

# NATIONAL MISSION FOR SUSTAINING HIMALAYAN ECOSYSTEMS: LINKING TRADITIONAL KNOWLEDGE AND CLIMATE CHANGE

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*Nature provides enough to satisfy man's needs but not every man's greed."*

*Mahatma Gandhi*

## ABSTRACT

Climate Change has reached a level that cannot be ignored anymore. Nobody on this planet is going to be untouched by the impact of Climate Change. It has posed the threat to human survival, food stock and human security. Climate Change is most prominent issue which is discussed in all the international, regional and domestic forums. In various international forums related to environment started taking note of environmental changes and how the human development and growth is adversely affecting the planet earth. This research paper is elaborating on the role which Traditional Knowledge can play to detect, adapt and mitigate Climate Change. This article has discussed the historical development of how the Climate Change was first recognised as an all protruding problem. India's contribution and commitment to international efforts. The paper's main focus is to discuss the National Mission on Sustaining Himalayan Studies which is one of the mission of National Plan for Climate Change. One of the task of mission is to collect data on how Traditional Knowledge is essential to Climate Change adaptation and mitigation.

**KEYWORDS :** CLIMATE CHANGE, TRADITIONAL KNOWLEDGE, MITIGATION.

## INTRODUCTION:

Climate Change was not defined before eighties. Initially in international forums the environment and sustainable development use to be main agenda. First time ever in 1949, the United Nations Scientific Conference on the conservation and utilisation of resources addressed the depletion of natural resources and their use. The focus of conference was on how to manage natural resources for economic and social development, and conservation perspective was not point of consideration. In 1968 the Economic and Social Council of United Nations decided with the approval of General Assembly to hold the first United Nations Conference on the Human Environment.

Thereafter in 1972 at Stockholm first time the Earth Summit was held. The summit adopted a declaration setting out principles for the preservation and enhancement of the human environment, and an action plan containing recommendation for international environmental action. Here first time the issue of Climate

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Change was brought to the notice of the global governments. In Stockholm it was decided to establish United Nations Environment Programme (UNEP).

In United Nations Environment Programme various issues like water resources, marine mammals, renewable energy resources, desertification, forests, environmental legal framework and the issue of environment and development were deliberated. At this point in time Climate Change was not an issue for consideration as the global economy was busy taking leap forward with industrial and technological development. Due to speedy growth and green house gases emission the issue of Climate Change started getting the global attention of late.

In 1988, global warming and the depletion of the ozone layer became increasingly prominent in the international public debate and political agenda. United Nations Environment Programme organised an internal seminar to identify environmental sectors that might be sensitive to Climate Change. The Intergovernmental Panel on Climate Change (IPCC), a forum for the examination of greenhouse warming and global Climate Change was established by United Nations Environment Programme and World Metrological organisation in the year 1988. Intergovernmental Panel on Climate Change has become leading organisation and a common platform to deliberate on Climate Change and decide action plan to deal with it. The and met for the first time in November.

The General Assembly identified Climate Change as a specific and urgent issue. In its resolution on the protection of global climate for present and future generations of mankind, it asked World Metrological organisation and United Nations Environment Programme to initiate a comprehensive review and make recommendations on Climate Change, including possible response strategies to delay, limit or mitigate the impact of Climate Change. The As a result, 1989 was a watershed year for Climate Change, as the first significant global efforts were taken<sup>3</sup>.

In 1992 at Rio Earth Summit was conducted after 20 years. The Earth Summit, set a new outline for pursuing international commitments to protect the global environment and agenda 21 was also adopted. The agenda 21 discussed a global consensus on development and environmental cooperation and sustainable growth. The most significant event during the Conference was the opening for signature of the United Nations Framework Convention on Climate Change. This was a landmark step in the world history in the context of Climate Change. In 1997 Kyoto Protocol to United Nations Framework Convention on Climate Change was conducted to discuss the emission of carbon dioxide.

#### **UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE AND RECENT DEVELOPMENTS:**

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<sup>3</sup> <https://unchronicle.un.org/article/stockholm-kyoto-brief-history-climate-change>

Under the umbrella of United Nations Framework Convention on Climate Change the conference of parties meets on regular basis. The latest development in this direction is the Paris Agreement adopted by Conference of Parties on 12<sup>th</sup> December 2015. The agreement is legally binding. The agreement aimed to keep global temperature well below 2 degree Celsius. It provided for nationally determined contribution i.e. the mitigation efforts of individual countries to reduce the Climate Change. Paris replaced the Kyoto Protocol and gave action plan beyond 2020. The agreement aimed at increasing the adaptive capacity, strengthening the resilience and reducing vulnerability to Climate Change. Adaptation and mitigation were the main focus of the agreement. It dictated to developed countries to meet their commitments by financial resources and technology transfer to developing nations.

In December 2018 COP 24 was held in Poland to implement the goals set by Paris agreement. The main focus of the meet was to develop an action plan to implement what is decided in Paris. At the heart of talks in Poland was the Paris “rulebook”, which was mandated in 2015 to be finalised by the end of COP24. Rule book is basically the detailed “operating manual” needed for the Paris Agreement to enter force in 2020<sup>4</sup>.

The rulebook covers following things:

- How countries should report their greenhouse gas emissions or contributions to climate finance and carbon trading.
- Additionally, countries agreed that their pledges will be recorded in a public registry.
- There was also agreement that pledges should cover a “common timeframe” from 2031.
- The developed countries were instructed to give report from 2020 for projected finance to be given to developing nations to counter Climate Change threat.
- How to report countries efforts to adapt to Climate Change was discussed
- The COP decided that the “adaptation fund” – a financial mechanism set up under the Kyoto Protocol – should continue under the Paris Agreement.

Hence the out come of the Poland COP 24 was positive but lot of loopholes are left which are expected to be addressed in the next COP.

## **INDIA’S CONTRIBUTION TO INTERNATIONAL EFFORTS: NMSHE**

India being the member of all the active international and regional talks related to Climate Change as a nation it is committed to play a responsible role. India is ready and willing to contribute to global solution of the global problem. India is pledged to ensure that following its development goals at no point in time it will let the greenhouse emissions cross the level of developed countries. Hence India developed the National action

<sup>4</sup> <https://www.carbonbrief.org/cop24-key-outcomes-agreed-at-the-un-climate-talks-in-katowice>

plan on Climate Change. The national action plan on Climate Change focuses on several fronts simultaneously. There are eight missions which form core of National Action Plan. Out of these eight plans one is named as National Mission for Sustaining the Himalayan Ecosystem. In this area government has made efforts to protect, promote and reward the Traditional Knowledge based systems for sustainable Himalayas.

The vision of the Himalayan mission is for maintenance, sustenance and improvement of the ecological, natural, cultural, socio-economic capital assets and values of the Indian Himalayan Region. The aim of Himalayan mission is to promote and support innovative studies and related knowledge interventions. The objectives of mission are as follows:

- To build a body of scientific and traditional knowledge on the identified thematic areas;
- To build a network of practitioners (individuals and institutions) engaged in working solutions to problems in thematic areas;
- To demonstrate workable/ implementable/ replicable solutions to the problems in thematic areas<sup>5</sup>.

The focus of the mission is on ten Himalayan states. These states are Himachal Pradesh, Arunachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim,

Tripura and Uttarakhand) and 2 States partially (i.e. hill districts of Assam and West Bengal. The core of the mission is to develop an all-inclusive understanding of indigenous systems, mechanisms of knowledge and their linkage in comprehending the environment and sustainable development of ecology of Himalayan regions. The mission is to strengthen the indigenous communities and Traditional Knowledge. These communities are considered as a guardian of Himalayan ecosystem. The accountabilities of communities and stakeholders along with the scientific knowledge are essential to safeguard the sustenance in the Himalayan region.

One of the objectives of the mission is to create a data base of knowledge institution including Traditional Knowledge systems and on preservations and conservation of the ecosystems. The mission further focusses on Studying of Traditional Knowledge systems for community participation in adaptation, mitigation and coping mechanisms inclusive of farming and traditional health care system.

National Mission for weathering the Himalayan Ecosystem has numerous task forces to accomplish the 8 different missions. The task force dedicated to preserve the Traditional Knowledge system is working on strategy to congregate Traditional Knowledge for sustainable development in the Indian Himalayan region.

The indigenous communities living in the Himalayan region has sustained and survived for centuries. They lived in harmony with nature and developed various systems as part of their day to day life and are able to

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<sup>5</sup> Govt of India Circular dated 18<sup>th</sup> January 2018, available at <http://megplanning.gov.in/circular/NMHS.pdf>

sustain their methods for generations to generations. Hence, they can give headway to government agencies in their task to sustain the Himalayan ecosystem. The concern of present times are the corrosion of Traditional Knowledge and the indigenous communities who shaped it.

The Mission aims at building a body of scientific and traditional knowledge with a supporting network of indigenous communities and institutions engaged in working solutions to problems of the Himalayan region and demonstrating workable/implementable/ replicable solutions to the identified problems relevant for the sustainable development of Himalayan Region<sup>6</sup>. The Mission targets to work for:

- Nurturing environmental and sustainable management of ecological resources.
- Improving supplemental and complementary livelihoods of indigenous communities in Himalayan Region communities and complete economic and social well-being of the region.
  - Monitoring and preventing pollution in the region.
  - Fostering human and institutional capabilities and the traditional knowledge for future environmental policy framework in the region.
  - Consolidation, greening, and fostering development of climate- resilient infrastructure and basic service assets

#### **THE OBJECTIVES AND PURPOSE OF THE NMSHE TASK FORCE**

The task force's main objective is to identify the traditional ecosystems and the communities owing these systems. Another important task of the force is to plan how to adapt these knowledge systems to help deal with Climate Change. further the task force is authorised to suggest, plan and develop scientific validation of the Traditional Knowledge based systems.

Another very important task is to create the data base of the sustaining Traditional Knowledge Himalayan systems. The guiding factor of the study and understand the impact of Industrialisation, development and modernisation's impact on the Traditional Knowledge in Himalayas.

The task force is also expected to formulate strategic framework for indigenous knowledge management system.

#### **BROAD THEMATIC GROUPS:**

The Himalayan mission is broadly divided into 6 thematic groups:

- **Sustainable management of land and water resources:** This group is formed to on the principles of Convention of Biodiversity. The focus of the group is on the conservation, sustainable management

<sup>6</sup> <http://nmhs.org.in/pdf/BOOKS/04.%20G-SHE%202018.pdf>

and equitable benefit sharing arising out of utilisation of natural resources and Traditional Knowledge. Another important aspect of the group is water management and soil conservation. It is important to note that this is part of indigenous living hence the mission cannot move forward without the support of indigenous community and their knowledge in the specified area of water and soil conservation. For these communities conservation of soil and water is part of day to day life and they have knowledge base related to this area. Another study area under this group is restoration and regeneration of pastures and grasslands etc.

- **Environmental assessment and management:** The most important aspect is long term ecological and environmental monitoring. Waste management and hazardous substance is important aspect of preservation of Himalayan mission. The focus of this group is on role of indigenous communities, role of Traditional Knowledge and institutions in environment protection and development. Most significant aspect of this group is to study and collect data on natural and manmade disaster risk reduction. In the era of Climate Change there is need to have an impeccable disaster risk reduction plan. The aim of Disaster risk reduction is targeted to move from relief to prevention, mitigation and most important preparedness.
- **Conservation and Sustainable use of Biodiversity:** Conservation of genetic resources, invasive alien species, multipurpose trees and preservations of flora and fauna are the primary objectives of this group.
- **Supplementary Livelihood Options:** This group targets on the supplementary livelihood options for local communities and other rural population and market linkages. This group is focused on various facets of organic agriculture, shifting cultivation and geographic indications related to Climate Change. The prime focus of group is to understand the indigenous livelihood of and Traditional Knowledge aspect to deal with the Climate Change which is creation of modernisation and Industrialisation.
- **Awareness and Capacity Building:** the purpose of NHMS is to ensure the results and not only the data collection. Mission focuses on the grant of aid, educating the indigenous communities, awareness and outreach with the help of Non- Governmental organisations and local government bodies. One of the aspects of the mission is building human capacity and promoting Traditional Knowledge and green technologies.

It is very important that the sustainable developmental goals must be linked with the United Nations principles in this area. In year 2015, the United Nations declared total 17 Sustainable Developmental Goals that are to be achieved by the partner nations by the end of 2030. The NMSHE also attempts to pursue and comply with UN goals.

The expected outcomes of the National Mission on Himalayan Studies are given below:

- Ready to use database/information management centre in the form of e-Library, Online submission, etc.
- Combination of conclusions for mainstreaming with the current initiatives of the State and Central governments.
- Capacity building of various implementing agencies

#### **NMSHE: FOOD AND WATER SECURITY**

The National Mission for Sustaining the Himalayan Ecosystem is the most critical from the perspective of survival of indigenous communities in the region. Further the mission is closely related to the water and food security. Entire Himalayan zone is ecologically fragile. The Climate Change has adversely affected the entire region and added to its fragility.

Over the last few years there has been steady degradation of this region due to massive construction, road building and urbanisation without taking into the account the fragility of the region. It further resulted in the degradation due to deforestation, demographic pressure and rapid and uncontrolled constructions to promote tourism. No environmental safeguards were taken in the race towards development. This adversely affected the Himalayan region adversely.

This region is the largest source of snow and ice hence the Glaciers are largest source of water in the region. Further these are natural water resources for rivers like Ganges and Brahmaputra. Hence in the long term the melting of Himalayan Glaciers are going to adversely affect the water availability and in the long-term hydro power generation. In view of this recent development of melting Himalayas there is need to have an update data to deal with this protruding problem.

The Himalayan region is necessary for the landmass and food security. Along with providing water to rivers it provides the forest cover, by conserving biodiversity it provides rich base for the high value agriculture. At the same time Climate Change may adversely impact the Himalayan ecosystem through increased temperature, altered precipitation patterns and episodes of drought<sup>7</sup>.

In view of the above mentioned circumstances it has become necessary to enhance the monitoring system in this region.

#### **THE NATIONAL ENVIRONMENT POLICY:**

The mission is an addition to the National Environment Policy of 2006. Aligned with National Environment Policy, 2006 of the Govt. of India, the NMSHE strategy is to focus on enhancing livelihoods of local

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<sup>7</sup> National Action Plan on Climate Change , available at <http://www.moef.nic.in/downloads/home/Pg01-52.pdf>

communities, with a basic premise that Ecological and Economic Securities should be reinstated in the IHR. The NMHS is expected to support the 13 monitorable targets towards environment, forests, wildlife and climate change under the Twelfth Plan national priorities, specifically in the context of the IHR. It is envisioned that the NMHS will contribute for achieving the Twelfth Plan goals covering Environment; Forests and Livelihood; Wildlife, Ecotourism and Animal Welfare; and Ecosystem and Biodiversity. Further, the Scheme will help to understand and improve the implementation and effectiveness of various national laws and policies<sup>8</sup>.

### **CUMULATIVE EFFORTS BY INDIA TO IDENTIFY, RECORD AND UTILISE TRADITIONAL KNOWLEDGE BASED PRACTICES TO MITIGATE CLIMATE CHANGE:**

The approach of the government is to identify the Traditional Knowledge based practices with its link to manage natural resources with the aim to maintain ecological services, management of food and fodder. Augmenting nutritional inputs, health and sanitation, disaster reduction and Climate Change etc<sup>9</sup>. Traditional Ecological Knowledge is an indigenous developed over hundreds of years through direct contact with the environment. It is important to note the knowledge is specific to the geography.

In fifteen different agro-climatic zones of India there are different in different geographical regions as per their topographic requirements hence there are different practices to survive in that set up. Traditional Knowledge has the tested dynamism. There are various practices which are part of elaborate Traditional Knowledge system. In the context of addressing the menace of Climate Change is Traditional Ecological Knowledge.

Most important or the first stepping stone to address the issue of Climate Change is predicting the weather conditions and accordingly developing the practices to survive. In the Himalayan region the indigenous farmers developed their unique ways to observe changing weather conditions. One of the unique practice adopted by farmer to predict the rainfall is observe honey bees in the region. The Traditional Knowledge practice is that if the honey bee flies towards northern hills there will be no rainfall, if they fly towards south there will be good rainfall.

The traditional weather forecasting knowledge of the people has the potential of being utilized for making modern weather-related predictions more robust and effective but if not documented this rich knowledge of the people is likely to be lost forever<sup>10</sup>. Indigenous communities do long and short-term assessment of weather conditions.

<sup>8</sup> [http://nmhs.org.in/pdf/Flyers/NMHS\\_Flier.pdf](http://nmhs.org.in/pdf/Flyers/NMHS_Flier.pdf)

<sup>9</sup> [http://www.astec.gov.in/ncsc/agb\\_5\\_tks.pdf](http://www.astec.gov.in/ncsc/agb_5_tks.pdf)

<sup>10</sup> Rutela and Karki, JGEESI 3(3), 1-14 2015, Article no JGEESI 19016



Various parameters are used for weather predictions. Most relevant among them are indicated below:

- Bird/insect movements
- Cloud pattern and colour
- Soil condition in different seasons
- Animal Behaviour

Timeliness and simple methodology of observations are the two most important advantageous yardsticks of Traditional Ecological Knowledge and traditional forecasting system. Indicators observed by the people in and around their environment provide close to accurate and sometimes accurate information of weather conditions. The accuracy of traditional knowledge systems is better than the modern scientific methods.

The agricultural decisions relating to sowing, planting, harvesting is made on the basis of Traditional Knowledge based practices by the indigenous communities.

#### **CONCLUSION:**

Traditional weather forecasting knowledge can be utilised to predict the weather in the era of Climate Change. The advantage to use the Traditional Knowledge based forecasting system is that no fund needs to be spent in the Research and development as the Traditional Knowledge systems are ready to use observations systems. But the challenge to utilise these systems are various. the biggest challenge is the knowledge system related to weather forecasting is not in the form of organised scientific data which is easily readable. Another challenge is the accessibility to this knowledge system. Indigenous communities are not part of mainstream hence a lot need to be done as a confidence building measure. Once the indigenous communities are willing to share their forecasting related knowledge. Once the access is gained then another hurdle is that the knowledge is not documented. The solution to the Climate Change can be found in the Traditional Knowledge but before it gets lost in the history it must be documented.