

An Overview of Bangladesh' Vulnerability to Climate Change and National Adaptation Programme for Action

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Basics on GW and Global Climate Change

Science of GCC, Concerns, IPCC and IPCC-TAR²⁰⁰¹

Findings of IPCC TAR (Observed climate & future climate projections)

Implications for Bangladesh

Bangladesh' Climate Variability

Water Resources and Water-related Vulnerability

Anticipated Impacts and Their Implications

Economic and Social Consequences

What Can We Do? How does NAPA fit in?

GLOBAL WARMING : THE PHENOMENON

Because of a number of human activities, there have been a gradual accumulation of 'Greenhouse Gases' in the atmosphere.

A number of gases such as CO₂, CH₄, N₂O, CFCs etc can trap solar radiation. Increased accumulation of these gases called GHGs allows trapping of heat (energy) as it is reradiating from the Earth's surface back to space. Consequently radiative forcing occurs and the earth surface gets warmer.

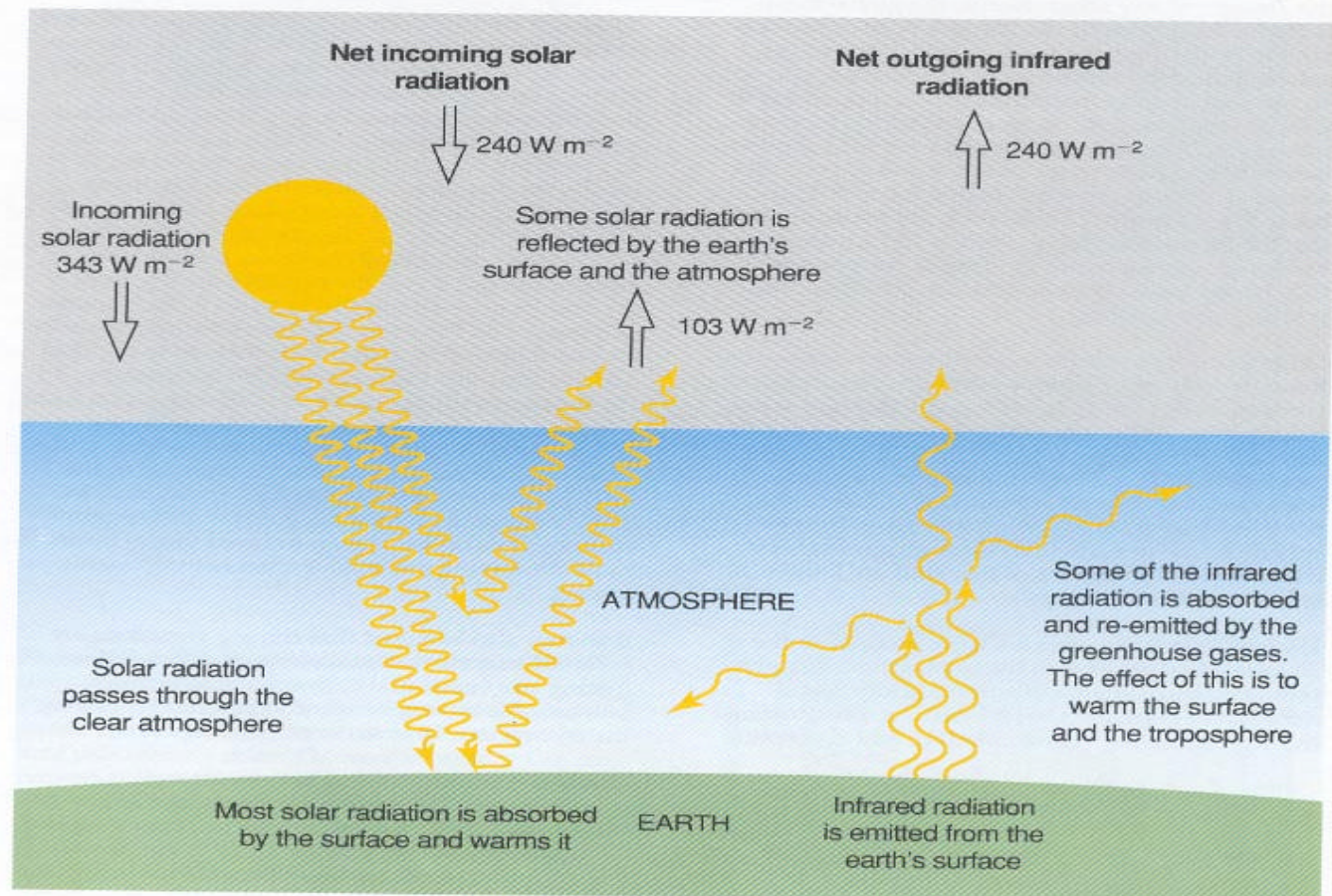


Figure 1. A simplified diagram illustrating the global long-term radiative balance of the atmosphere. Net input of solar radiation (240 W m^{-2}) must be balanced by net output of infrared radiation. About a third (103 W m^{-2}) of incoming solar radiation is reflected and the remainder is mostly absorbed by the surface. Outgoing infrared radiation is absorbed by greenhouse gases and by clouds keeping the surface about $33 \text{ }^\circ\text{C}$ warmer than it would otherwise be.

Warming up of the Globe's surface due to human activities through a process of radiative forcing is generally known as the Global Warming.

Basic reasons of increased atmospheric accumulation of GHGs:

- **Fossil fuel burning**
- **Industrialization**
- **Use of various synthetic products (e.g., refrigerants...)**
- **Deforestation and Land Use Change**
- **Livestock rearing practices**
- **Wet paddy cultivation**

Historically, there has always been a certain degree of warming up (CC) due to the presence of natural GHGs in the atmosphere. Human activities since the industrial era has enhanced atmospheric accumulation of GHGs, giving rise to a faster GW & GCC.

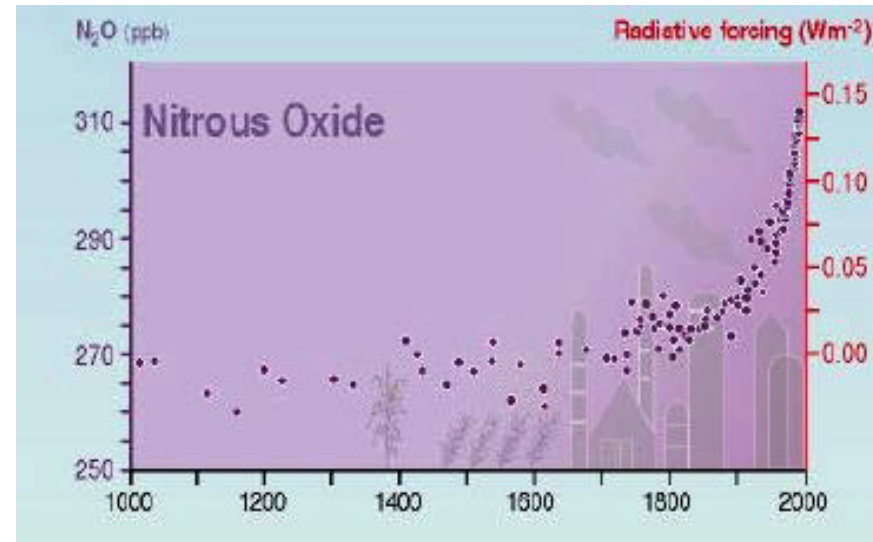
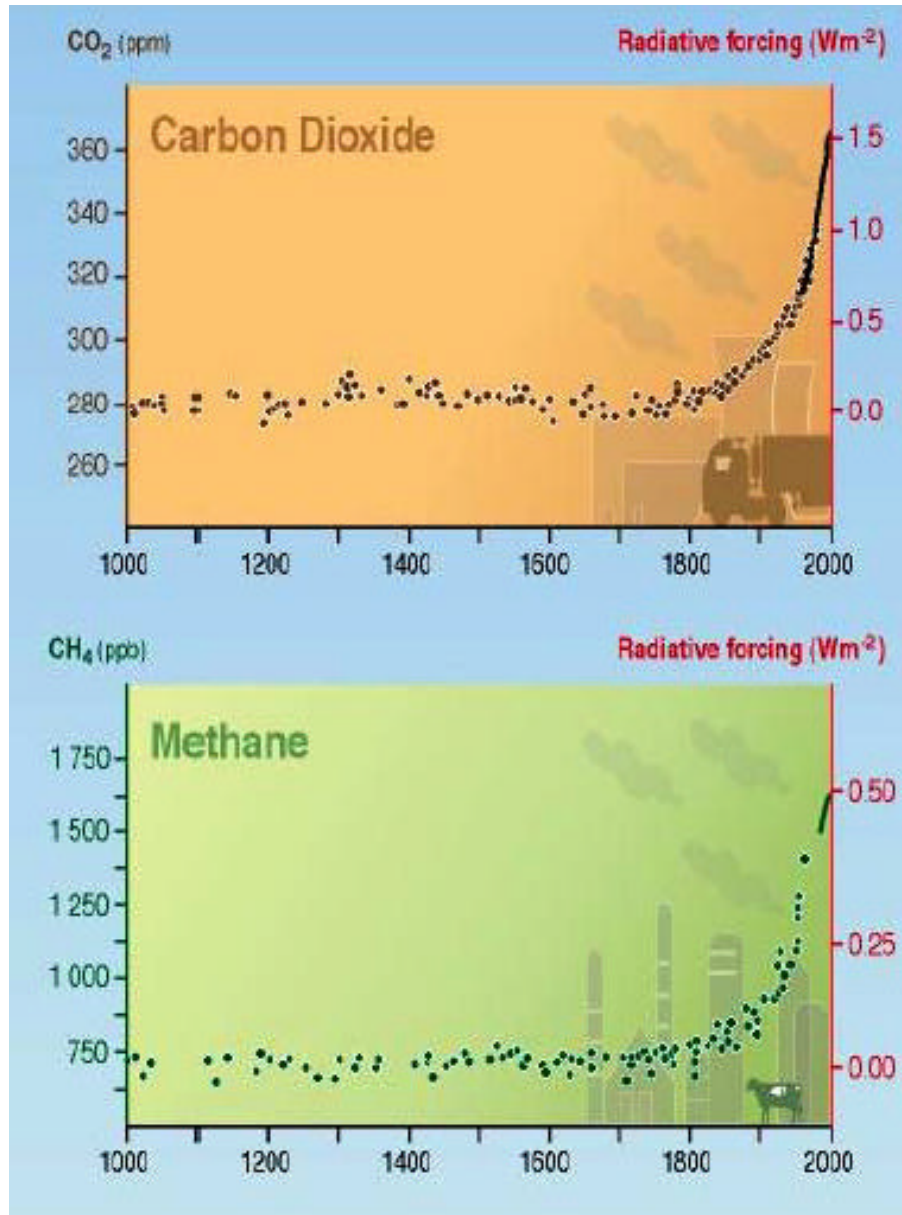
Background to Climate Change



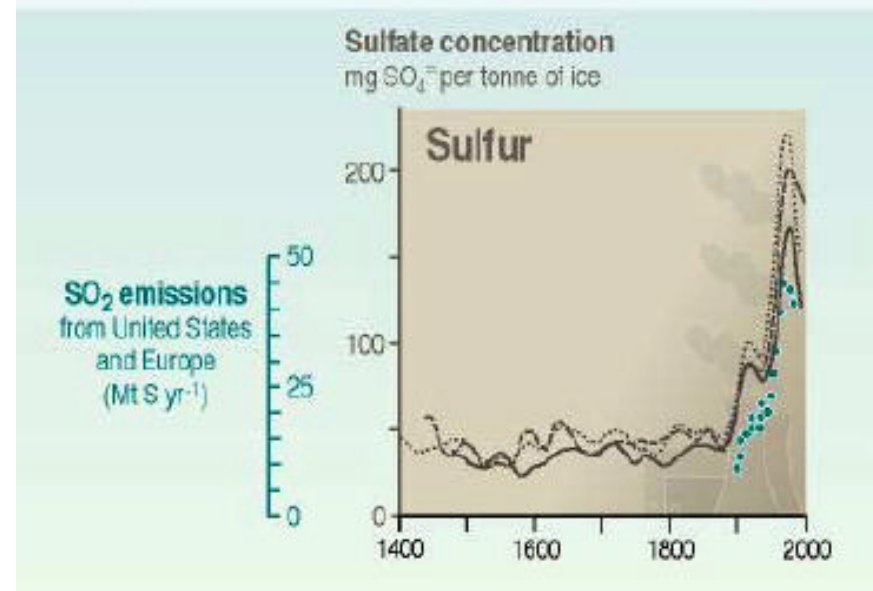
Causes behind Global Warming

- **Partly natural**
- **Partly and for last 100+ years largely due to GHG emission caused by human actions**
- **Such human activities mainly include increasing fossil fuel burning, industrial processes, deforestation and land use changes, livestock feeding practices, wet paddy culture, use of synthetic products (e.g., refrigerants), and particular lifestyle and consumption behaviour**

GHG emissions have risen very fast since pre-industrial era

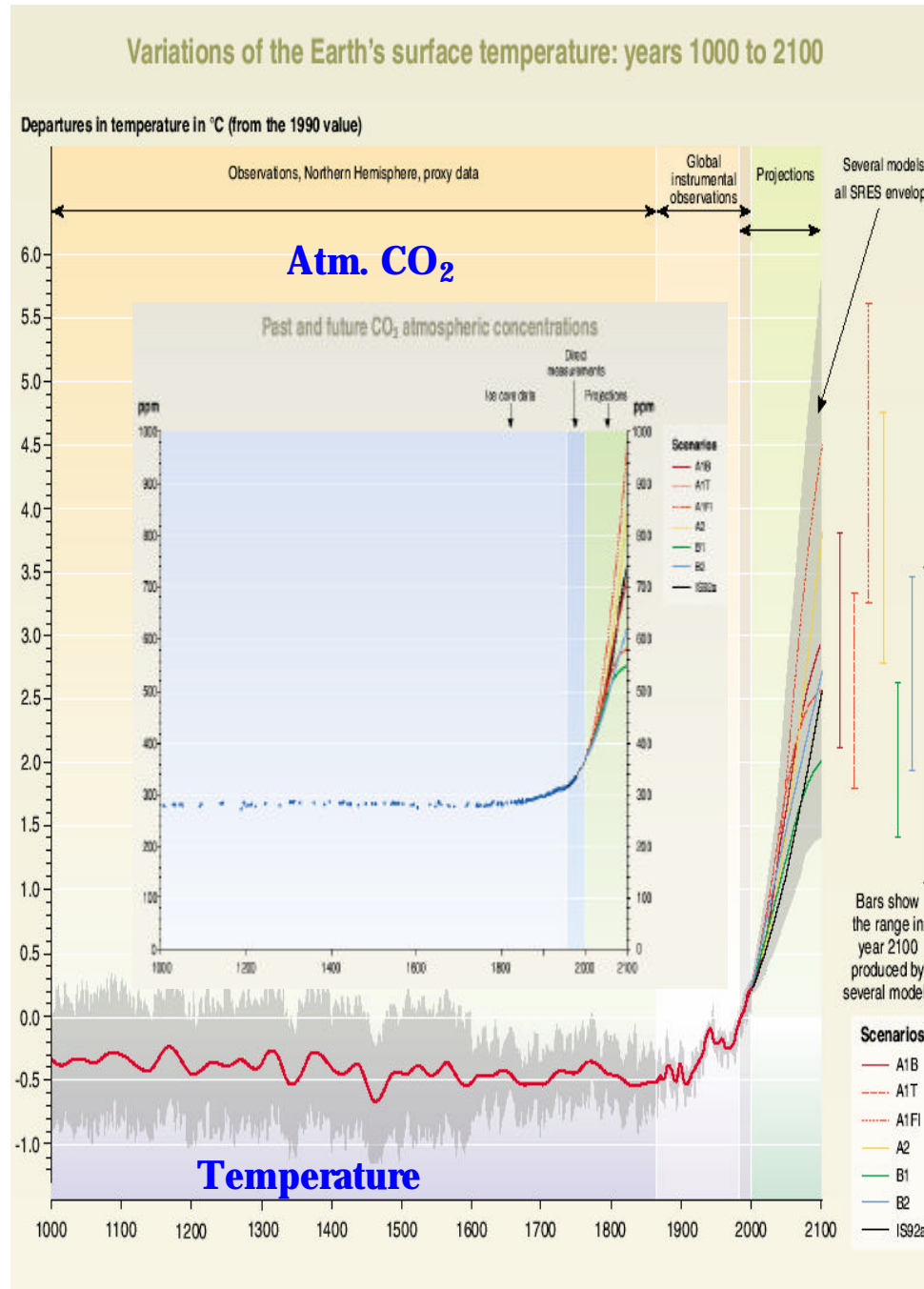


Sulfate aerosols deposited in Greenland ice



Source: IPCC, 2001

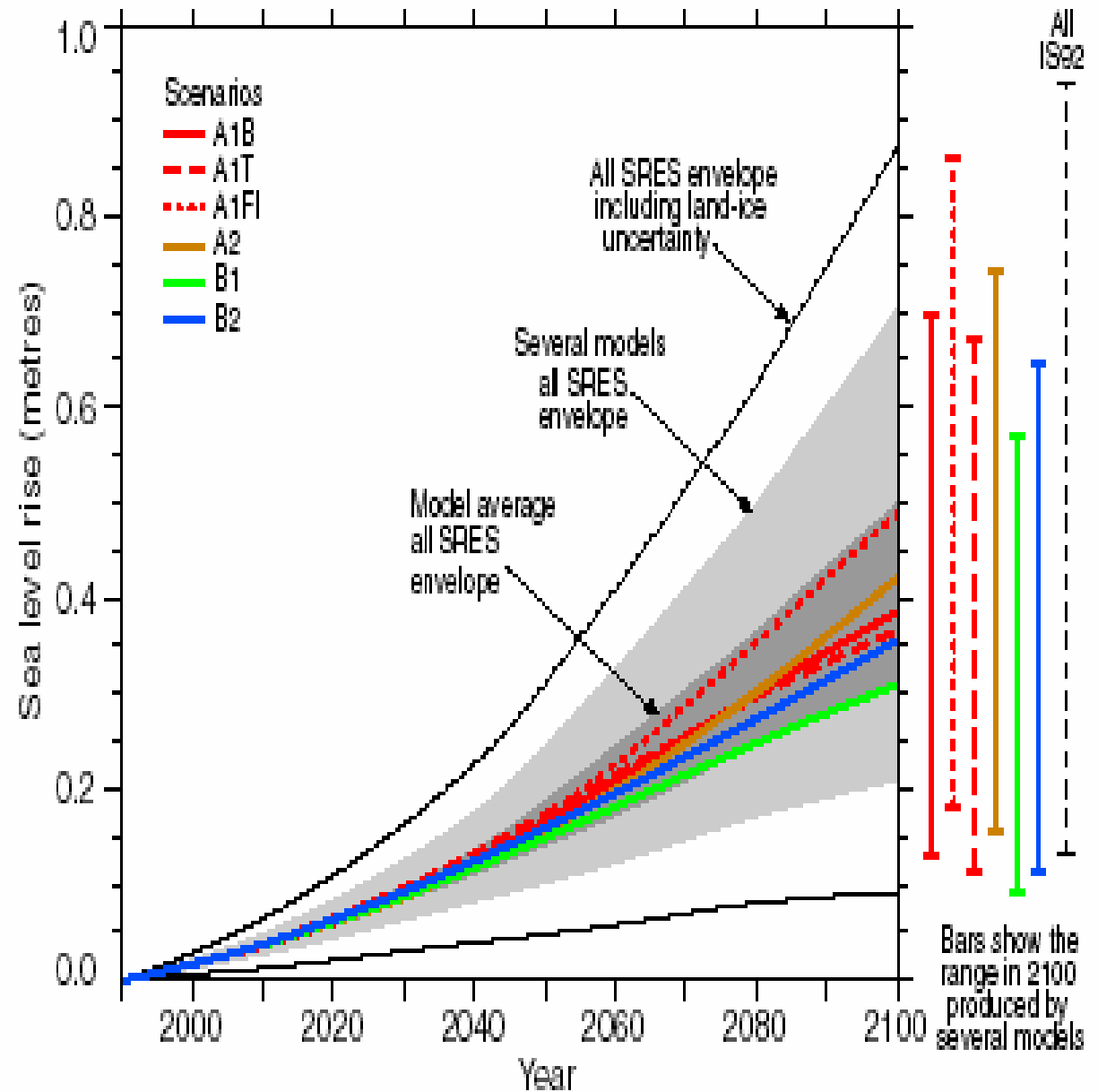
Source: IPCC, 2001



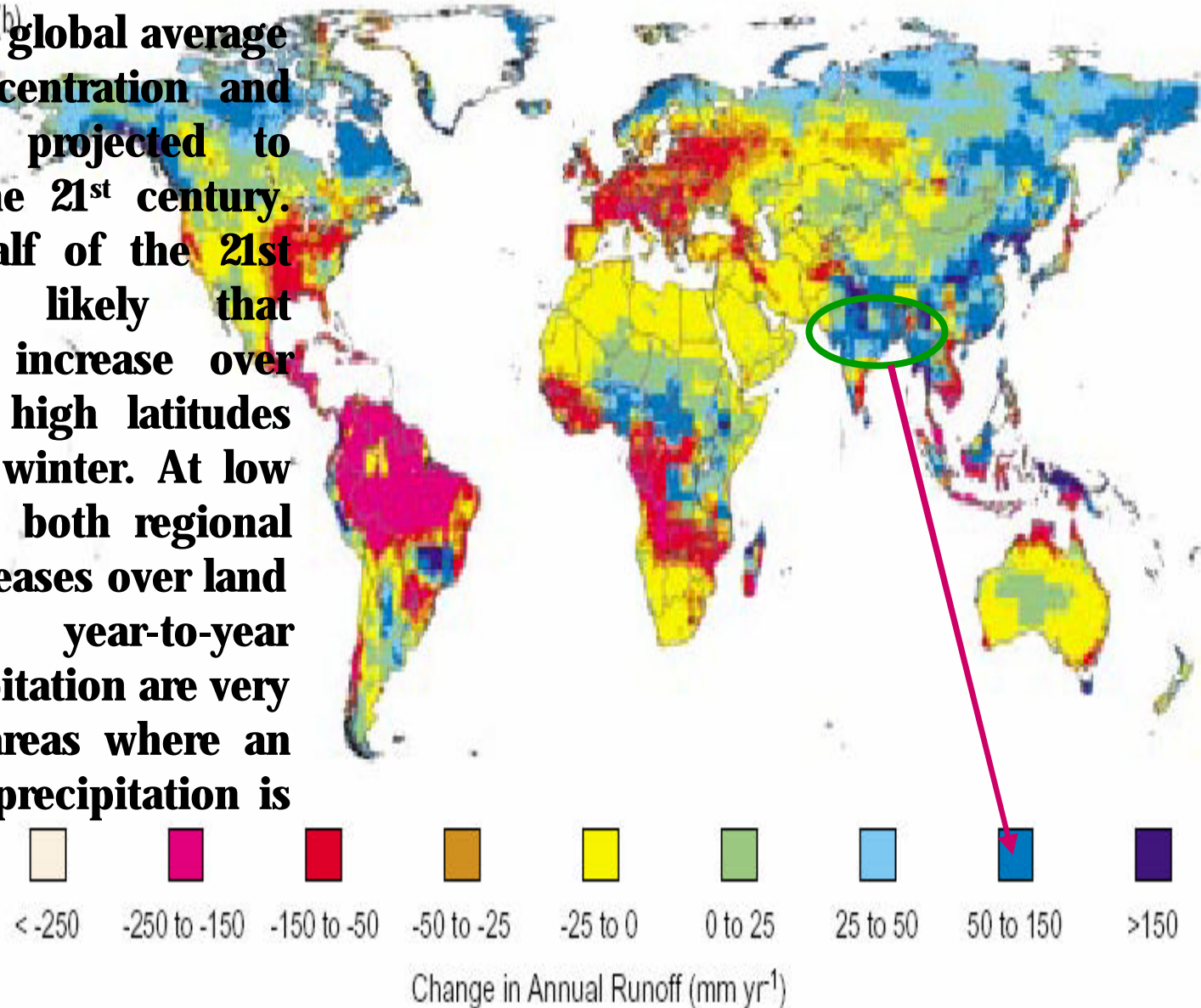
Depending on scenario, the sea level may rise from 20 cm to 80 cm over the next 100 years

Source: IPCC, 2001

(e) Sea level rise



Precipitation Based on global model simulations and for a wide range of scenarios, ^(b) global average water vapour concentration and precipitation are projected to increase during the 21st century. By the second half of the 21st century, it is likely that precipitation will increase over northern mid- to high latitudes and Antarctica in winter. At low latitudes there are both regional increases and decreases over land areas. Larger year-to-year variations in precipitation are very likely over most areas where an increase in mean precipitation is projected.



Bangladesh highly vulnerable to climate change due to:

- **High climate variability: spatial and temporal**
- **High sensitivity of biophysical resources to climate variability**
- **Extreme weather events: national and regional dimensions**
- **High population density**
- **High incidence of poverty and social inequity**
- **Poor institutional capacity: policy, human resources, technology adoption**
- **Inadequate financial resources**
- **Poor infrastructure**

Vulnerable sectors and issues

Water Resources

Floods (extent, frequency, timing), Drought, Salinity Ingress

Coastal zone and resources therein

Sea level rise – expected to be up to 43 cm by 2050;

Salinity; more frequent and extensive cyclones and tidal effects

Agriculture

Yield sensitivity to climate variability and carbon enrichment,

**Losses due to more frequent and extensive natural disasters,
pest infestation**

Cropping pattern changes

Human Health

More favourable climatic conditions for parasites, pathogenes

Response to climate change

Mitigation: Attempt to curb total GHG emission by lowering emission per unit of human activity (e.g., GDP, energy use) and/or increasingly locking up already emitted GHG in sinks such as forests.

Much of global efforts so far (Kyoto protocol, successive COPs) geared towards that

Adaptation: "... responses, anticipatory (hence planned) or reactive, collective and/or individual, which would reduce adverse impacts, thereby can decrease vulnerability to climate change..."

Adaptation is more an issue for LDCs and developing countries who are the possible worst sufferers while they emit only a little GHG compared to developed countries

Adaptation issues

Who and where to adapt?

Vulnerable sectors, communities, geographical areas, households and individuals

Who should facilitate adaptation?

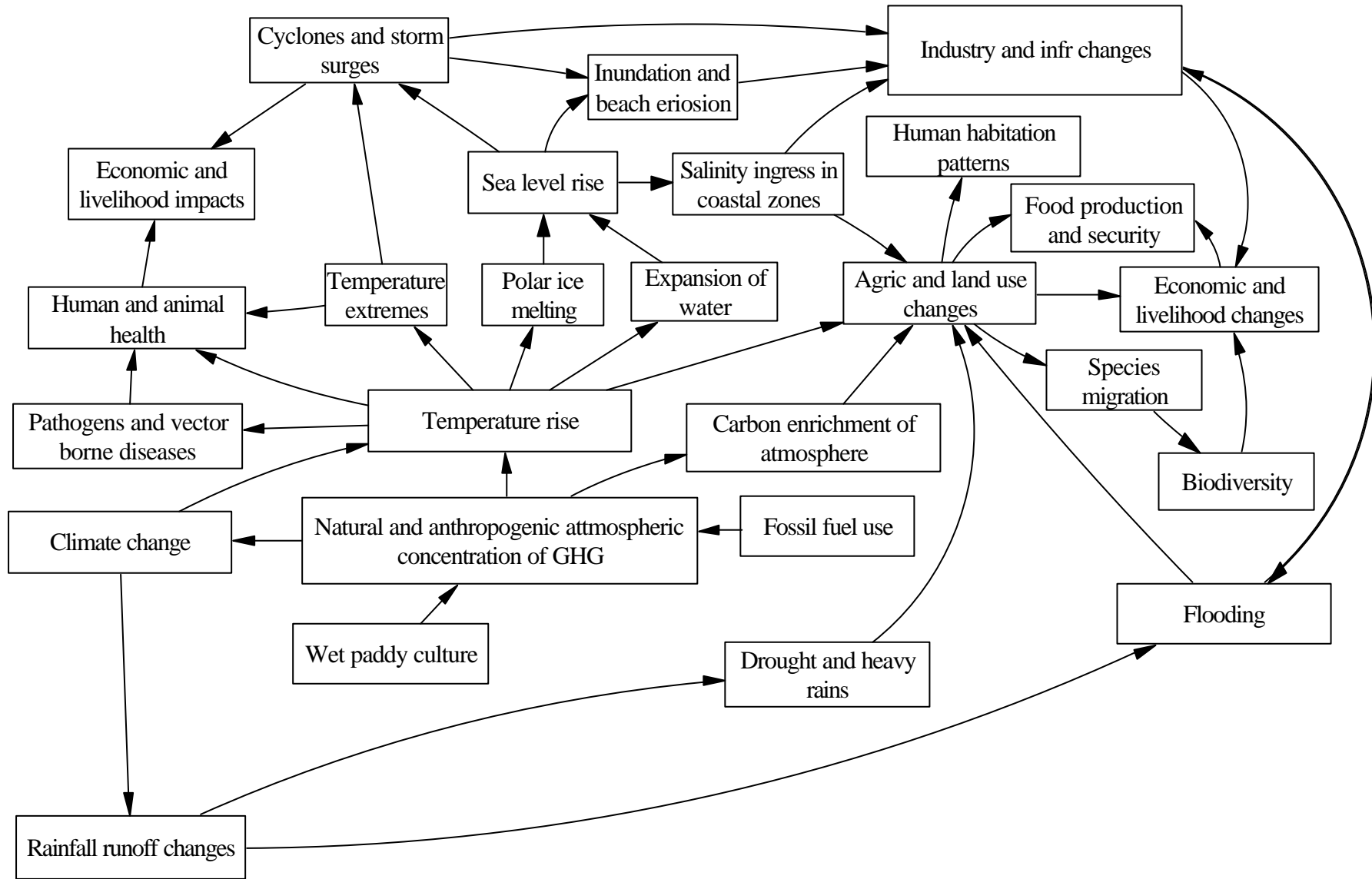
Government including local governments, CBOs, NGOs, households/individuals

How to adapt?

NAPA as a first step

NAPA: Overview of Bangladesh' Vulnerability

NAPA Inception Workshop



Climate Vulnerability Process and Points of Adaptation

NAPA

Part of a global process

Bangladesh in 2002 took a lead role among LDCs by hosting an International meet on prospective institutionalisation and globalisation of national efforts at adaptation

Time now for BD to prepare her own NAPA and claim her lead position role model in this regard

NAPA process in BD

Goal is to create a framework to guide and coordinate adaptation activities in the country

Five multidisciplinary working groups (ag, biodiversity, water, livelihood, industry and infr) depending on main vulnerability that BD faces plus a sixth on adaptation policy and institutions

Stakeholder consultation

WG reports to be synthesised by a group of consultants

Funding from GEF channelised through UNDP and Sponsored by the Ministry of Environment and Forests

NAPA methodology

Methodology of each sectoral working group may be different; but at core the generic methodology is to

- Assess the vulnerability to climate change as to its extent and nature;**
- Assess the adaptation needs;**
- Prioritise adaptation needs according to certain principles to be decided**

NAPA to be based on as far as possible existing development priorities and programmes and thus be a part of the mainstream development interventions and activities

Thank you