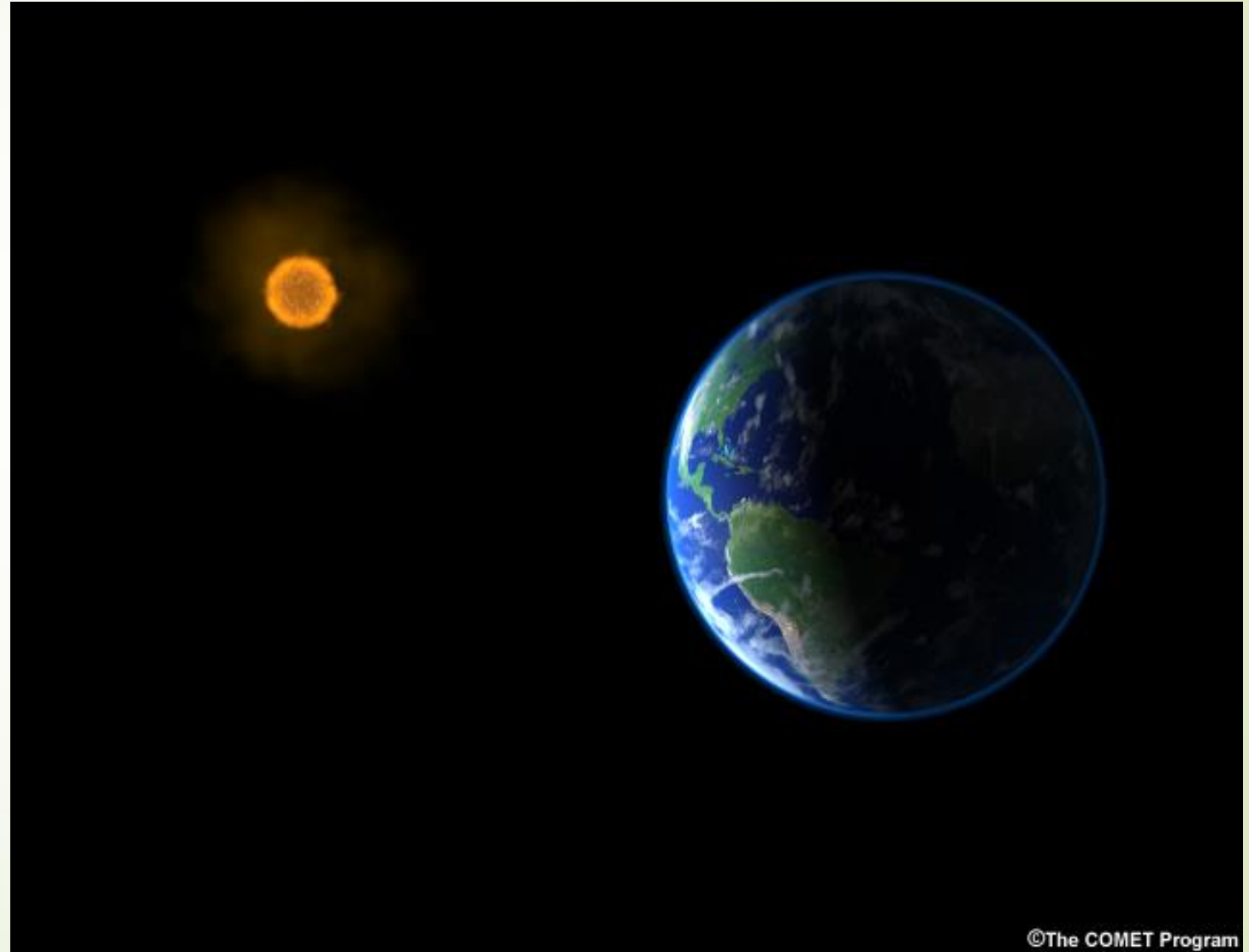


Environment and Climate Change Policy Challenges

Syndicate Group Presentation: Group-7

- Amit Sahu
- Amlendu Pathak
- G Prasanna Kumar
- Gangaram Punia
- Nikita Garg
- Rishi Shukla
- Sandesh Mahadevappa
- Shalaka Kujur



Definition

The "environment" is everything that creates natural conditions of the existence of organisms including Man, and it is a precondition of their further development. Its components are mainly the air, water, minerals, soil, and living organisms.



What is Environment ?

- Encompasses the whole of life on earth & the complex interactions with the physical world.
- Time also is a key factor as historic issues have an influence on the status of the environment - locally and globally, both now and in the future.
- In a general sense, this covers everything contained within the air, land and water.



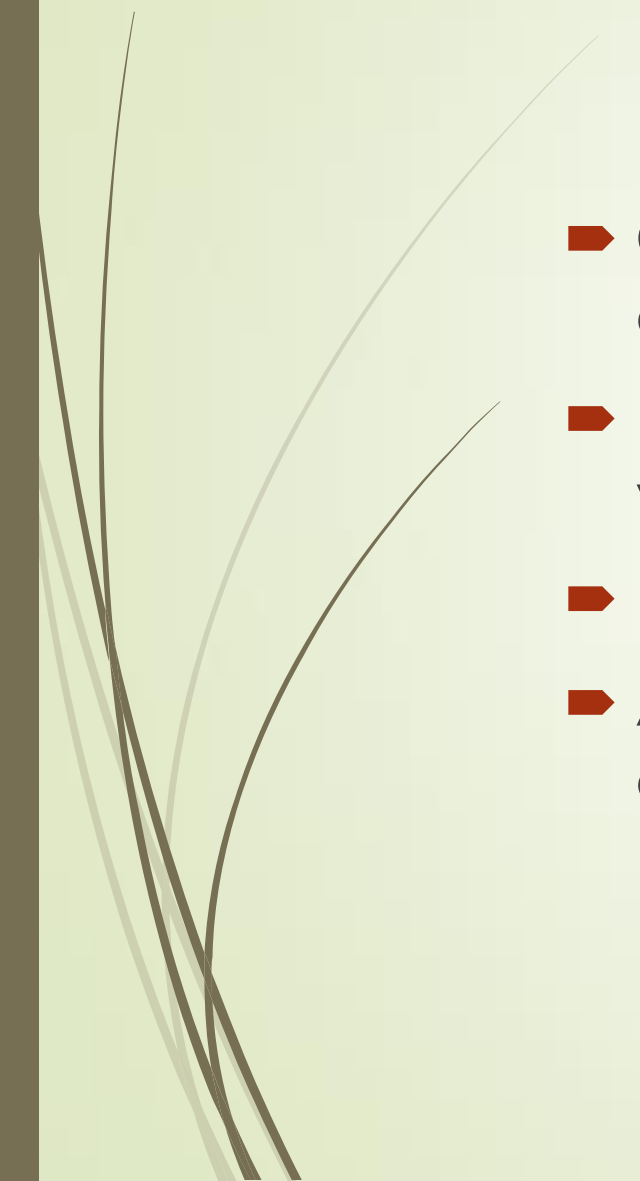


Understanding Climate Change





What is Climate Change?

- ▶ Climate Change- A significant shift in the mean state and event frequency of the atmosphere.
 - ▶ It is a normal component of the Earth's natural variability.
 - ▶ It occurs on all time and space scales.
 - ▶ A plethora of evidence exists that indicates the climate of Earth has changed.
- 

Our climate is changing

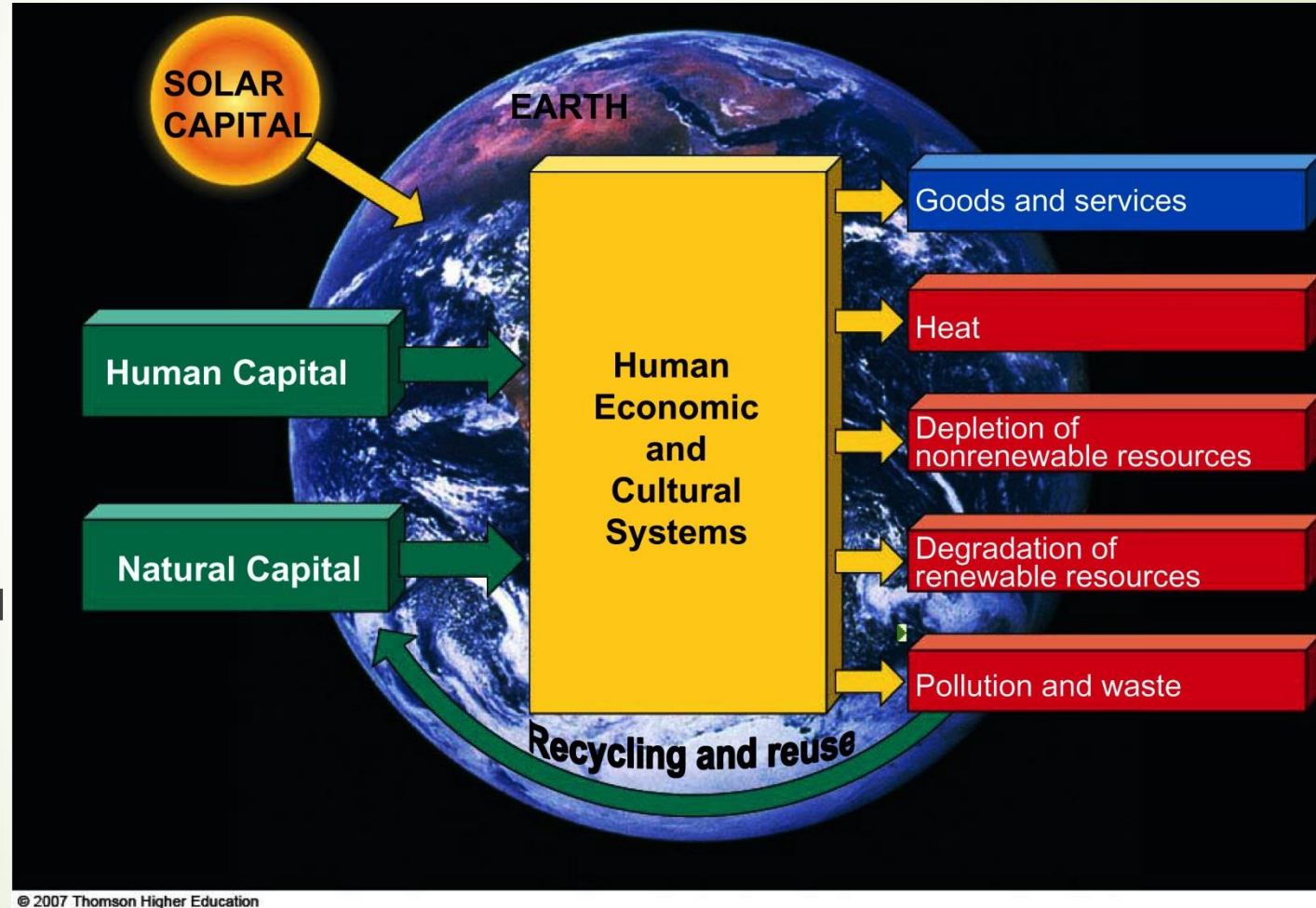
- ✓ In a irreversible direction
- ✓ On an increasingly faster rate
- ✓ Mainly due to anthropogenic reasons



Environmental Problems: Causes and Connections

The major causes of environmental problems are:

- Population growth
- Wasteful resource use
- Poverty
- Poor environmental accounting
- Ecological ignorance













A plane takes off from Newark Liberty International Airport as workers plow the tarmac, in New Jersey

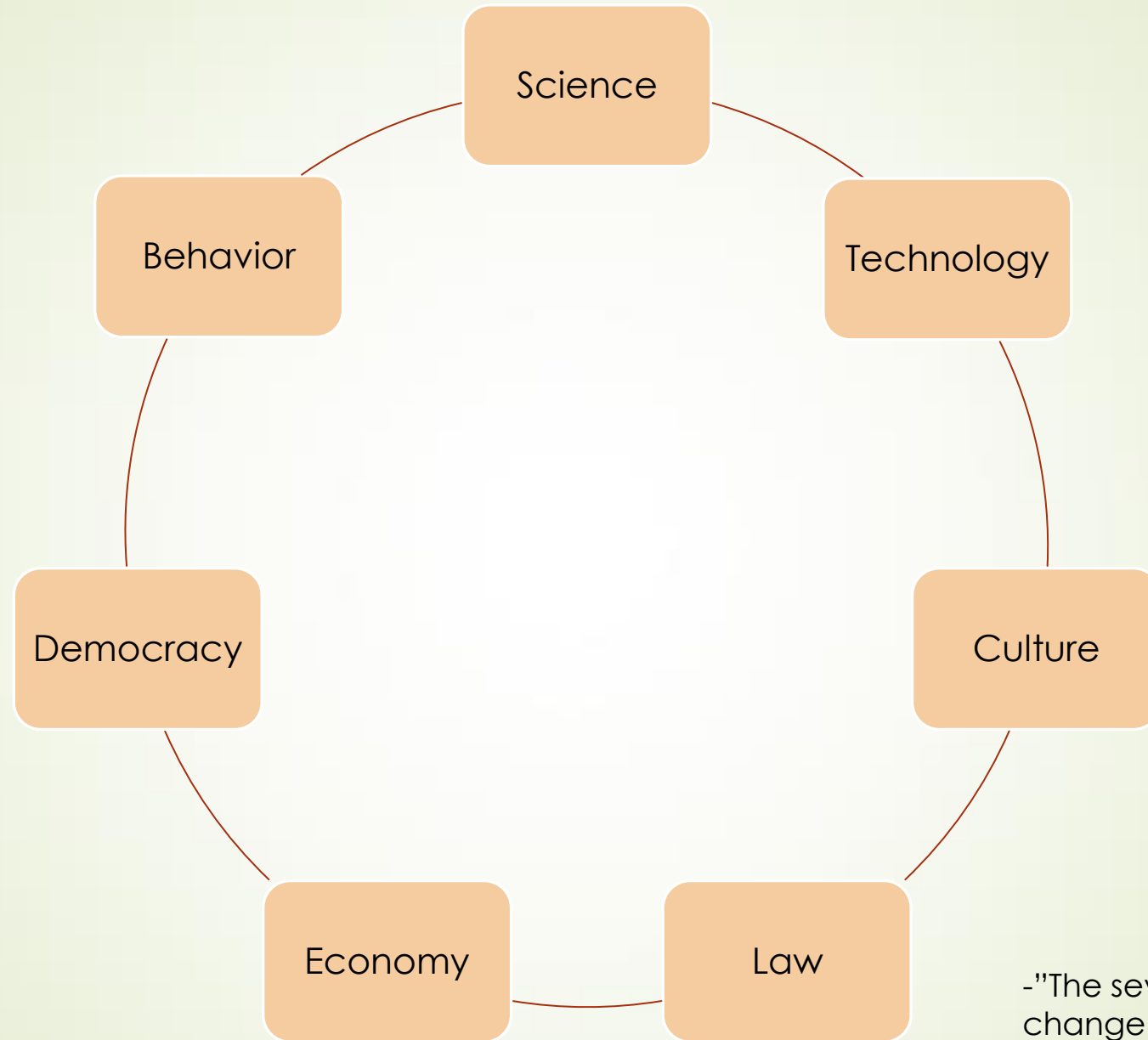
Temperature - 20° C



**Cars are covered with snow
Manhattan, New York**



Dimensions of Climate Change



- "The seven dimensions of climate change: A new way to think, talk and act"
Jonathan Rowson and Adam Corner



Dimensions...contd.

- ▶ In **Science** we need **a new social contract** between scientists and society; moving away from a hands off view of just giving the facts towards deeper engagement with communication and policy.
- ▶ With **Behaviour** we need to face up to '**stealth denial**' - the fact that the majority of those who understand the problem intellectually don't live as though they do.
- ▶ From **Technology** we need **deep decarbonisation** at scale - we need more and better tools to decarbonise energy, and as quickly as possible.
- ▶ Our **Democracy** needs to overcome the **governance trap** - people expect the government to act but government thinks people don't care about the issue enough; and collective action problems generally prevail.
- ▶ Our **Economy** needs to **invest in the future**; which is mostly about sending money away from fossil fuels towards renewables, but may also be about rethinking economic growth models.
- ▶ In **Law** we need **a constraint on extraction at a global level** i.e. a legal mechanism to keep fossil fuels in the ground, but we need to be mindful of the financial impact.
- ▶ Throughout our **Culture**: we need to break '**climate silence**' and normalise discussions on the issue; moving away from whether it's happening to what we're doing about it.



Impacts of Climate Change



IPCC Fifth Assessment Report Synthesis Report

2nd November 2014
Copenhagen

IPCC AR5 Synthesis Report

ipcc
INTERGOVERNMENTAL PANEL ON climate change



Key Messages

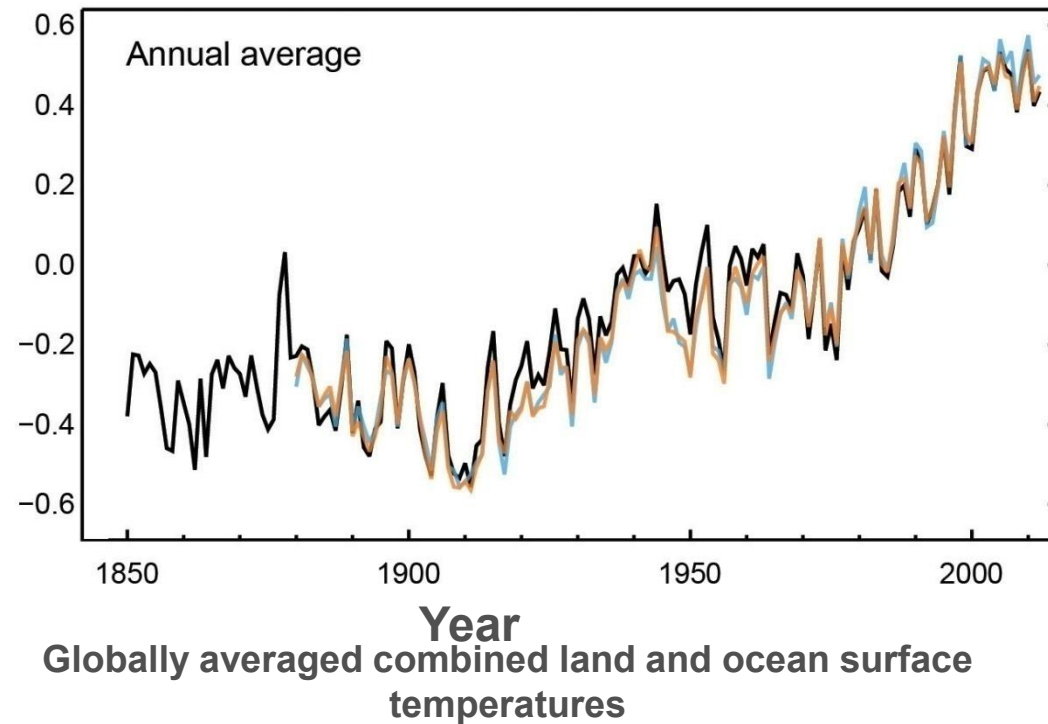
Warming in the climate system is unequivocal

Human influence on the climate system is clear

Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions

Humans are changing the climate

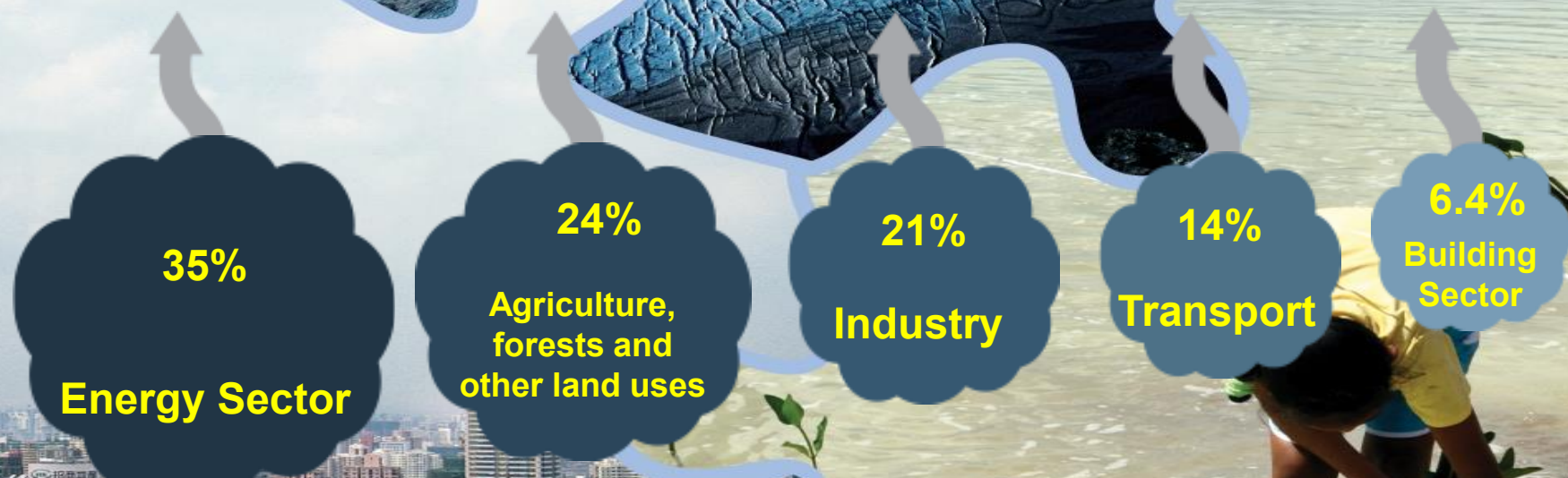
It is extremely likely that we are the dominant cause of warming since the mid-20th century



AR5 WGI SPM

Sources of emissions

Energy production remains the primary driver of GHG emissions



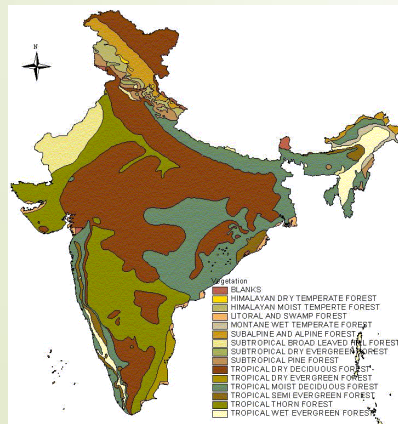
2010 GHG emissions

IPCC WGIII SPM

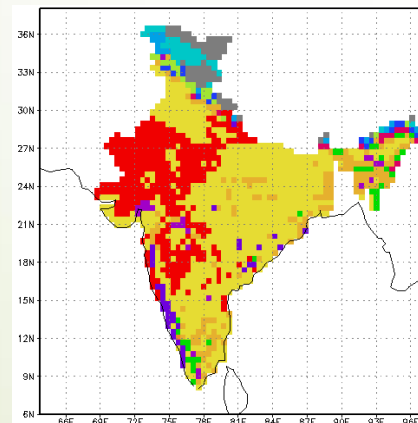
Impact on Biodiversity

- Habitats of many species will move northward from their current locations.
- Upward migration of plants in the Himalayas could reduce the alpine meadows and related vegetation, thus impacting the habitats of several high altitude mammals including wild sheep, goat, antelope and cattle.
- Increase in precipitation over northeastern India leading to severe floods could place the wildlife in Kaziranga National Park at risk.

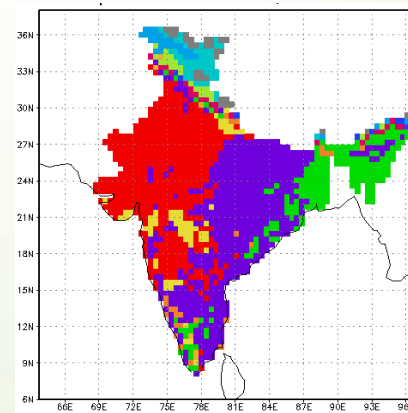
Present vegetation map



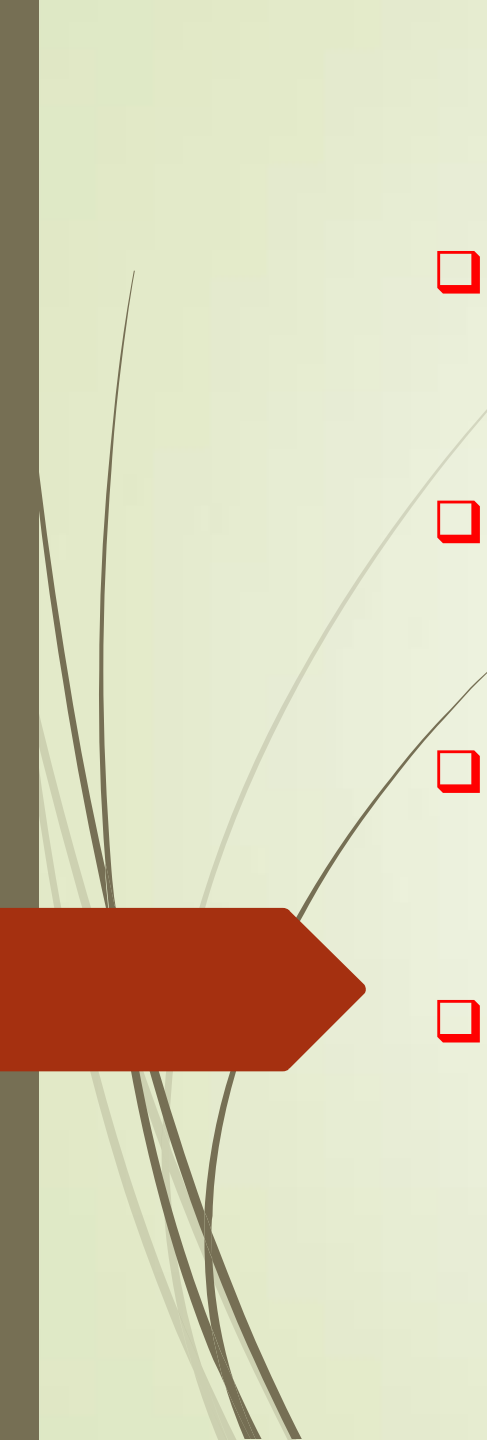
Present Biome Types



Expected biome types under climate projections in 2050s.



- Dry savannah
- Xeric Shrub land
- Xeric woodland
- Tropical Seasonal Forest
- Boreal Evergreen
- Tundra

- 
- ❑ Decrease in tropical rain forests of 2 - 10% and an increase in tropical dry forest of 7 - 8%.
 - ❑ A shift of tropical wet forests into areas currently occupied by tropical dry forests.
 - ❑ Productivity of teak plantations in Kerala would decrease due to depletion in soil moisture.
 - ❑ The productivity of moist deciduous forest would also decline from 1.8 m³/ha to 1.5 m³/ha.



Impact on Economy


- Floods & Drought
 - Lower Agriculture Production
 - Sea level elevation and coastal flooding
 - Fresh water loss
 - Health related hazards
 - Lower GDP
- 



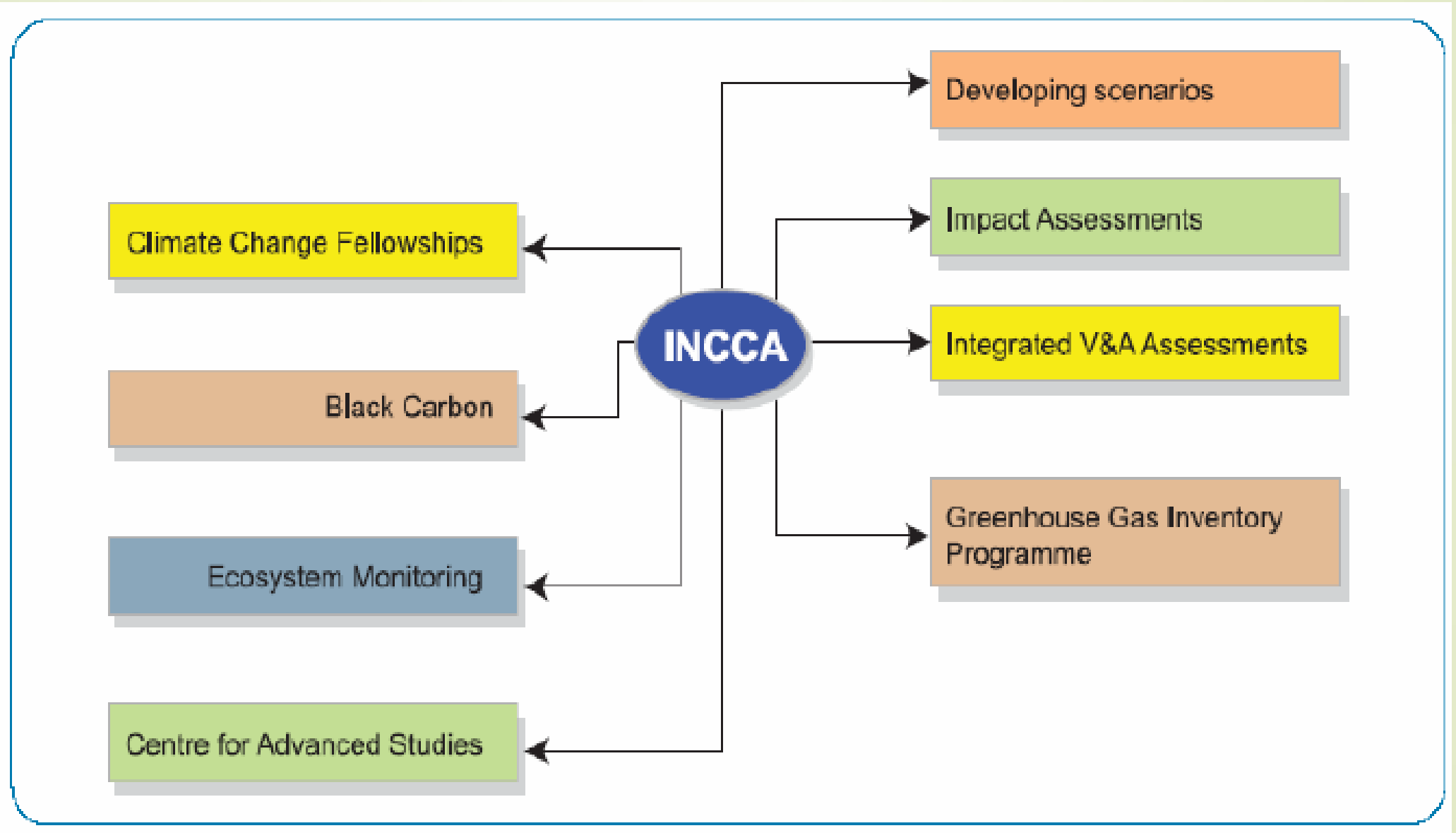
India's Response to Climate Change Challenges



INCCA

- ❖ INCCA (Indian Network of Climate Change Assessment)
 - ❖ Launched on 18th October 2009, a large network of institutions
 - ❖ Assess drivers of Climate Change through scientific research
 - ❖ Prepare GHG estimation & impact of Climate Change biennially
 - ❖ Develop Decision Support System
 - ❖ Capacity Building for Climate Change related risk & opportunities
- 

INCCA Programmes



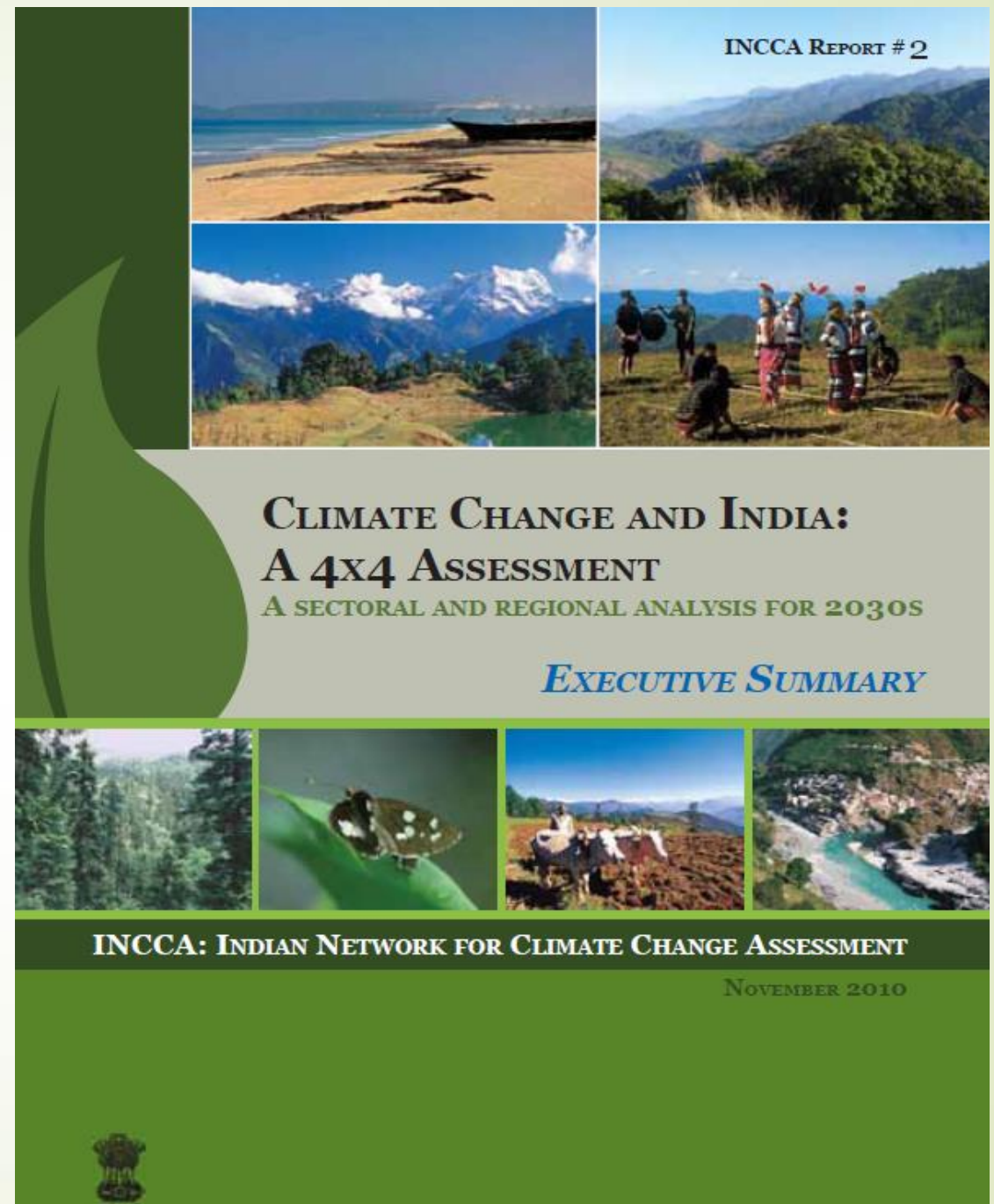
The 4 x 4 Assessment

Assess impact of climate change
in 2030s on 4 key sectors,

- ✓ *Agriculture,*
- ✓ *Water*
- ✓ *Natural Ecosystems &
Biodiversity*
- ✓ *Health*

Focus on 4 climate sensitive
regions of India

- ✓ *Himalayan region,*
- ✓ *Western Ghats*
- ✓ *Coastal Area*
- ✓ *North-East Region*



Indian National Action Plan on Climate Change

Mission	Objectives	Responsible Entity
National solar Mission	<ul style="list-style-type: none"> • 1000 MW of solar power by 2012 • 20,000 MW of solar power by 2020 	Ministry of New & Renewable Energy
National Mission for Enhanced Energy Efficiency	<ul style="list-style-type: none"> • 10,000 MW of EE saving by 2020 • 5% saving/annum-100 mt CO2 mitigation/a 	Ministry of Power
National Mission for Sustainable Habitat	<ul style="list-style-type: none"> • EE in residential and commercial buildings, public transport, Solid waste management 	Ministry of Urban Development
National Water Mission	<ul style="list-style-type: none"> • Water conservation, river basin management 	Ministry of Water Resources
National Mission for Sustaining the Himalayan Ecosystem	<ul style="list-style-type: none"> • Conservation and adaptation practices, glacial monitoring 	Ministry of Science & Technology
National Mission for a Green India	<ul style="list-style-type: none"> • 6 m hectares of afforestation over degraded forest lands by 12th Plan 	Ministry of Environment, Forests & Climate Change
National Missions for Sustainable Agriculture	<ul style="list-style-type: none"> • Drought proofing, risk management, agricultural research 	Ministry of Agriculture
National Mission on Strategic knowledge for climate change	<ul style="list-style-type: none"> • Vulnerability assessment, Research & observation, data management 	Ministry of Science & Technology



3 'Mitigation' focus



5 'Adaptation' focus



Response Strategy

Mitigation

Reduce GHG emissions to stabilize GHG concentrations in the atmosphere

Adaptation

Implement strategies to address the risks related to a changing climate. Essential as the earth is already subject to a certain degree of change



Recent Developments

On October 1, 2015, India formally submitted its intended nationally determined contribution (INDC) to the climate agreement due in December 2015 in Paris.

Key elements:

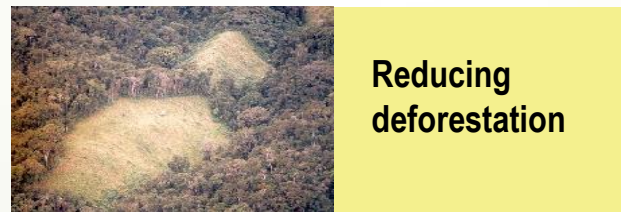
- To reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level.
- To achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030, with the help of transfer of technology and low cost international finance including from Green Climate Fund (GCF).
- To create an additional carbon sink of 2.5 to 3 billion tons of CO₂ equivalent through additional forest and tree cover by 2030.

How can the forest sector mitigate climate change?

- **Increasing** carbon stocks



- **Avoiding** losses of carbon stocks



- **Reducing** emissions caused by forest activities Less energy, oil, fertilisers...
- **Producing** biomaterials and bioenergy

Forest and Climate change

Sinks: remove CO₂ from the atmosphere

- Forests and other terrestrial sinks absorb 2.6 GtC annually

Reservoirs: keep carbon as biomass

- According to FAO estimates forests store about 638 GtC

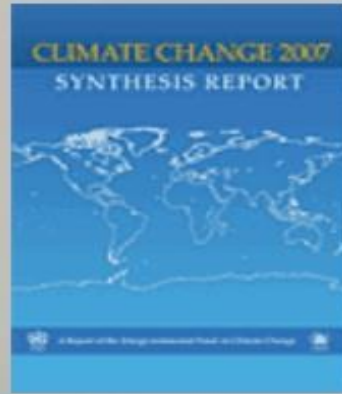
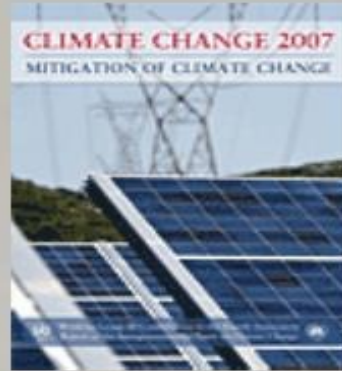
Sources: releases gases like CO₂ and CH₄ when forests are destroyed

- Deforestation and other land-use activities emit 1.6 GtC annually
- Forest sector, mostly deforestation, accounts for 17 % of the total anthropogenic GHG emissions



■ [International Day of Forests 2015.mp4](#)

Adaptation and Mitigation



“Neither adaptation nor mitigation alone can avoid all climate change impacts; however, they can complement each other and together can significantly reduce the risks of climate change”

- IPCC Fourth Assessment Report



Thank You