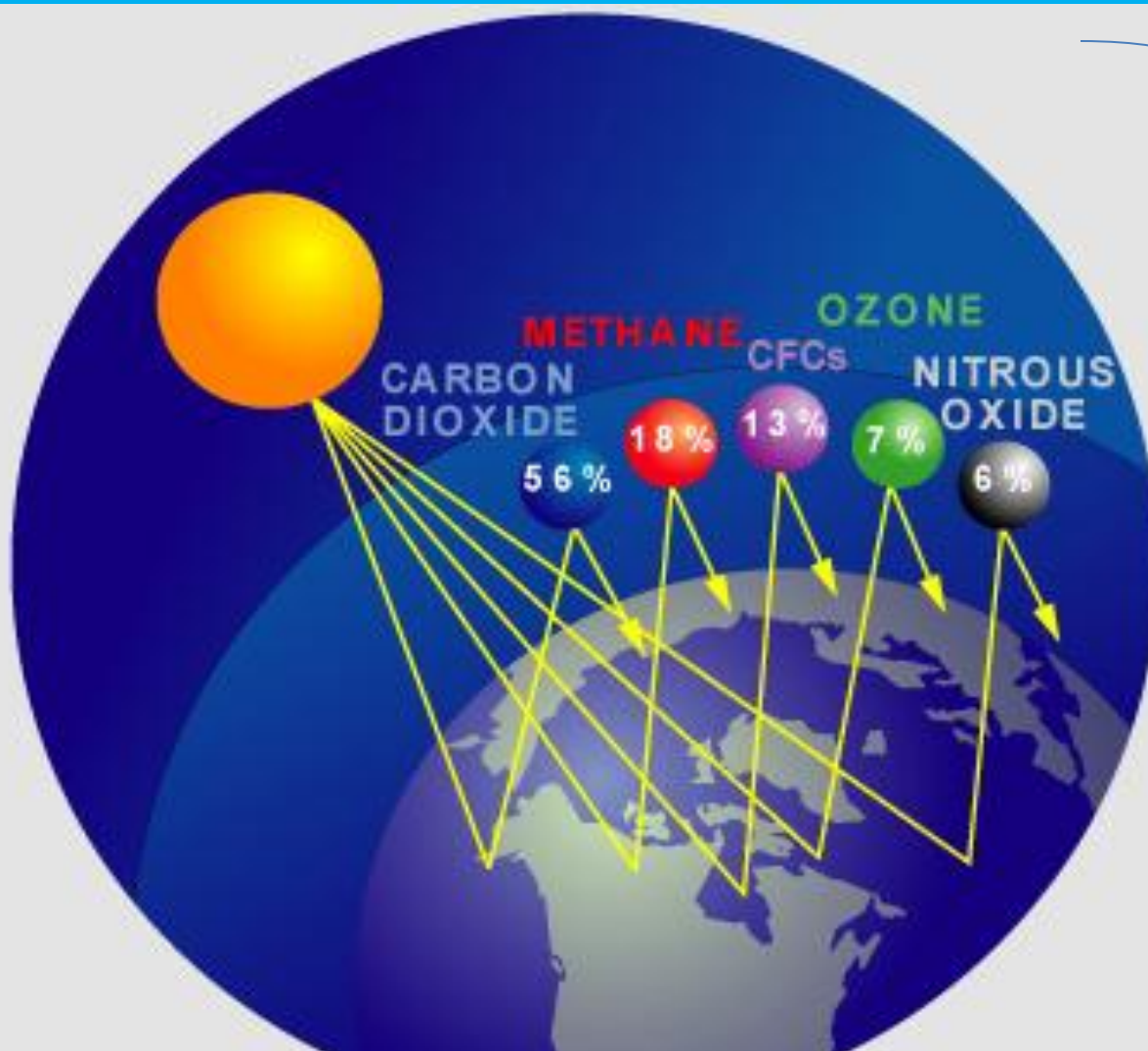
- (6) Higher concentrations of CO₂ and other “greenhouse” gases trap more infrared energy in the atmosphere than occurs naturally. The additional heat further warms the atmosphere and Earth’s surface.





UNDERSTANDING “CLIMATE CHANGE” AND ITS CAUSES

Major Greenhouse Gases



Due to both Natural (biogenic) processes and human activity (anthropogenic)

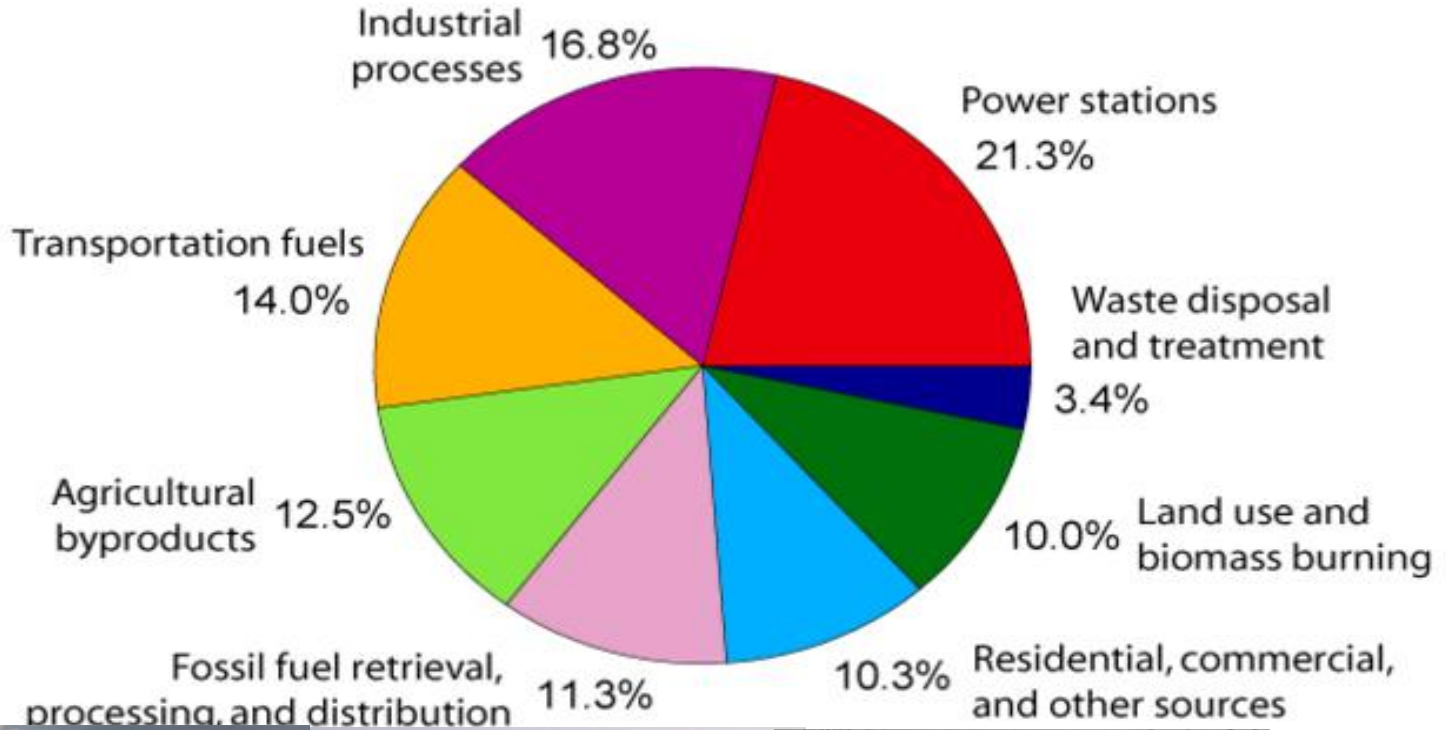
The Problem is with Anthropogenic Emissions – Excessive human intervention in natural cycles



UNDERSTANDING "CLIMATE CHANGE" AND ITS CAUSES

Inventory of Anthropogenic Emissions

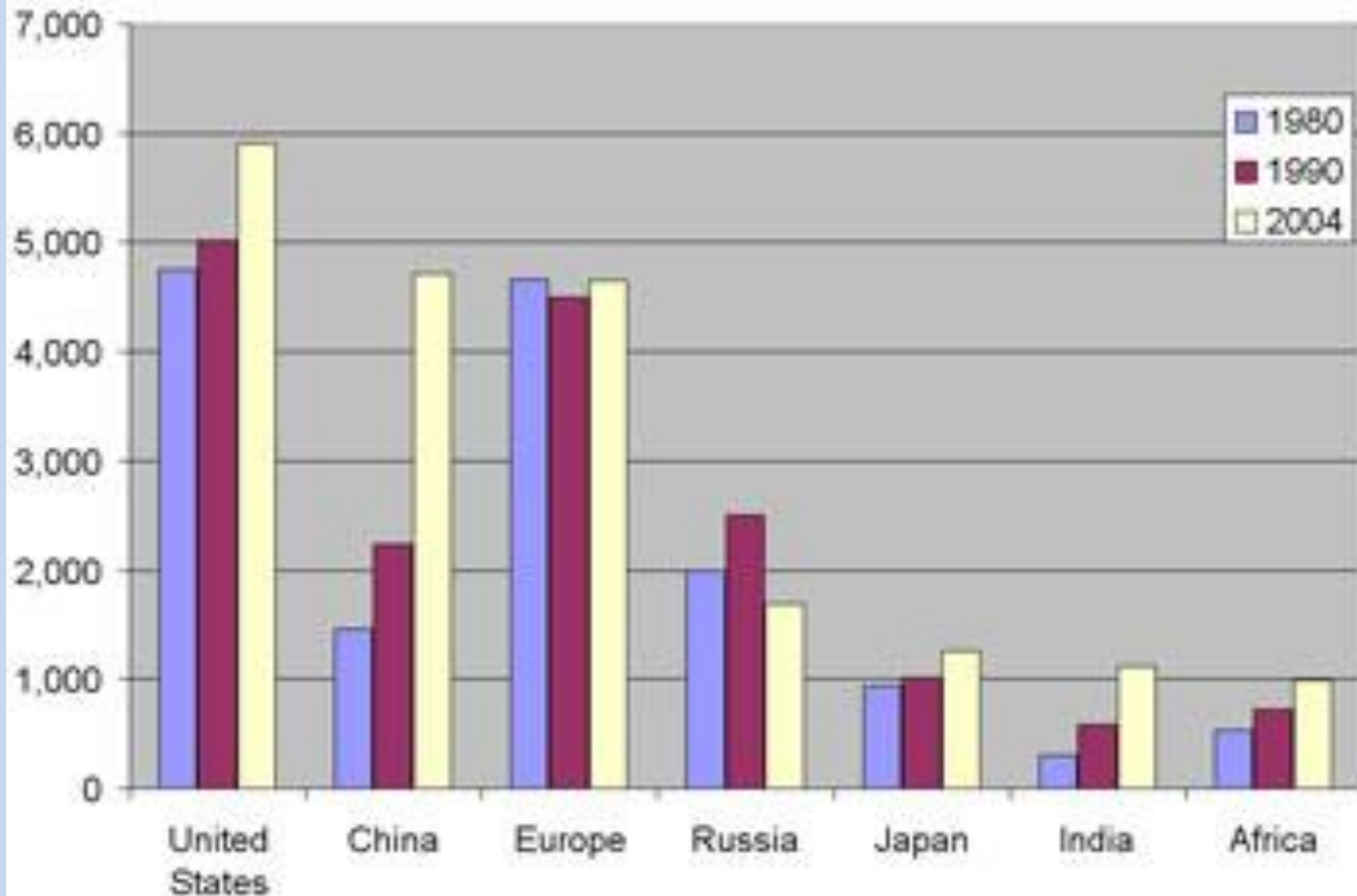
Annual Greenhouse Gas Emissions by Sector





UNDERSTANDING "CLIMATE CHANGE" AND ITS CAUSES

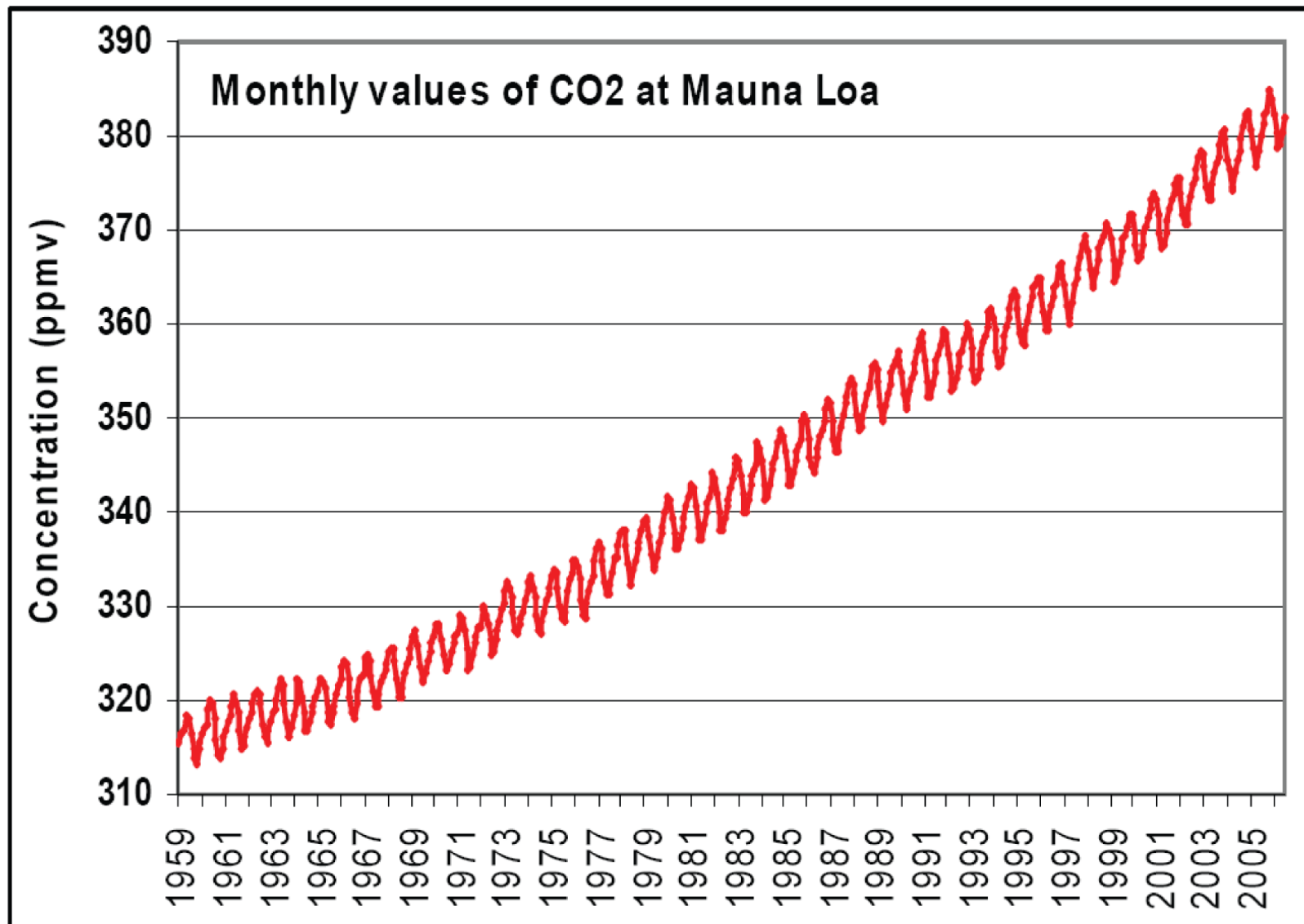
Million metric tons of carbon dioxide





UNDERSTANDING "CLIMATE CHANGE" AND ITS CAUSES

Increasing Trend in CO2 Conc.





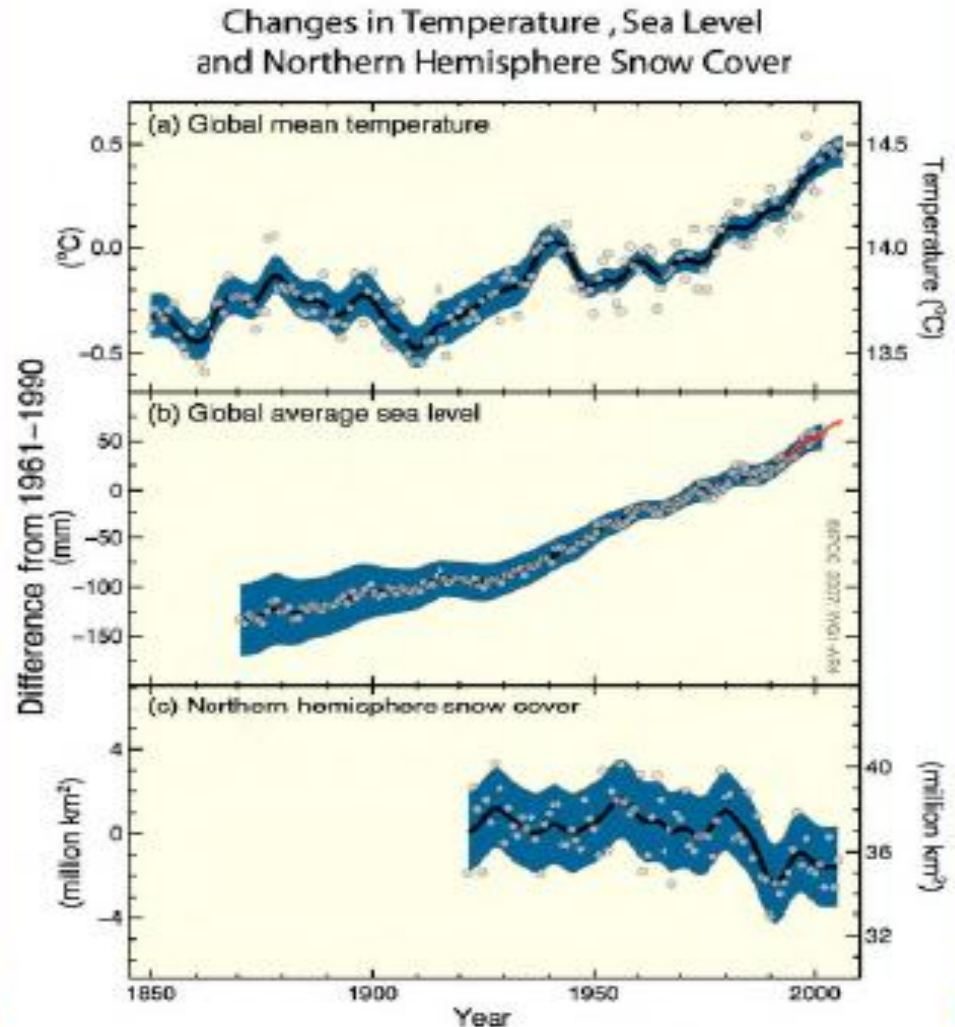
Evidence of a Changing Climate

Direct Observations of Recent Climate Change

Global mean temperature

Global average sea level

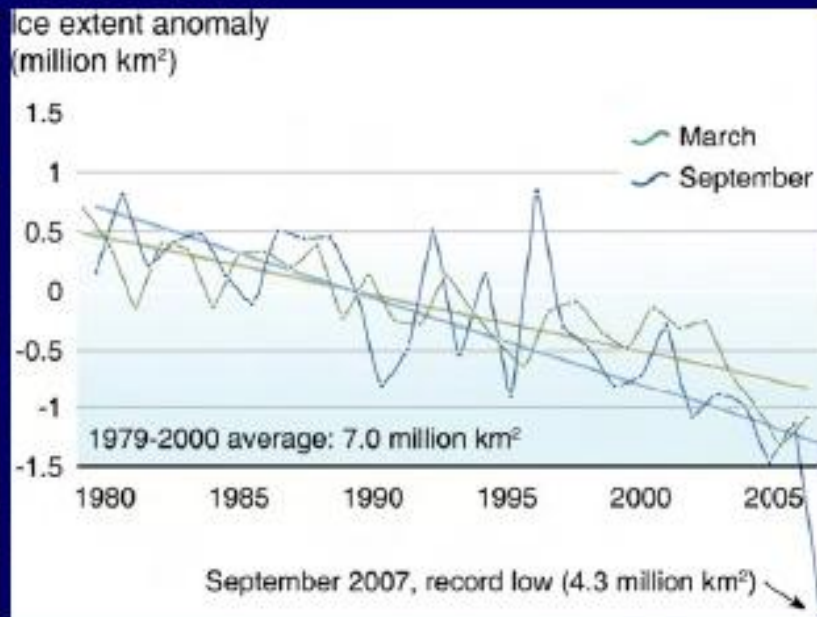
Northern hemisphere snow cover





Evidence of a Changing Climate

Snow cover and Arctic sea ice are decreasing



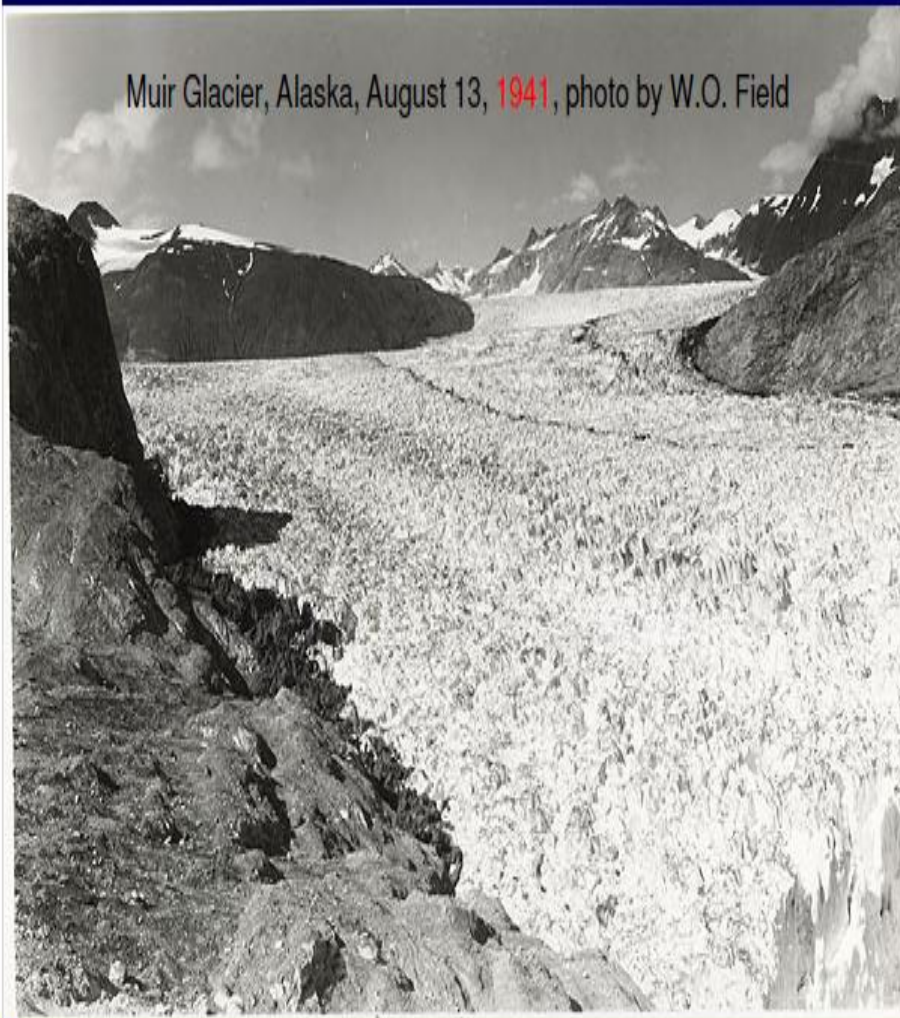
**Arctic sea ice area decreased
by 2.7% per decade**

Summer: -7.4%/decade

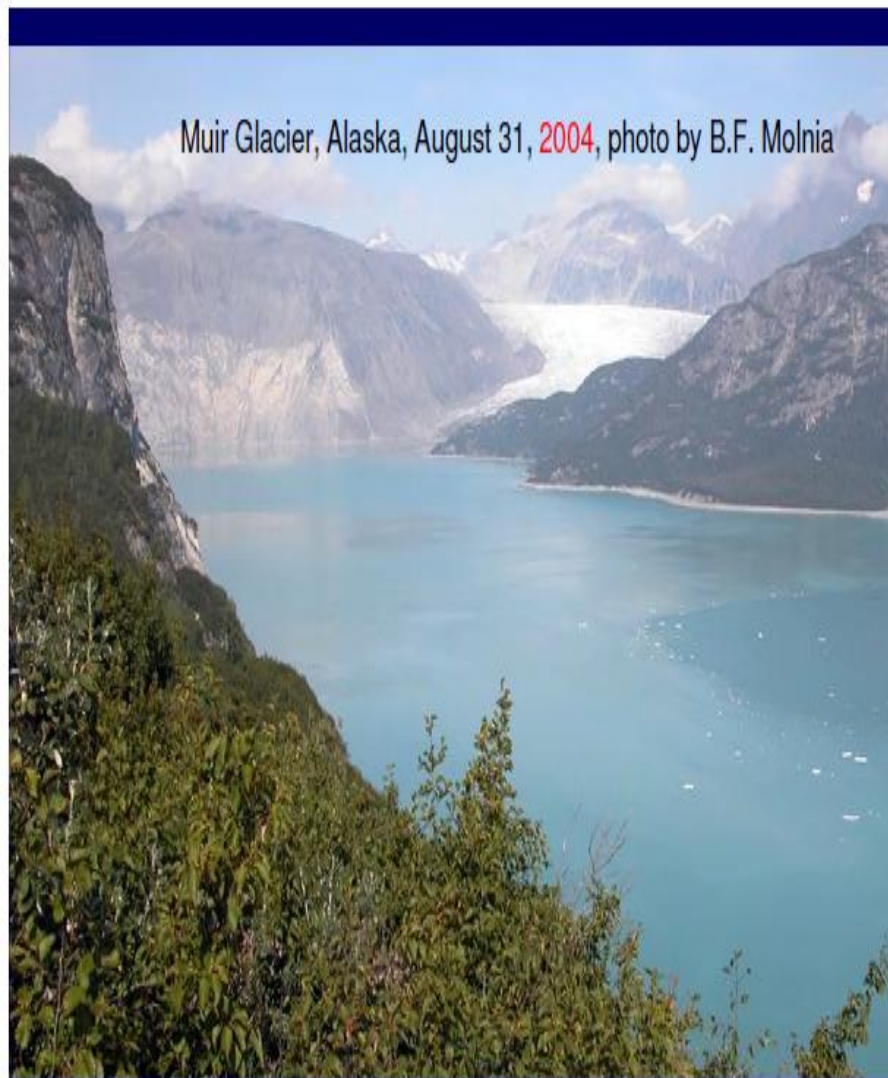


Evidence of a Changing Climate

Muir Glacier, Alaska, August 13, 1941, photo by W.O. Field



Muir Glacier, Alaska, August 31, 2004, photo by B.F. Molnia





Evidence of a Changing Climate

Algeria (2008), Worst floods in a century

Chile (2008): Heavy rains and worst flooding in the worst flooding in country's history

Portugal (2008): Worst drought in since 1917

China (April 2008): Typhoon Neoguri, earliest typhoon to strike china on record. 175km/h



Evidence of a Changing Climate



Kids wait out tidal flooding o



Photo: John McConnico

Extreme weather events



Evidence of a Changing Climate





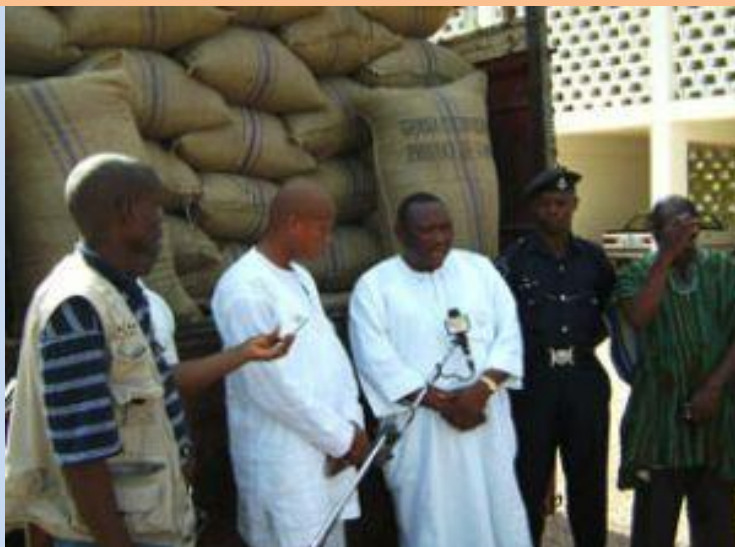
Evidence of a Changing Climate



Floods in Northern Ghana



Evidence of a Changing Climate

















Northern Ghana

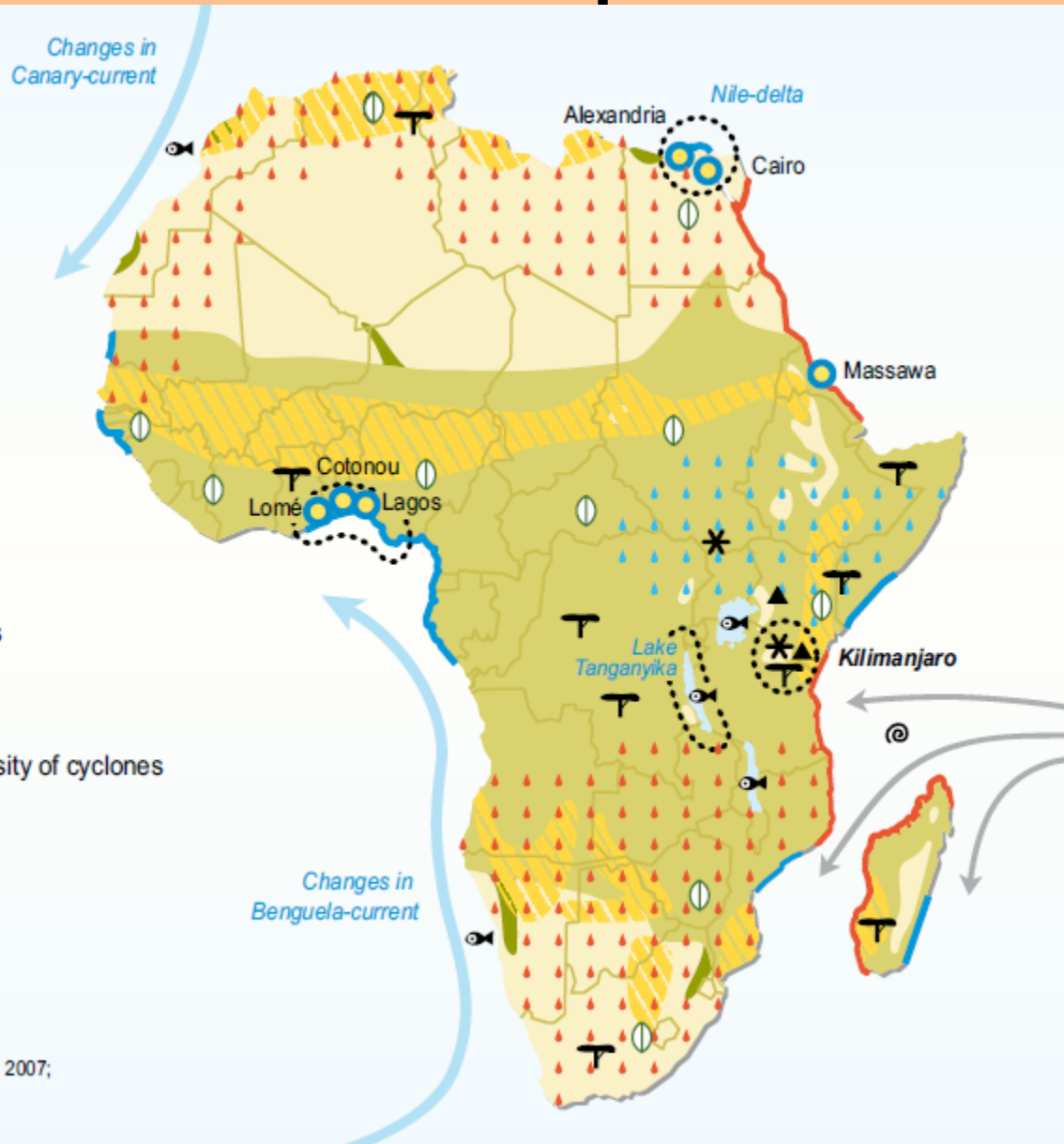


What are the Consequences?

Africa

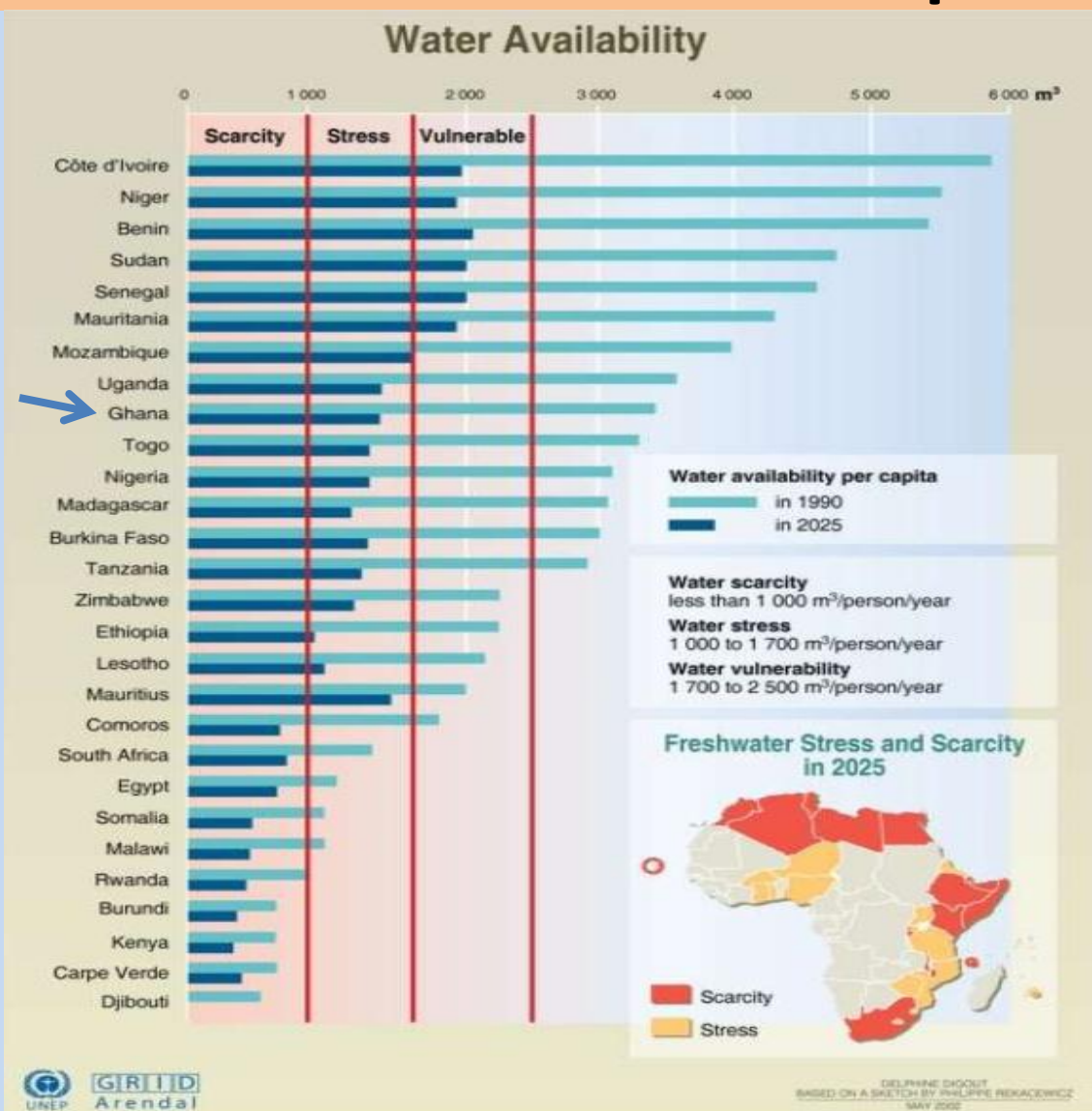
-  Climate change hotspot
 -  Risk of desertification
 -  More precipitation
 -  Less precipitation
 -  Coral bleaching
 -  Sea-level rise concerns and affected major cities
 -  Negative agricultural changes
 -  Changes in ecosystems
 -  Impact on fisheries
 -  Increasing frequency or intensity of cyclones
 -  Impact on mountain regions
 -  Melting of glaciers
- Malaria:
-  Current distribution
 -  Possible extension by 2050

Sources: IPCC, 2007; World Resources Institute, 2007; Rogers and Randolph, 2000; Klein et. al., 2002.





What are the Consequences?

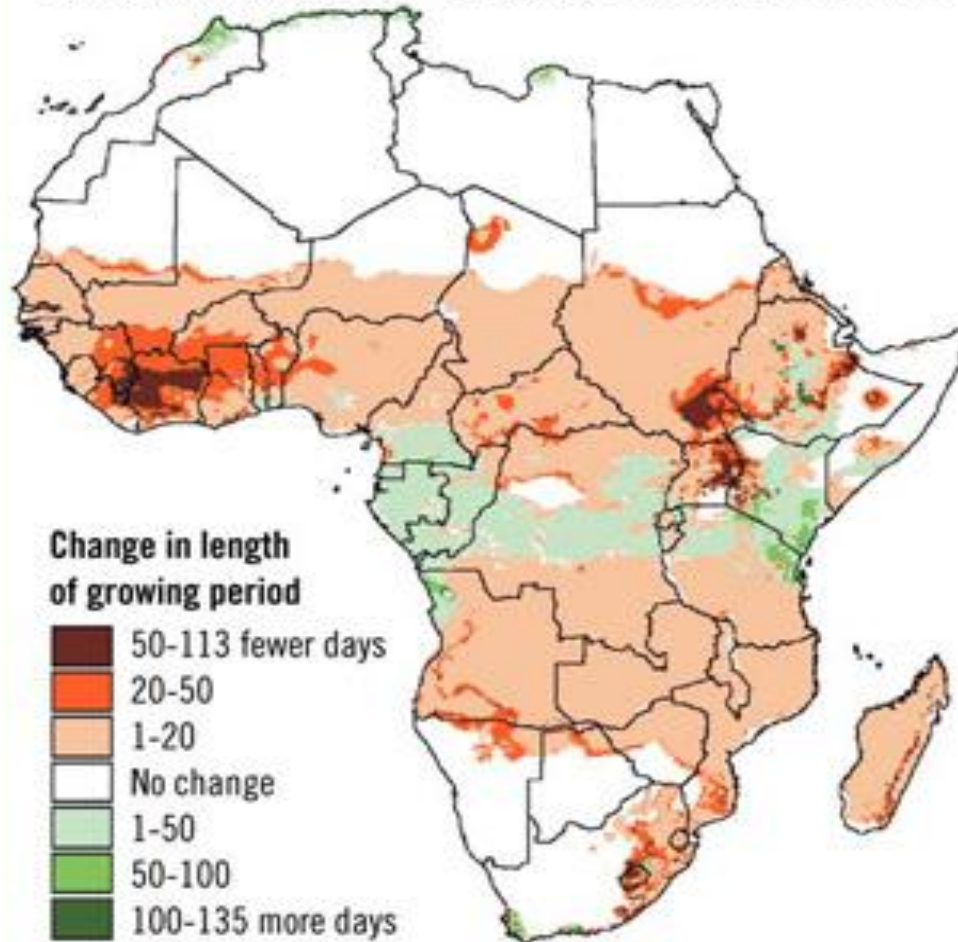




What are the Consequences?

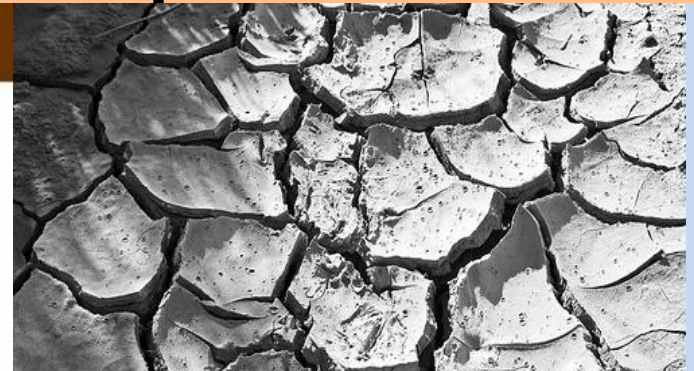
Figure 1.2 Climate change and food security

Changes in Projected Growing Season, 2000-2050



Source: Thornton et al. 2002:89

AGRICULTURE



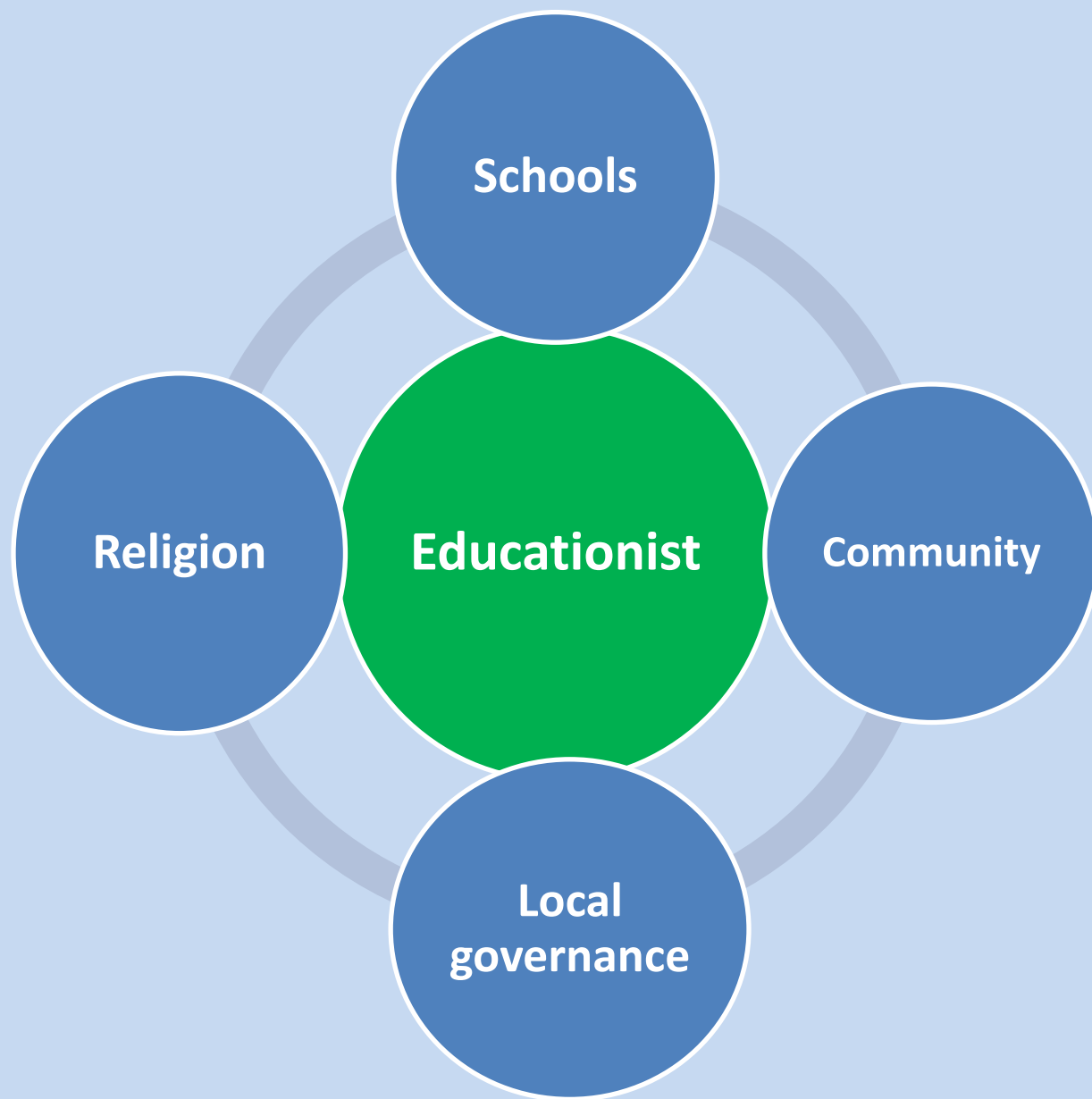


International Efforts

- Climate Conference in Geneva in 1979
- Earth Summit in 1992 Rio de Janeiro
 - Kyoto conference in 1997
 - Bali Conference in 2007
- Copenhagen Conference 2009



What should we do, the role of the educationist?





What should we do? The role of the educationist

Transportation

Buildings

Forestry

Waste

Agriculture

Industry

Energy

Climate Change Mitigation Strategies

Climate Change Mitigation Strategies



What should we do, the role of the educationist?

The EPA has studied three thematic areas in Ghana:

water

Agriculture

Coastal zone and Infrastructure



What should we do, the role of the educationist?

Additional areas critical to adaptation

Human health

Energy

Adaptation techniques and strategies

Adaptation techniques and strategies



What should we do, the role of the educationist?

ADAPTATION

+

MITIGATION







Africa under water

300 dead, approx. 1.5 million affected

Source: © OCHA/ICPC





THANK YOU



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