

Carbon Finance: Emerging Opportunities for Biosphere Reserves in Africa

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Environment and Coffee
Forest Forum (ECFF)

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Reserves in Africa**

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Climate Change: Definition

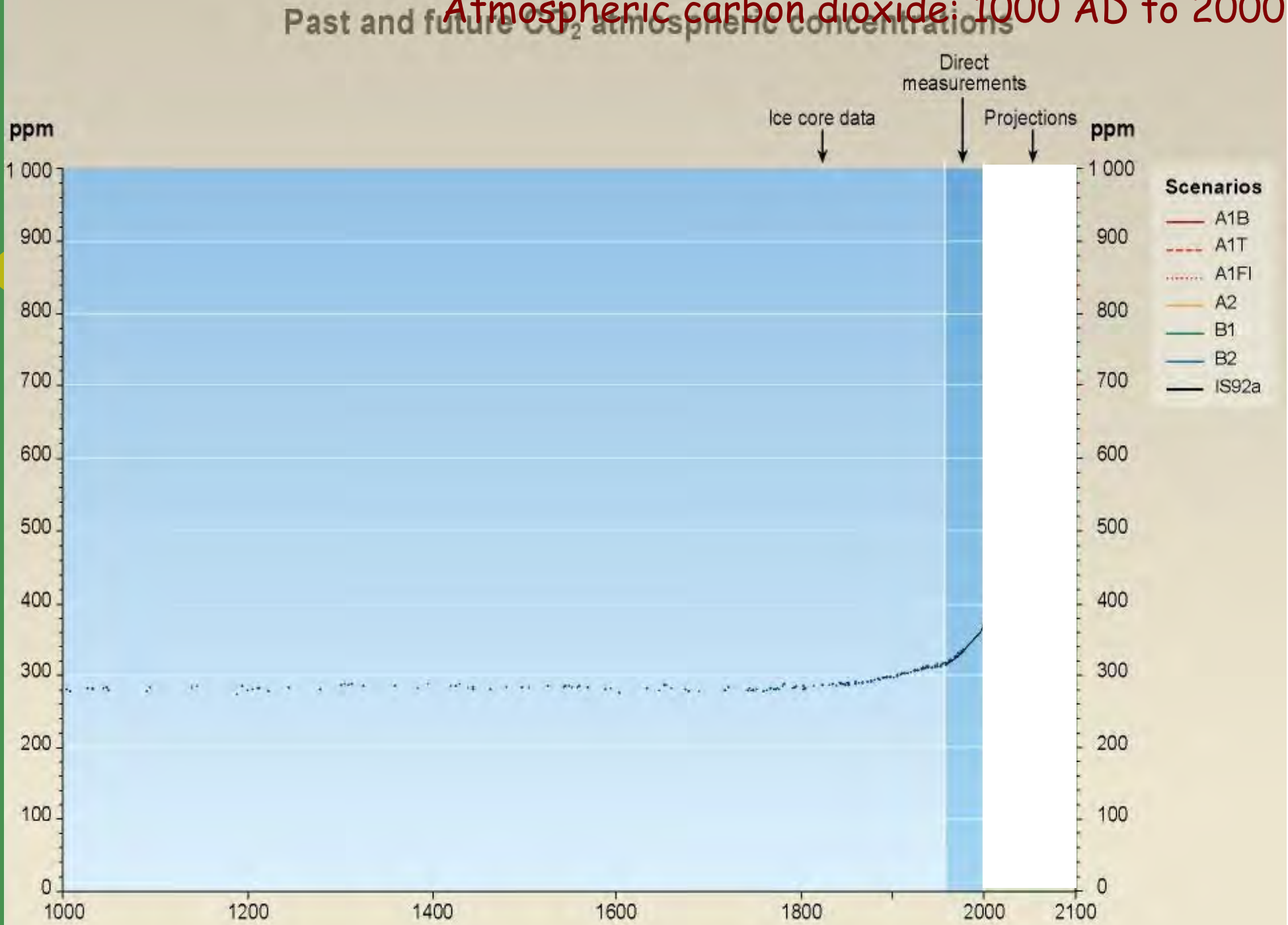
- United Nations Framework Convention on Climate Change (UNFCCC) defines Climate Change as ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere’.
- “Warming of the climate system is unequivocal..” (IPCC Fourth Assessment Report, 2007)

Climate Change: Causes

- Anthropogenic Greenhouse Gases (GHG)

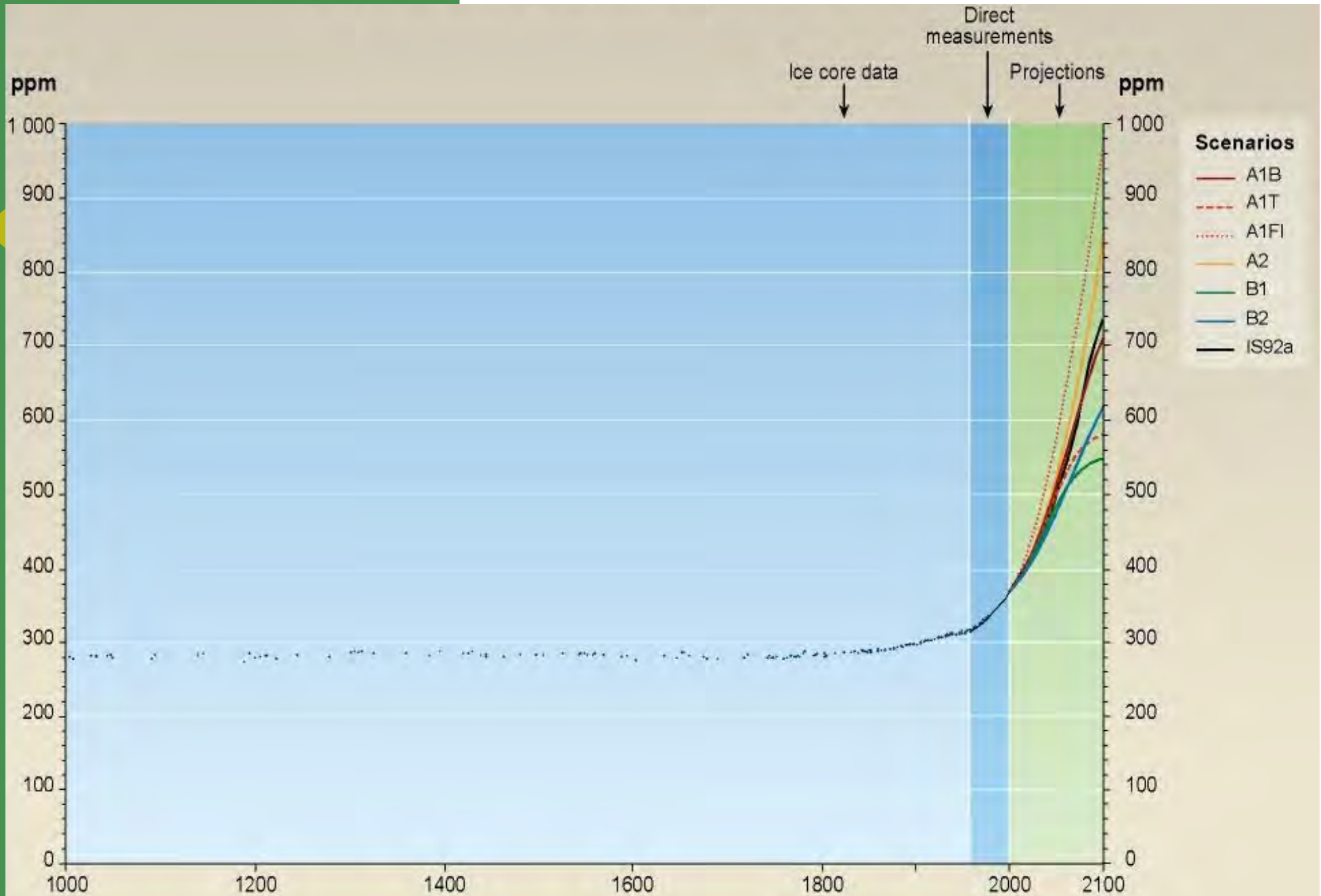
Greenhouse Gas	Industrial Sources	Land Use Sources
Carbon dioxide (CO ₂)	Fossil fuel combustion, cement manufacturing	Deforestation and burning of forests
Methane (CH ₄)	Landfills, coal mining, natural gas production	Conversion of wetlands Rice paddies Livestock production
Nitrous oxide (N ₂ O)	Fossil fuel combustion, Nitric acid production	Fertilizer use Burning of biomass

Atmospheric carbon dioxide: 1000 AD to 2000 AD



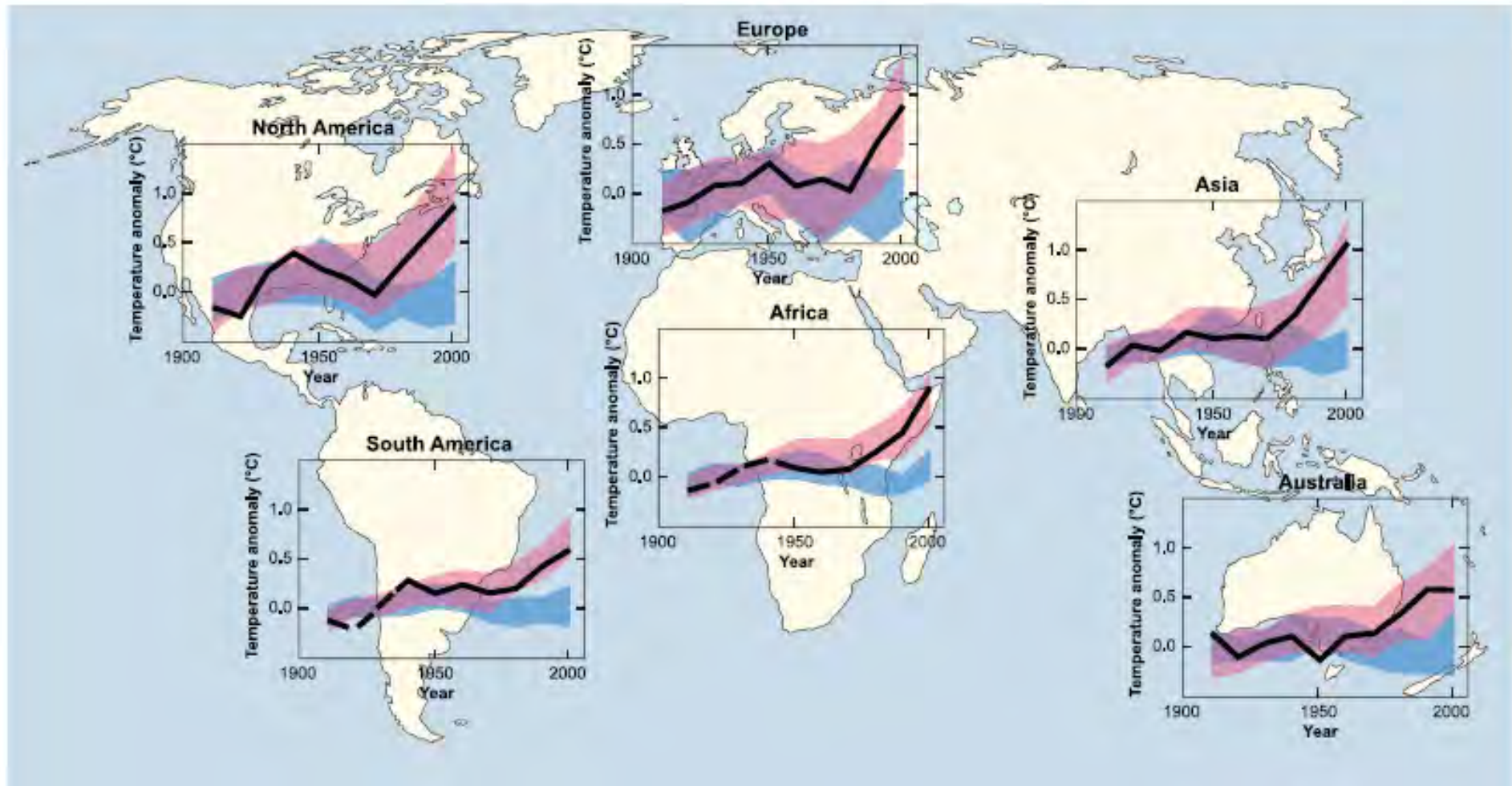
Source: Intergovernmental Panel on Climate Change

Atmospheric carbon dioxide: 1000 AD to 2100 AD

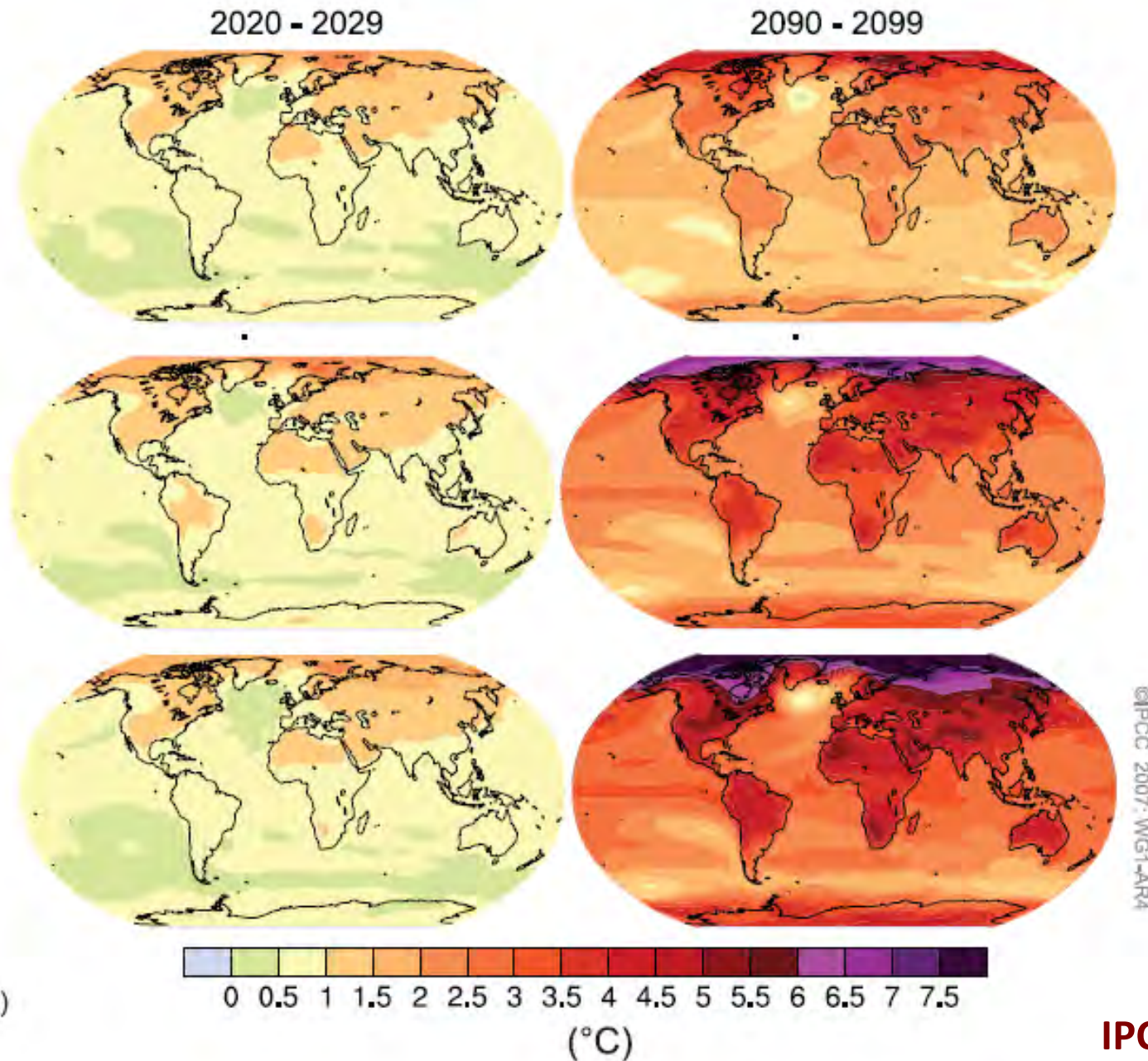


Source: Intergovernmental Panel on Climate Change

GLOBAL AND CONTINENTAL TEMPERATURE CHANGE

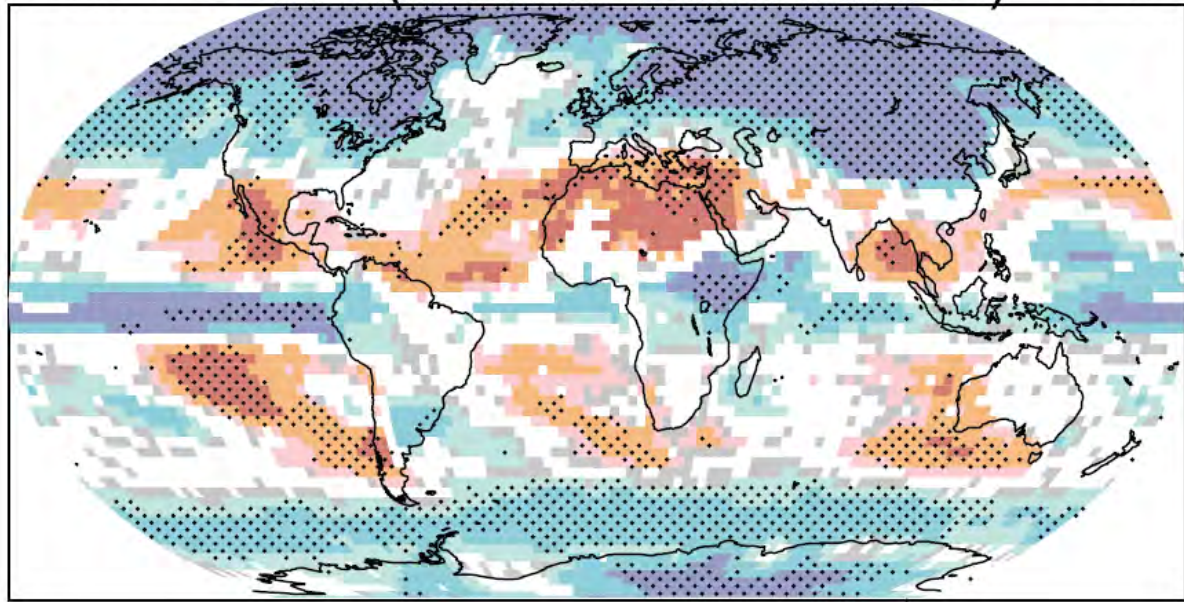


Projected temperature change under A1B emissions scenarios



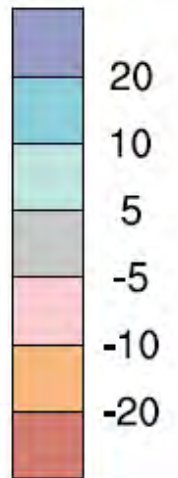
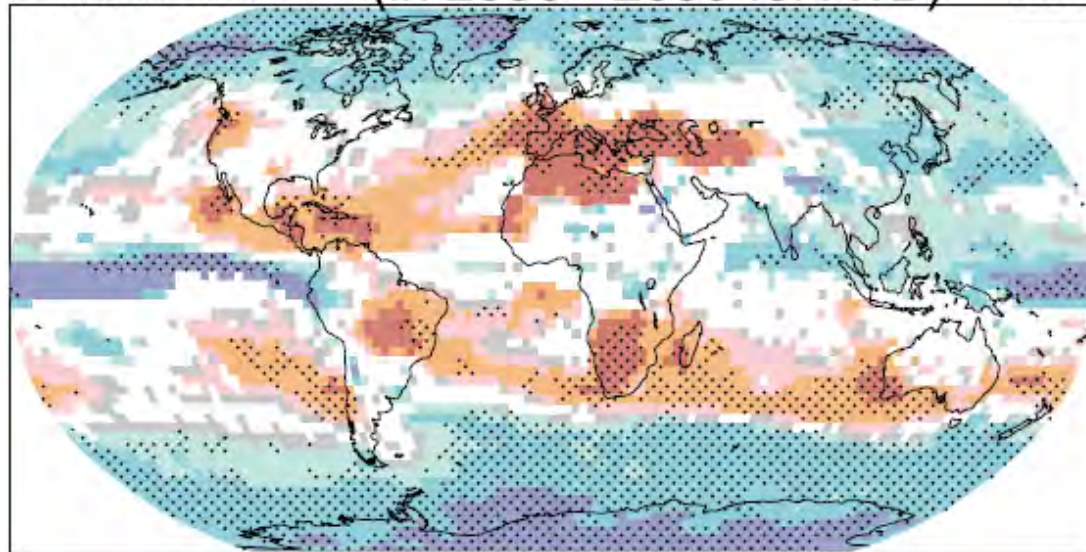
**December-January-
February**

Projected change
multi-model (in 2090 - 2099 for A1B) DJF



June-July-August

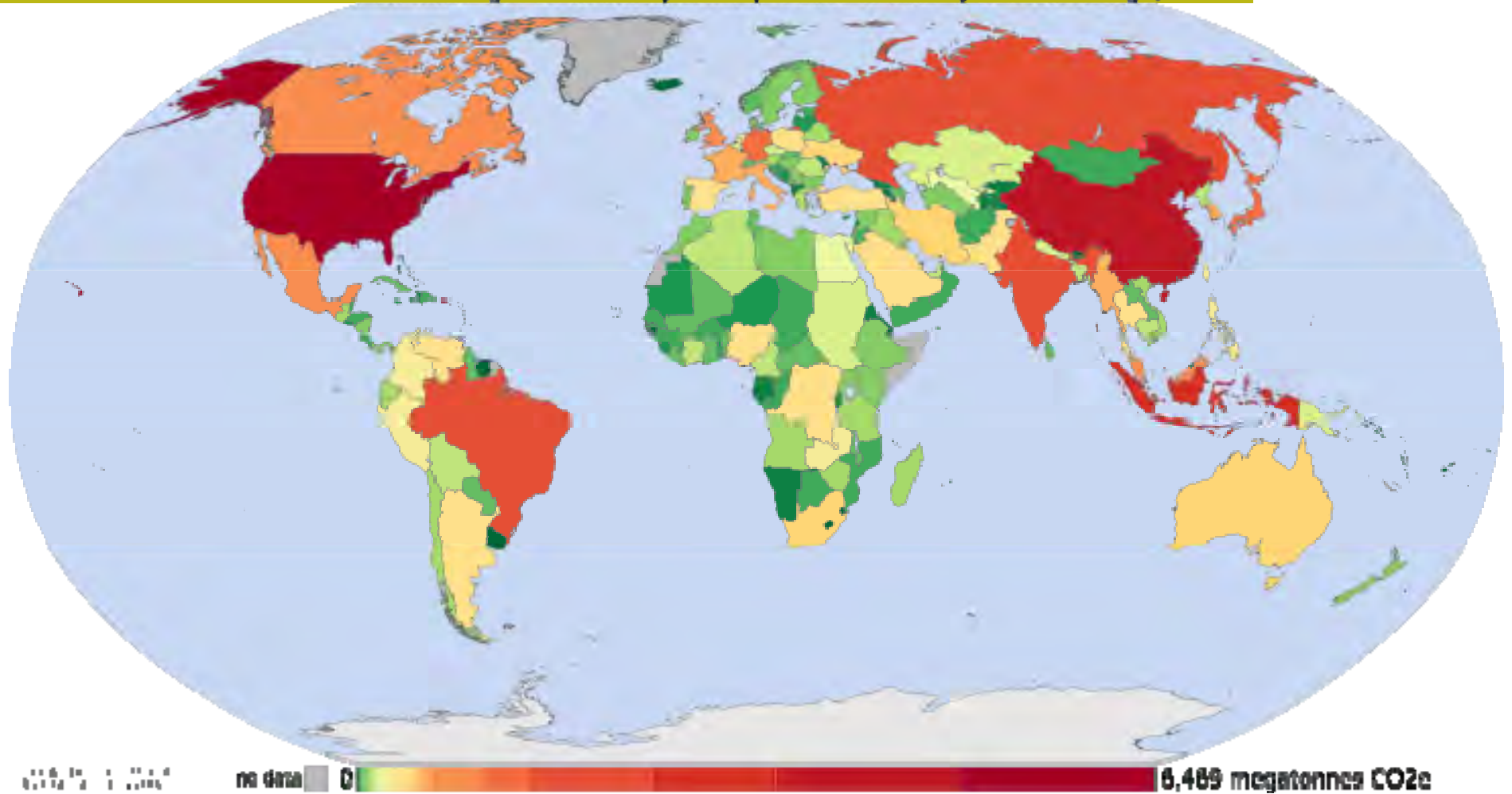
Projected change
multi-model (in 2090 - 2099 for A1B) JJA



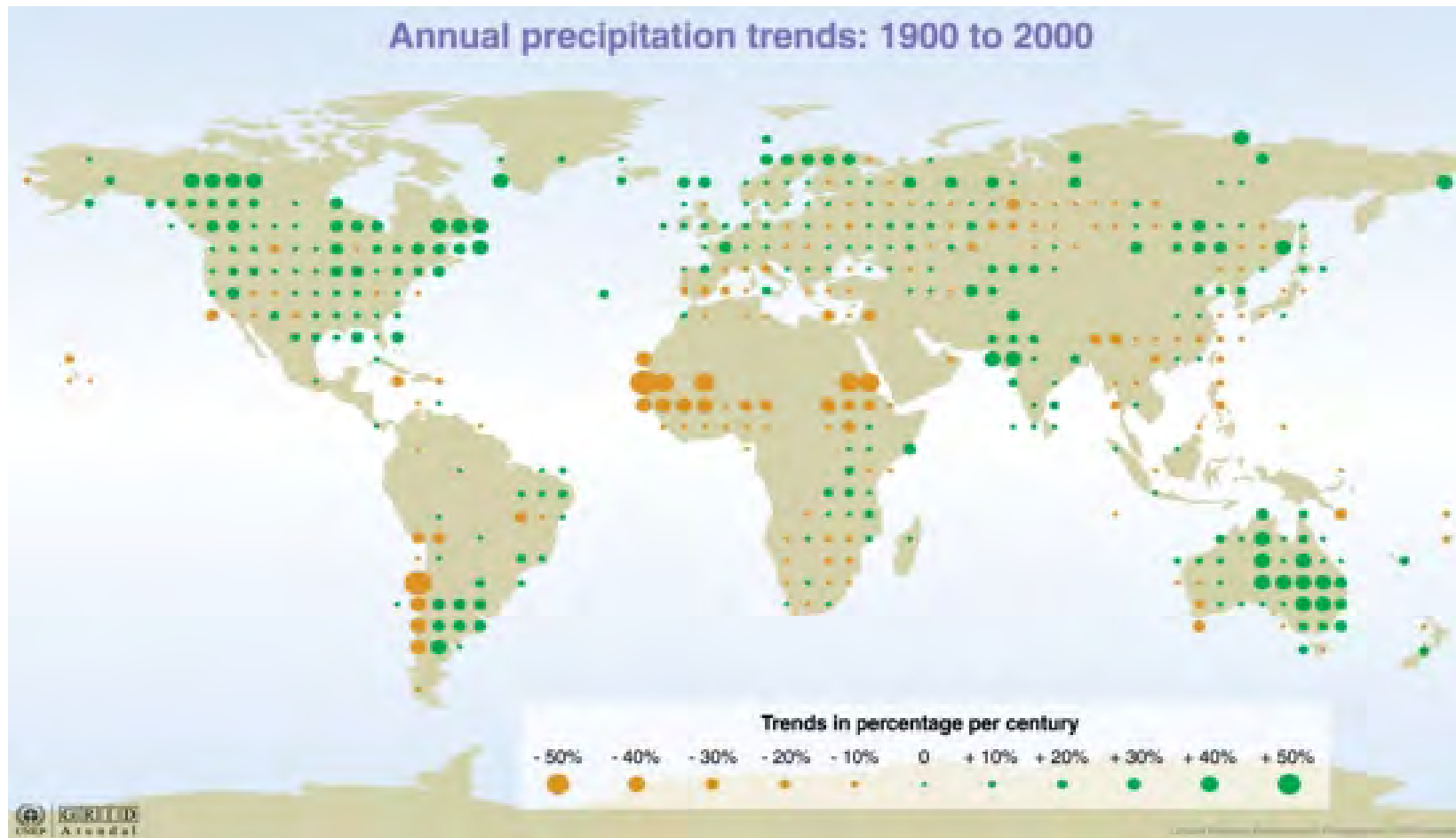
%

Climate Change: Inequalities

Greenhouse gas emissions by country in 2000 (including land-use change)



Climate Change: Effects

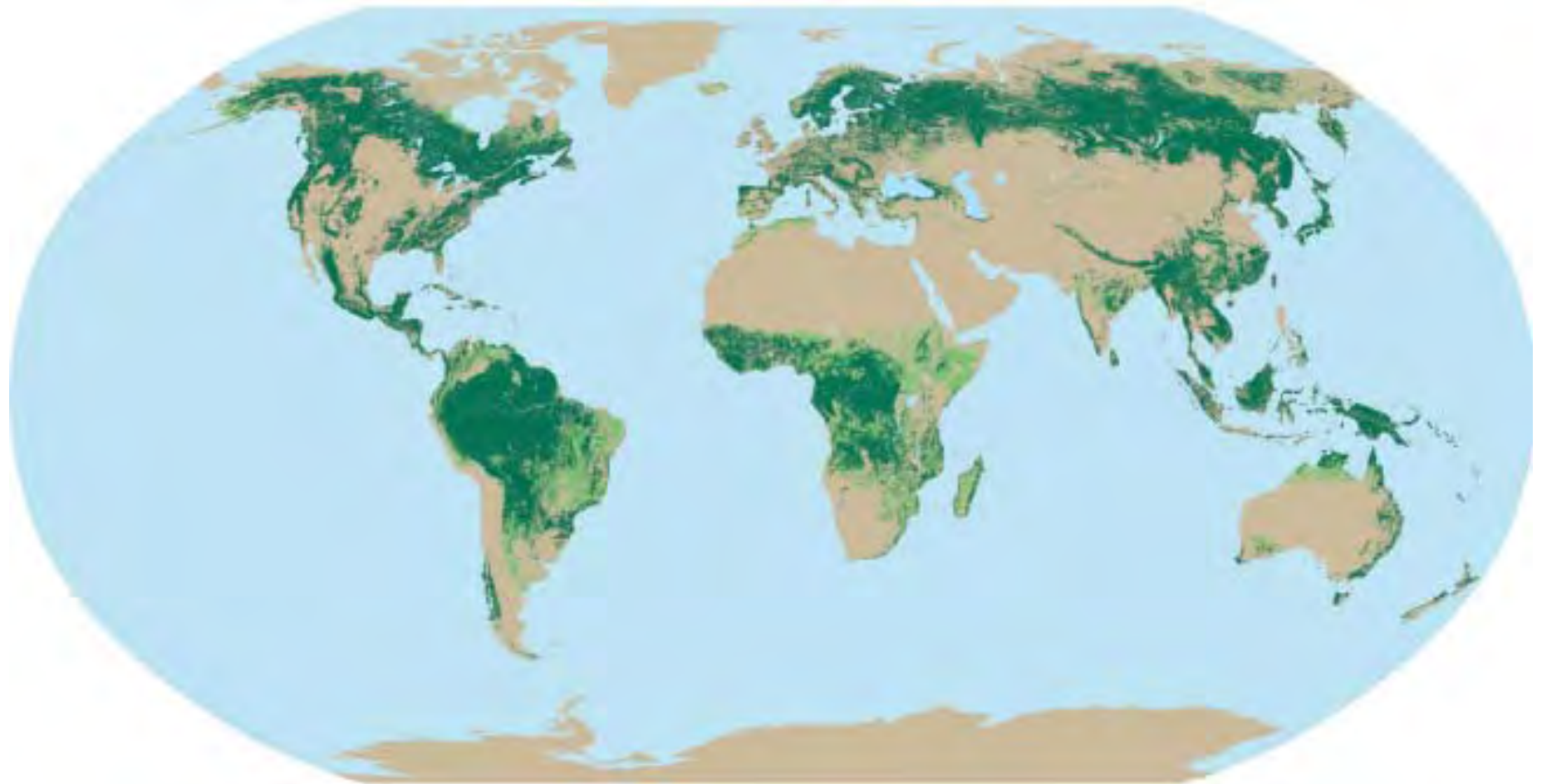


http://maps.grida.no/go/graphic/precipitation_changes_trends_over_land_from_1900_to_2000

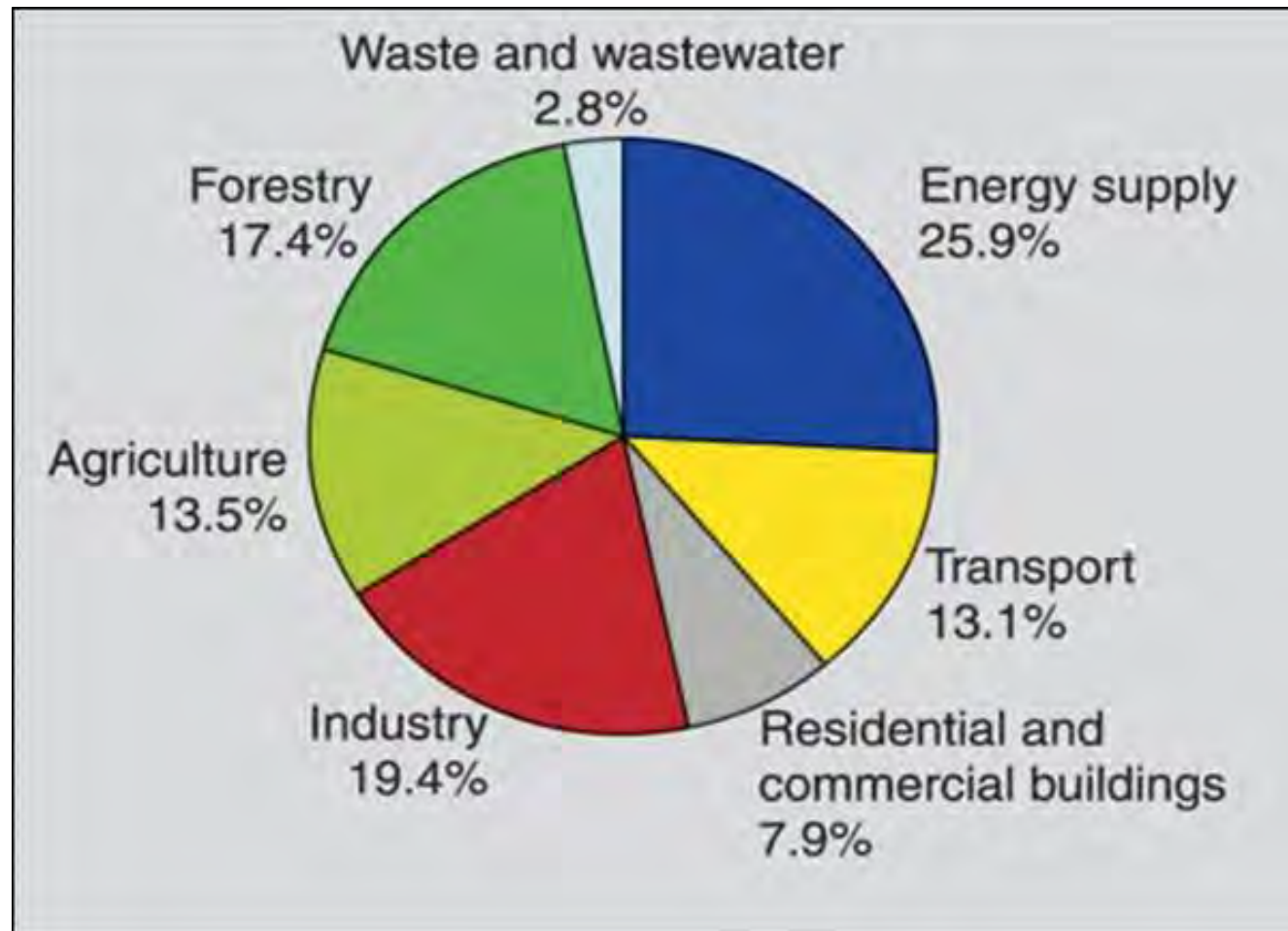
Mitigation & Adaptation

- To avoid the most serious impacts need to
 - Reduce climate change effects by lowering GHG emissions (Mitigation);
 - Adjust natural and human systems so they are less vulnerable to climate change effects (Adaptation).
- Forests play an important role in both.

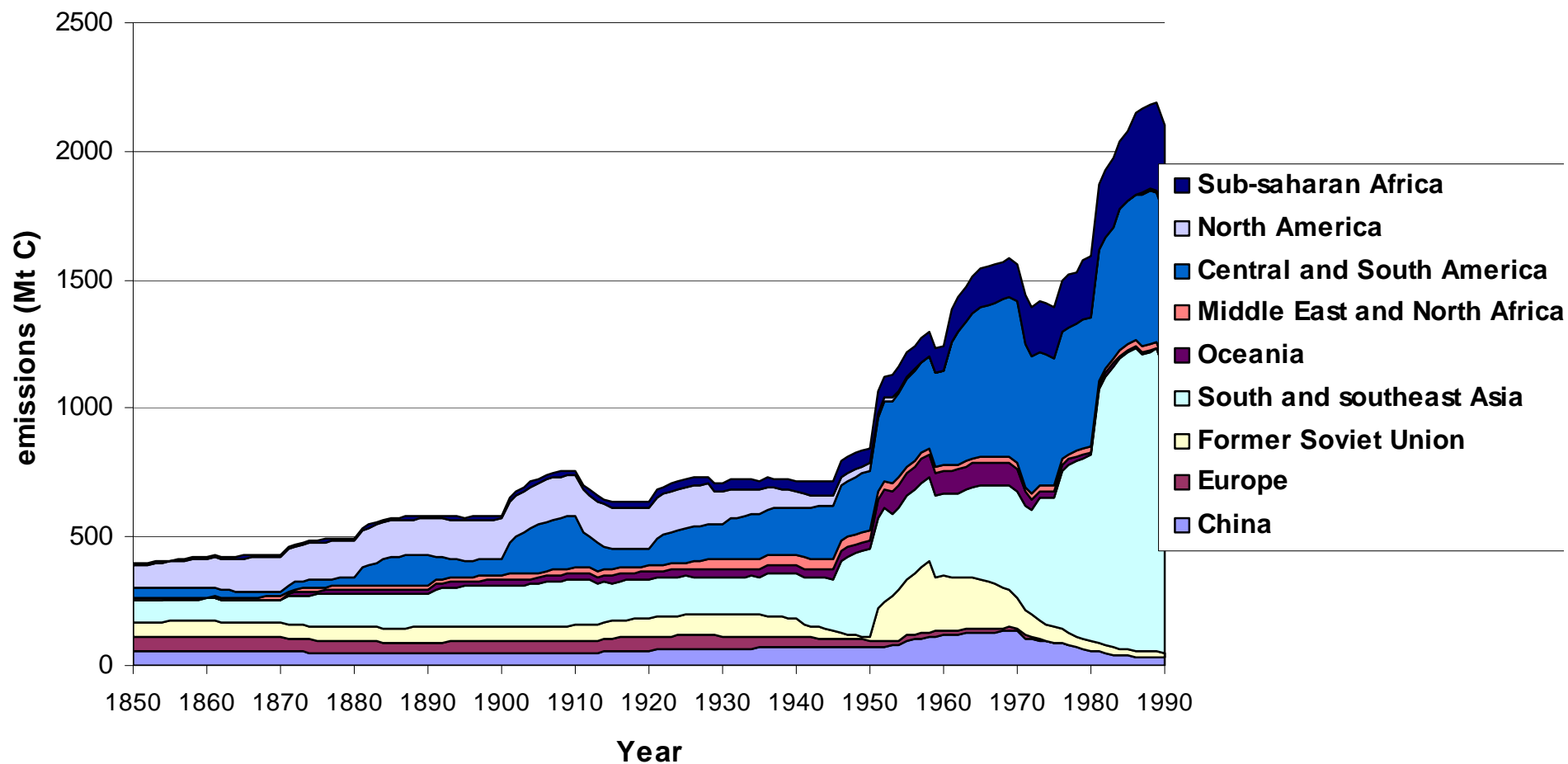
Forests:



Forests: CO₂ Sources



Carbon emissions from deforestation since 1850



Houghton et al 2003

Forests: CO₂ Sources

- Emissions (GtC yr⁻¹) due to changes in land use (IPCC 2007).

Tropical Americas	Tropical Africa	Tropical Asia	Pan-Tropical	Non-Tropics	Total Globe
0.7 (0.4 to 0.9)	0.3 (0.2 to 0.4)	0.8 (0.4 to 1.1)	1.6 (1.0 to 2.2)	-0.02 (-0.5 to +0.5)	1.6 (0.5 to 2.7)

Forests: CO₂ Sinks

- While **deforestation** and forest **degradation** contribute substantial amounts of greenhouse gases to the atmosphere, measures to **protect, restore, and sustainably manage forests offer significant climate change mitigation potential.**
- This matches with **BR management objectives**



Forests: Mitigation Potential...

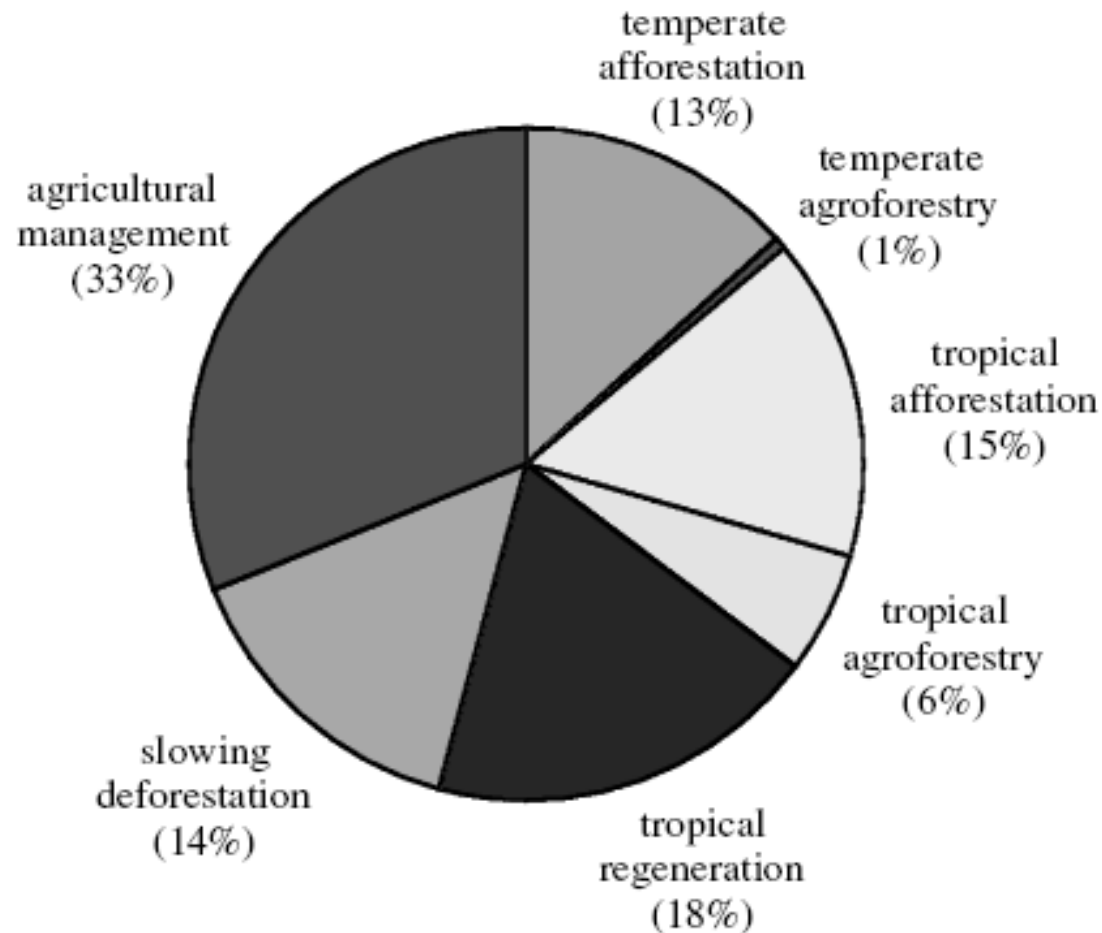
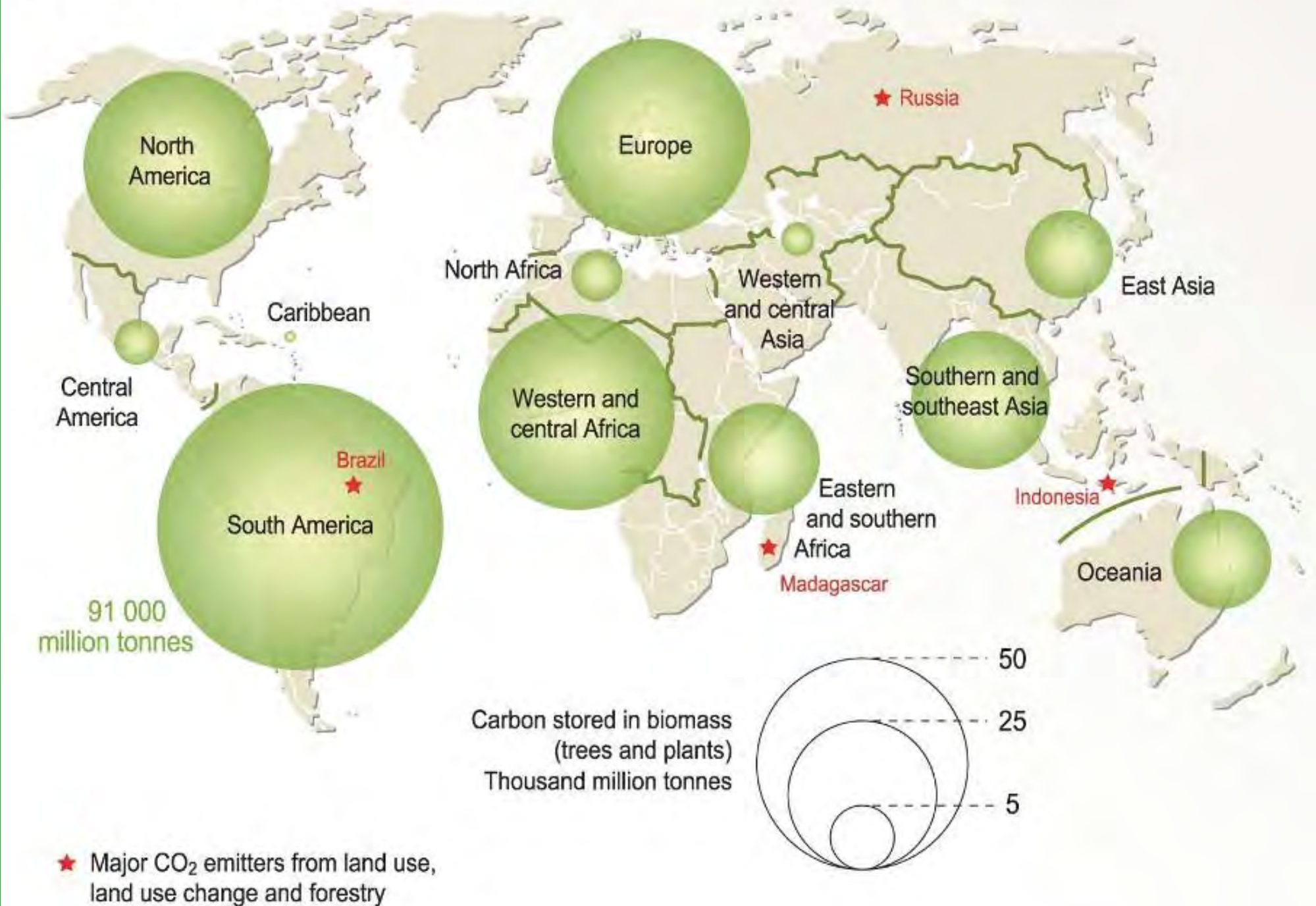


Figure 12. The potential of various land-management activities to mitigate global emissions of CO₂ by increasing the carbon-sink potential of forestry and agriculture or reducing emissions at source (reducing deforestation). Estimates provided by the IPCC suggest that a maximum mitigation of 100 PgC could be achieved between 2000 and 2050. (Reproduced from The Royal Society (2001).)

Carbon stored by forests



Forests: REDD+

- Reduced Emissions from Deforestation and Degradation
- Deforestation: “permanent removal of forest cover and withdrawal of land from forest use, whether deliberately or circumstantially.” (IPCC)
- Degradation: “changes within the forest which negatively affect the structure or function of the stand or site, and thereby lower the capacity to supply products and/or services” (FAO)

REDD+ Carbon

- REDD+: Performance-based financial incentive system for countries to reduce the rate of emissions from deforestation and forest degradation.
 - Payment only be made after performance
 - Payment not made for standing forest, but for the reduction of the deforestation RATE.
 - Payment for the service of protecting threatened habitat and its inherent carbon stocks.
- Stern Report (2006), Eliasch Review (2008) identified reduced deforestation as the most economically effective approach in short term.
- Bali Roadmap in 2007 adopted resolution on REDD recognizing major role it can play in climate mitigation.
- Economic potential could be significant: e.g. Indonesia - potential total value USD2billion/yr

REDD+ Carbon

- REDD has evolved to include biodiversity, community, gender and poverty values. This more inclusive form of REDD is called REDD+.
- REDD+ is guided by international standards and certification systems. Most projects designed and certified to VCS and CCBA standards. External 3rd party certification at end of design phase.
- Projects, once implementation begins, are audited by approved external auditors on regular basis (every 3 years or more frequently) through project life.
- Voluntary markets for REDD+ carbon credits. No regulation yet. More flexible than regulated markets and do not require prior qualification to participate. But volume smaller and prices lower.

REDD+ Architecture in Africa

- Countries need to qualify to participate in future formal REDD+ carbon transactions.
- Two mechanisms or paths to qualification – Forest Carbon Partnership Facility (FCPF) in WB or UN REDD.
- Group of countries selected in 1st tier Forest Carbon Partnership Facility countries and have prepared their R-PIN (REDD Readiness Program Idea Note) documents.
- Other countries pushing hard to be included in next batch of FCPF and UN REDD countries.

REDD+ Architecture in Africa

- Ghana and DRC submitted REDD Preparatory Proposal (R-PP) in Jan 2010. Approved 1st countries in Africa to have internationally approved R-PP.
- Kenya received approval for their R-PP in July, and Ethiopian in December 2010.
- National level roundtables held with all segments of society concerned with REDD (private, NGO, government, traditional leadership) in various countries.

Key questions for REDD+ project

Key questions to consider when assessing for a REDD+ project:

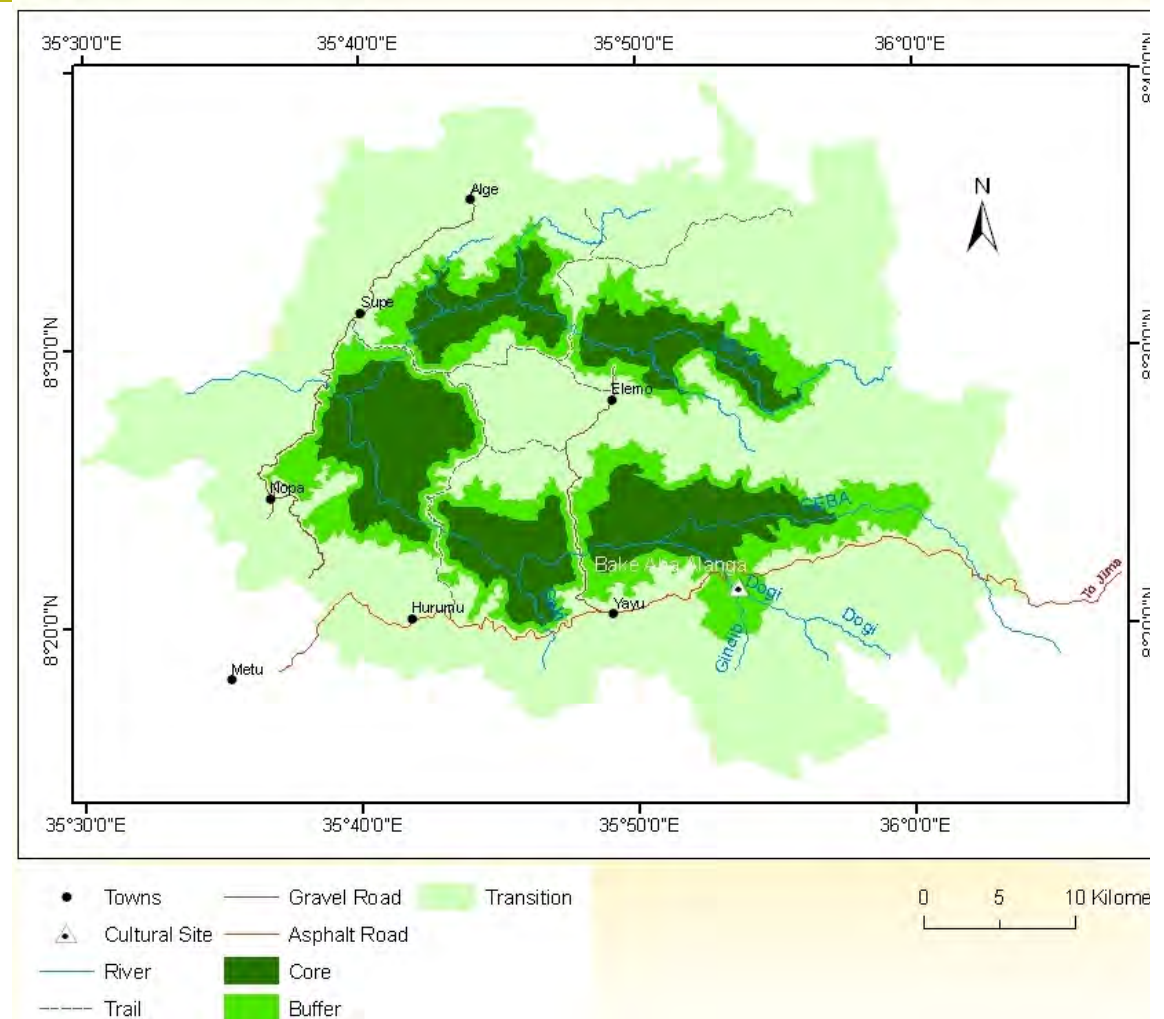
- **What are the causes of deforestation and the rate of deforestation/degradation? Are there implementable measures to halt deforestation/degradation?**
- **What is the size of the area? Is it large enough to be economically viable as a carbon finance project?**
- **What is the forest type and carbon stock levels per hectare? What is residual carbon stocking after deforestation?**
- **What is the land tenure & who has rights of carbon connected with the target site? Are the owners prepared to place their lands into a REDD project mechanism?**
- **Can the project be considered additional?**
- **Is there compelling biodiversity and community involvement?**

How is REDD+ revenue utilized?

- REDD+ contracts have variety of timeframes but average 20+ years.
- Funds paid after 2 to 5 year performance periods. In Kenya – 2 projects have contracted with NED Bank & BNP Paribas valued at USD 100 million.
- Bulk of carbon revenue must reach the site level where land use decisions are made. This is emerging challenge for African pilots.
- Each country and site are evolving formula for revenue distribution.
- Elements of distribution includes:
 - Taxes to government (ideally should not exceed 10%)
 - Transaction fees (ideally should not exceed 10%)
 - Project implementation/protection activities (average 40%)
 - Land owners & communities (average 40%)

Yayu Coffee Forest REDD+ project

- Yayu Coffee Forest Biosphere Reserve Established in 2010
- REDD+ Prefeasibility in 2010
- Carbon assessment and feasibility 2011
- PDD preparation planned for 2011/ 2012 with GEF financed mainstreaming Agrobiodiversity project



Yayu Coffee Forest REDD+

Yayu Coffee Forest – phase 1 (Illubabor, Oromia, Ethiopia)

- Government / Community lands
- Approximately **85,000 hectares** Afromontane rainforest
- Carbon stock: estimated to be **260 tonnes C/ hectare**
- Residual carbon estimated at **20 tonnes C/hectare**
- Deforestation rate **1.2%/annum**
- Tenure is reasonably clear but carbon ownership not clear
- Biosphere reserve consisting of core areas and buffer zones under forest cover, and transition area of different land uses
- REDD emissions reduction of **9.3 million tCO₂ over 20 years.**
- Estimate **USD 2.3 million annual revenue over 20 year contract period.**

Yayu Coffee Forest REDD+...

- 2nd and 3rd phase of the project covers larger areas of **Western Oromia Coffee Landscape**
 - Approximately **540,000 ha** Afromontane rainforest.
 - REDD emissions reduction of **58.9 million tCO₂** over 20 years.
 - Estimate **USD 14.7 million annual revenue over 20 year contract period.**

Yayu Coffee Forest REDD+...

- Feasibility for Yayu to be finished in two months
- PDD preparation planned to be finished end of 2012
- Good chances of success: REDD+ is complementary with sustainable management of the forest for coffee production and conservation in core areas
- In April 2011, ECFF organized a training workshop on **“Carbon assessment in different land uses for REDD+ project preparation”** in Yayu BR, in collaboration with UNESCO Nairobi office and NCRC Ghana
 - Regional capacity building (17 experts from **K, T, U, ET**)
 - Generate carbon data to complete the feasibility study for REDD+
 - Carbon assessment field manual by the end of 2012

A decorative graphic consisting of a green L-shaped corner in the top-left and a yellow horizontal bar extending from the green shape across the top of the slide.

Thank you!!