



Climate Change Impacts on Food and Water Security- The legal Response

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SEPTEMBER 2016

Climate Change Impacts on Food Security

- ❖ The Big Picture
- ❖ “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (World Food Summit, 1996).
- ❖ Four dimensions of food security:
 - ❖ availability of food,
 - ❖ accessibility (economically and physically),
 - ❖ utilization (the way it is used and assimilated by the human body) and
 - ❖ stability of these three dimensions
- ❖ <http://www.fao.org/3/a-i5188e.pdf>

Climate Change Impacts on Food security

- ❖ Climate change is profoundly impacting the conditions in which agricultural activities are conducted.
- ❖ In every region of the world, plants, animals, and ecosystems are adapted to the prevailing climatic conditions.
- ❖ When these conditions change, even slightly, even in a direction that could seem more favourable, the plants and animals present will be impacted, some will become less productive, or even disappear.
- ❖ A range of physical, biological and biophysical impacts bear on ecosystems and agroecosystems, translating into impacts on agricultural production.
- ❖ This has quantity, quality and price effects, with impacts on the income of farm households and on purchasing power of non-farm households.
- ❖ All four dimensions of food security and nutrition are impacted by these effects i.e. availability, accessibility, utilisation and stability of the three.



Climate Change Impacts on Food Security

Four out of the eight key risks identified by IPCC AR5 have close relations with or direct consequences to food security:

- Loss of rural livelihoods and income
- Loss of marine and coastal ecosystems, and livelihoods
- Loss of terrestrial and inland water ecosystems, and livelihoods
- Food insecurity and breakdown of food systems

Climate Impacts on food security

❖ ***Impacts of climate change on freshwater availability***

- ❖ An increase in temperature will trigger increased demand for water for evapotranspiration by crops and natural vegetation and will lead to more rapid depletion of soil moisture (FAO, 2013a).

❖ **IMPACTS ON AGRO-ECOSYSTEMS**

- ❖ Crops; livestock and pastoral system; **Forests ; Fisheries and aquaculture systems ; Genetic resources**

❖ **ECONOMIC AND SOCIAL CONSEQUENCES**

- ❖ *Impact on agricultural incomes, observed and projected*
- ❖ *Impact on food prices, trade and investments*
- ❖ *Impacts of extreme events, climate-related disasters. – Esp marginal farmers*

❖ **VULNERABILITIES DETERMINE THE IMPORTANCE OF THE NET IMPACT ON FOOD SECURITY AND NUTRITION**

- ❖ *Food security vulnerabilities to climate change*
- ❖ *Vulnerabilities resulting from gender bias*

❖ **IMPACTS ON FOOD SECURITY AND NUTRITION**

Options and Challenges

❖ INCREASE RESILIENCE OF LIVELIHOODS

- ❖ Devise appropriate social protection strategies
- ❖ Address gender-related vulnerabilities
- ❖ Conceive disaster risk reduction for food and security and nutrition in the context of climate change adaptation

❖ BUILD RESILIENCE OF AGRICULTURAL SYSTEMS

- ❖ Crop systems
- ❖ Livestock and pastoral systems
- ❖ Forests
- ❖ Fisheries and aquaculture systems
- ❖ Building resilience at landscape level

❖ MANAGING GENETIC RESOURCES

❖ INVESTING IN RESILIENT AGRICULTURAL DEVELOPMENT

- ❖ Promoting agricultural development for economic growth, alleviation of poverty and reduction of vulnerabilities in rural areas, focusing on smallholder agriculture.
- ❖ Enabling in-farm and off-farm diversification

Options and Challenges

- ❖ **INVESTING IN SYSTEMS TO ASSESS RISKS, VULNERABILITIES AND ADAPTATION OPTIONS**
 - ❖ *Climate risk and impact assessment and tools*
 - ❖ *Developing environmental monitoring systems*
 - ❖ *Vulnerability assessment and tools*
 - ❖ *Adaptation options assessment and tools*
 - ❖ *Early warning systems*

Options and Challenges

❖ ENABLING ADAPTATION THROUGH POLICIES AND INSTITUTIONS

- **Building institutions and policies to support the transition to more resilient systems**
Support food producers, especially small-scale food producers, in their efforts to adapt.
 - *Support and facilitate collective action*
 - *Manage risks*
 - *Integrate climate change concerns in all agricultural and food security strategies and policies*
 - *Ensure the integration of the agriculture sectors as well as food security and nutrition concerns in climate change strategies and policies*
- **Enhance markets and trade's contribution to stability of food security**
 - *Limiting trade restrictions*
 - *Widening and deepening markets*
 - *Information and transparency*
- **Strengthen regional and international cooperation**
 - *International Plant Protection Convention*
 - *The role of the International Treaty on Plant Genetic Resources for Food and Agriculture*



Climate Change Impacts on Food security - South Asia Perspective- CUTS study

❖ IMPACTS

- ❖ Meltdown of the Himalayan glaciers is not only raising sea-levels but also intensifying flooding and thereby affecting agriculture
- ❖ Countries and regions lying in the Hindukush Himalaya (Nepal and Bhutan) are facing more frequent flood due to glacial lake outbursts, low-lying countries in South Asia are witnessing a rise in sea-levels (Bangladesh and coastal areas of India)- Sundarbans islands
- ❖ Glacial lake outbursts in Nepal and Bhutan intensify flash-flood, devastating livelihoods of poor communities.
- ❖ Low-lying countries like Bangladesh and coastal regions of India are suffering from rising sea-levels. The inundation of sea water salinate agriculturally productive land. The salination not only destroys crops but also livestock of small and marginal farmers

❖ Potential Solutions

- ❖ Climate resilient agriculture is the need of the hour
- ❖ Development of climate resilient seeds, both agricultural production and productivity can be increased
- ❖ With the right selection of crop genotypes and livestock breed, rural livelihoods can be made more secured

Climate Change Impacts on Food security-India's Policy Response

❖ **National Action Plan on Climate Change** in 2008 recognises the adverse impacts of CC on Agriculture

National Mission for Sustainable Agriculture envisages in making agriculture resilient to climate change by dryland agriculture, introduction of technology, access to information and use of biotechnology.

❖ Strong agricultural insurance is required to protect the farmers from crop failures due to climate change.

➤ National Agricultural Insurance Scheme implemented in 1999 has been replaced by **Pradhan Mantri Fasal Bima Yojna** in January 2016. The new crop insurance scheme aims to strengthen the existing framework of protection of farmers against unforeseen circumstances.

❖ The increase in temperature may attract a higher number of pests and may have a direct impact on the production output of agriculture. (Araya Flores, 2007, *Effects on resilience in Indian cotton production due to climate change*, Centre for Trans disciplinary Environmental Research)

❖ To combat the increase in pests and diseases in crops, there may be an increase in the use of pesticides, in the process affecting the depleting water table and surrounding environment.

❖ To combat the twofold impact, introduction of genetically modified crops may be needed and the government is steadily planning on introducing GM crops. For instance, GM Mustard seeds are planned for introduction in Indian markets and MoEF & CC has invited objection from the public for comments.

Climate Change Impacts on Food Security- Response in Law including Judiciary

- ❖ Under Directive Principles of State Policy, it is provided under Article 47 that that the State shall regard raising the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties.
- ❖ Securing “ Right to Food” through **National Food Security Act, 2013** (also **Right to Food Act**) which aims to provide subsidised food grains to approximately two thirds of [India](#)'s 1.2 billion people; converts into legal entitlements for existing food security programmes of the Government of India.
- ❖ Protection of Plant Varieties and Farmers' Rights Act, 2001-
- ❖ Resorting to traditional agricultural practices which accommodated change in weather patterns
 - ❖ By using legislations such as Forest Rights Act using concepts such as Community Forest Resource

Climate change impacts on water security

❖ The Big Picture-

❖ Water security as ensuring “the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable limit of water-related risks to people, environment and economies.”

http://siteresources.worldbank.org/INTWRD/Resources/FINAL_0601_SUBMITTED_Water_for_Growth_and_Development.pdf - accessed on 24-09-16

- ❖ Water is fundamental to the post-2015 development agenda and achieving the Sustainable Development Goals (SDGs)
- ❖ World’s population will bulge to almost 10 billion by 2050 and hungry cities will require more energy and drinking water. Global water demand is projected to increase by about 55%, due to the growing needs for domestic water, manufacturing, and thermal electricity generation
- ❖ More than a third of the world’s irrigated area is served by groundwater-70% of which in China, India and Pakistan (FAO)
- ❖ Afghanistan, the PRC, India, Singapore, and Pakistan will have the lowest per capita water availability.
- ❖ Sustainable Development Goal (SDG) 6: Ensure availability and sustainable management of water and sanitation for all.

Climate change impacts on water security

- ❖ Water Security through:
 - Better water management
 - Providing sufficient water for people and economic activities.
 - Healthy aquatic ecosystems and
 - Protection against water-related disasters.

- ❖ Water security through different water sources
 - River Sources
 - Ground water
 - Wetlands
 - Glaciers



Asian Region, Climate change and Water Security

- ❖ The Asian region is a global hot spot for water insecurity.
- ❖ It remains home to 60% of the world's population and half of the world's poorest people.
- ❖ Water for agriculture continues to consume 80% of the region's resources.
- ❖ A staggering 1.7 billion people lack access to basic sanitation, and with a predicted population of 5.2 billion by 2050 and hosting 22 megacities by 2030, the region's finite water resources will be placed under enormous pressure.
- ❖ Recent estimates indicate up to 3.4 billion people could be living in water-stressed areas of Asia by 2050 (Asian Water Development Outlook 2016)



Asian Region- Climate change and Water Security

- ❖ ADBs-National Water Security Index
- ❖ Key Dimensions: (KD)
 - Household,
 - Economic- Investments in water infrastructure and institutions
 - Urban,
 - Environmental, and
 - Resilience to water-related disasters
 - **(Asian Water Development Outlook 2016)**

Key Messages for Water Security

- ❖ Economic development: Investments in water infrastructure and institutions in developing member countries
- ❖ Inclusive water supply and sanitation
- ❖ Knowledge and information:
 - ❖ Analysis also shows that a country's water endowment hardly plays a role in achieving water security
 - ❖ Particularly for groundwater remain weak for making informed decisions on water resources allocation

India's Policy Response Climate impact on water security

- ❖ **National Water Mission.** The mission includes:
 - management of surface water resources,
 - management of ground water regulation,
 - storage of fresh water,
 - conservation of wetlands and
 - development of desalination technologies.

- ❖ **National Mission for Sustaining the Himalayan Eco System**
 - Addresses the concern of impacts of climate change on water security.

- ❖ **National Mission for Sustainable Agriculture:**
 - The plain aim is to support adaptation to climate change in agriculture, through the development of climate-resilient crops and adapted agricultural practices, as well as the expansion of weather insurance mechanisms.

India's Policy Response Climate Change

- ❖ National Environment Policy, 2006
 - ❖ Outlines essential elements of India's response to Climate Change. These, inter-alia, include:
 - ❖ Adherence to principle of common but differentiated responsibility and respective capabilities of different countries,
 - ❖ Identification of key vulnerabilities of India to Climate Change, in particular impacts on water resources, forests, coastal areas, agriculture and health, assessment of the need for adaptation to Climate Change and
 - ❖ Encouragement to the Indian Industry to participate in the Clean Development Mechanism (CDM)



Climate change impacts on water security-Legal and Judicial Response

- ❖ Securing Ecologically Sensitive Areas in the Himalayas (Uttarakhand disaster in India as one example of glacial lake outburst, cloud burst and erratic rains.
- ❖ Currently the National Green Tribunal is monitoring this case proactively through the Legal Aid Committee of the NGT Bar Association versus Union of India and Others
- ❖ Supreme Court judgment on securing “commons resources” Jagpal Singh vs State of Punjab- dated Jan 28, 2011; CA 1132 OF 2011
- ❖ Wetlands Rules 2010 as amended upto 2016
- ❖ Coastal Regulation Zone, 2011 (Albeit amended 35 times since 1991!)
 - ❖ Vulnerability Index!
- ❖ Securing Ground water through Central Ground Water Authority Regulations
 - ❖ Numerous cases in National Green Tribunal
- ❖ Rejuvenating Rivers
 - ❖ Yamuna and Ganga cases in NGT
 - ❖ Cumulative Impact Assessment



Legal Response on Climate Change Impacts- Seeds of Climate Justice

- ❖ The fact is that there is no legislation in India that fixes the government's responsibility to pay compensation for climate change either as a natural phenomenon or as a result of industrial development worldwide that affects vulnerable communities
- ❖ However, The Indian Supreme Court has evolved several judicial principles that may be used in combating climate impacts on food and water security and other dimensions as well. These include:
 - **Strict and Absolute Liability** - M.C. Mehta v, Union of India AIR 1987 SC (1965)
 - **Polluter pays principle** - Indian Council for Enviro-Legal Action v Union of India 5 SCC 212 (1996)
 - **Precautionary Principle** - Vellore Citizens Welfare Forum v Union of India and others, 5 SCC 647, (1996)
 - **Public Trust Doctrine** - M.C. Mehta v Kamal Nath and others 1 SCC 388, (1997)
 - **The principle of inter-generational equity** - State of Himachal Pradesh v. Ganesh Wood Products (1995) 6 SCC 363. See also Indian Council for Enviro-legal Action v. Union of India (CRZ Notification case), (1996) 5 SCC 281.
 - **The principle of sustainable development** - M.C. Mehta v. Union of India (Taj Trapezium Case) (1997) 2 SCC 353, 381. See also Narmada Bachao Andolan v. Union of India (2000) 10 SCC 664, at 727
 - **Expanding the scope of Article 21- Right to Life** and using the constitutional provisions of Writs both under the High Court as well as the Supreme Court raising environmental concerns and also thereby sowing seeds of climate justice.

The above may certainly be used in the region for ensuring climate justice



THANK YOU

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