Pakistan's Increasing Vulnerability to Climate Change: Policy Response

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Causes of Climate Change

- **Enhanced concentration of GHGs, especially the carbon-dioxide, in the atmosphere is causing the global warming.**

- **Global climate change is the most difficult and dangerous environmental problem humans have ever created.**

(UNFCCC)

Climate Change:

A Global Top Priority Agenda!

Pakistan's Vulnerability to Climate Change

- Considerable Increase in frequency and intensity of extreme weather events, erratic monsoon rains causing frequent and intense floods and drought.

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Pakistan's Vulnerability to Climate Change

- Projected recession of (HKH) glaciers threatening water inflows into Indus River System (IRS).
- Increased temperature leading to reduced agricultural productivity.
- Increased intrusion of saline water into Indus delta due to sea-level rise.

Pakistan's Vulnerability to Climate Change

These threats may lead Pakistan to major concerns in terms of its:

- Water Security
- Food Security
- Energy Security
- **National Security** -Pakistan is among the top 8- countries most vulnerable to climate change (GERMANWATCH C.C. Vulnerability Index-2013)

Responding to Climate Change

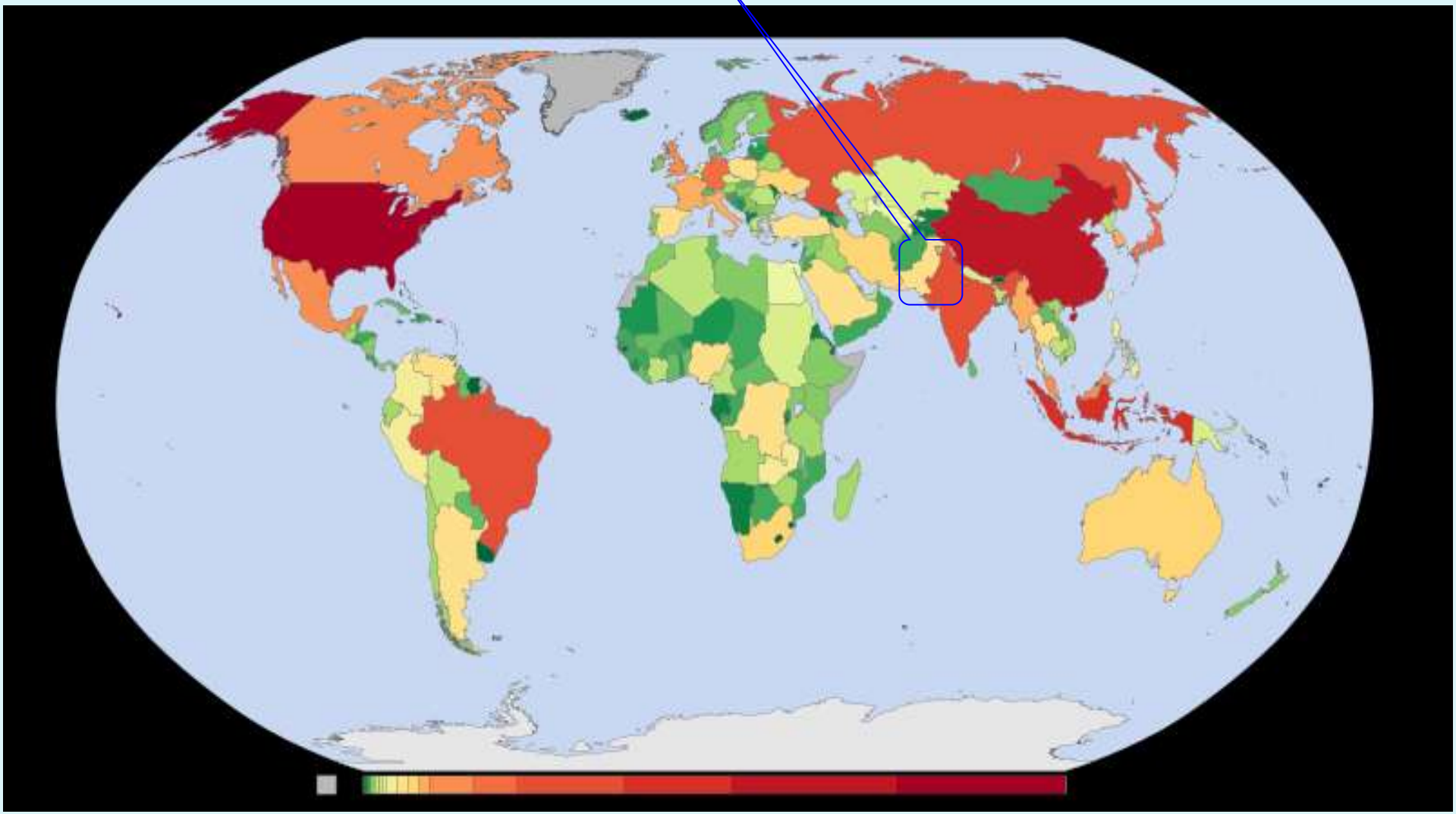
- There are two key ways of responding to climate change:

  - Through **Adapting** to the changes

  - Through **Mitigation** measures: GHG emissions reduction.

Pakistan’s contribution to the Global GHG emissions

0.8 % of Global GHG emissions



Focus of policy response

- Pakistan's contribution to global GHG emissions is 0.8% and ranked 135th on per capita basis
- Priority is towards adaptation to climate change
- As a responsible party to the UNFCCC and signatory to KP, we also need to mitigate and work towards low carbon development pathway

Adaptation to Climate Change

KEY SECTORS

- Water Resources
- Agriculture and Livestock
- Human Health
- Forestry & Biodiversity
- Disaster Preparedness
- Other Vulnerable Eco-Systems:
  - Mountain Areas - Rangeland & Pastures
  - Arid, Hyper Arid Areas - Wetlands
  - Coastal and Marine Ecosystems

Mitigation of Climate Change

KEY SECTORS

- Energy
- Transport
  - Road, Railway & Aviation
- Agriculture & Livestock
- Forestry
- Town Planning
- Industries

Water Resources

Policy Measures:

Water Conservation Strategies

- conservation, reduction in irrigation losses and use of efficient irrigation techniques.
- Local rain harvesting measures.

continued….

Water Resources

Policy Measures:

Water Management

- **Increase of water storage capacity & identification of new dam sites.**
- **Protection of surface and ground water degradation.**
- **Recycling of waste water.**
- **Protection of catchments & reservoirs.**
- **Rational ground water exploitation.**

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Water Resources

Policy Measures:

Enhancing capacity

a. **Domestic water saving & sea water utilization;**
b. **Monitoring temporal changes in glaciers, snow cover, and meteorological parameters;**
c. **Strengthening river flow monitoring network & flood warning system**

Agriculture and Livestock

Research

a. **Develop digital simulation models for assessment of climate change impacts on physical, chemical, biological and financial aspects of agricultural production systems in various agro-ecological zones;**

b. **Develop new varieties of crops which are high yielding, resistant to heat stress, drought tolerant, less vulnerable to insects and pests;**

Agriculture and Livestock

Technology

a. Energy efficient farm mechanization;
b. Adopting laser land leveling, optimized planting dates, crop diversification;
c. Incentives for water saving technologies;
d. Bio-technology for improved crops & livestock breeds

Agriculture and Livestock

General Management

a. **Expansion of cultivated lands through rain harvesting & development of wastelands**
b. **Feed conservation techniques**
c. **Remote sensing & GIS techniques to assess land cover changes, water logging, salinity**

Agriculture and Livestock

Risk Management:

a. **Risk management against crop failures, and extreme weather events;**
b. **Effective communication of climatic info to farmers;**
c. **Encourage agriculture-drought management practices.**

Agriculture and Livestock

- Develop & adopt methods to reduce GHG emissions from rice cultivation
- Reduce releases of Nitrous Oxide from agricultural soils/ Nitrogenous fertilizer
- Reduce GHG emissions from enteric fermentation
- Improve manure management

Disaster Preparedness

Policy Measures

- Implement National Disaster Risk management Framework of NDMA;
- Upgrade storm drainage of major cities;
- Strengthen early warning systems for cyclones & tsunami and evacuation plans for coastal areas;
- Strategies in case of GLOF;
- Construct cyclone shelters ;

Disaster Preparedness

Policy Measures:

- Strengthen flood forecasting warning system.
- Enforcement of " Flood Plain " Regulations; Strengthening barrages capacity. Rehabilitation of irrigation infrastructure & river embankments.
- Strategies for flood managements such as use of dams, retarding basins & escape channels.
- Ensure infrastructure resilient to C.C. impacts.

Disaster Preparedness …. contd

Policy Measures

- Upgrade storm drainage of major cities.
- Strengthen early warning systems for cyclones & tsunami and evacuation plans for coastal areas.
- Strategies in case of GLOF.
- Construction of cyclone shelters.

Forestry and Biodiversity

Policy Measures

i) Forest Management
ii) Habitat conservation
iii) Community participation

Forestry and Biodiversity

Most likely impacts of climate change:

- Decreased forest productivity
- Reduced forest area
- Unfavorable conditions for biodiversity
- Changes in species composition
- Higher flood risks etc

Forestry and Biodiversity

Forest Management

a. Explore new planning and decision support tools to deal with uncertainty and risks in long-term forest planning.

b. Ensure flexible adaptive planning that allows to consider multiple options.

c. Encourage area specific adaptive practices with greater participation of local communities.

Forestry and Biodiversity

Policy Measures:

- Arrest soil erosion, minimize insect outbreaks, reduce wildfires and other damages.
- Scientific research on forests, biodiversity and forest management systems.
- Scientific collaboration with international bodies regarding forest based adaptation.
- Establish gene banks to conserve the biological diversity of valuable flora and fauna.

Policy measures suggested for:

- Capacity Building & Institutional Strengthening
- Awareness Raising
- International & Regional Cooperation
- Finance
- Technology Transfer
- Policy Implementation Mechanism

International Cooperation & Finance

- Effective use of internationally available technology transfer and capacity building opportunities through:

1. **Green Climate Fund**: reaching to US$ 100 billion per annum by 2020
2. Clean Development Mechanism (CDM)
3. Adaptation Fund
4. Global Environmental Facility
5. Establishment of National Climate Change Fund

- **Dr. Qamar uz Zaman Chaudhry**

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Thank you