

CLIMATE ACTION IN MIZORAM

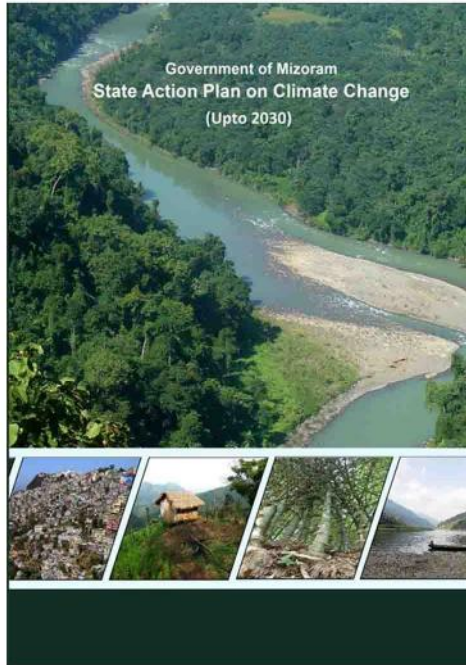
Newsletter

Tri-annual newsletter published by Mizoram State Climate Change Cell

MIZORAM STATE ACTION PLAN ON CLIMATE CHANGE Ver. 2 (Upto 2030)

The Mizoram State Government through the State Executive Council on Climate Change has constituted Climate Change Coordination Group (CCCG) in December 2017 to revise the Mizoram State Action Plan on Climate Change (SAPCC) 2012-2017 for which the operational period has ended.

The CCCG led by the Nodal Department (Department of Environment, Forest & Climate Change) has initiated the revision with full participation of its members constituting mission lead departments and other partner departments with technical assistance provided by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) through the services of Bhubaneswar based consulting firm called CTRAN.



Cover page of SAPCC (Upto 2030)

After series of meetings, long process of tireless works and inputs given by different stakeholders, the draft State Action Plan on Climate Change (Upto 2030) was completed and approved by the State Executive Council on Climate Change headed by the Chief Secretary on 19th November 2020. With formal approval by the State Government, the draft copy of new SAPCC is being forwarded to the National Steering Committee under the Ministry of Environment, Forest & Climate Change, Govt. of India for review and due approval.

The draft SAPCC (Upto 2030) consists of 286 pages in total started with messages from Pu Zoramthanga, Hon'ble Chief Minister of Mizoram and Pu TJ Lalnuntluanga, Hon'ble Minister of State for Environment, Forest & Climate Change, Govt. of Mizoram. Foreword written by Pu Lalnunmawia Chuaungo, IAS, the then Chief Secretary and Chairman of the State Executive Council on Climate Change, Mizoram and Acknowledgement written by Dr. Ch.M. Rao, IFS, Principal Secretary (EF&CC Dept.) & Chairman, CCCG, Govt. of Mizoram.

The content of the document starts with Executive Summary, 10 chapters, lists of Annexures and references.

Chapter 1 (Introduction) writes about the background of SAPCC, objective, scope and methodology which goes in line with the National Action Plan on Climate Change (NAPCC) Govt. of India. Chapter 2 writes about the Mizoram State Profile with sectoral highlights, key development issues and the state performance under India's Nationally Determined Contribution (INDC) under the United Nations (UN) Sustainable Development Goals (SDG). Chapter 3 highlights climate profile, disaster risk, loss & damages in Mizoram and Chapter 4 deals with Climate Vulnerability, sectoral vulnerabilities & impacts.

The main climate change action strategies are entailed in Chapter 5 (Adaptation) and Chapter 6 (Mitigation) consisting of a total 9 missions.

There are 6 state mission on climate change adaptation strategies namely 5A-Sustainable Agriculture, 5B-Green India mission, 5C-Sustaining Himalayan Ecosystem, 5D-Health mission, 5E-Strategic Knowledge for Climate Change and 5F-Water mission. The remaining 3 state missions are climate change mitigation strategies namely 6A-Energy mission which constitutes 6A.1-Enhanced Energy Efficiency and 6A.2-Solar Mission, and 6B-Sustainable Habitat. In each of these missions, sectoral overview, impact of climate change, key issues & challenges, progress mapping, gap analysis, action strategies and proposed activities (implementation & budget) are mentioned in details. Actions for each of these state missions are under the responsibility of respective concerned lead department with few other partner line departments.

Chapter 7 writes cross cutting issues and gender mapping. Chapter 8 deals with the financial plan of SAPCC including the financial gateway and allocations of budget under the previous SAPCC. Chapter 9 deals with the implementation arrangement and framework, proposed activities and implementing agencies of SAPCC. Chapter 10 mentioned the monitoring mechanisms and frameworks.

Adopting permanent farming to reduce jhum area

It has been an obvious fact that jhumming or Shifting cultivation has been a threat to deforestation and it is also intensifying the adverse effects of Climate Change. The Agriculture Department, Govt. of Mizoram has been investing enormous amount of resources and tremendous efforts towards reducing jhum area and encourage farmers to adopt permanent farming since many years. Among such endeavours, few important achievements during the current financial year, i.e., April, 2021 to October, 2021 are highlighted as below:

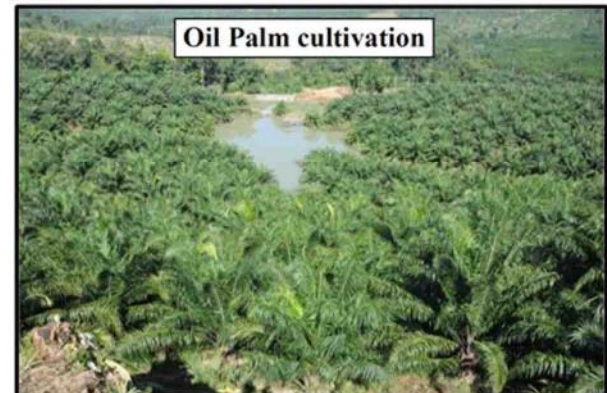
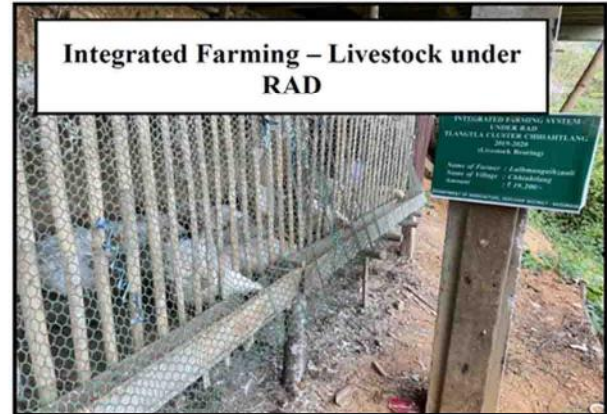
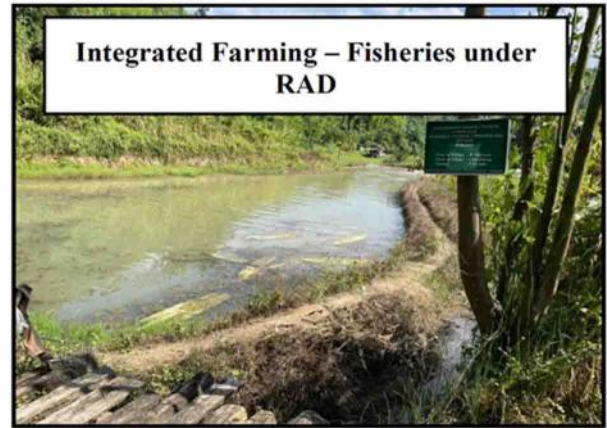
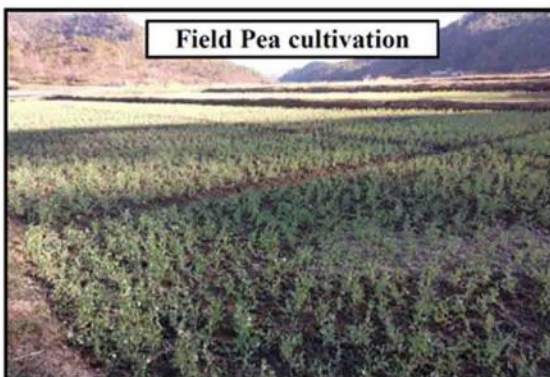
(1) Better methods of cultivation with high yielding crop varieties are introduced and cluster demonstrations are taken up in various locations under different schemes

Sl. No.	Intervention/Activity	Physical achievement	Financial expenditure (Rs. in lakh)
1.	Cluster demonstration on Direct seeded Rice, Line transplanting, System of Rice Intensification and Hybrid Rice.	195 ha.	17.52
2.	Distribution of Hybrid and HYV Paddy seeds	50 qtl.	2.75
3.	Cluster demonstration of Pulses (Field Pea, Rajmah)	200 ha.	18.00
4.	Distribution of seeds of Pulses	258 qtl.	271.00
5.	Demonstration on Maize cultivation	637 ha.	38.00
6.	Distribution of Maize seeds	142 qtl.	4.25
7.	Cluster demonstration of Nutri-Cereals (Sorghum)	368 ha.	22.00
8.	Distribution of Sorghum seeds.	300 qtl.	9.00

(2) Area expansion of Oil Palm cultivation is taken up in the current year covering 37 ha.

(3) Assistance for different cropping systems were given to farmers in the selected clusters as below.

- (a) Fishery : 209 units involving Rs. 52.25 lakh
- (b) Horticulture : 745 units involving Rs. 186.25 lakh
- (c) Livestock : 881 units involving Rs. 220.25 lakh
- (d) Apiculture : 116 units involving Rs. 23.20 lakh
- (e) Agro-forestry: 228 units involving Rs. 34.00 lakh.



Springshed based Watershed Development

Land Resources Soil & Water Conservation Department, Govt. of Mizoram has taken up various projects such as Springshed Based Watershed Development Projects, RKVY, Coffee, Arecanut, and Rubber plantations during the current financial year i.e 2021-2022. Such projects are expected to have positive impact on reducing global climate change by decreasing global carbon emission and attending soil degradation, deforestation, and water scarcity problems.

Under springshed based watershed development project and RKVY, in villages with water scarcity problems, groundwater recharging structures such as contour trench, percolation tank, bench terraces and check dam, etc are constructed to reduce the length of slopes across the landscapes thereby decreasing run-off velocity and soil erosion rate. Since water is held for longer duration by increasing the time of concentration of run-off, this increases infiltration and percolation rate down the soil profile and thereby increasing groundwater recharge. In addition, cash crops such as Banana, Papaya, Ginger and Pineapple, etc are also grown in the project areas to increase vegetative cover and income generation for the local people. These activities will give both tangible and intangible benefits for the implementation area.

Under NABARD funding, Rubber plantation has been created in many parts of the State for afforestation to increase vegetative covers. It also has the potential of protecting soil degradation and conservation of soil nutrient losses through soil erosion. The roots of rubber plants tightly held the soil surrounding them which improves soil structures as porosity of soil is increased through the development of roots. This ultimately increases natural groundwater recharge for reviving the spring.

Under SEDP of the State Government flagship program, Arecanut Plantation has been created with an aim to increase the vegetative cover of the area and to improve the overall conditions by protecting splash/ raindrop erosion, moderating the climate of low lying areas, obstructing the intensity of the wind velocity, collecting dust particles on their leaves, and thereby reducing their longer suspension in the air.

Cash crop plantation of coffee and broom grass have also create and modify the microclimate of the implementation area. They also generate livelihood income to the people who are the present victim of global climate change and its consequences.



Percolation Tank



Contour Staggered Trench



Bench Terrace



Rubber Plantation

Study of groundwater in relation to climate change

Summary:

Ground water Level Survey has been conducted from the year 1999 in Mizoram by Public Health Engineering Department, Govt. of Mizoram. The records include annual ground water level for pre-monsoon and post monsoon seasons.

Within this year, data collected up to 2018 has been analyzed and study on ground water in relation to Climate Change has been carried out by Ground Water Resources Assessment Cell with Dr. F. Lalbiakmawia, Assistant Hydrogeologist as the main handler.

This report shows the decadal comparison of Rainfall and groundwater level during the period of 20 years. The comparison was done using line graph. The graph will show the effects of changes in rainfall to the ground water level. The outcome of the analysis will also show whether ground water was depleted or not in the state. Depending on the outcome of the study, suggestions for recharging ground water will also be made.

Methodology:

Data of ground water level in Mizoram were compared with rainfall data for each year from 1999-2018. The comparison was done using line graph. The average annual rainfall within the state was also recorded at the same time. The average temperature of the state is a bit difficult to analyze and record since meteorological stations except rain gauges were not distributed evenly within the entire state. All the data collected and analyzed were entered in excel sheet which is further used for comparison using graph.

The outcome from the graph analysis is the final results of the study which can also be utilized for further studies and for developmental activities.

Analysis and result:

The figure below shows the average rainfall data of all districts of Mizoram over a period of 20 years. Wet tape method is used for surveying the ground water level within the entire state. Graduated steel or cloth tapes were used to measure the ground water level. The advantage of this method is that it offers great flexibility when measuring water levels.

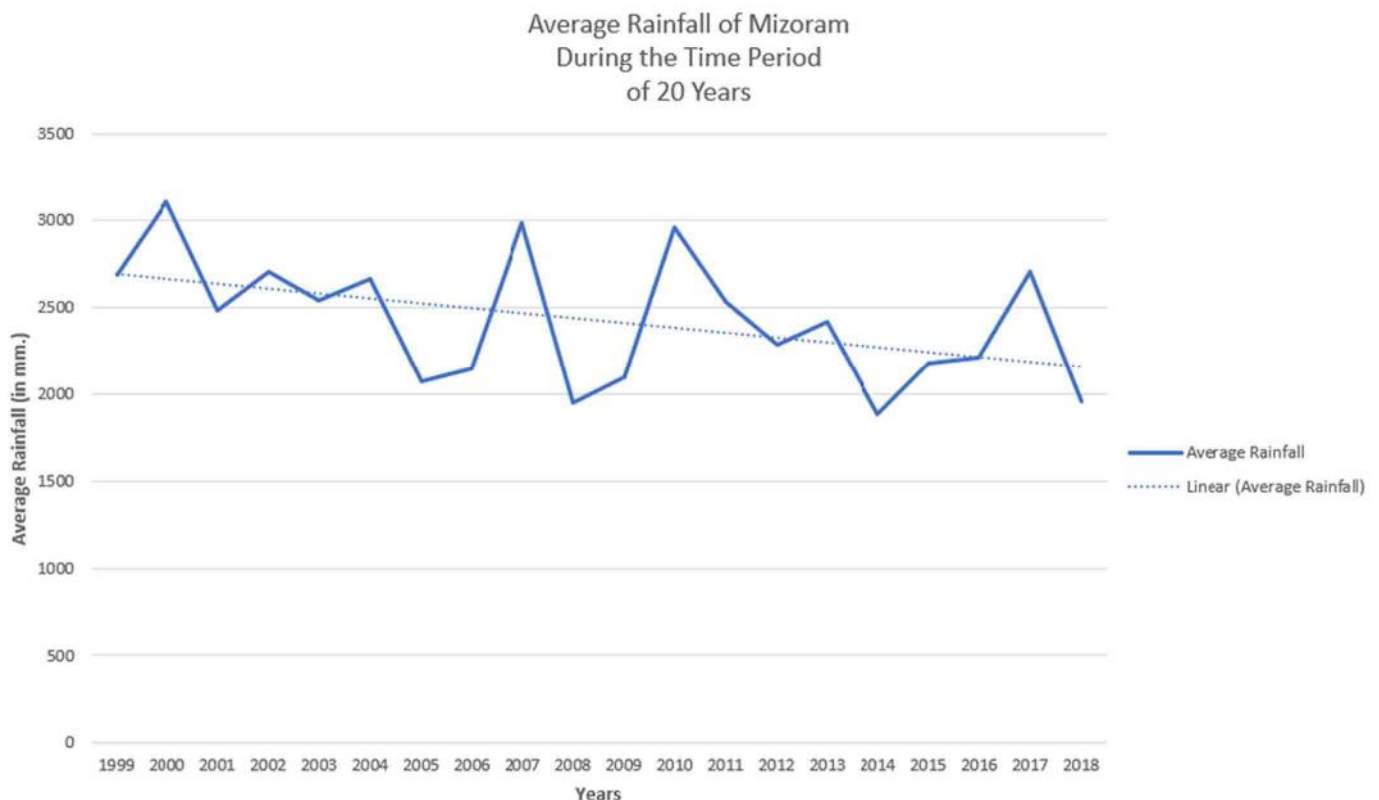


Figure 1. Average Rainfall of Mizoram during the time period of 20 years.

Study of groundwater in relation to climate change contd.

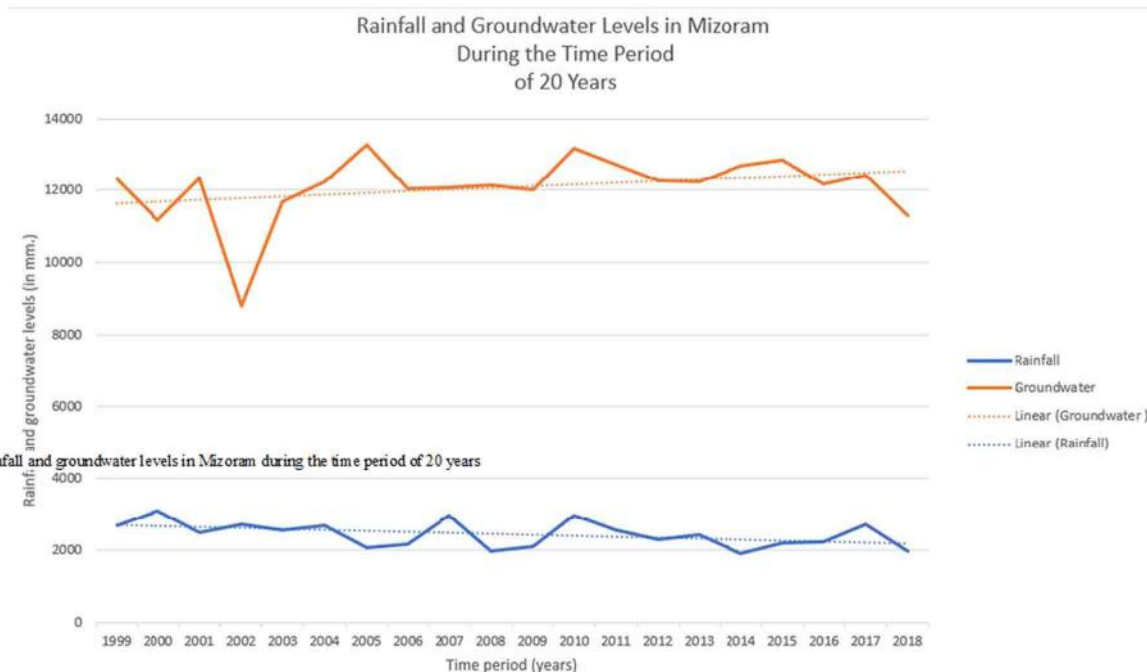


Figure 2 – rainfall and groundwater levels in Mizoram during the time period of 20 years

Figure 2 – rainfall and groundwater levels in Mizoram during the time period of 20 years

The line graph above (fig. 2) shows a comparison between annual rainfall levels and groundwater levels in Mizoram for the last 20 years (1999-2019).

Findings and conclusions:

Decadal Comparison between Rainfall and Ground water level in Mizoram during the time period of 10 years (1999-2008) & (2009-2018) each.

The clustered columned bar below (figure 3) shows a decadal comparison between each of average rainfall and groundwater level data.

It can be observed from the figure that there is a slight decrease in average rainfall levels as compared to the last 10 years. The ground water also shows an increasing level of about 0.58 meters as compared to the previous 10 years.

After analyzing rainfall and groundwater levels throughout Mizoram, it has been found that there is a declining trend of amount of rainfall received and there is an increasing trend of ground water levels i.e. the depth of ground water increases.

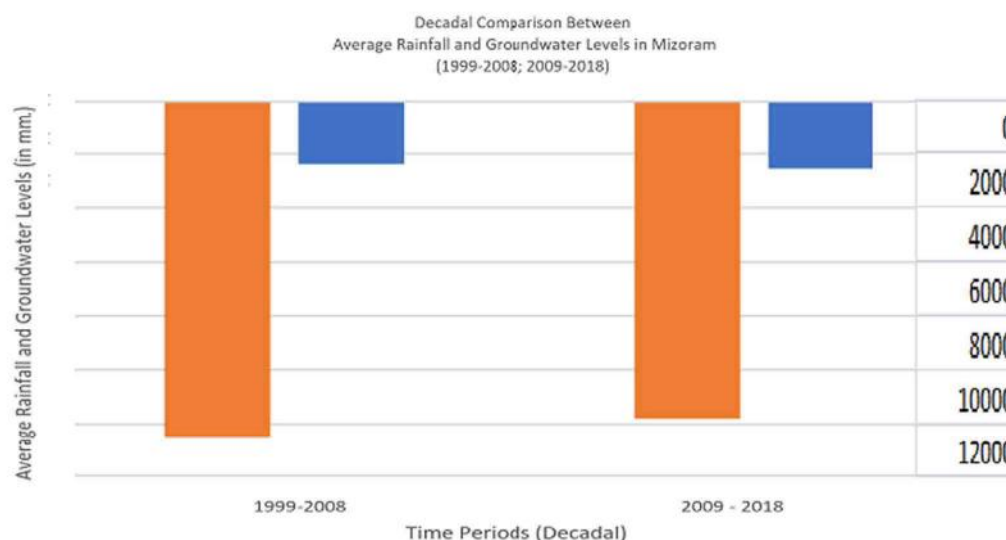


Figure 3 - Decadal Comparison between Rainfall and Ground water level in Mizoram during the time period of 10 years (1999-2008) & (2009-2019) each

Fighting climate change through sericulture

As trees grow, they help to stop climate change by removing carbon dioxide (CO₂) from the air, storing carbon in the trees and soil, releasing oxygen into the atmosphere. Tree planting is one of the simplest and most effective ways of tackling climate change caused by green house gas.

In Sericulture Industry, planting food plants of Silkworm like Mulberry, Som, Soalu and Oak trees are the important initial activities for the success of Sericulture occupation, now covered 2318.84 ha. under food plants in Mizoram till date. Besides Sericulture activities, planting food plants for Silkworm provide many benefits to us everyday. They offer cooling shade, block cold winter winds, attract birds and wild life, purify our air, protect soil erosion, clean our water and add beauty to our surroundings.

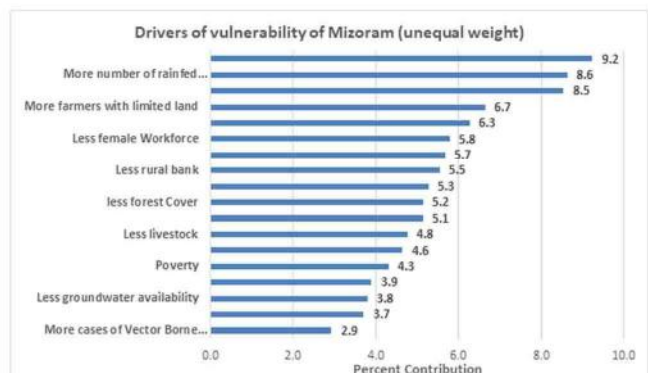
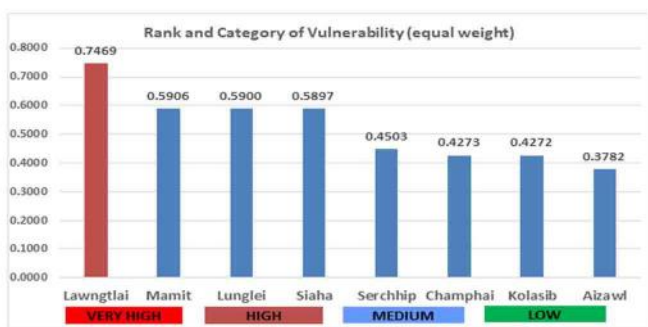
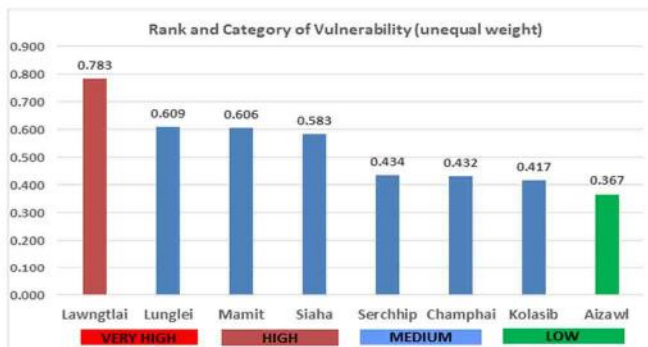


Fig: (1). Som (Bul) *Litsea polyantha* (2). Soalu (Nauthak) *Machilus bombycina* (3). Oak Tasar (Sasua) *Quercus seratta* (4). Kesseru (Changkhen) *Heteropanax fragrans* (5). Castor (Mutih) *Ricinus communis* (6). Tapioca/ Cassava (Pangbal) *Manihot esculenta* (7). Mulberry (Thingtheihmu) S-1635 *Morus alba/Morus spp.* (8). Mulberry (Thingtheihmu) V-1 (9) Mulberry (Thingtheihmu) Tr-10.

District level climate vulnerability assessment

Following the recommendations and suggestion from the Training Workshop on Vulnerability Assessment in India conducted by Department of Science and Technology, Government of India through the combined effort of IIT Mandi, IIT Guwahati & IISc Bangalore, held at New Delhi during 12th-15th February, 2020. State Specific assessment of vulnerability due to climate change on different sectors were conducted by the State Climate Change Cell under Mizoram Science, Technology & Innovation Council (MISTIC), Directorate of Science & Technology, Govt. of Mizoram.

As a part of the project, District Level Climate Change Vulnerability Assessment of Mizoram: Biophysical and Socio-Economic Sectors was done to rank and categorized different districts of Mizoram based on their vulnerability indices and drivers of vulnerability for both overall (Mizoram) and for each district were identified.



Approach/Methodology adopted: Top-down assessment using secondary data and geospatial techniques were used. The study was done by taking current vulnerability as a function of sensitivity and adaptive capacity. 18 sub-indicators belonging to a category four indicators were selected for the assessment. Study was done with both equal and unequal weights to maximize the aspects of the result in different scenario. Unequal weights were assigned based on stakeholder and expert consultations. Districts were rank and categorized based on their calculated vulnerability indices. The selected 18 sub indicators used for the assessment are categorized into socio-economic and livelihood indicators, biophysical indicators, institutional and infrastructure indicators and health indicators.

Significant results brought out as a part of the project: District level vulnerability maps of Mizoram were generated for vulnerability ranking and vulnerability categories. The drivers of vulnerability were identified for the current scenario. The results of the assessment were compiled and published in a booklet form which are available for download at <https://mistic.mizoram.gov.in/page/publications>.



Cover of the report District Level Climate Change Vulnerability Assessment of Mizoram: Biophysical and Socio-economic Sectors

Global top appreciation award bagged by climate scientist

The Royal Swedish Academy of Sciences awarded the Nobel Prize in Physics 2021 "for groundbreaking contributions to our understanding of complex physical systems" with one half jointly to Syukuro Manabe, Princeton University, USA and Klaus Hasselmann, Max Planck Institute for Meteorology, Hamburg, Germany "for the physical modelling of Earth's climate, quantifying variability and reliably predicting global warming" and the other half to Giorgio Parisi Sapienza University of Rome, Italy "for the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales"

Manabe, starting in the 1960s, demonstrated how increases in the amount of carbon dioxide in atmosphere would increase global temperatures, laying the foundations for current climate models.

About a decade later, Hasselmann created a model that linked weather and climate, helping explain why climate models can be reliable despite the seemingly chaotic nature of the weather. He also developed ways to look for specific signs of human influence on the climate. Parisi "built a deep physical and mathematical model" that made it possible to understand complex systems in fields such as mathematics, biology, neuroscience and machine learning.

After the announcement, Parisi said that "it's very urgent that we take very strong decisions and move at a very strong pace" in tackling climate change.

(Source: <https://www.downtoearth.org.in/news/climate-change/physics-nobel-2021-to-3-for-predicting-climate-change-building-physical-models-for-complex-systems-79528>)



L-R: Klaus Hasselmann, Syukuro Manabe & Giorgio Parisi, the winners of the 2021 Nobel Prize in Physics.

PHOTO: (L) JONAS WALZBERG/EPA SHUTTERSTOCK (C) KYODO/REUTERS (R) SAPIENZA/ROPI/ZUMA PRESS

India promised to cut emissions to zero at Cop 26

India has promised to cut its emissions to net zero by 2070 - missing a key goal of the COP26 summit for countries to commit to reach that target by 2050.

Prime Minister Narendra Modi made the pledge, the first time India has set a net zero target, at the Glasgow summit. Net zero, or becoming carbon neutral, means not adding to the amount of greenhouse gases in the atmosphere.

The Indian leader is one of more than 120 leaders to have gathered in Glasgow for the two-week conference.

India's net zero pledge

India is the world's fourth biggest emitter of carbon dioxide after China, the US and the EU. But its huge population means its emissions per capita are much lower than other major world economies. India emitted 1.9 tonnes of CO₂ per head of population in 2019, compared with 15.5 tonnes for the US and 12.5 tonnes for Russia that year. PM Narendra Modi made the pledge as one of five commitments from his country.

- India will get its non-fossil energy capacity to 500 gigawatt by 2030
- India will meet 50 per cent of its energy requirements till 2030 with renewable energy
- India will reduce its projected carbon emission by one billion tonnes by 2030
- India will reduce the carbon intensity of its economy by 45 per cent by 2030
- India will achieve net zero by 2070

(Source: <https://www.bbc.com/news/world-asia-india-59125143>)



Source: Indianexpress.com

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