Department of Science & Technology
Ministry of Science & Technology
Government of India
NMSHE NATIONAL MISSION FOR SUSTAINING THE HIMALAYAN ECOSYSTEM

MIZORAM STATE CLIMATE CHANGE CELL
MIZORAM SCIENCE, TECHNOLOGY & INNOVATION COUNCIL

Newsletter CLIMATE ACTION IN MIZORAM

7th ISSUE (October 2023 to September 2024)
Bi-annual newsletter published by Mizoram State Climate Change Cell

CLIMATE CHANGE MITIGATION STRATEGIES

- Adopted by A.H. & Veterinary Department, Govt. of Mizoram

01 Biogas Plant:

Biogas programme has been implemented in Mizoram under the New National Biogas and Organic Manure Programme (NNBOMP) under the Ministry of New and Renewable Energy, Govt. of India. The project was launched in September 1982. Till today the A.H. & Veterinary Department, Mizoram has installed **5482 units of biogas plant** throughout different corners of the State. Mizoram has been awarded National Award for achievement in Biogas Plant installation in the year 1993-1994, 1994-1995 and 2000-2001.

Biogas is mainly used for cooking fuel, lighting, meeting thermal and small power needs of users which results in GHG reduction. The digested slurry from biogas plants is a rich source of manure and is used for supplementing/reducing the use of chemical fertilizers.

02 Moringa Trees Plantation:

Apart from being a good source of nutrients to animals, plantation of Moringa tree helps in mitigation of climate change through carbon sequestration.

This project is implemented under National livestock Mission (NLM), Govt. of India. A.H. & Veterinary Department, Mizoram has distributed **1,19,000 nos. of Moringa saplings to 595 farmers** of various districts in Mizoram for plantation.

03 Distribution of Chaff Cutter:

Physical processing of forages, such as chopping, grinding, and steam treatment improves forage digestibility and mitigates enteric methane production in ruminants (Hristov *et al.*, 2013).

A.H. & Veterinary Department, Mizoram distributed **144 nos. (1.5-3 HP, 7.5 HP, and 10 HP) of chaff cutters** to various farmers in Mizoram. The department had also distributed 48 nos. of chaff cutter under the FOCUS project.

04 Fodder cultivation:

The department has a vast cultivated land for fodder production, an area of 23 hectare in Thenzawl and smaller areas in Thingdawl, Selesih, Lungpuizawl, Mampui and Siaha. Good quality fodders are cultivated and harvested in these areas each year for animal feeds. Fodder cultivation helps in carbon sequestration for mitigation of climate change.

05 Water Body Conservation:

Carbon sequestration can also be achieved by decreasing deforestation rates, reversing of deforestation by planting, targeting for high yielding crop with better climate change adapted varieties, and improvement of land and water management (Steinfeld *et al.,2006*). A.H. & Vety Farm Complex, Thenzawl has a natural lake known as DILPUI. It is used to conserve water for irrigation purpose and for the farm animals as well. This water is also used for domestic purpose by staffs and their family dwelling in the farm complex. As time passes, improvement of Dilpui and the surrounding area extended further with cultivation of good quality fodder all around. Dilpui has now become a recognized livestock based eco-park having thousands of visitors each year.

06 Awareness Campaign:

The A.H. & Veterinary Department, in collaboration with Environment, Forest & Climate Change Department organized an awareness campaign on '***Climate change, Its impact on Livestock and Mitigation***' at different villages in Mizoram.

07 Single Use Plastic :

The Department cooperated well with the CPCB, Govt. Of India for the implementation of Comprehensive Action Plan on ban of Single use plastic. Single Use Plastic items banned by the CPCB, Govt. of India are now eliminated within the premises of the Department.

(Contd... on pg2)

Biogas plant

Moringa tree nursery, Thenzawl

Fodder farm, Thenzawl

DILPUI, Thenzawl (Water body conservation)

RENEWABLE ENERGY: SUSTAINABLE SOLUTIONS FOR GREEN MIZORAM

- Power & Electricity Department, Govt. of Mizoram

The quantum of unrestricted power requirement of Mizoram at present is about **162 MW**. However due to rapid growth of the load requirement this will be again increased within a short period of time. About 80 percent of power requirement of the State is met from outside sources. The load expected as per 18th Power Survey Report, is 285 MW. As compared to the requirement, the State owned generation is negligible. This clearly indicates that all-out efforts need to be taken from all corners to meet the gap between the power requirement and the power supply.

There is a huge gap between the requirement of power and the State-owned generating capacities. Due to this vast gap, the State Government has to allocate huge funds for the purchase of power from outside the State which could have been saved if State-owned generating stations had been increased. The existing problems can be solved only by increase of the state-owned generating stations or capacity addition. Solar photovoltaic (PV) technology converts sunlight into electricity directly, without any other additional energy conversion step. Mizoram, lying in the tropical region, receives an average solar insolation of about *4.5 kWh/m2/day* and has approximately 300 sunshine days. This energy can be utilized for power generation during day time and also during night time by power storage options/systems. The temperature favours setting up of solar power plants within the State as the State has cool natural breeze to cool down the plants. The estimated solar potential of Mizoram, as calculated by National Institute of Solar Energy (NISE), is approximately **9.09 GWp.**

State energy sources by installing a 10 MWp Grid Connected Solar PV Power Plant at Thenzawl. For this purpose, Govt. of Mizoram sanctioned Rs 74.82 crore for the project through a NABARD loan and it is targeted to be completed within the year 2025. Apart from this, the Govt. of India launched **PM-Surya Ghar: Muft Bijli Yojana** (Rooftop Solar Scheme) in Residential sectors providing Central Financial Assistance (CFA). Knowing the importance of this scheme, the State Govt. had put the utmost effort to increase energy generated from Rooftop Solar by providing additional subsidies to supplement the subsidy provided by the Central Govt. Interested consumers may visit the web link pmsuryaghar.mizoram.gov.in and process registration/application. Under this scheme, the Ministry of New & Renewable Energy (MNRE) encouraged all States/UTs to undertake saturation of Govt. buildings with Rooftop Solar.

Lastly, solar energy is the source of green energy and the future of our upcoming source of generation. It is safe and does not cause pollution. Thus, we must try to tap solar energy on a large scale to make our state Mizoram eco-friendly.

CLIMATE CHANGE AND FISHERIES: MITIGATION STRATEGIES

- Adopted by Fisheries Department, Govt. of Mizoram

Fisheries and aquaculture have emerged as the fastest-growing food sector, outpacing all other animal food production systems. However, the sector's sustainability is increasingly under threat due to the ongoing and predicted effects of climate change which are not just a future concern but a present reality. Climate change is disrupting fisheries by altering water temperatures, impacting fish habitats, migration patterns, and breeding cycles. This can result in reduced fish stocks, biodiversity loss, and shifts in the distribution of aquatic species. The Department of Fisheries, Govt. of Mizoram recognizes the profound impact climate change has on aquatic ecosystems and the livelihoods of communities dependent on fisheries. With rising temperatures, erratic rainfall patterns, and the increasing frequency of extreme weather events, there is a growing need to adapt and mitigate the effects of climate change on fisheries and aquaculture. In response, the department has initiated several key meas-

01 Promotion of Climate-Resilient Fish Species

To address the changing environmental conditions, the department is focusing on promoting the cultivation of climate-resilient fish species that can survive in fluctuating water temperatures and low oxygen levels. Species that are naturally better adapted to local environmental conditions are being prioritized for sustainable aquaculture practices.

02 Sustainable Aquaculture Practices

The department emphasizes the adoption of environmentally sustainable aquaculture techniques, such as integrated fish farming, which minimizes the ecological footprint while enhancing productivity. By promoting practices like **polyculture and bio floc technology**, the department aims to ensure the long-term viability of fish farming, even in the face of climate stress.

Bio-fluc Culture System

Paddy cum fish culture

03 Restoration/Restocking of Water Bodies

Water bodies such as wetlands, reservoirs, lakes, and rivers play a crucial role in buffering against climate impacts and supporting biodiversity. The department is actively involved in the restoration and restocking of these water bodies to improve water quality, enhance fish productivity and restore ecological balance.

04 Policy Advocacy and Stakeholder Engagement

The department is committed to advocating for the integration of climate adaptation strategies into national and regional fisheries policies. For the effective conservation and responsible use of water resources, the State Government has enacted the **Mizoram Fisheries Act of 2002** and the **Mizoram Fisheries Rules of 2016**. Additionally, the **Mizoram Fisheries Conservation Fisheries Reward Scheme, 2019**, encourages community participation in conserving water resources.

Recognizing the vital role of local communities, the Fisheries Department has also partnered with the Young Mizo Association (YMA), signing an MoU to collaborate on awareness campaigns for riverine fish conservation and community-level vigilance. These efforts aim to foster greater awareness and collective action in safeguarding aquatic ecosystems for future generations.

The Department signed an agreement with Central Young Mizo Association (CYMA) on Riverine Conservation

RELIABLE, ECO-FRIENDLY AND RENEWABLE FABRIC SILK

- Sericulture Department, Govt. of Mizoram

The textile industry uses copious amounts of two things: water and chemicals. It is the number one industrial polluter of water in the world. So, there is a need for sustainable eco textiles. Sustainable products are environment friendly, support communal harmony, and meet fashion needs. Eco textiles are textile products, produced in eco- friendly ways and processed under eco-friendly limits defined by agencies like Oekotex, IFOAM, etc. Silk, cotton, wool and hemp are important eco-textiles and need to be exploited, branded and marketed to a higher extent.

Silk, one of the most luxurious and ancient fabrics, has long been valued for its sheen, softness, and elegance. While commonly associated with opulence, silk also possesses qualities that make it an eco-friendly and renewable fabric, a fact that aligns well with modern sustainability demands. In this article, we'll delve into what makes silk both a reliable and eco-friendly material, its renewable nature, and its role in sustainable fashion. Natural fibres have an edge over artificial fibres and silk excels over all the fibres for many inherent characteristics such as lustre, softness, elegance, versatility, wearability, yarn strength etc. Silk fibre is constituted by two important proteins, ***fibroin (73.5 %) and sericin (22.28 %)***. The chemical formula of sericin is $C_{15}H_{25}N_5O_8$ and that of fibroin is

Silk as a natural fibre

Natural fibres tend to have complex and distinctive internal and external features. Natural fibres have variable diameters, cross sections and possibly colour banding. Silkworm food plants are planted in places that would not be ideal for raising crops. This cottage sericulture is known for its low-tech silk processing, which uses no electricity at all in the majority of its stages.

Natural fibre has an edge over artificial fibres and silk excels over all the fibres for many inherent characteristics such as:-

- *Silk gains precedence over other fibres because of its lustre, softness and elegance.*
- *It is the only fibre that is directly woven into its raw state.*
- *Pure silk knitted fabrics have a very good scope because it is a synonym for elegance, and silk garments are prized for their vanity versatility, wearability and comfort.*
- *High hairiness value.*
- *High single yarn strength.*
- *High elongation.*
- *Good abrasion resistance as these fibres are man-made and as their surface is smooth, there is less friction resulting in decreased abrasion.*
- *Decreased bursting strength.*
- *High area shrinkage.*

Pollution of the Environment

Without a doubt, silk is among the most environmentally friendly materials available in terms of pollution. The Silkworm food plants don't utilise pesticides, something we can't claim for the cotton sector. Silk is a waste-free, circular fabric. Its production technique requires less energy and chemicals than that of many other fibres, and it is a renewable resource that is fully biodegradable.

The stages of production that involve degumming and bleaching are the most polluted. Usage of formaldehyde, zinc sulphoxylate, sodium hydrosulphite, or sulphur dioxide is in itself not the biggest issue, but the uneducated use of it without proper protective gear, and the uncontrolled disposal of wastewater creates problems.

Eco Fashion and Silk

Ecologically responsible fashion like other things in the Eco realm, calls the aesthetic sense of the customer. Eco-fashion has made several big names from both the domestic and international fashion fraternity. Silk fibre comes in vibrant colours, shades and hues, that bring you close to mother nature. It plays an important role in our lives and can also be a reflection of our personality. Eco-fashion is the way out to make the textile fibre more sustainable.

Bangalore-based eco-fashion designer (Deepika Govind) has made Eri silk soft and supple. Eri silk has natural thermal properties and is characteristically coarse and rugged. Deepika has now come up with soft Eri silk with a drape and bounce that, according to her challenges the pashmina. The fabric is directly woven in respective shapes, increasing fabric utilization and wastage is reduced by 15-22%.

Sericulture as a solid way of employment

In India, silk sericulture is practised in over sixty thousand villages. Just in the state of Karnataka alone, more than nineteen thousand villages raise silkworms for the silk industry. This business is ***providing employment to roughly 6 million people*** in those rural areas of India that otherwise do not have many economic opportunities. It is calculated that the silk production from the cultivation of mulberry trees to the weaving process on just one acre of land creates as many as 1000 days of employment.

In most other silk-producing countries the situation is similar: sericulture creates low-stake (minimal investments) employment in rural areas that are otherwise not endowed with many employment opportunities. Moreover, a high percentage of the people working in sericulture are female, and this is helping women become players in the decision-making process. Taking that away will cause a large gap in income and status that is not easily filled with any alternative.

WATER MANAGEMENT AND CLIMATE ADAPTATION: COMMITMENT TO A SUSTAINABLE FUTURE IN MIZORAM

- Irrigation & Water Resources Department, Govt. of Mizoram

The Irrigation & Water Resources Department (IWRD) in Mizoram is actively contributing to climate change resilience through various initiatives:

01 *National Hydrology Project (NHP):*

As part of the National Hydrology Project (NHP), the ***RTDAS has been established at 81 strategic locations*** across Mizoram to collect real-time weather and water data. This system enables the state to respond rapidly to extreme weather events like floods and droughts, which are becoming more frequently due to climate change. The real-time data supports early warning systems, helping reduce risks and enhance disaster preparedness.

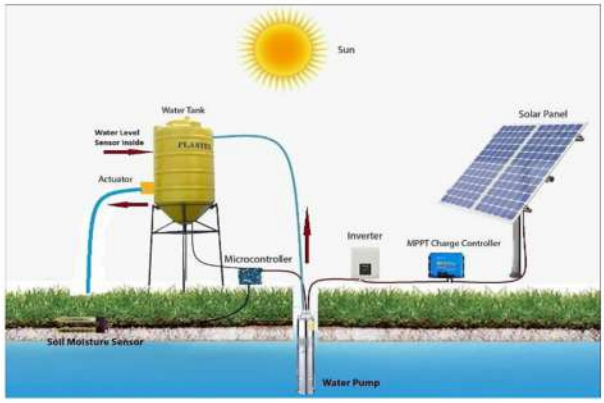
In addition to data collection, ***the NHP includes spring rejuvenation studies***, which aim to revitalize natural springs, a critical water source in rural areas, especially as rainfall patterns change. The project also focuses on sediment studies in jhum (shifting cultivation) areas, where soil erosion is a major concern. These studies seek to manage sediment and reduce soil degradation, protecting ecosystems and promoting sustainable farming practices in the face of climate change.

02 *Command Area Development and Water Management (CADWM):*

By optimizing irrigation systems and land management, the CADWM initiative ensures more efficient water use. This is critical for sustaining agriculture in the face of erratic rainfall and other climate-related challenges.

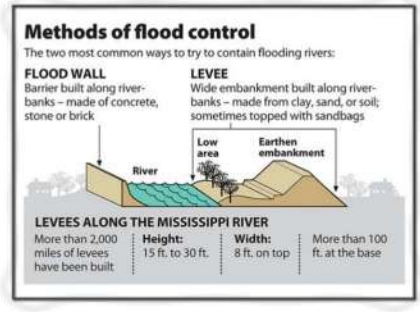
03 *Solar-Powered Irrigation Projects:*

Under the PM-KUSUM scheme, solar-powered pumps for groundwater and lift irrigation are being installed across Mizoram. These pumps reduce reliance on fossil fuels and promote renewable energy, thereby lowering the carbon footprint while ensuring sustainable irrigation for farmers.



04 *Erosion Control and Flood Management:*

Mizoram's heavy rainfall and monsoon season make it vulnerable to soil erosion and flooding. The department's anti-erosion and flood management programs protect agricultural lands from damage, helping to maintain soil fertility and food security, both of which are at risk due to climate change.



These initiatives by the IWRD not only help Mizoram adapt to the impacts of climate change but also contribute to mitigating its causes. The department's focus on sustainable water management, renewable energy, and ecosystem restoration highlights its commitment to building climate resilience.

CLIMATE CHANGE AND MITIGATION STRATEGIES

- Hoticulture Department, Govt. of Mizoram

Changes in temperature leads to rainfall variability which results in more severe and frequent storms. They cause flooding and landslides, destroying homes and crops. The five-year average global temperature from 2019-2023 is the highest on record, and 2023 was the warmest year on record. The Department of Horticulture, Government of Mizoram has taken up various mitigation strategies to combat the negative impact of climate

01 Vegetable Production:

Most commercial vegetables are seasonal and can only be grown after monsoon in the State due to heavy rainfall which cannot be tolerated by delicate crops. To have year-round production even during the monsoon period, efforts have been made by the Department to identify crop varieties suitable for cultivation during the rainy season so that farmers can take up off-season cultivation.

Cultivation of Tomato during the off-season period in the state was introduced. The varieties ***'Arka Rakhak'*** and ***Arka Samrat',*** resistant to leaf curl, bacterial wilt, early blight diseases and heavy rainfall were introduced in open fields as well as under partial shade (shade net) and have shown great adaptability with high yields. Off-season Cabbage was also introduced utilizing a variety named ***Ryozeki,*** a Japanese heat-tolerant variety that is successfully grown in the State during the summer months of the monsoon period.

Cabbage cultivation at Zawlpui

02 Fruit Production:

During the 2023-2024 planting season, the Department supported *more than 400 farmers for the cultivation of Papaya, 200 farmers for Dragon fruit cultivation and another 200 farmers for Mandarin Orange cultivation.*

Due to climate change, Mandarin Orange is recommended to be grown at a height of 4000 ft and above for successful cultivation. Dragon fruit is recommended for cultivation as the water demand is low compared to that of other crops and can tolerate dry tropical climates and tolerate temperatures as high as 38-40°C and as low as 0°C for short periods.

Khiangzawl,Serchhip

03 Protected Cultivation:

While open-field cultivation is ongoing to a great extent, the Department also covers protected cultivation. This allowed cultivation of different crops under polyhouses and made a shift from jhum cultivation to permanent cultivation in the villages. Under protected cultivation, the crops escape the external harsh conditions of unprecedented rainfall, fluctuation in temperature, etc. caused by climate change.

Haidai, Leng

BAMBOO PLANTATION AT SAIPHAL ZAU, HMUNPUI VILLAGE

04 Bamboo Plantation:

Bamboo is a versatile group of plants that is capable of providing ecological, economic and livelihood security to the people. It is a fast-growing grass that can ***sequester carbon at a higher rate t***han many other plants. The Mission focuses on utilisation of existing bamboo plantations (forest cover) and the expansion of bamboo areas in cultivated land. Development of bamboo is limited to a few states in the country, wherein it does have social, commercial and economic advantages, particularly in the North Eastern region besides contributing to climate change mitigation strategies.

There are as many as ***37 species of Bamboo*** found in Mizoram. Due to the specificity in climate and elevation of different bamboo species, the selection of species for cultivation must be made according to the requirement of the specific species. Eg:- *Dendrocalamus brandisii* and *D. latiflorus* are recommended for cultivation at a higher elevation of 1000 m and above. *D. sikkimensis* is recommended at an elevation of 500-700 m and *D.longispathus* is recommended at a lower elevation of 500 m.

However, due to the affect of hailstorm and Cyclone Remal, many farmers in Horticulture sector throughout Mizoram have suffered a lot and lost their crops, farm hut, greenhouses and link roads. The Department in response to the spot verification done by the Central Team and Disaster Management & Rehabilitation Department, Govt. of Mizoram thereby submitted the damage report in respect of the Horticulture Department amounting to a total of Rs.7.27 crore approximately.

CLIMATE CHANGE & DISASTER: A FOCUS ON MIZORAM

- Zodinpuii Bawitlung, MFAS
Finance & Accounts Officer
Directorate Disaster Management & Rehabilitation

Mizoram stands on the frontline of climate change, experiencing firsthand the growing impact of extreme weather events. Its geo-climatic conditions make it particularly susceptible to natural disasters such as cyclonic storms, cloudbursts, hailstorms, and landslides. As climate change intensifies, these disasters are becoming more frequent and severe, posing a grave risk to the region's fragile ecosystem and its people.

The Climate Profile of Mizoram

Mizoram's susceptibility to climate-induced hazards is well documented. Over 71% of the state's land falls within very high to moderate hazard zones, making it one of the most disaster-prone states in the country. The region frequently endures extreme weather events, and these events have been exacerbated by climate change.

Over the past 30 years, Mizoram has experienced a steady rise in average temperatures, particularly in its capital city, Aizawl. Concurrently, the region's rainfall patterns have shifted, with an increasing trend in monsoon precipitation but a marked decrease in post-monsoon and winter rainfall. Heavy precipitation events are now more frequent, leading to flash floods, landslides, and soil erosion. These shifts in climate dynamics directly impact the region's water availability, agricultural productivity, and land stability.

For instance, the annual rainfall recorded in Mizoram showed fluctuations from 118 cm in 2019 to 123 cm in 2021. This variability underscores the unpredictability brought on by climate change, with significant implications for the region's agriculture and infrastructure.

Climate Change and Natural Disasters

The interplay between climate change and natural disasters is evident in Mizoram, where cyclones, heavy rainfall, and landslides are becoming more severe and frequent. The table below highlights the scale of destruction caused by different types of disasters from 1st April 2023 - 31st March 2024:

Disaster Type	Lives Lost	House Damage	Crop Area Damage (in hectares)	Loss Amount (?)
Cloudburst	1	376	110.00	8,71,350
Cyclonic Storm	0	383	29.80	51,62,900
Flood	2	7	147.53	21,74,560
Hailstorm	1	424	249.53	1,21,63,075
Heavy Rainfall	0	10	42.90	1,00,000
Landslide	0	90	168.90	2,26,29,900
Pest Attack	0	0	116.93	12,11,275
Fire	2	139	88.413	2,99,98,225

Landslide and Wind Hazards in Mizoram

Landslides are among the most destructive natural disasters in Mizoram, with large swaths of land classified as high to very high landslide hazard zones. The table outlines the extent of land vulnerability to landslides.

Zone	Area (Sq. Km)	Percentage (%)
Very High	1,822.48	8.65
High	4,263.79	20.22
Moderate	8,903.47	42.24
Low	5,011.57	23.77
Very Low	968.72	4.60
Water Body	111.97	0.53

Similarly, wind and cyclonic storm hazards are a persistent threat. The following table highlights the areas affected by wind and cyclone hazards:

Zone	Area (Sq. Km)	Percentage (%)
Very High	3,736.34	17.68
High	7,283.50	34.50
Moderate	10,061.17	47.82

Landslide and Fire Incidents Over the Years

The increasing frequency and intensity of landslides in Mizoram are well documented, with significant damage to homes and agricultural land:

Year	House Damage	Crop Area Damage (HA)
2014-15	163	14.32
2016-17	425	125.68
2018-19	175	3400.00
2020-21	233	5400.00
2022-23	64	800.00
2023-24	90	46.14

Future Outlook and Way Forward

The impacts of climate change on Mizoram's ecosystem and its people are unmistakable. Changing rainfall patterns, rising temperatures, and increased frequency of natural disasters such as landslides, cyclones, and fires are reshaping the region's landscape and livelihoods.

Going forward, it is essential to adopt integrated approaches that focus on climate adaptation, disaster preparedness, and environmental conservation. Key measures include strengthening early warning systems, enforcing land use regulations to avoid development in high-risk areas, and promoting sustainable agricultural practices. Reforestation and soil conservation efforts will help stabilize landslide-prone areas, while community-based disaster risk management (CBDRM) programs can empower locals to take proactive action.

Conclusion

Mizoram's battle with climate change is not a future possibility but a present reality. The growing frequency of natural disasters, coupled with shifting weather patterns, underscores the urgent need for climate action and resilient disaster management strategies. By addressing these challenges through collaboration between local communities, the government, and environmental agencies, Mizoram can better adapt to climate change and safeguard its environment and people from future risks.

CURRENT STATUS OF GLOBAL CLIMATE CHANGE

- Mizoram State Climate Change Cell, MISTIC

Climate change broadly refers to the long-term shift in the global weather pattern due to the excessive emission of heat-trapping greenhouse gases (GHG) which increases the average global temperature often referred to as 'Global Warming'. This shift can occur naturally due to the eruption of volcanoes, emissions from wetlands, livestock and agricultural sectors release carbon dioxide, methane and nitrous oxide which are the main contributors of atmospheric greenhouse gases. However, anthropogenic activities such as industrial, vehicle and domestic emissions, burning of coal and gases, agriculture and livestock emissions are unequivocally found to be the main drivers of climate change according to the ***report published by IPCC (AR6).*** The dawn of the Industrial Revolution around the 18th century brought about a series of changes worldwide, from transforming a rural, agrarian-based economy to a modern industry-dependent economy. This progressive transformation however has inadvertently altered the Earth's terrestrial and atmospheric environment, hugely disrupting its natural equilibrium. These affects lead to climate change, the critical issue of our time and we are at an important defining moment.

Current Scenario

The IPCC (AR6) reported that the average global temperature has increased by ***1.1°C*** as compared to the pre-industrial era and at this alarming rate of emission, we are likely to exceed ***1.5°C by 2030***, possibly even reaching 3.2°C in an overshoot scenario by the end of this century if we do not take immediate actions.

Warmer temperatures and shifts in weather patterns are just one aspect of climate change. In broader terms, it encompasses the bio-geochemical cycle regulating our Earth's environment, where one alteration in one area can negatively affect the other, causing a catastrophic ripple-like effect. The consequences of climate change have now reached a near irreversible stage and we need to do something about it fast.

Many parts of the world experienced unusual heat this summer caused more likely by climate change as per a report released on September 18 by Climate Central, an independent group that analyses data on climate change and its impact on people. It reported the Earth's hottest summer season on record and human-caused climate change increases heat-related severe health risks among many people and prolonged extreme heat waves all over the world. In India, more than 20.5 million people experienced extreme heat waves for at least 60 days during the past summer months from June to August. The cities on the coast of the Arabian Sea such as Thiruvananthapuram, Vasai-Virar, Kavaratti, Thane, Mumbai, and Port Blair witnessed 70 days or more of unusual heat possibly caused by climate change.

Temperature Rise and Rising Sea Level

The World Meteorological Organization (WMO) reported that 2023 was the warmest year on record, with the global average near-surface temperature at ***1.45 °C above the pre-industrial baseline***. The rate of global sea-level rise is accelerating, and it has risen about 8-9 inches (0.2 meters) since reliable record-keeping began in 1880. Glacier and ice sheets are melting faster than ever causing sea level rise and threatening vulnerable small islands, coastal cities and animal communities. Ocean warming and acidification due to rising temperature have also adversely impacted the aquatic communities.

Extreme Weather Events

Frequent and extreme weather events such as flooding are linked to heavy rainfall prompted by tropical cyclones causing misery and mayhem, besides displacing thousands of people. Prolonged recurring heatwaves, drought and wildfires across many tropical regions greatly affect our agriculture productivity and groundwater storage levels.

Socio-Economic Impacts

Increasing food and water shortages because of weather and climate hazards pose a great socio-economic challenge. The consequences of these tend to affect the most vulnerable communities, having to uproot them from their situations causing great distress mentally. Climate change will primarily influence economic growth through property and infrastructure damages, lost or low agricultural productivity, mass migration and security threats.

What are we doing about it?

The United Nations Framework Convention on Climate Change (UNFCCC) conference in 2015 resulted in the famous Paris Agreement (COP25) marking a milestone achievement in fighting climate change. It put forward globally accepted frameworks and agreements to steer the progressive measures through the Sustainable Development Goals. The frameworks are broadly categorized into various action plans such as cutting emissions, adapting to climate impacts and financing required adjustments.

The IPCC (AR6) in its latest report has also put forward mitigation and adaptation strategies to curb excess greenhouse gas (GHG) emissions, falling in line with the Paris agreement (2015). Thorough scientific-based, inclusive and equitable policies and governance are the key to cutting emissions by 45% by 2030 and achieving net zero emissions by 2050 if we want to keep the average global temperature to 1.5°C.