



Government of Pakistan  
Ministry of Environment

CLIMATE CHANGE

# Vulnerabilities in Agriculture in Pakistan



INTERNATIONAL UNION FOR CONSERVATION OF NATURE





## Climate Change Vulnerabilities in Agriculture in Pakistan

Pakistan is an agriculture-dependent country, with over 47% of its population earning their livelihood from agriculture. This sector contributes 24% to GDP. The Indus Valley, which is the cradle of Pakistan's agriculture, is presently threatened by the vagaries of Climate Change, largely induced through anthropogenic interventions that result in global warming. While higher concentrations of carbon dioxide can have beneficial impacts on crops, rising temperatures and reduced precipitation play havoc with the biological complex.

### Climate Change Scenario!

Temperatures are predicted to rise by 3 degrees by 2040 and up to 5-6 degrees by the end of the century. Monsoon rains will be drastically reduced but have a much higher intensity. Droughts and floods are predicted for the whole of South Asia.

### Issues arising from Climate Change:

- Reduced water availability, which is altering the crop rotation and cropping patterns
- Drastic reduction in cereal production, e.g wheat and rice, as well as in cotton and sugarcane
- In southern Pakistan yields of major cereals predicted to decline by 15-20% by Regional Climate Change Models
- In the northern area minor improvements in yield due to increased duration of growing period
- Livestock production predicted to decline by 20-30%, creating crises in milk, meat and poultry supplies and pushing prices beyond reach of the average Pakistani
- Rangelands will be over-stressed from prolonged droughts and shifting human and livestock populations around riverine areas and in mountainous regions. This will reduce tree and shrub cover. Pakistan is already amongst the most forest/tree resource-poor countries in the world with a meager 5.2% forest cover, and even that sparsely stocked.
- Inland fisheries predicted to be reduced due to decreased water availability and changing river flows





- Plant diseases, weeds and insect attacks will increase considerably, resulting in major crop losses
- Fruits, vegetables and horticultural products are high-value exports for Pakistan. A predicted reduction in these will severely impact our balance of payments.
- The livelihood of farm communities will be affected, and marginalized groups like women, children and the elderly will be negatively impacted through widespread malnutrition.

Pakistan earns 70% of its foreign exchange from agriculture alone. Unless it maintains stable growth rates, its economy will suffer immensely.





**Unless Climate Change trends are reversed and things return to normal, agriculture will be the most seriously impacted sector. Without a clear-cut adaptation strategy and the requisite resources and capacity building the medium to long-term prognosis is far from good!**

### **Is Pakistan a special case?**

Climate Change impacts for the whole of South Asia are daunting.

The International Food Policy Research Institute states in its 2009 report, “South Asia will be the most severely impacted by climate change. By 2050 it could lose 50% of its wheat productivity.”

Recent ranking by Maplecroft of the UK places Pakistan at 28<sup>th</sup> amongst those that will be most severely affected. But since 22 of those countries are in Africa, Pakistan is ranked amongst the top ten outside Africa. By virtue of sharing a highly porous border with Afghanistan (ranked No. 4) and being a neighbor to the emerging economies of China and India, Pakistan is being squeezed from all sides.

Pakistan is an agriculture supplier that feeds vast populations of its own and of neighboring countries like Afghanistan, as well as the Middle East and several Central Asian Republics.

### **What’s at risk?**

The agriculture in the whole of the Indus Valley is under threat, resulting in direct and indirect impacts on agriculture that could cost billions of dollars. This threat translates into direct impacts to over 100 million people and indirect impacts to the entire burgeoning population of 180 million, which is projected to increase to 240 million by 2035.

Producing high delta water-consuming crops like sugarcane under a Climate Change scenario may no longer be feasible. Sugar prices have more than doubled over the past year, creating social unrest and political embarrassment.





## Required adaptation?

Pakistan needs to put in place immediate Adaptation Measures directed at its agriculture sector that will help stabilize its agricultural growth rate at around 5% above the population growth rate of 2.4%.

### This needs:

- Investment in research and development that provides solutions to high-stress agriculture
- Hi-tech meteorological services along with early warning systems to predict floods, drought, cyclones, tsunamis, wind shear, fog, hailstorms, etc.
- Breeding of livestock species and multiplication of seed varieties that are resistant to drought
- Building up food reserves to cater for extreme events
- Development of an **Action Plan** that focuses on adaptation and mitigation measures to enable sustainable growth in agriculture
- Financial resources to the tune of US \$30 billion or more to address the needs of agriculture alone over the next 10 years
- Know-how, farmer training and capacity building for the 8 highly diversified agro-ecological zones
- Technology transfer in the area of renewable energy at farm level and green technologies to save the environment from the vagaries of Climate Change
- Massive investment in forest and tree cover across the board with due attention paid to special ecologies, e.g. the coastal belt, where mangroves are the most suitable
- Lastly, a major focus on the **youth and children** to prepare them to face the consequences of Climate Change. Their education and involvement are a vital part of any sensible strategy!

## Actions needed to meet the Challenge:

Pledge unequivocal support to help address the agricultural challenges arising from Climate Change in Pakistan.



There is no margin for inaction, for it would only result in further extremism, terrorism, food insecurity, poverty and widespread chaos. Pakistan is already facing tough times due to the **War on Terror**, and climate challenges will further drain its heavily committed resources.

Pakistan is a country with a strong resolve and fighting spirit. Climate Change poses a challenge that cannot be fought alone. As a responsible member of the International Community Pakistan is willing to join hands in the fight against Climate Change. We are committed to move ahead rapidly and do our part in mitigating carbon emissions and have already put in place responsible programs and projects. While ranked very high in coal resources we are committed to renewable energy technologies. However, adapting to Climate Change is a costly and painful business. Here is where we need help that results in significant and perceptible outcomes.

Climate Change is a threat never witnessed before by mankind. Its anthropogenic interventions have induced action - knowingly or unknowingly. It requires a befitting response. Threats to food supplies and the sustainability of agriculture are at the forefront of the predicted impacts of Climate Change. Mankind's survival eventually depends on how wisely and well it adapts to climatic vagaries, and the actions it takes or its inaction will ultimately determine its fate. Human response and resilience are often beyond imagination, but we need help to plan the required response strategies and tactics at all levels.

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