



# IPCC Working Group II Adaptation Report

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The United Nations' climate science body, the Intergovernmental Panel on Climate Change (IPCC), published the second instalment of its Sixth Assessment Report (AR6) February 28, 2022. The instalment is titled ***Climate Change 2022: Impacts, Adaptation and Vulnerability***, and focuses on the effects of climate change on ecosystems and society.

The report was deemed an “atlas of human suffering” by UN Secretary General António Guterres. He pointed to the failure of climate leadership that has left nearly half of the world's population in the danger zone now. This abdication of responsibility is criminal, he added.

Compiled by 270 authors from 67 countries, and incorporating research from more than 34,000 scientific papers, the report identifies 127 risks to natural and human systems. It stresses on the interconnections between climate, biodiversity, and human well-being – a critical link that is often overlooked in environmental analysis, which tends to be siloed.

# Key Takeaways

## **The most populated regions are at high risk**

Cities housing more than half of the world's population are at highest risk from climate change. Globally about 3.3-3.6 billion people are highly vulnerable to climate change.

The global hotspots for vulnerability are West, Central and East Africa, South Asia, Central and South America and Small Islands Developing States.

# Key Takeaways

## **Asia is a hotspot for some of the worst climate impacts**

Countries like India are experiencing a hotter summer climate, resulting in increase of energy demand for cooling at a rapid rate, together with the population growth

Climate change is expected to have serious impacts for people living within these hot spot areas, as observed from loss of food crop yields to disasters such as floods, fluctuations in seasonal water availability, or other systemic effects. For instance in South Asia, extreme climatic conditions are threatening food security, thus agro-based economies like India and Pakistan are the most vulnerable to climate change in this regard.

Both climatic and non-climatic drivers such as socio-economic changes have created water stress conditions in both water supply and demand in all sub-regions of Asia. By mid-21st Century, the international transboundary river basins of Ganges and inter-state Sabarmati river basin in India could face severe water scarcity challenges with climate change acting as a stress multiplier (high confidence). Due to global warming Asian countries could experience increase of drought conditions (5- 20%) by the end of this century.

In India, rice production can decrease from 10% to 30% whereas maize production can decrease from 25% to 70% assuming a range of temperature increase from 1° to 4°C.

Occurrence of pests such as the golden apple snail (*Pomacea canaliculate*), associated with the predicted increase in climatically suitable habitats in 2080, threatens the top Asian rice-producing countries including China, India, Indonesia, Bangladesh, Vietnam, Thailand, Myanmar, Philippines and Japan.

Increased climate variability and extreme events are already driving migration (robust evidence, medium agreement) and projecting longer-term climate change will increase migration flows across Asia (medium confidence). One in three migrants comes from Asia. In 2019, Bangladesh, China, India and the Philippines each recorded more than 4 million disaster displacements.

# Key Takeaways

## **The poor are hurt the most**

While climate impacts do not distinguish between borders, the poorest are hit the hardest. Low-income populations face the largest gap in adaptation action, in terms of what is happening versus what is needed.

Sharpens the urgency for loss and damage, since the poor are bearing the brunt of a problem they have not caused

## **Every small degree of rise in warming will increase risks**

“Projected adverse impacts and related losses and damages escalate with every increment of global warming”, says the report. Up to 14% of species face a very high risk of extinction at global warming of 1.5C, and this rises to 29% at 3C, and 39% at 4C.

# Key Takeaways

## **More complex problems**

The report found that the complexity of climate change impacts is increasing as multiple climate hazards are happening at the same time, climate related risks are interacting with non-climate related risks, risks are moving from one sector of the economy to another and from one region to another and even some responses to climate change are resulting in new impacts and risks.

For instance, when a tropical cyclone would occur the storm surge along with heavier rainfall and future sea level rise would make the resultant flooding more intense hence difficult to manage. Similar compounding of impacts of weather extremes can also occur in the case of heat waves resulting in extended periods of drought in region which in turn would result in food insecurity and health related issues, all of them occurring simultaneously.

The risks moving across the different sectors of the economy and various regions would mostly occur in the mountains also along coasts and urban centres. When they would occur in sensitive eco systems such as those in the polar regions they may trigger climate tipping points which would change those ecosystems irreversibly.

# Key Takeaways

## **Some changes are irreversible**

Some losses that have occurred are irreversible, such as the first species extinctions driven by climate change. Others are approaching irreversibility with worsening climate change, such as the retreat of glaciers, or thawing of permafrost, particularly in the Arctic region. If global average temperatures temporarily cross the 1.5 Celsius – what is known as an “overshoot” scenario - critical and fragile ecosystems could be lost, even if temperatures are brought back down (theoretically, using carbon dioxide removal technologies like direct air capture). This will be disastrous for biodiversity.

## **Impacts on health, food and agriculture**

Climate change has conclusively affected the physical and mental health of people around the world. And human society will increasingly face heat stress, water scarcity, threats to food security, and flood risks as it worsens. At 2C of warming, people in Sub Saharan Africa, South Asia, and Small Island Developing States will face severe food shortages and malnutrition.

# Key Takeaways

## **More finance and political commitment urgently needed**

In some regions, the limits to adaptation may have been reached, particularly in the case of people living in low-lying areas in Australasia, and Small Islands, and smallholder farmers in Central and South America, Africa, Europe and Asia. To reap further benefits from adaptation, other constraints need to be overcome such as poor governance, climate literacy and access to finance.

Current global financial flows for climate action are insufficient, and are mostly targeted at emissions reductions, with a small proportion going towards adaptation. As climate impacts worsen, economic growth will slow down, and thus reduce the availability of financial resources for vulnerable regions.

Climate adaptation efforts have improved in recent years, but progress is unevenly distributed by geography and is slow. Political commitment and follow-through are needed across all levels of government, to accelerate adaptation. Institutional frameworks with clear goals and priorities that define clear responsibility are also key. The report calls for adaptation measures that are effective, feasible and based on the principles of climate justice.



# Key Takeaways

## **Solutions are available if we choose to adopt them**

A key aspect of this report is the vast set of options it provides to reduce risks to people and nature. Strengthening of health systems can reduce impacts of infectious diseases and heat stress, and should be combined with disease surveillance, early warning systems, and improved access to potable water. Harnessing the adaptive strengths of nature, the report recommends measures like agroforestry, the conservation, protection and restoration of natural forests, and the planting of diverse tree species to withstand climate impacts. Groundwater depletion in agriculture can be combatted by adopting rainwater storage and other water-saving technologies, while food security can be enhanced by adopting stress-tolerant crops and livestock, promoting community-based adaptation that is locally driven, and respecting local and indigenous knowledge systems. All of this brings co-benefits for nutrition, health and wellbeing. Cities can use nature-based engineering approaches like establishing parks, green corridors, and urban agriculture. And expanded social safety nets will help with disaster management.

The report closes on an instructive and poignant note: “The cumulative scientific evidence is unequivocal: Climate change is a threat to human well-being and planetary health. Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all.” Holding global temperature rise to below 1.5C could reduce projected losses.