



*Newsletter*

# CLIMATE ACTION IN MIZORAM

4<sup>th</sup> ISSUE (August 2022 to November 2022)

Tri-annual newsletter published by Mizoram State Climate Change Cell

## A PLASTIC-FREE INDIA: INITIATIVES UNDER SWACHH BHARAT MISSION (URBAN) MIZORAM

In 2019, Prime Minister Narendra Modi said, “When we celebrate Mahatma Gandhi’s 150<sup>th</sup> anniversary we will not only be dedicating Open Defecation Free India to him, but also kick-starting a mass movement for making India plastic-free. Let the birth anniversary of Gandhiji serves as an inspiration for all of us to curb single-use plastic” and called for a national movement against Single Use Plastics as a tribute to Mahatma Gandhiji’s 150<sup>th</sup> birth anniversary.

Ever since, Indian cities and States have taken initiatives to enforce the ban on Single Use Plastics (SUPs) from July 1, 2022. During the past seven years, Swachh Bharat Mission (Urban) has significantly contributed in curbing SUP through its 3Rs- Reduce, Reuse & Recycle Campaigns.

As Swachh Bharat Mission (SBM-Urban) 2.0 kickstarted from 1<sup>st</sup> April, 2021, MoHUA has launched massive awareness drive regarding the use of alternatives of plastics like cloth/jute shopping bags, biodegradable cutlery, opening up bartan banks etc. and ensure that SUPs remain banned.

Aizawl City and statutory towns in Mizoram have been taking actions in tackling SUP and have done significantly well even at the National level. With collective efforts of the Govt., local authorities, various NGOs and the citizens, awareness on the ban of SUPs and its alternatives have been spreading by and large. Let us look at some of the initiatives taken up by urban towns of Mizoram in reduction of SUPs.



- Plastic Bottle banks are installed in strategic locations for further processing. Collected bottles are to be utilized and upcycled by various Self-Help Groups (SHGs)
- Single Use Plastic alternatives such as steel Water Bottles, Bio-degradable bags, Paper cups, Paper Lunch boxes and Cloth banners have been widely used in official functions and gatherings.
- Picking of plastic waste from water bodies and rivers are carried out frequently
- SUP hotspots are eliminated, transformed and beautified in many areas.
- Awareness campaigns on ban of SUP are being conducted in all urban towns.
- SHGs have been engaged in exploring alternative solutions to polythene bags and waste to wealth initiatives.
- SUPs have been reused and recycled for toilet constructions and beautification of towns



Issued in public interest by Urban Dev. & Poverty Alleviation Deptt. Swachh Bharat Mission (Urban)

# Climate adaptation through water quality and ground water monitoring

-Irrigation & Water Resource Department, Govt. of Mizoram

## Setting up of Water quality Laboratory

As it is said, “Most of the climate change impacts come down to water,” climate change has drastically affected the quantity as well as the quality of surface and ground water sources. As the earth’s temperature rises, surface water temperature also rise. Warmer waters create a more hospitable environment for some harmful algae and other microbes to grow, thus contaminating the water and ultimately cause various water borne diseases. It is therefore, necessary to monitor the quality of water to ensure that it is within the acceptable limit for domestic and irrigational purpose.

At present, the Water Quality Testing laboratory (Level-II) is being set up under national Hydrological project at the office of Chief engineer, I&WRD, located at MINECO, Aizawl to strengthen the water quality monitoring network in the State of Mizoram and for successful implementation of water resources related projects in the state. The laboratory is equipped with Hot air oven, laminar air flow, BOD and bacteriological incubator, water quality sonde, etc.

Quality of the following water bodies in Mizoram will be monitored-29 nos of water bodies (ponds and lakes), ground water from all tube wells constructed under IWRD and 18 nos of rivers. Till date, 8 groundwater samples from Darlak and South Vanlaiphai have been tested to determine its suitability for domestic and irrigational purpose



## Construction of Borewell Peizometer

Climate change becomes an ever greater concern and although this issue is currently getting a great deal of attention, its effect on groundwater is still underexposed. Climate change has a considerable impact on surface and ground water resources. Any phenomenon that produces a change in pressure on groundwater will cause the groundwater level to vary. Differences between supply and withdrawal of groundwater cause levels to fluctuate. Streamflow variations are closely related to groundwater levels. Other diverse influences on groundwater levels include meteorological and tidal phenomena, urbanization, earthquakes, and external loads. Finally, subsidence of the land surface can occur due to changes in underlying groundwater conditions.

Considering that the impact of climate changes on groundwater resources is indirect and slower than surface water resources, monitoring the status of these resources and maintaining their sustainability under the influence of these changes are of great importance.

20 nos. of borewell piezometer were proposed, out of which the construction of 10 nos. of borewell at Chemphai (4 nos.), Bukvannei (2 nos.) and Zawlnuam (4 nos.) were completed. Digital Water Level Recorder (Telemetry) will be installed at the mentioned sites for real time ground water level data collection network and establish data communications using GSM& GPRS telemetry between the remote DWLR stations and state data center at Aizawl, Mizoram and later through internet to the WIMS FTP server. Further this DWLR station data shall be accessible through WIMS cloud at the office of State Data Center, Aizawl, Mizoram.



## What is Sericulture?

Commercial rearing of silkworm to produce silk yarn is called sericulture. It is an agro- based industry and labour intensive activities however silkworm rearing period takes only a month to produce cocoons and there is no problem in marketing of cocoons and yarns. Sericulture comprises three main components: i) cultivation of food plants of the worms, ii) rearing of silk worms, and iii) reeling and spinning of silk. The first two are agricultural and the last one is an industrial component. There are four varieties of commercially exploited silkworms, which are Mulberry, Tasar, Muga and Eri.



*Photo: Glimpse of Muga silkworm food plants (Bul thingkung) and Muga silkworm rearing under net.*

India is the only country in the world which produces all four commercially exploited silk varieties and commercial exploitation of Muga is only done in the North Eastern States of India and nowhere else in the world it is produced. Hence, among the four varieties of commercially exploited silk, Muga is the costliest in terms of cocoon, silk yarn and silk cloth.

Muga worms are a good indicator of global warming because these worms cannot tolerate high temperature. Assam being the largest producer of Muga silk in the world often experienced failure in Muga rearing during summer due to increase in temperature, at the same time high altitude and cooler region like Mizoram is an ideal place to conduct muga rearing throughout the year. Muga silkworm food plants of Som and Soalu which is evergreen tree type of plantation would be the most appropriate one to conserve and regulate our environment in the state of Mizoram due to naturally available food plants in the forest and wild Muga silkworm in the forest.

Due to long term impact on the traditional Jhum or Shifting cultivation system and increased in population growth, loss of natural forest and adverse effect on soil fertility occurs in many places results forest land are becoming unproductive and generates negligible income to the farmers. Therefore, to alternate jhum cultivation and conserve forest, sericulture activity would be one of the best approaches to conserve our environment and at the same time farmers can get a remunerative income out of it. The cost of silkworm eggs per kgs is Rs. 14000.00 and prevailing market rate of Muga silk yarn cost Rs. 26000.00 per kgs.

## An assessment of extreme weather events in India during 2022 (January-September)

From 1<sup>st</sup> January till 30<sup>th</sup> September, 2022, India recorded extreme weather events on 241 of the 273 days. This shows that close to 90 per cent of the first nine months of this year, India had an extreme weather event breaking in one or more parts of the country. It also experienced record-breaking temperatures for several months and regions across the country experienced severe floods because of extremely heavy rainfall. India has seen a disaster nearly every day in the first nine months of this year—from heat and cold waves, cyclones, lightning to heavy rain, floods and landslides which have claimed 2,755 lives, affected 1.8 million hectares (ha) of crop area, destroyed over 416,667 houses and killed close to 70,000 livestock.

With an event every second day, Madhya Pradesh saw the highest number of days with extreme weather events; but Himachal Pradesh saw the highest number of human deaths at 359. Madhya Pradesh and Assam saw 301 human deaths each. Assam reported the highest number of damaged houses and animal deaths. Assam reported the highest number of damaged houses and animal deaths. Since the beginning of the year, Karnataka which experienced an extreme weather event on 82 days, accounted for more than 50 per cent of the crop area affected in the country.

The highest number of days with extreme weather events at 198 was reported by the Central region, followed by the Northwest (195 days). The Central region saw the highest number of deaths at 887, followed by East and Northeast region (783 deaths). In 2022, India recorded its seventh wettest

January since 1901. This March was also the warmest ever and the third driest in 121 years. It was also the country's third warmest April, 11th warmest August and 8th warmest September since 1901. Eastern India and Northeast India saw its warmest and driest July in 121 years. The region also recorded its second warmest August and fourth warmest September in 2022.

### Season wise extreme weather events:

**1. Winter (January-February, 2022):** While January saw cooler daytime temperatures, February remained almost half a degree colder than normal, resulting in 30 cold wave/cold days and 12 hailstorm days. January was also abnormally wet, while February was drier than normal. The country experienced an extreme weather event on 39 out of 59 days in the winter months of 2022. The events were spread across 21 states/UTs. Uttar Pradesh was the worst hit as it experienced extreme weather events on 25 days. It was followed by Madhya Pradesh, which experienced extreme weather events on 24 days.

**2. Pre-Monsoon (March-May, 2022):** Unusually hot March and April led to the early onset of heatwaves this year. While the temperature was largely normal in May, the month saw heavy rainfall triggering floods in Assam and Meghalaya. India experienced extreme weather events on 81 out of 92 days in the summer months of 2022. The events were spread across 31 states/UTs. Heatwaves were reported on 51 days, followed by lightning and storms on 43 days and heavy rains, floods and landslides on 29 days. Rajasthan and Assam were the worst hit with extreme weather events on 36 days. They were followed by Madhya Pradesh (32 days).

**3. Monsoon (June-September, 2022):** While India experienced an overall normal monsoon, the season oscillated between dry and wet spells. It began in June with catastrophic floods in North-east India, especially in Assam and Meghalaya. The region then went through a dry phase in July and August. In July, Gujarat, Rajasthan and Maharashtra suffered from floods. August brought flood-like conditions in Kerala, Karnataka and central Indian states of Odisha and Madhya Pradesh. Extreme weather events were reported on all 122 days between June and September 2022, and they claimed over 2,400 human lives and damaged 1.8 million hectares of cropped area and 0.4 million houses.

### Disaster wise extreme events:

- On 159 out of 273 days, India experienced lightning and storms which claimed 954 lives.
- On 157 out of 273 days, India experienced heavy rains, floods and landslides which claimed 1,214 lives.
- On 66 out of 273 days, India experienced heatwaves which spread across 20 states/UTs and claimed 45 lives.
- On 30 out of 273 days, India experienced cold wave/cold day which spread across 14 states/UTs.
- On 2 out of 273 days, India experienced snowfall which spread across 2 states/UTs and claimed 8 lives.
- On 11 out of 273 days, India experienced cloudbursts which claimed 33 lives across four states/UTs.
- On 2 out of 273 days, India experienced cyclones which claimed three lives in Andhra Pradesh.

**2010-India's hottest regional summer:** "Overall, the observed hottest summer in 2010 can be attributed to anthropogenic warming with high confidence." (Nanditha, J. S. et al.2020)

**2013-Severe rainfall in Northern India:** "Cumulative precipitation in northern India in June 2013 was a century-scale event, and evidence for increased probability in the present climate compared to the preindustrial climate is equivocal." (Singh, D. et al. 2014)

**2015- Record warmth in India:** "In 2015, record warm surface temperatures were observed for the global mean, India, and the equatorial central Pacific. CMIP5 simulations suggest that for the globe and India, anthropogenic warming was largely to blame." (Kam, J. et al.2015.)

**2015- Deadly heat & humidity in India :** "We find that the deadly heat waves in India and Pakistan in 2015 were exacerbated by anthropogenic climate change. Although the impacts of both events were severe, the events themselves were not connected to each other." (Wehner, M. 2015)

**2022-Deadly heatwave in India and Pakistan:** "Because of climate change, the probability of an event such as that in 2022 has increased by a factor of about 30. The same event would have been about 1°C cooler in a preindustrial climate. With future global warming, heatwaves like this will become even more common and hotter." (World Weather Attribution Network. 2022)

CONTACT: Mizoram State Climate Change Cell, Mizoram Science, Technology & Innovation Council, Top Floor, Directorate of Science & Technology, Mizoram New Capital Complex, Khatla, Aizawl, Mizoram - 796009. Email: [mistic.dst@gmail.com](mailto:mistic.dst@gmail.com)  
Phone: 0389-2336486 Website: [www.misticmizoram.gov.in](http://www.misticmizoram.gov.in)