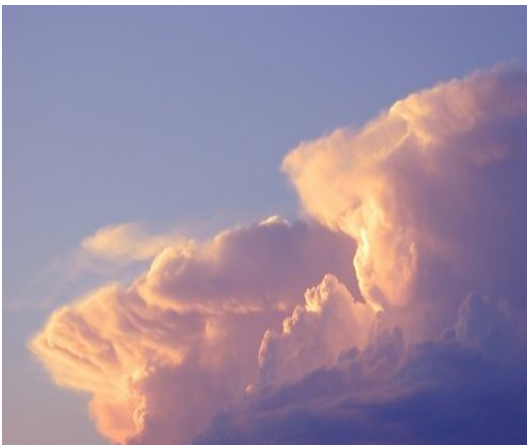




Climate Change, Energy and Greenhouse Gas Assessment



**United Nations/Austria/
European Space Agency Symposium
12-15 September 2006**



Katia Simeonova
Manager, UNFCCC



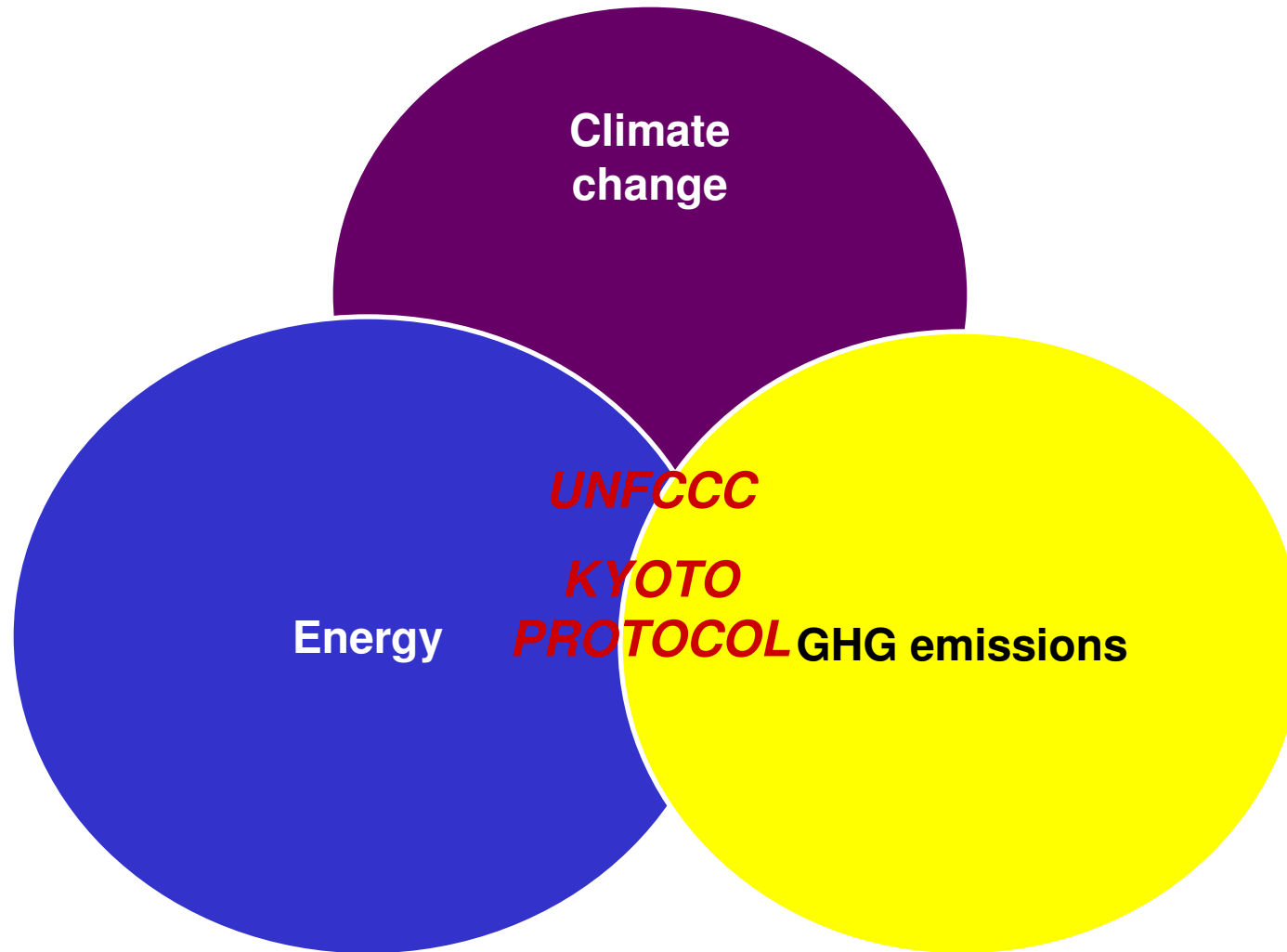
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Overview

- 1. Climate change and concentration of GHG emissions in the atmosphere**
- 2. The role of energy as the main source of emissions**
- 3. UNFCCC and the Kyoto Protocol as a framework for action to mitigate climate change**
- 4. Robust assessment of emissions is critical to ensure credibility of the Kyoto implementation and for the success of mitigation action**

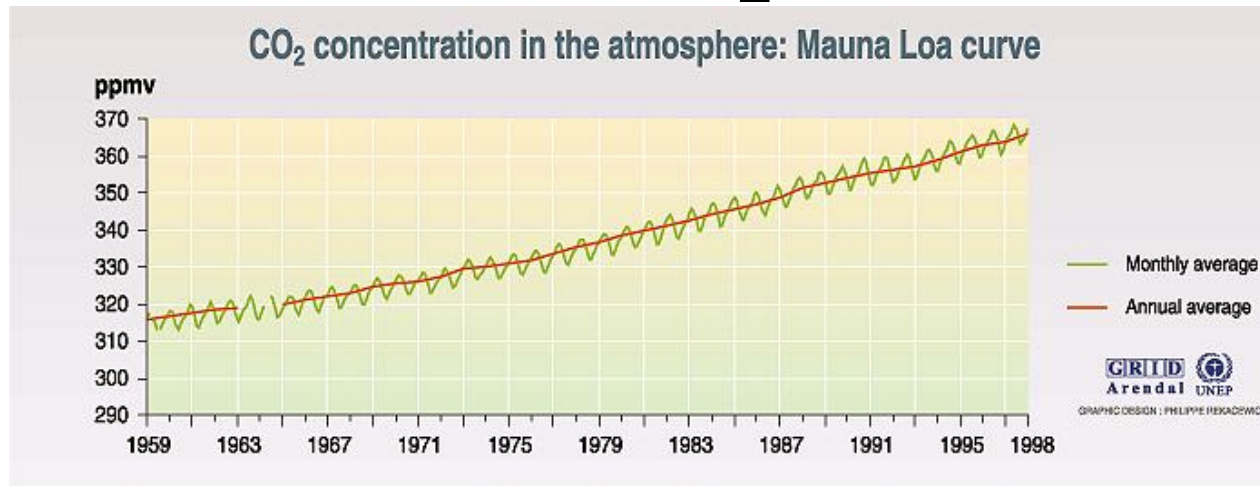


Climate change, energy and GHG emissions



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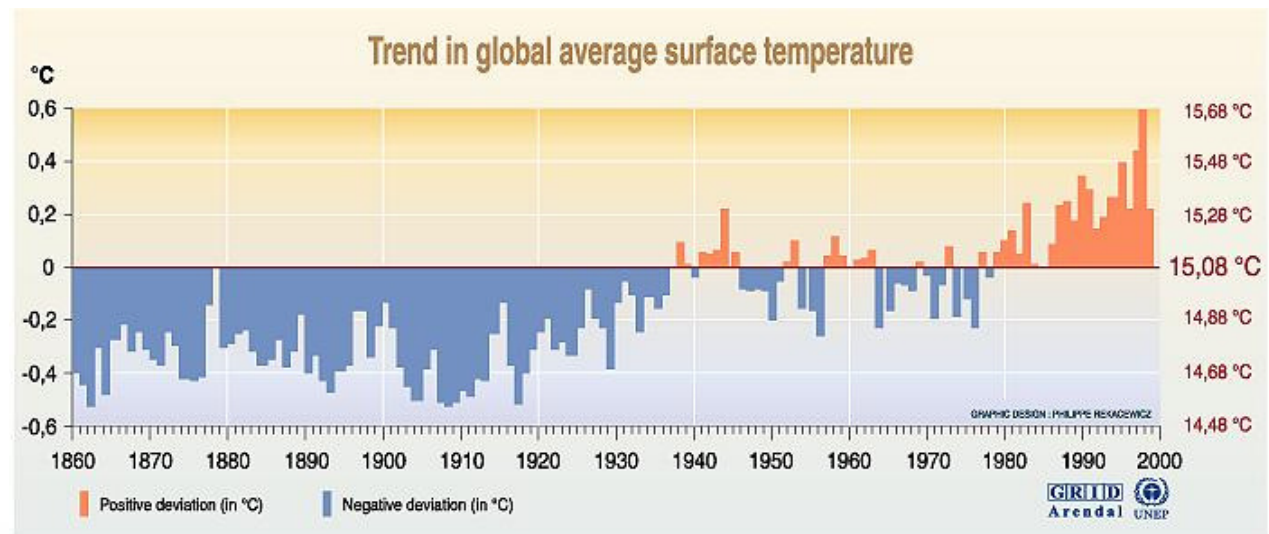
Climate change and concentration of CO₂ emissions



CO₂ concentrations are rising

Source : Scripps Institution of oceanography (SIO), University of California, 1998.

Global temperatures are increasing



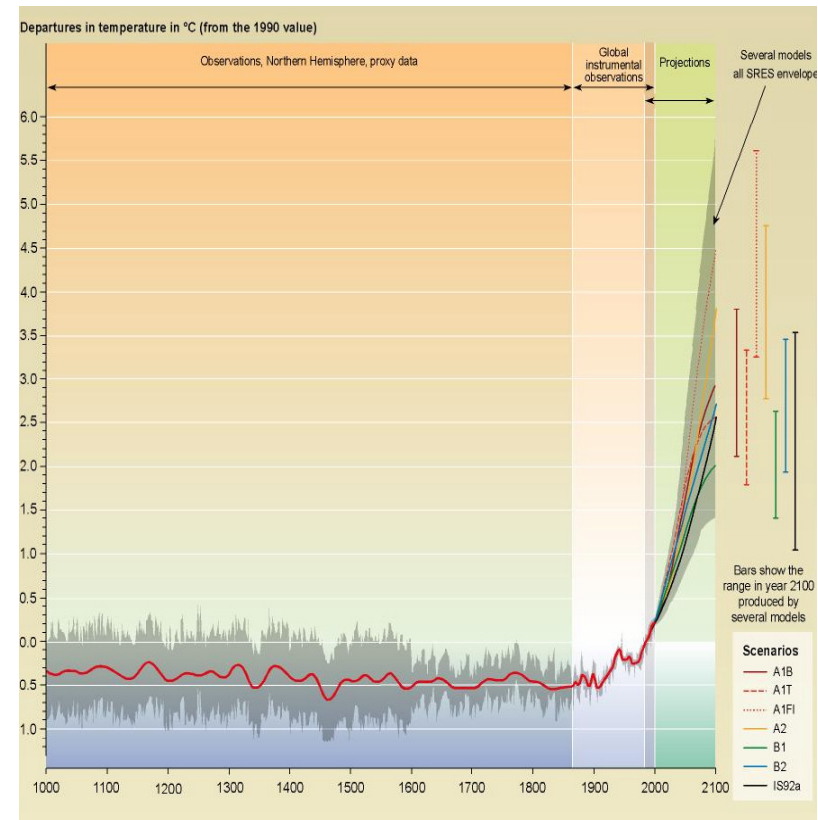
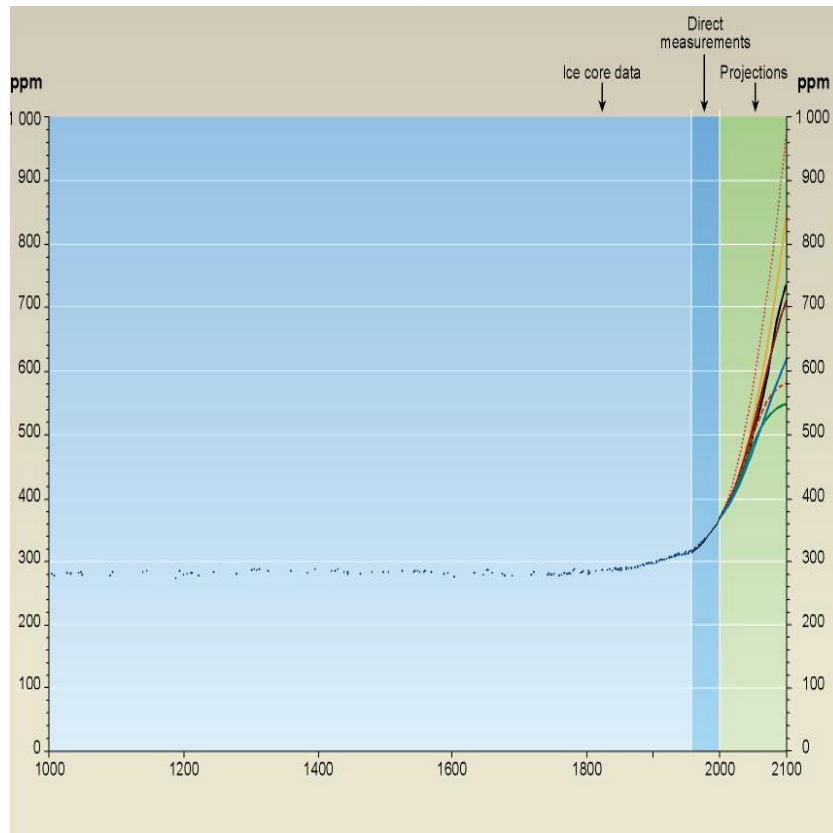
Source: School of environmental sciences, climatic research unit, university of East Anglia, Norwich, United Kingdom, 1999.

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Past and future concentrations of CO2 emissions and variations of the Earth surface temperature to 2100



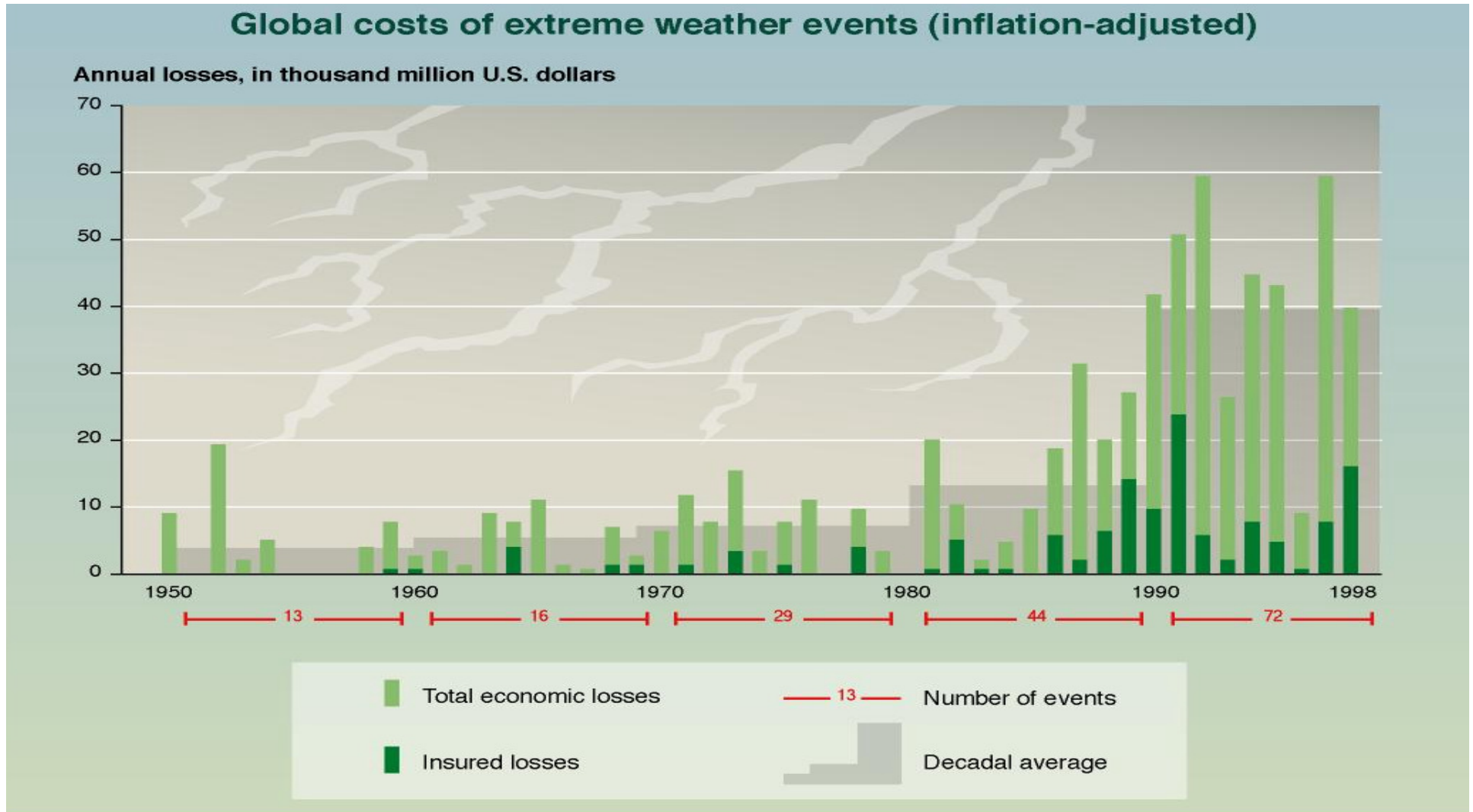
Source: IPCC Synthesis Report, 2001

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Global cost of extreme weather events



Source: IPCC Synthesis Report, 2001



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Adaptation

Adapting to Climate Change

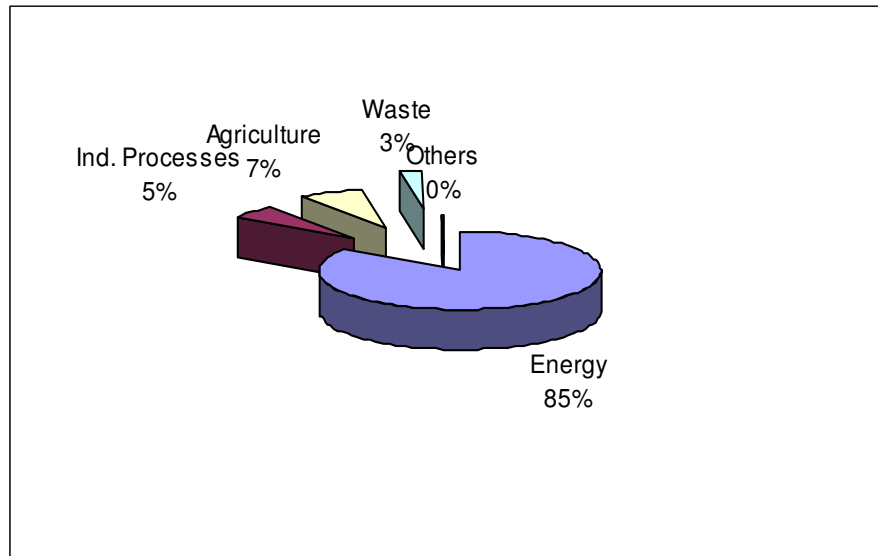
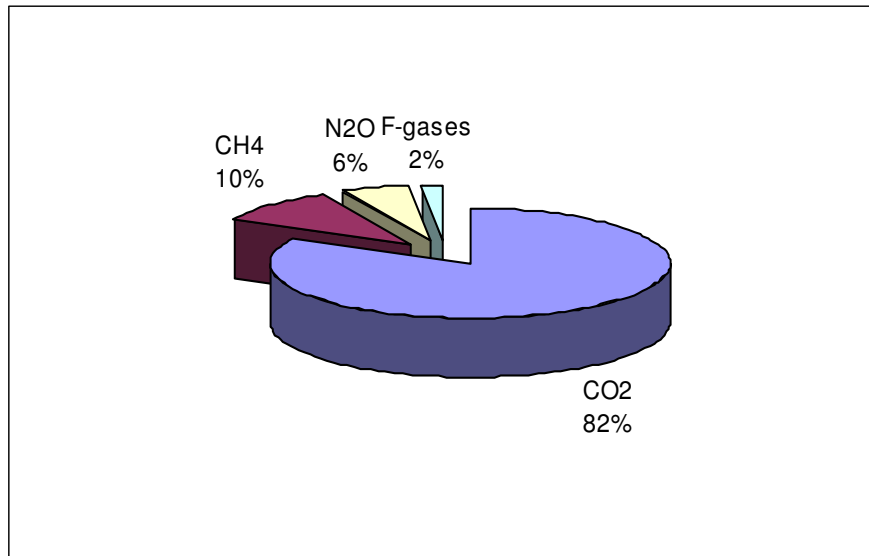
Developing country region	Vulnerable sectors	Need to adapt
Africa	<ul style="list-style-type: none">● Agriculture● Water resources	Very high
Asia	<ul style="list-style-type: none">● Agriculture● Terrestrial ecosystems	High
Latin America	<ul style="list-style-type: none">● Agriculture● Water resources	High
Small island developing States	<ul style="list-style-type: none">● Water resources● Coastal zone (sea level rise)	Very high



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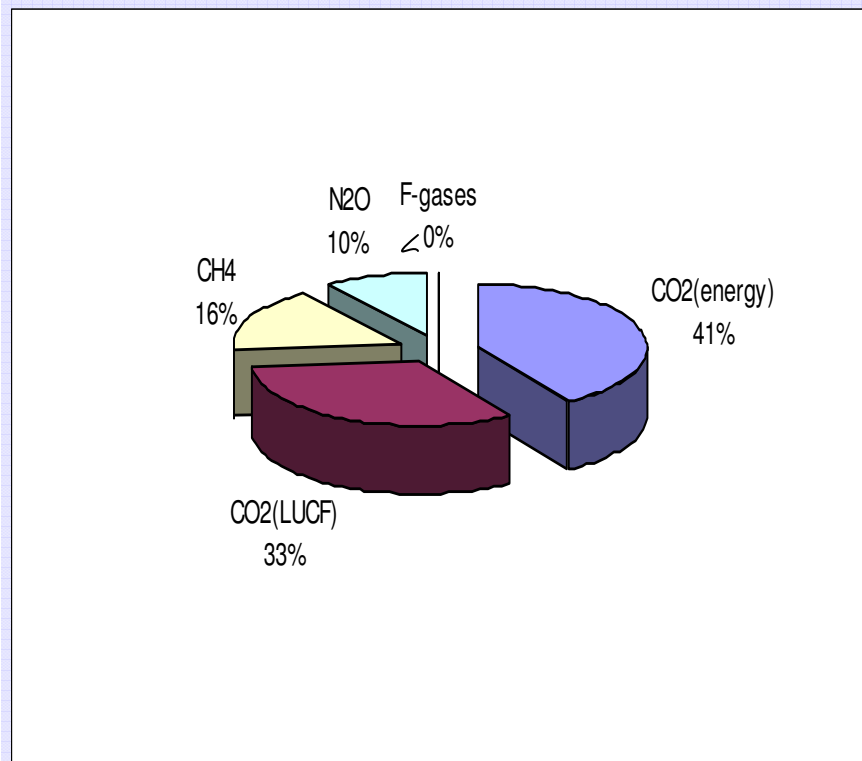
Emission profile of industrialized countries in 2003, by gas and by sector



CO2 is by far the most important GHG and energy is by far the most important source of emissions

Source: UNFCCC

Emission profile of developing countries and top 10 GHG emitters in 2000



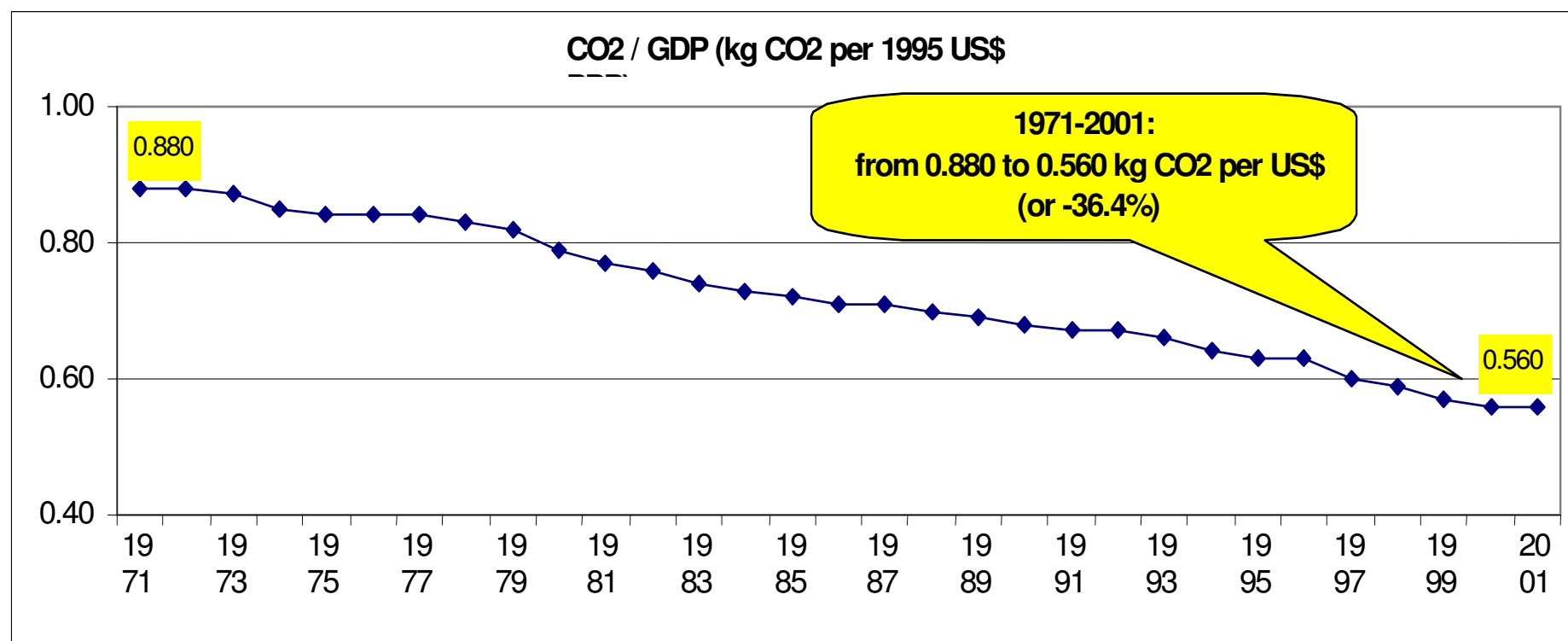
Country	Mt CO2 eq.	%of World GHG
United States	6,928	20.6
China	4,938	14.7
EU-15	4,725	14.0
Russia	1,915	5.7
India	1,884	5.6
Japan	1,317	3.9
Germany	1,009	3.0
Brazil	851	2.5
Canada	680	2.0
United Kingdom	654	1.9

Source: WRI



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Carbon intensity of the world economy 1971 - 2001



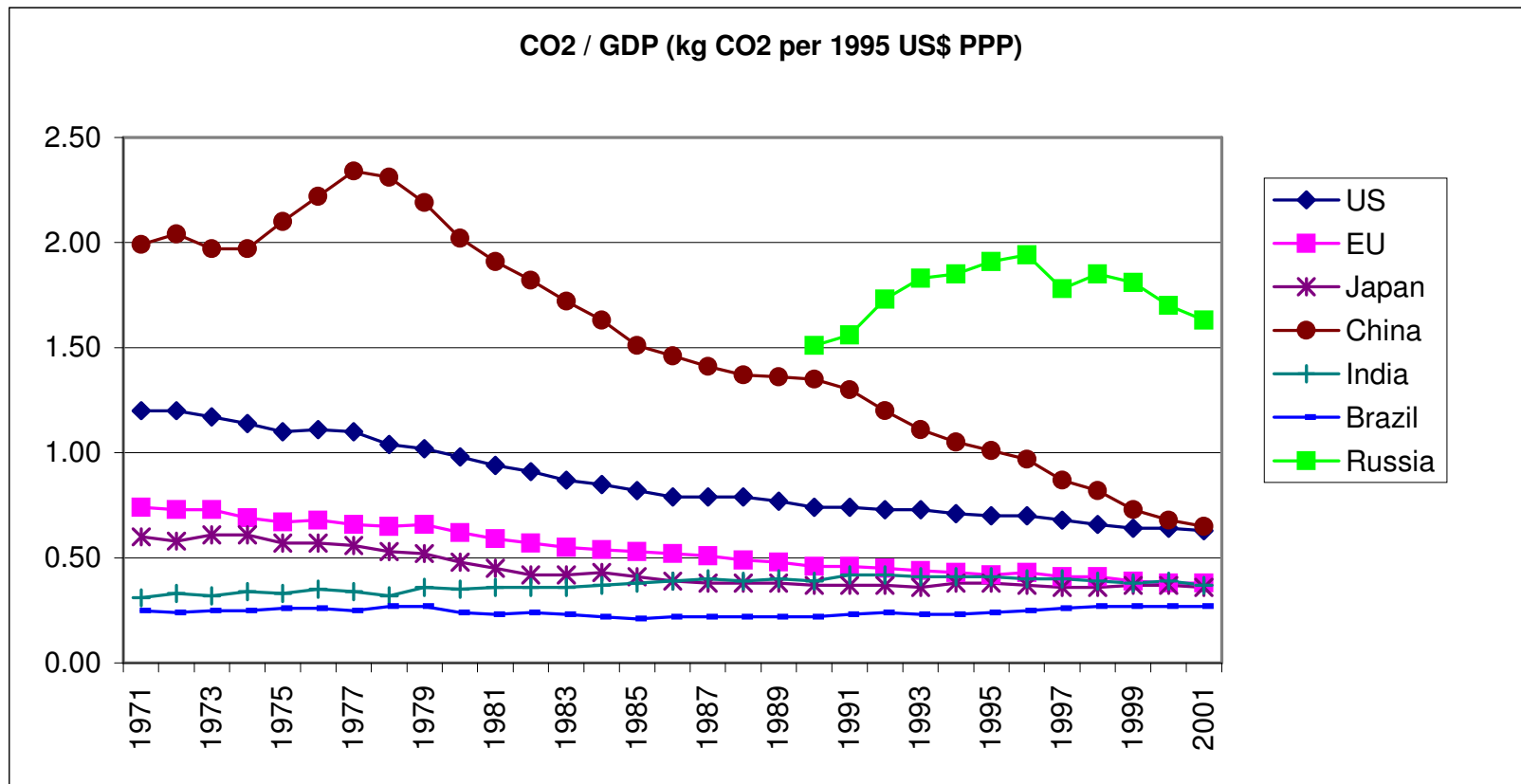
Source: IEA CO₂ and energy statistics

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Changes in the carbon intensity of GDP for selected countries



Source: IEA CO₂ and energy statistics

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UNFCCC

- UNFCCC: adopted in 1992, entered into force in 1994
- Ultimate objective: to stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system
- Commitments
 - Preparing and publishing national GHG inventories
 - Preparing and implementing national and regional mitigation programmes
 - Co-operating in the area of mitigation technologies and technology transfer
 - Co-operating in sustainable management of sinks

Kyoto Protocol

- Adopted in 1997 and entered into force in 2005
- Same objective as the UNFCCC
- Commitments for industrialized countries
 - Emission commitments
 - Policies and measures
 - Mechanisms (joint implementation, emission trading and clean development mechanism)
 - Reporting and review of information, including on **national GHG inventories**

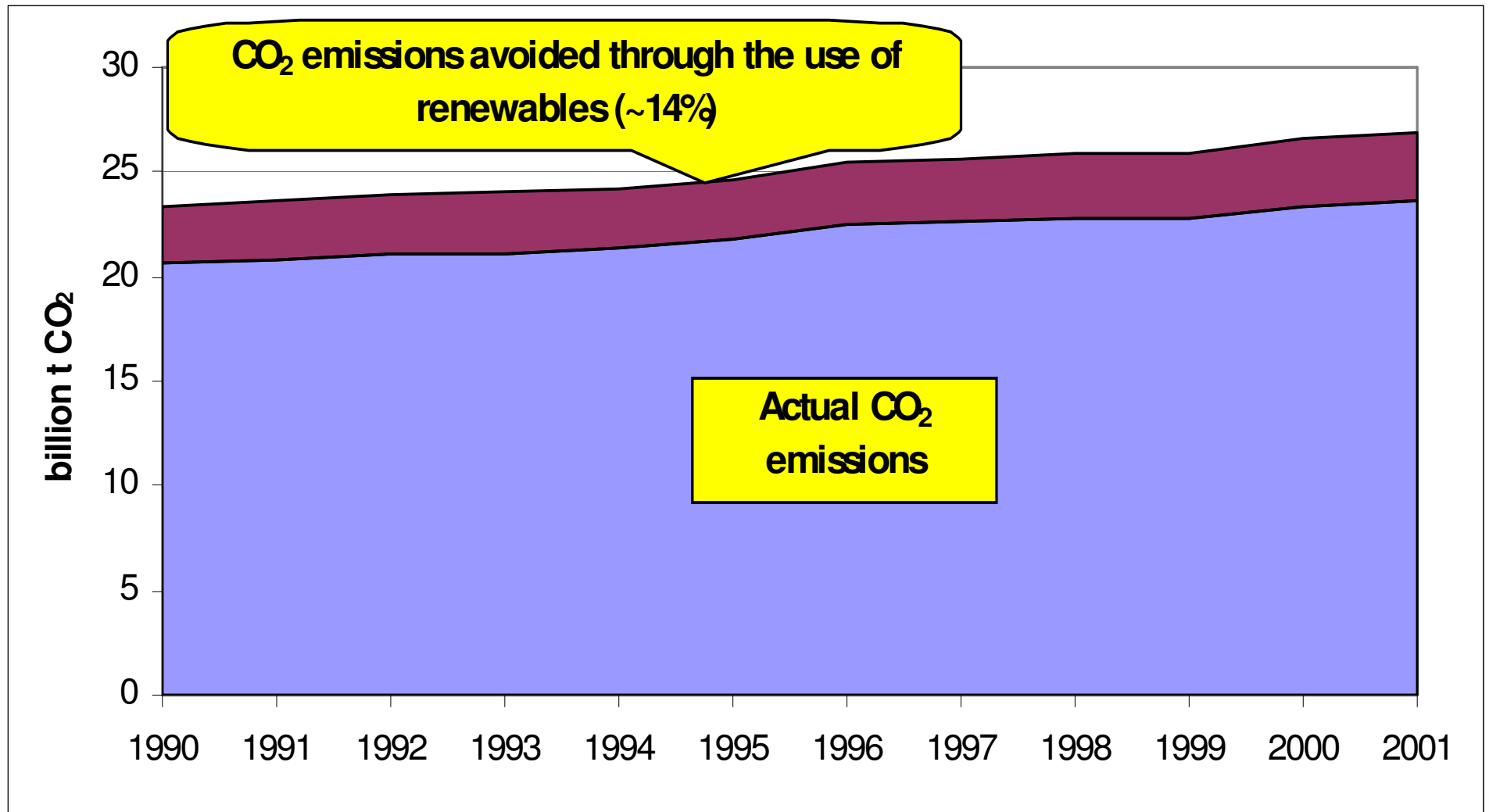


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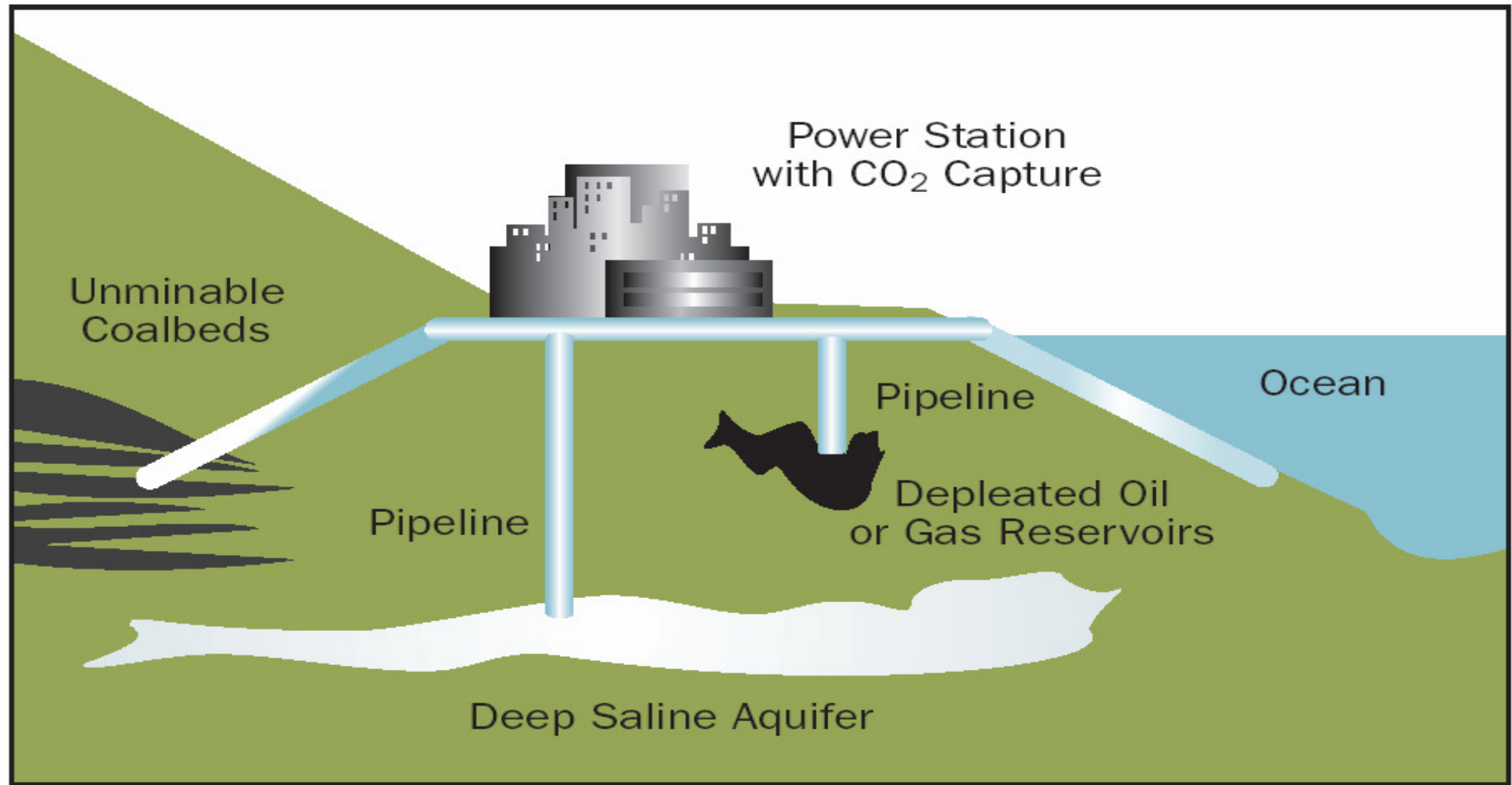
Kyoto Protocol: mitigation measures

- Aimed at reducing emissions, while promoting sustainable development
- Key focus is on energy, including:
 - ☞ Enhancement of energy efficiency in relevant sectors of the national economy (**energy intensity**)
 - ☞ Research and promotion of renewables, of carbon sequestration technologies, and advanced and innovative environmentally sound technologies (**carbon and energy intensity**)
 - ☞ Measures to limit GHG from transport and distribution of energy
- Measures in other important sectors include
 - ☞ Protection and enhancement of sinks and sustainable forms of agriculture
 - ☞ Measures to limit GHG from transport sector, from waste management and from production (**carbon and energy intensity**)

Example of mitigation measure: use of renewable energy



Example of mitigation measure: carbon capture and storage



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GHG emission assessment is critical to ensure credibility

- Parties must:
 - Establish a national system for the estimation of emissions and removals
 - Report annually the status of their emissions and removals following agreed methodologies (IPCC guidelines, IPCC Good Practice Guidance, including for land-use, land-use change and forestry (LULUCF))
 - Report on base year emissions and the level of emissions according to emission limitation and reduction target
 - Be subject to an annual review by a team of technical experts



IPCC methodology for GHG emission assessment

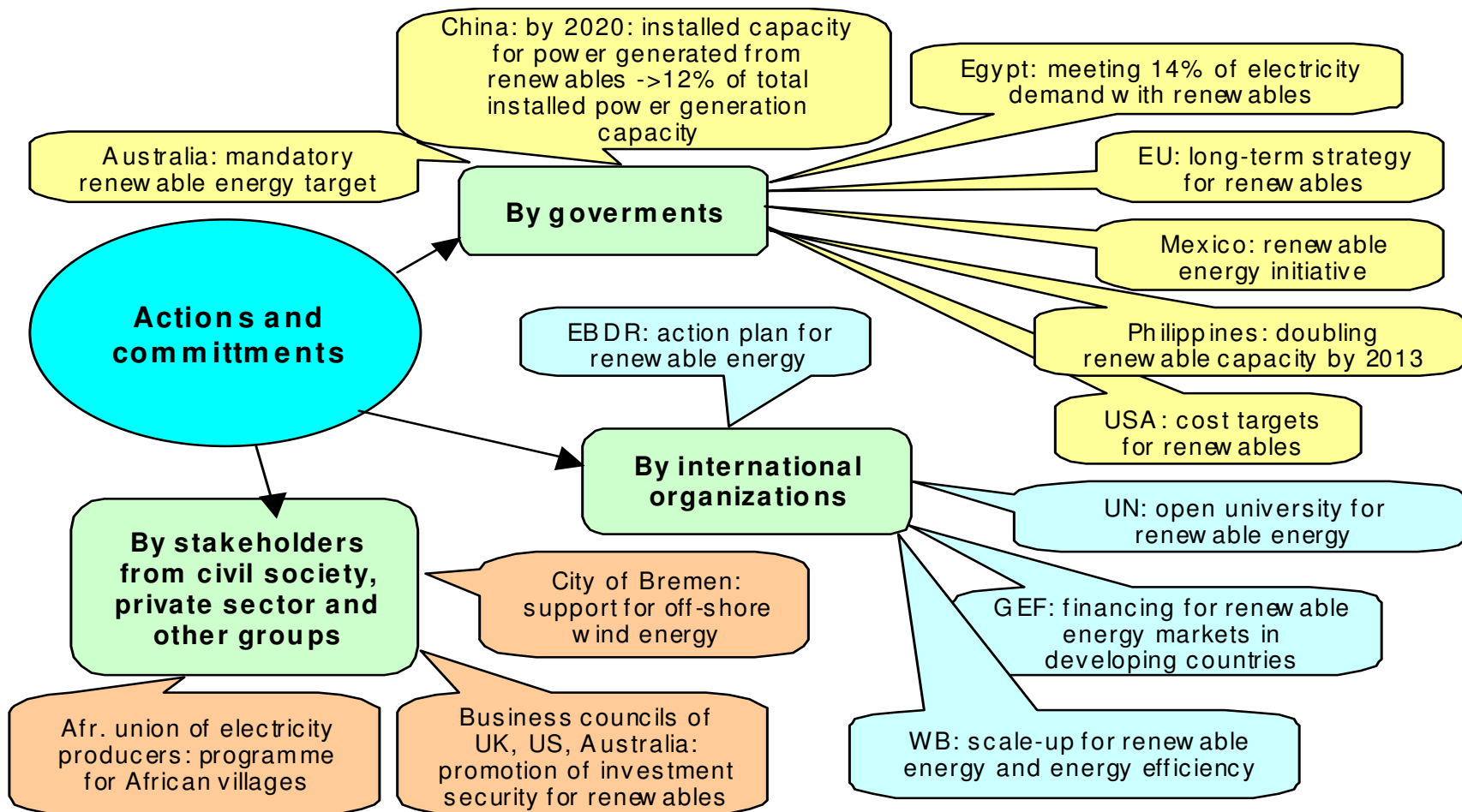
- Emissions are assessed in 6 sectors: energy, industrial processes, solvent and other product use, agriculture, LULUCF and waste
- Methodologies (tiers), activity data and emission factors (default or country specific)
- Challenge of assessment of emissions and removals from LULUCF (activity definitions by land area)
 - Article 3.3 activities: afforestation, reforestation and deforestation
 - Article 3.4 activities: forest management, cropland management, grazing land management and revegetation



Challenges of LULUCF under the Kyoto Protocol

- Parties must determine forest area using spatial resolution no larger than one hectare
- Parties shall determine prior to the CP forest definitions based on areas, crown cover and height
- Once land is accounted for, it must be accounted throughout subsequent and contiguous periods
- National inventory system shall ensure that all areas of land subject to LULUCF are identifiable
- Parties shall demonstrate that LULUCF activities started since 1990

Instead of conclusion: role of international co-operation in GHG mitigation, renewables case





Thank you

Earth at Night
More information available at:
<http://antwrp.gsfc.nasa.gov/apod/ap001127.html>

Astronomy Picture of the Day
2000 November 27
<http://antwrp.gsfc.nasa.gov/apod/astropix.html>



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