

APAN- NATIONAL GOVERNMENTS - IWRM

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APAN ---- NATIONAL GOVERNMENTS

Build climate change resilient and sustainable :

Human systems, Ecosystems and

Economies ,

Mobilisation of knowledge, enhanced institutional capacity.

Informed decision making-processes, and

Facilitated access to finance and technologies.

NATIONAL POLICY : Climate Change Adaptation

Water Resources

Agriculture and Livestock

Human Health

Forestry ,Biodiversity ,Eco-Systems

Mountain areas ,Rangeland and Pastures ,Arid, Hyper Arid Areas

Coastal and Marine Ecosystems ,Wetlands

Disaster Preparedness

Socio-Economic Measures

RESPONSE

Capacity Building & Institutional Strengthening

Awareness Raising

International & Regional Cooperation

Finance

Technology Transfer

Policy Implementation Mechanism

FINANCING STUDIES

Study on Climate Change Impact Assessment and Adaptation

Strategies Study for Pakistan,

Developing Strategies for Climate Change Pakistan's Initial National Communication
on Climate Change,

Water Resources in South Asia: An Assessment of Climate Change

Associated Vulnerabilities and Coping Mechanism

Variables Limits/Periods

Temperature $+0.3\text{ }^{\circ}\text{C}/\text{decade}$

Rainfall $\pm 1.0\%$ /decade

Prediction scenario $+0.9\text{ }^{\circ}\text{C}$ and $+1.8\text{ }^{\circ}\text{C}$ in

Rainfall 0%

$\pm 3\%$ rainfall

$\pm 6\%$ rainfall

Prediction periods 2020, 2050

Impacts on Hydropower Generation Irrigation

	Scenarios	Changes Years			
		2000	2010	2020	2050
• 6% decrease in rain					
• 29% net increase in irrigation requirements	0.3 °C & +0% PPT	0	0.04	0.03	0.22
	0.3 °C & +1% PPT	0.02	0.86	1.98	4.32
	0.3 °C & -1% PPT	-0.01	-0.83	-1.46	-3.85

Adaptations in Policy Planning

Measures to Improve System Efficiency

Watershed Management

Urban Water Use

Water Quality and Environmental Protection

Flood Control

Weather Forecasting and Information Network for Farmers

Changes in Cropping Patterns

Policy Measures

Water Storage and Infrastructure & Water Conservation Strategies

- a. Assess and address the needs for additional water storages and distribution ;
- b. Ensure early rehabilitation, remodeling and up gradation of the existing irrigation infrastructure ,make it resilient to climate change related extreme events;
- c. Identify new potential dam sites to keep the options open to develop new dams;
- d. Develop necessary infrastructure to harness the hill torrents potential;
- e. Enforce measures to enhance the life of existing storages;
- f. Introduce local rain harvesting measures.

Integrated Water Resource Management

- a. Ensure that, while making water allocations to various sectors in the medium- to long-term, due consideration is given to changes in sectoral demands caused by climate change;
- b. Protect groundwater through management and technical measures like regulatory frameworks, water licensing, slow action dams, artificial recharge especially for threatened aquifers, and adopt integrated water resources management concepts;
- c. Ensure rationale ground water exploitation by avoiding excessive pumping;
- d. Ensure recycling of wastewater through proper treatment and reuse it in agriculture, artificial wetlands and groundwater recharge ;
- e. Protect and preserve water 'catchment' areas, and reservoirs against degradation, silting and irrigation system contamination;

Integrated Water Resource Management

- f. Encourage active participation of farmers in water management along with line departments by accelerating implementation of participatory irrigation management reforms;
- g. Ensure water distribution among provinces as far as possible according to crop sowing timings;
- h. Address sea water intrusion
- i. Take appropriate measures to preserve the ecology of dry river reaches of Eastern Rivers;
- j. Develop contingency plans for short term measures to adapt to water shortages that could help to mitigate drought;
- k. n. Promote integrated watershed management including ecological conservation practices in uphill watersheds.

Enhancing Capacity

- a. Technologies and techniques for sea water utilization, water recycling and avoiding wasteful use of domestic and drinking water;
- b. Measurement and monitoring of irrigation water delivery
- c. National capacities in remote sensing and GIS techniques for monitoring temporal changes in glaciers and snow cover;
- d. National capacities for making seasonal hydro-meteorological forecasts;
- e. Comprehensive inventory of all water resources;
- f. Hydrological network to monitor river flows and flood warning systems.

Areas of Concern

Community Participation

Local Area Plans

Disaster Prone Area Identification

Hazard Mapping

Disaster Risk Reduction

Resettlement

Livelihood

Social Engagement