

**SPECIAL EDITION**

1-15 NOVEMBER, 2022

**30**  
years

# Down To Earth

FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH

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**CLIMATE CHANGE**

# LOSS AND DAMAGE

Who will foot the bill?



**EXISTENTIAL CRISIS**

A last-ditch plea by the prime minister of a sinking island nation

**DESPERATE MEASURES**

Vulnerable countries innovate to estimate losses as extreme weather events intensify

**ATTRIBUTION**

We now know the culprits that are making the disasters deadlier. Will they pay up?

**COP27**

Why climate negotiators must accept loss and damage as a legitimate demand

**AAETI**

## RESIDENTIAL TRAINING PROGRAMME

# NCAP: DEVELOPING AIR QUALITY MANAGEMENT PLAN FOR INDUSTRIAL AREAS

**Dates:** December 13-16, 2022

**Venue:** Anil Agarwal Environment Training Institute, Nimli (near Alwar), Rajasthan

**Participants will be awarded Certificates on completion of the Training Programme**

Industries contribute 30 per cent of the total air pollution in India. Despite this glaring fact, the National Clean Air Programme (NCAP) introduced in December, 2018 is weak on both strategies and scale of the solutions it enlists to combat the emissions from industries. The national programme recognises 132 non-attainment cities that have prepared the clean air action plans to achieve 20-30 percent reduction in particulate pollution by 2024 from the 2017 level. Most of these city action plans lack in-depth analysis of industrial pollution and requisite mitigation measures.

Reflecting on this, CSE is organizing a four days training programme on "NCAP: Developing air quality management plan for industrial areas". The aim of the programme is to build capacity of the participants on methodology of preparing action plan to reduce air pollution from industrial sources to achieve an overall objective of clean air. The course will stress on step by step methodology from identification of issues, to inventorisation of pollution sources, sector specific best practices, role of small and medium scale industries, learning skills to conceive phase-wise action plans using data-points and strategies for its implementation.

### WHO CAN APPLY

- Working professionals and decision makers from government and non-government institutions
- Practitioners from private organizations, non-government organizations
- Independent researchers and academicians working in the field of air quality
- Institutes of Repute (IORS) under NCAP

### LEARNINGS FROM THE PROGRAMME

- Sources of air pollution from industrial area
- Pollution source inventory and load assessment
- Designing air quality monitoring network
- Compliance and enforcement in small and medium scale industries
- Case study: Role of technology and fuel change
- Stakeholder mapping and assigned responsibilities
- Management of non-hazardous waste
- Class exercise and presentation: Preparation of Action Plans

### COURSE FEES

₹28,000/- for single occupancy

₹25,600/- for double occupancy  
(Course fees entails Lodging, Boarding & Training Kit fee. It does not cover travel cost from your respective location to Delhi and back)

### SPECIAL DISCOUNTS:

**25%** discount on course fees for Industry, Researchers, consultants and academicians

**50%** discount on course fees for NGOs and students.

**Last date to apply:**  
**December 5, 2022**

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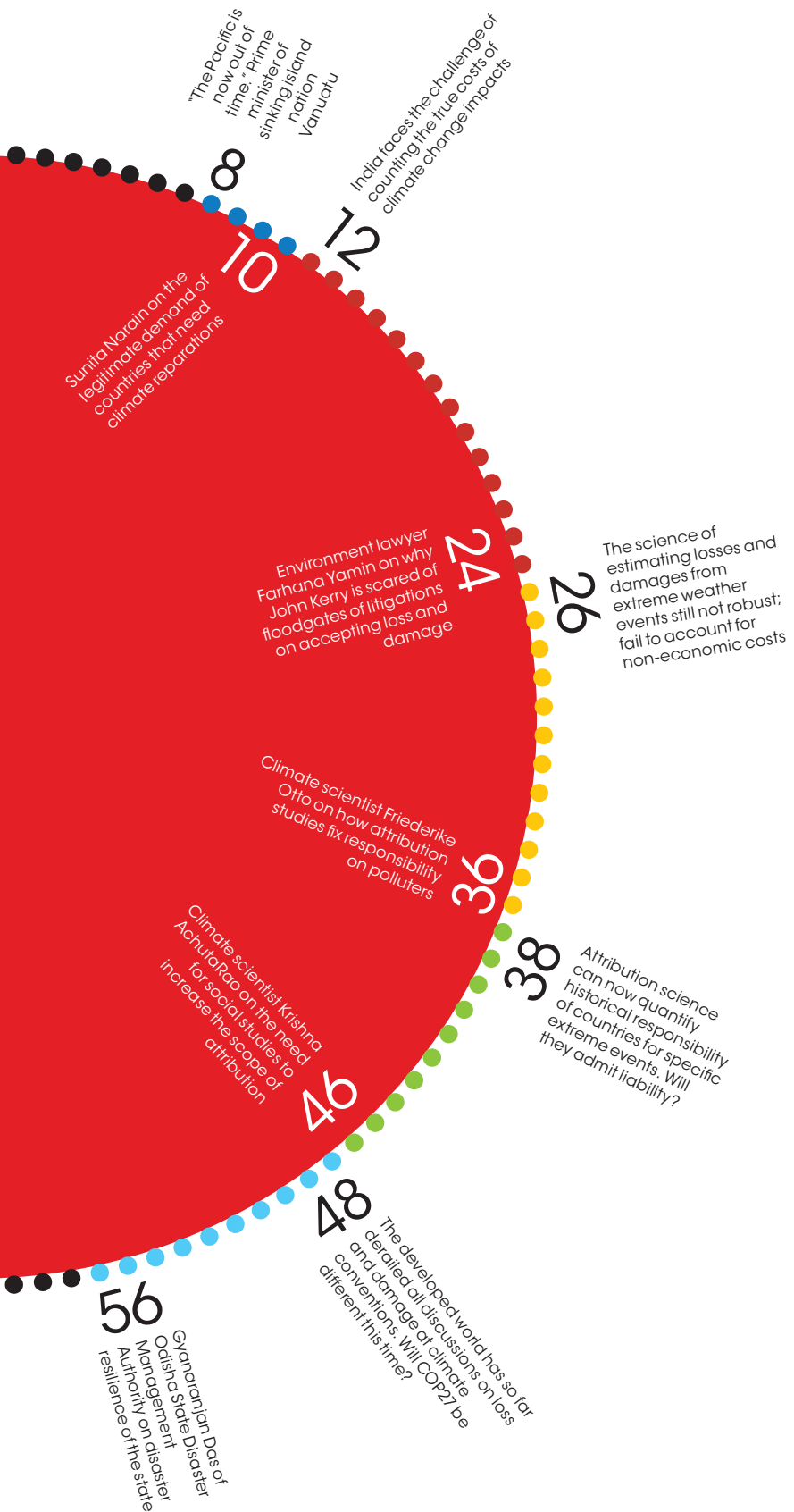
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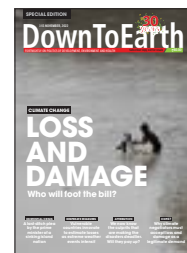
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**LOSS AND DAMAGE**

# TIME TO

Vulnerable countries are gearing up for a renewed battle over compensation for the growing hazards of global warming



# PAY UP

PHOTOGRAPH: REUTERS



## PAKISTAN

A camp for people displaced due to floods in Sehwan, Sindh province, on September 30. A 10-times heavier than usual rains since June caused floods in the Indus, bringing a third of Pakistan under water. The disaster killed over 1,700 people and 1.2 million livestock. Some 33 million people, including 16 million children, have been impacted, as per UNICEF. The government's initial estimates show that the disaster has led to losses of US \$30 billion. The deluge came after the country witnessed extreme heat in May, recording one of the highest ever temperatures of 50°C. High temperature hastens melting of ice in Himalayan and Hindu Kush glaciers that feed the Indus.



**WE ARE NO  
LONGER  
MEASURING THIS  
EMERGENCY  
ONLY IN TONNES  
OF CARBON  
EMISSIONS OR  
THE GLOBAL  
WARMING BY  
DEGREES OF  
CELSIUS**

**BOB LOUGHMAN WEIBUR**  
PRIME MINISTER,  
REPUBLIC OF VANUATU



Here in the Pacific Islands, climate change is an existential threat. It is the single greatest threat to our livelihoods, security and well-being. Our economies routinely suffer damages of more than 50 per cent of GDP from climate extremes, taking us back decades in our goals for sustainable development. Worse of all, we are no longer measuring this emergency only in tonnes of carbon emissions or the global warming by degrees of Celsius, but also in human rights violations and lives lost. This is the real face of loss and damage. All of these are happening at just over 1.1°C of global heating and seven years after the Paris Agreement. Imagine the devastation 1.5°C of temperature rise will bring to our Blue Pacific.

The world's political leadership has not yet taken this crisis fully to heart. So we continue to see the expansion of new fossil fuel projects and a failure to commit the finances, technology and political will to avert catastrophic loss and damage. Believe me when I say "The Pacific is now out of time".

Initiatives like Vanuatu's, supported by more than 80 nations around the world, to bring climate change to the International Court of Justice for legal clarity on the existing obligations of States to protect human rights, will help unstuck the UN Framework Convention on Climate Change (UNFCCC) negotiations, put people at the front of climate decision-making, and see widespread transformative actions from all nations to save the goals of the Paris Agreement.



*Vanuatu, a Pacific island country, contributes less than 0.0018 per cent of global greenhouse gas emissions. In fact, it sinks more carbon than it emits and is already a "carbon-negative" country. Yet it is one of the most vulnerable countries to climate impacts. It ranked 132nd out of 182 countries in the 2020 Notre Dame Global Adaptation Initiative (ND-GAIN) Index that illustrates a country's vulnerability to climate change. Its sea level is rising at twice the average global rate, and would continue to rise through the 21st century. "Disasters resulting from natural hazards are a significant contributor to issues of social deprivation and impede economic development in Vanuatu, costing on average an estimated 6% of GDP every year," estimates the World Bank. It is probably the only country that in its commitment under the Paris Agreement has included not just phasing out of fossil fuels but also a cost to cover the loss and damage due to climate change impacts. Vanuatu has requested the International Court of Justice to issue "an opinion on the right to be protected from the adverse impacts of climate change" for which it has been seeking support from other countries.*

# ONLY TOGETHER CAN WE WIN

**At COP27, loss and damage must not to be pushed away with another puny promise of a fund that never materialises but be accepted as a legitimate demand of countries that need climate reparations**

**SUNITA NARAIN**

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It's a nightmare moment for climate change activists like me as we head for the next conference of parties (COP27)—this time being organised in the coastal city of Sharm el-Sheikh in Egypt. The rich world, which has to act decisively to cut fossil fuel emissions and to finance transitions in the rest of the world, is going through its own economic crisis. Energy prices are high; this winter, it will be tough for households to stay warm. Climate change sceptics and the fossil fuel industry are close to taking a victory lap as they whip up public opinion against the needed energy transition—out of fossil fuel and into cleaner sources. The rich countries are already moving towards reinvestment in fossil fuels, although they say this is temporary and that they will go back to meeting their commitments to decarbonise. It's going to be a hard winter and beyond.

This is when every region has experienced the pain of extreme weather disasters—from floods to heatwaves, and from forest fires to the changing intensity and frequency of cyclones and hurricanes. We are seeing a glimpse of what awaits us as temperatures increase further—from the 1.1°C rise now since the pre-industrial era. It is the revenge-

of-nature moment that we have brought on ourselves by years of procrastination.

The world has refused, again and again, to accept the basic principles that must guide action on climate change. First, climate change is a global problem and it requires cooperation between all nations. Second, it needs rules that are fair and just, for the poor and the rich alike. Third, science is clear that humans are responsible for the global temperature rise and that this increase will lead to more and more variable and extreme weather events, much like what we are seeing now. Fourth, it is possible to estimate each country's responsibility for the stock of emissions already in the atmosphere—the historical cumulative emissions that have “forced” climate change impacts. And fifth, countries that have not yet contributed to the emissions will do so in the future, simply because the world has reneged on the need to make global rules that would apply fairly to all. This is not a tragedy of the commons. It is a monumental failure of collective leadership. Our failure.

At COP27, we have an opportunity to repair this terrible mess we are in—not all of it, but at least to restore a semblance of trust. The world can do this

by putting on the table the issue of loss and damage—the negotiations on the need to pay for damages that the countries of the South are experiencing because of climate change.

The issue of loss and damage is not new—the demand for this goes back to the time when the climate agreement was in the making in the 1990s. But it has been sidelined, openly rejected and dismissed. It made its way into the Paris Agreement only after the affected and vulnerable countries accepted that loss and damage would not become a basis for any “liability or compensation”. This is when environmental jurisprudence demands that the polluters should pay. This global politics, where the rules are made by the rich and for the rich, as it

dismissed. This has to be the basis of who will be liable to pay compensation for the loss and damage. Given that the gentlemen-negotiators do not like to call a spade a spade, they can choose to avoid all the references to liability or compensation, but they must not erase the principle of why and who in the world must take this action.

The world must also go back to rule-based decisions and not base its decision on the whims and fancies of the powerful. I am saying this because facts show that China—part of the Group of developing countries—is now yesterday’s US. Its annual emissions are double of what the US, the second highest (but historically largest), emits. By 2030, China will equalise its emissions on a per capita

## **COUNTRIES COULD HAVE WORKED TO REDUCE CLIMATE IMPACTS, BUT THE SCALE AND FEROCITY OF EXTREME EVENTS ARE UNPRECEDENTED**

would seem, needs to be addressed in the face of the catastrophic events that are breaking the backs of countries, making their people even more vulnerable to future shocks and forcing them to migrate out of homes that they call their own. We cannot just call these events new normal and turn the page. This is why loss and damage must be on the table—not to be pushed away with another puny promise of a fund that never materialises but to be accepted as a legitimate demand of countries that need reparations for damages they are enduring.

But this negotiation must be based on the agreement enshrined in the climate convention—that cumulative emissions of countries must be the basis of their responsibility to act. The numbers on the emissions—and which countries have appropriated the carbon budget of the world—are known and cannot be

basis with the US and also its share of the already depleted carbon budget. This is why we need rules for all—what was proposed in 1992 and what the world has shunned and shirked. Had the US agreed to emission reductions based on its contribution, the same would have been applied to others—including China. But now, it’s free for all.

This is not the regime that the world needs for loss and damage. There is enough evidence that while countries could have worked to reduce climate impacts, say, through better flood and drainage planning, the scale and ferocity of the extreme events are unprecedented and devastating. So, this climate nightmare moment can turn into a dream only if the world that gathers in Egypt has the courage to act differently and to realise that in this only one Earth of ours, we are interdependent. **DTE**





#### INDIA

Farmers dry their paddy crop on a road in Morigaon district, Assam, on May 24. Assam witnessed widespread floods across its network of rivers this year, affecting more than 30 of the state's 35 districts, and impacting over 5 million people. The state estimated the disaster to have cost around ₹4,416 crore. Floods are chronic in the state, but their intensity and frequency have increased. A fresh spell of rain later in early October led to another wave of flood, affecting five districts

# POWER OF EVIDENCE

India is transitioning to a robust tool to assess the loss and damage caused by extreme weather events

SEEMA PRASAD

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**R**ain conjures hope in Maharashtra's Marathwada region. Its eight districts are predominantly rainfed and are among the most drought-prone areas in the country. Monsoon failures and chronic farmer suicides bring the region national notoriety. This year, the monsoon season was different. The region received bountiful rains, and yet farmers lost their crops; scores of them even took their lives.

Between July and September, 4.5 million farmers in Marathwada saw rain wash away their standing crops from 0.38 million hectares (ha), an area more than double the size of Delhi, informs the office of divisional commissioner at Aurangabad, Maharashtra. Even before the news of crop loss could spread, in June, 108 farmers in Marathwada died by suicide. July saw 83 suicides, while August reported the highest 114 suicides and September 90 such incidences. This means three farmers from the region died by suicide every day during this monsoon season.

The situation was particularly acute in Maharashtra's Nanded district, which saw a two-fold rise in farmer suicides during the monsoon season—eight farmers died by

suicide in July, 26 in August and 22 in September. This was the highest spike in farmers' suicides in the region, which coincided with the monsoon's erratic progress that oscillated between dry and wet spells.

According to the India Meteorological Department (IMD), Nanded received 135 per cent and 501 per cent excess rainfall in the fourth week of June and first week of July, respectively. The trend continued in the second (210 per cent excess) and third weeks (67 per cent excess) of July. Farmers usually sow seeds in early June, and excess rain destroyed most of the saplings. Since seeds account for 40 per cent of crop input costs, most small and marginal farmers could not resow their fields. Only the ones with money, or access to credit, went in for late sowing. Even that did not help. Rainfall stopped abruptly in the last week of July, ushering in an unexpected month-long dry spell that continued till the first week of September. And then, in the next week, the district received 247 per cent excess rainfall. Kiran Gade of Himayatnagar village in Nanded says the September rains eroded the soil to the extent that farmers in his village might not be able to grow crops in the next few seasons.

## Extreme swings

On September 30, IMD announced the monsoon report card, claiming that the season was normal for the country, with 6 per cent excess rainfall. The reality is most parts of the country have experienced extremes like Marathwada. At the end of the season, 188 districts, or 27 per cent of the country, reported deficit rainfall (20-59 per cent less than normal), and seven received large deficient rainfall (60-99 per cent less than normal). The states that received deficit rainfall include Jharkhand, Bihar, Uttar Pradesh, Uttarakhand, Assam, Haryana, Delhi and Punjab.

The case of Uttar Pradesh was

department submitted a document to the chief minister's office urging it to consider declaring a mid-season drought, which is extremely rare. While the state took some immediate measures such as waiving off electricity costs for borewells, it never announced a drought. The discussion fizzled out after the rains.

## Year-round damages

The monsoon was not the only erratic season this year. Weather vagaries were visible in the winter and pre-monsoon seasons as well. In the first 273 days of this year (January-September), India experienced extreme weather events on 242 days, according to an

# IN THE FIRST 273 DAYS OF THIS YEAR (JANUARY-SEPTEMBER), INDIA EXPERIENCED EXTREME WEATHER EVENTS ON 242 DAYS

particularly unusual. The overall monsoon in the country's most populous state remained deficient even after receiving 193 per cent excess rainfall in the last week of September. Shortly after, the state got flooded. On October 5, three of its districts received 10,000 per cent excess rainfall. Shrivasti district received 176.8 mm rains, against the normal of 2.4 mm. On October 11, IMD released data that suggests that in the first 10 days of the month, the country received 80 per cent excess rainfall; Uttar Pradesh reported 689 per cent excess rain.

Apart from damaging crops, the unexpected rains in October also dashed farmers' hopes of receiving compensation for the crops lost due to deficit rainfall during the season. On August 20, the relief commissioner of the Uttar Pradesh revenue

analysis by *Down To Earth* Data Centre (see 'Disaster a day', p16).

What India has witnessed so far in 2022 is the new normal in a warming world. A 2020 report by the UN Office for Disaster Risk Reduction says globally, there has been "a sharp increase [in disasters] over the previous twenty years". India reported the third highest number of natural disasters during this period.

Between 1995 and 2020 (till October), India recorded 1,058 climatic disaster events (floods, cyclones, droughts, cold waves and heat-waves), says a September 2021 report by National Institute of Disaster Management (NIDM). It says the country has seen an "increasing pattern for both hydro-meteorological [floods, droughts and others] and biological disasters [disease outbreak]."

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# DISASTER A DAY

India experienced extreme weather events\* on 242 of the 273 days from January 1 to September 30, which claimed 2,755 lives and damaged 1.9 million hectares (ha) crop area

**KIRAN PANDEY AND RAJIT SENGUPTA**

### Extreme weather event type\*

- Heatwave
- Cyclone
- Snowfall
- Cloudburst
- Lightning and storm
- Cold wave/cold days
- Heavy rain, flood and landslide

### WINTER

**22** | **33,184 ha**  
Human deaths | Crop area affected

**39 of the 59 days in January and February** saw extreme weather events, spread across 21 states and Union Territories (UTs). Uttar Pradesh saw extreme events on 25 days, followed by Madhya Pradesh (24 days) and Punjab (15 days). The country experienced its third wettest January since 1951. Yet, most of **Maharashtra, Karnataka and Kerala recorded deficit rainfall**. This is surprising because central and southern regions were wetter than normal.



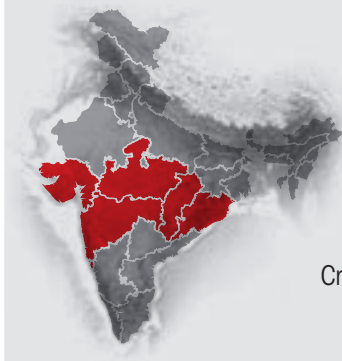
## REGION-WISE EXTREME WEATHER EVENTS

**Central region** recorded extreme weather events on **198 of the 273 days**. Madhya Pradesh was the worst hit, with events on 140 days.

**East and northeast region** recorded extreme weather events on **171 of the 273 days**.

### States in the region

Gujarat, Madhya Pradesh, Goa, Maharashtra, Chhattisgarh and Odisha



Deaths **887**

Crop area affected **136,781 ha**



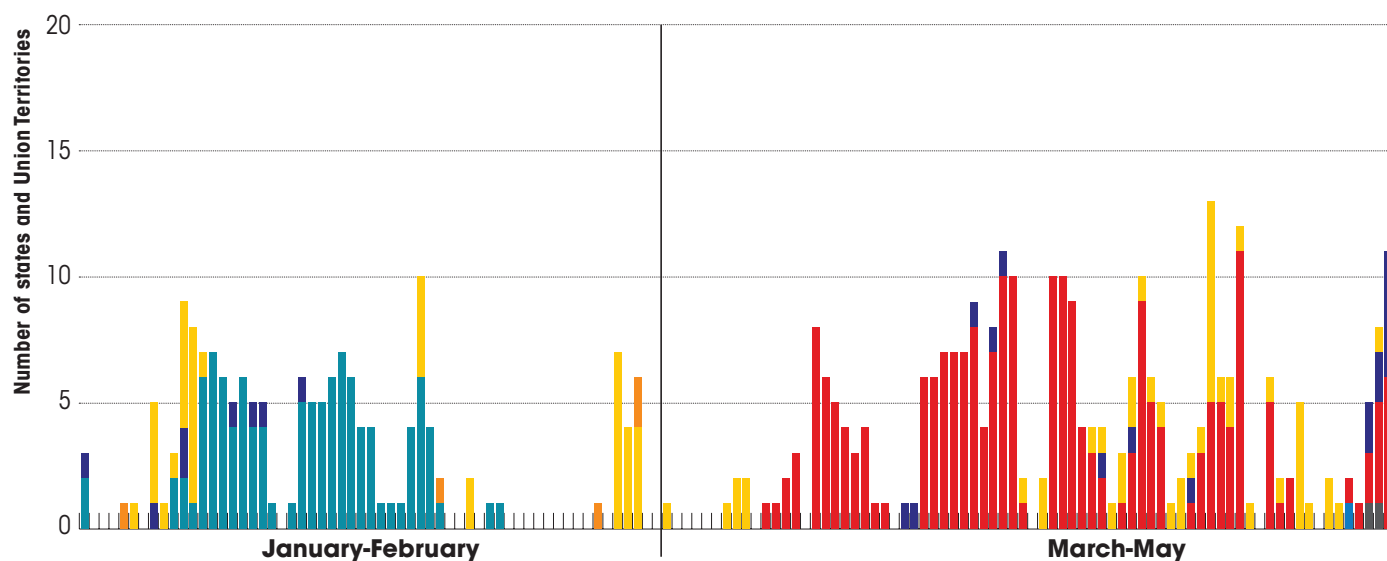
### PRE-MONSOON

**302** | **83,256 ha**  
Human deaths | Crop area affected

**81 of the 92 days between March and May** saw extreme weather events, spread across 3 states and UTs. **Rajasthan and Assam saw extreme events on 36 days, followed by Himachal Pradesh (33 days)**. Unusually hot March and April led to the early onset of heatwaves this year. The country reported heatwaves on 51 days. While the temperature was largely normal in May, the month saw heavy rainfall.



## SEASON-WISE DAILY EXTREME WEATHER EVENTS IN INDIA (JANUARY 1 - SEPTEMBER 30, 2022)





**(JANUARY 1- SEPTEMBER 30, 2022)**

Assam was the worst hit, with events on 131 days.

**Northwest region** recorded extreme weather events on **198 of the 273 days**. Uttar Pradesh was the worst hit, with events on 104 days.

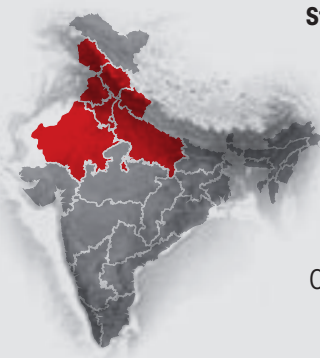
**South peninsula region** recorded extreme weather events on **124 of the 273 days**. Karnataka was the worst hit, with events on 82 days.

**States in the region**

Bihar, Jharkhand, Sikkim, West Bengal, Assam, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya

Deaths **783**

Crop area affected **256,517** ha

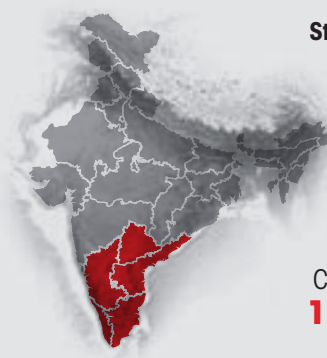


**States in the region**

Jammu and Kashmir, Punjab, Himachal Pradesh, Uttarakhand, Haryana, Delhi, Uttar Pradesh and Rajasthan

Deaths **735**

Crop area affected **393,726** ha



**States in the region**

Telangana, Andhra Pradesh, Tamil Nadu, Kerala and Karnataka

Deaths **350**

Crop area affected **1,126,607** ha

**MONSOON**

**2,431** | **1,797,190 ha**

Human deaths | Crop area affected

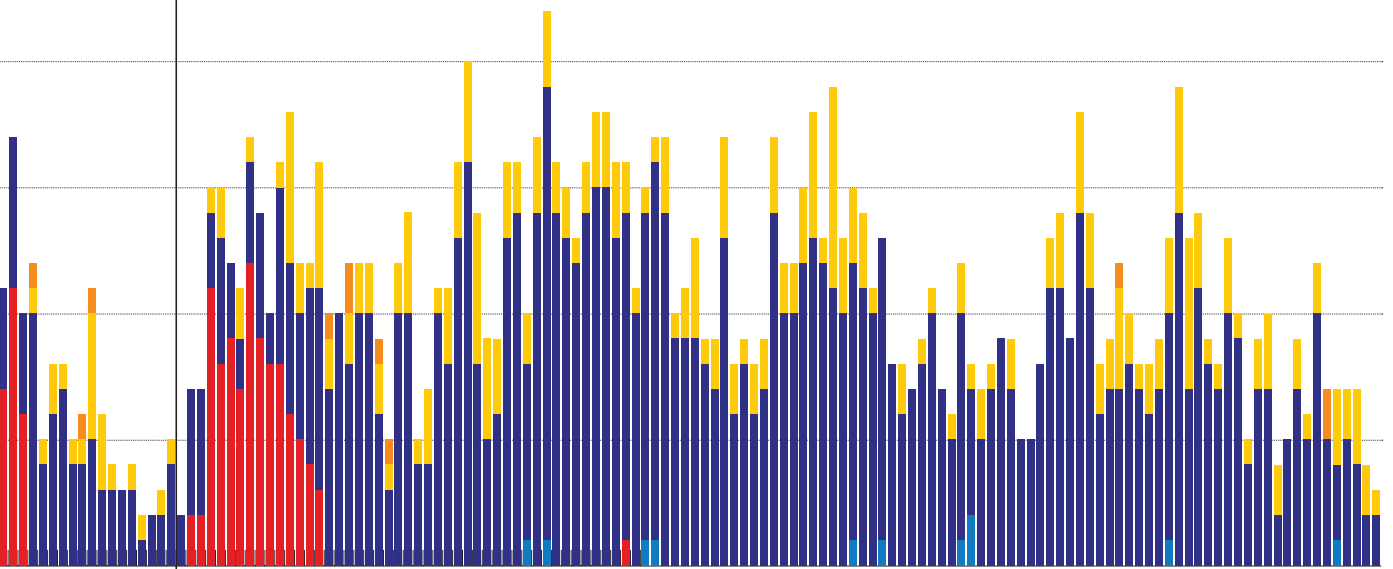
**All the 122 days between June and September** saw extreme weather events, spread across 34 states and UTs. **Assam saw extreme events on 95 days, followed by Madhya Pradesh (84 days) and Maharashtra (80 days).**

While the overall monsoon was normal, rainfall fluctuated between deficit and excess throughout the season. At the end of the season, 188 districts (27% of districts in the country) received deficient rainfall, while seven districts received large deficient rainfall (60-99% less than normal).



**\*India Meteorological Department's "Statement on Climate of India during 2021" lists the given events (except cloudburst) as extreme weather events**

**SOURCE:** Based on India's database on weather disasters dashboard by CSE-DTE Data Centre; Data sourced from the Disaster Management Division of Union Ministry of Home Affairs, India Meteorological Department and media reports



June-September

INFOGRAPHICS: SANJIT / CSE

The disasters result in huge economic losses. The World Meteorological Organization, in its “State of the Climate in Asia” report, says that in 2020 India lost US \$87 billion due to disasters. The UN’s Economic and Social Commission for Asia and the Pacific projects that for 2020-59 “India is set to record an average annual loss of \$225 billion”. But for those affected by these disasters, the future only brings increased vulnerability due to inadequate assessment of loss and damage.

The United Nations Framework Convention on Climate Change (UNFCCC) in its working definition of loss and damage says that it is “negative effects of climate variability and climate change that people have not been able to cope with or adapt to”.

This is the situation of most farmers in Maharashtra and Uttar Pradesh who do not have the capacity to “cope or adapt to” extreme weather events. A farmer

household in Maharashtra has more outstanding loan than their annual income. Over 54 per cent of the farmer households in Maharashtra are indebted and the average outstanding loan per household is ₹82,085, as per the National Statistical Office 2019 survey on “Land and Livestock Holdings of Households and Situation Assessment of Agricultural Households”. With each crop failure, the debt burden increases. As per the “Farmers Suicides in Marathwada Region of India: A Causative Analysis”, a research published in the *International Journal of Current Microbiology and Applied Sciences*, 2019, out of the 320 farmer suicides studied between 2010 and 2017, about 76 per cent of the farmers died by suicide due to increased indebtedness. Crop failure amounted to over 87 per cent of the suicide cases in the Marathwada region. The average per capita annual income of these observed cases was about ₹74,576.

# HOW TO COUNT THE COST

While the actual process of loss and damage assessment for a disaster in India varies from state to state, the procedure broadly remains the same

## ASSESS LOSSES, DAMAGES

- Once a disaster is announced, the **first step** is to coordinate **rescue and relief operations**.
- **At the same time**, the team on the ground, whose size and composition are determined by the magnitude of the disaster, **collects damage-related data**.
- Once the **disaster ends**, the revenue department and disaster management officials at the district level **verify the information and upload it to the centralised National Disaster Information Management System**.
- The **state disaster management authority** re-verifies the information and **calculates the economic value** based on the Norms of Assistance, a Central document which assigns values to different losses, to avail of funding from the state disaster relief fund and the state government’s budget.
- If **there is a gap in funding**, they **prepare a memorandum** to close the gap with funding from the National Disaster Relief Fund. It is subject to approval by a central team that revisits the data.
- In the case of **slow-onset extreme events** like drought, agencies monitor its onset by looking at precipitation and soil moisture levels. After the onset, district and panchayat level teams create **seed, fodder banks and create jobs under Mahatma Gandhi National Rural Employment Guarantee Act 2005**.
- When state decides that the existing mechanism is unable to handle disaster management operations, international agencies like World Bank are roped in to carry out **Joint Rapid Damage and Needs Assessment**. It was used during the Uttarakhand floods of 2013 and the Kerala floods of 2018 and 2021.

## Lost in assessment

India has a mechanism for assessing disaster damages, which is, in simple terms, the immediate cost of a disaster. However, it lacks a robust infrastructure to assess the more holistic losses that arise from it. The existing system is centred around relief and offers little to rebuild an area and its economy post-disaster. The focus is changing, but the transition is likely to take a while.

The process of assessing damages varies from state to state, though the broad principles remain the same (see 'How to count the cost'). The district administration is the nodal agency that ropes in other departments such as health, revenue, agriculture, and agencies such as the national and state disaster response forces and the Army, says Manoj Ranjan, commissioner, Karnataka State Disaster Management Authority. The ground team does the initial assessment while carrying out relief work. Post disaster, the information is verified

and uploaded into the National Disaster Information Management System. The numbers are re-verified, and the compensation is released. "The first round of assessment is of houses, cattle, agriculture and crops. Our priority is to give some ex-gratia amount to the people affected. The exercise is completed a month after a disaster ends," says G D Tripathi, secretary of the Assam State Disaster Management Authority. Then, the damage to schools, hospitals and government buildings is assessed.

There are three major problems with the system: it does not cover all the affected sectors that are crucial for quick recovery; the compensation is seldom enough; and it gives the ideas of recovery and resilience a miss. The Norms of Assistance, a document that is used to calculate the economic cost of a disaster, was last revised in 2015. This is the reason state governments announce additional compensation packages in

Continued on page 22>>

## USE ROBUST TOOL

- In 2018, India for the first time, used the **post-disaster needs assessment** tool for the Kerala floods, which had already been used across the world since 2008. In 2019, cyclone Fani in Odisha was the second disaster that used this tool. Currently, a post-disaster needs assessment is underway for the Assam flood.
- It **replaces** an internationally accepted tool called **damage, loss and needs assessment**, which focuses on physical infrastructure and not on social sectors. In India, the Bhuj Earthquake of 2001 and tsunami of 2004, used damage, loss and needs assessment for funding from the World Bank.
- Besides **analysing immediate damage**, a post-disaster needs assessment, carried out along with international agencies such as World Bank, looks at macro-economic costs such as the **impact of the disaster on the local economy**. It has a third component that looks at **improving the resilience of the region**.
- In 2019, India released a **manual for this assessment**, and this year at least **eight states are using it for floods**. The country **plans to migrate to this tool** for all kinds of disasters over the next three years.

## FUND COMPENSATION

- While the disaster is underway, only relief is provided. All **compensation occurs post-disaster**.
- **Each state has a disaster relief fund**, which is financed by the Union Ministry of Home Affairs, and the respective state/UT budget. **The amount and the Centre-state share is decided by the Finance Commission**.
- **State relief funds are allocated** money based on **a combination of capacity** (as reflected through expenditure), **risk exposure** (area and population) and **hazard and vulnerability** (risk index).
- In the 15<sup>th</sup> Finance Commission (2021-26), the corpus for the entire period is ₹160,153 crore. The Centre's share is ₹1,22,601 crore. The amount is broken down into six installments and released annually to state funds.
- Finance Commission **allocates additional funds** for urban floods, landslide-prone states and others.
- State governments, at times, announce additional compensation to either augment the existing amount or cover a bigger population. Maharashtra this year has announced compensation for farmer suicides.

SOURCE: Based on interactions with state disaster management officials of Odisha, Kerala, Karnataka, Assam and Haryana, and government documents



## **Aditya Birla Group: Making a life changing difference**

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**NUMBERS MEAN A LOT  
BUT A SMILE MEANS EVERYTHING!**



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Engage. Uplift. Empower

times of a disaster. “As per the current compensation rate, a farmer gets only ₹100 per coconut tree, which takes 15-20 years to mature,” says Sekhar Lukose Kuriakose, member secretary, Kerala State Disaster Management Authority. The state government, as a result, pays an additional ₹600 per coconut tree damaged at the time of a disaster.

Overall, the existing mechanism leaves recovery and resilience almost exclusively to the initiative and capacity of each affected person. As a result, people resort to rebuilding their homes and other assets applying lower standards of quality and using inadequate construction materials. In the end, disaster risk, rather than being reduced, increases.

### Relief to resilience

The country has realised the limitations of the existing system, and is slowly transitioning to a more robust assessment tool called post-disaster needs assessment. The idea of the internationally accepted assessment tool is to build back better after every disaster. This is achieved by following four distinct steps. Creating a baseline of all the regions of the country, at least till the district level, to help the assessors know what kind of socio-economic system existed before the disaster. Next comes assessment of the immediate loss and damage, which India is already doing with reasonable success.

Third is assessment of the broader impact of the disaster on the macroeconomy (such as the impact of the state GDP and tax receipts) and on households and communities (such as the loss of household income due to the closing down of factories). And finally, a needs assessment is carried out to identify a full-fledged development

plan that goes beyond the disaster and makes the region resilient.

Post-disaster needs assessments have been around globally since 2008 and India used it for the first time during the Kerala floods of 2018. The state government took the help of four international agencies—Asian Development Bank, World Bank, EU Civil and Humanitarian Aid, and the UN—to carry out the assessment. The final report, accessed by DTE, shows that the damages caused by the floods was worth ₹10,577 crore, but the amount needed for the total recovery from the disaster was three times more at ₹30,715 crore. “We started the Rebuild Kerala Development Programme on the basis of the post-disaster needs assessment and got funding from the international agencies,” says Kuriakose. The methodology was again used in 2019 during cyclone Fani in Odisha. The final report shows that while the damages from the event was ₹16,465 crore, the total cost was ₹29,315 crore. “With the help of the post-disaster needs assessment, we formulated the Odisha Disaster Recovery Project,” says Gyana Das, executive director, Odisha State Disaster Management Authority.

The tool is currently being used only for major disasters, but India plans to make it an integral part of all disasters. “This year, it has been adopted by eight states—Assam, Himachal Pradesh, Gujarat, Karnataka, Jharkhand, Maharashtra, Odisha and Meghalaya—to assess floods. In another three years, we will see this being used for all disasters in the country,” says Kumar Vatsa, member of the National Disaster Management Authority. In 2019, NIDM released a two-volume post-disaster needs assessment manual, which has altered the global best practices to suit the country.

While there is a consensus among state officials that the tool should be embraced, they say the transition will be challenging. The country's administrative setup, for example, is not in line with the tool's guidelines, a point clearly mentioned in the manual. All post-disaster needs assessments must be carried out across nine sectors as pre-defined under the globally-accepted System of National Accounts. This is crucial to make the assessments comparable. The problem for India is that multiple government departments are responsible for each of the sectors. The activities mentioned under the agriculture, forestry and fisheries sector are carried out by five ministries and departments.

onset disasters like droughts that affect a large area and cause massive losses, but little structural damage. India is yet to use it for a drought and even globally, of the 55 post-disaster needs assessments conducted since 2008, only two were on droughts, suggests a 2018 World Bank report.

But the most important question is: Will this assessment tool translate into more funds for loss and damage—either from the Centre or international agencies such as the World Bank? India is trying to achieve this ideal. In February 2021, the 15<sup>th</sup> Finance Commission for the first time, made a provision for recovery and reconstruction in the national disaster management budget.

## INDIA'S EXISTING MECHANISM OF LOSS AND DAMAGE ASSESSMENT IS RELIEF-CENTRIC AND DOES LITTLE TO BUILD RESILIENCE

This overlapping of departments can cause problems in data collection and baseline creation.

India will also struggle with creating baselines, which require historical data for the disaster-affected region and the most recent forecasts available on the same variables for the current and subsequent years of the disaster. Shairi Mathur of UNDP, who was part of the assessment conducted on the 2018 Kerala floods, recalls that baseline gaps were rampant in remote villages, particularly in the worst-affected districts of Wayanad, Idukki, Alappuzha, and Pathanamthitta. "It was difficult to find documentation for *pucca* households at the rural level and determine their worth," she says.

There are concerns over the efficacy of the tool in assessing slow-

"This new addition increased the disaster management budget by 100 per cent from the 14<sup>th</sup> Finance Commission; It grew from ₹62,000 crore then to ₹1,60,153 crore now," says Vatsa. It has also introduced a new state disaster mitigation fund and bifurcated the existing state disaster relief fund for three functions: response and relief, recovery and reconstruction, and preparedness and capacity-building.

The country has also been vocal in its support for a global mechanism for transferring loss and damage funds from the developed world to developing countries. This is expected to be one of the core discussions at the upcoming 27<sup>th</sup> Conference of Parties to UNFCCC in Sharm el-Shaikh, Egypt. **DTE**

*(With inputs from Himanshu N, Raju Sajwan and Vivek Mishra)*

## ‘JOHN KERRY IS SCARED OF FLOODGATES OF LITIGATIONS ON ACCEPTING LOSS AND DAMAGE’

Loss and damage financing has seen little progress since the signing of the 2015 Paris Agreement, according to **FARHANA YAMIN**, adviser to the Climate Vulnerable Forum, a partnership of 55 countries highly threatened by climate change. In an interview with **AVANTIKA GOSWAMI**, Yamin, who was also one of the key architects of the Paris deal, explains why rich countries are attempting to linger negotiations on loss and damage. Excerpts:



### On loss and damage estimation and necessary legal frameworks

Science is more confident now to attribute the likelihood of certain extreme weather events being more ferocious or more frequent to human-induced climate change. There has been very little progress on the funding of loss and damage since the Paris Agreement which made a historic breakthrough to provide support for developing countries on this. As someone who was involved in the Paris Agreement negotiations, I think it's much more helpful if we move forward on this. Rich countries want to linger negotiations forever citing legal litigation, liability and compensation that would emerge from the recognition of loss and damage due to climate change. They fear the “floodgates of litigation”. Finally, I do



think that there should be an acknowledgement, a declaration for historic wrongdoing by the rich countries. I think that there can be no healing and no reconciliation without it.

I had an exchange recently with John Kerry (US special presidential envoy for climate). He raised the issue very clearly that the “floodgates of litigation and liabilities” saying “it is going to cost trillions (of dollars)”, instead of recognising that actually people and economies are being devastated right now.

### **On developed nations being unwilling to prioritise finance for loss and damage**

Developing countries contributed little to global warming from whose impacts they are suffering the most. Extreme weather and slow-onset disasters are the known impacts of climate change. It is a situation of climate chaos happening in a far more devastating way. This is a direct result of many of the delays in the system. Developed countries

was agreed to address the issue in a preventative way under this term “insurance”.

In the last decade developing countries have stressed the need to move to a different footing. And it is not that negotiations have not happened. It’s just that they have been limited to more technical, information and other support activities rather than funding.

I would say, enough of the negotiations. Developing countries are losing their GDP (gross domestic product) due to climate change-induced loss and damage and even going backwards on development. It is time for the richer countries to recognise this and actually pay up.

### **On whether a compromise or a deal is acceptable to vulnerable countries at the 27th Conference of the Parties to the UN Framework Convention on Climate Change (COP27)**

I think the facility to actually support funding of loss and damage

## **ANY COMPROMISE ON SETTING UP A FACILITY FOR LOSS AND DAMAGE FINANCE MEANS SAYING DEATH TO OUR PEOPLE**

have been dragging out this issue of loss and damage now for decades.

Since the very beginning of the process, small island and developing nations have been stressing the need for adaptation, which was very broad, and the need for insurance. Then the word insurance was even included in the 1992 UN Framework Convention. At that time they had raised the issue of loss and damage. But it

is needed, given the impacts they are already enduring. Countries are dealing with a debt crisis and also from the COVID-19 pandemic impacts. They are in a fragile condition as they start to recover. So, any compromise on the said facility for finance means saying death to our people. So, the reinstatement of a facility should happen at this COP27. Details of this facility should be fleshed out by COP28. **DTE**





## FRANCE

A dry branch of the Loire River in Loireauxence, France, on August 16. The country receives 10 to 14 days of rainfall in July, but 2022 saw a record deficit rain of fewer than four days, making it France's driest July in 60 years. In August, the country announced the drought its most severe in recorded history. French agricultural federations have said the sector will need €2-4 billion (US \$1.9-3.8 billion) to recover the losses in production. The situation is similar in most of southern Europe. England is witnessing its driest July since 1935, while Italy is going through its driest year since 1800. Heatwaves have become more frequent, longer and severe in Europe than almost anywhere else on the planet due to global warming and changes in jet streams as well as ocean circulations.

# HIDDEN COSTS

**Estimations of loss and damage after weather events do not account for non-economic consequences**

**AKSHIT SANGOMLA and AVANTIKA GOSWAMI**

**F**OR 40 days and 40 nights a biblical flood poured down on us, smashing centuries of weather records, challenging everything we knew about disaster, and how to manage it,” Pakistan Prime Minister Muhammad Shehbaz Sharif told the UN General Assembly on September 23, describing the incessant rainfall the country received throughout the monsoon months from June to September. In July and August, Pakistan recorded 391 mm rainfall—nearly 190 per cent more than the 30-year average—triggering flash floods and landslides, and inundating one-third of the country. The southern province of Sindh received 466 per cent more rain than average. “When we have a 100 km lake that has developed in the middle of Pakistan, tell me how big of a drain can I build to manage this? There is no man-made structure that can evacuate this water,” said Pakistan’s foreign minister Bilawal Bhutto-Zardari at a news conference.

Rising waters forced temporary displacement of 7.9 million people, as per a recent report by the UN Office for the Coordination of Humanitarian Affairs (OCHA). The agency said as of October 1, some 1,700 people had died. Over 33 million people—more than the population of Australia—were affected by floods.

Just as the water began to recede

in Pakistan, Nigeria too reported one of the worst flooding events it has seen in recent history. Death toll in the West African nation has crossed the 600-mark, the country’s humanitarian affairs ministry tweeted on October 16. The flood, which has spread across all the 36 states, has affected 2.5 million people and destroyed more than 200,000 homes. Large swathes of farmland have also been destroyed, the ministry said. Nigeria’s meteorological agency has warned flooding could continue until the end of November in some states. Although the country is used to seasonal flooding, this year has been significantly worse and the government has said unusually heavy rains and climate change are to blame.

An analysis of *Down To Earth* (DTE) shows that every month of 2022 so far has seen at least one record-breaking disaster and all continents have been affected by such unprecedented extreme weather events. These have revived calls for climate reparations as climate negotiators prepare for the 27<sup>th</sup> Conference of the Parties (COP27) to the UN Framework Convention on Climate Change (UNFCCC) in Sharm el-Shaikh, Egypt.

Islamabad, for instance, has put the preliminary estimates for flood-related damage at US \$30 billion, and its climate minister, Sherry Rehman, is calling not only for

immediate aid, but for compensation by rich industrialised countries for the damage caused by their greenhouse gas emissions. At a high-level event on the sidelines of a UN General Assembly session in September, Zardari highlighted a proposal to include discussions on loss and damage finance in the agenda of COP27. UN Secretary General Antonio Guterres, during his visit to Pakistan earlier that month, also urged governments to discuss loss and damage at COP27 with the seriousness it deserves.

## PERFECT CATALYST

Since the formation of UNFCCC, vulnerable countries have demanded a global agreement on loss and damage with rich nations, which have

normal in August; warming made the downpour 75 per cent more intense. This means climate change worsened the flooding in Pakistan despite the fact that the country accounts for 0.7 per cent of global carbon emissions. By comparison, the US is responsible for 25 per cent of historical emissions (1870-2019), followed by the EU, which accounts for more than 17 per cent of emissions.

These rich polluters are also not anywhere near as vulnerable as developing nations. DTE analysis also shows that in just nine months of 2022, extreme weather events have caused more than 10,000 deaths and affected over 75 million people across the globe. Neither the US nor the EU are part of the 10 worst affected

## NEITHER THE US NOR EU ARE PART OF THE 10 WORST DISASTER-AFFECTED COUNTRIES, IN TERMS OF BOTH POPULATION AND DEATHS

historically emitted more greenhouse gasses, to pay for destructions caused by climate change impacts. But their proposals have been rebuffed (see 'Indefinite talks', p50). Though climate impacts are happening all over the world and are felt by both rich and poor countries, the logic underpinning loss and damage payments by rich countries is straightforward.

The World Weather Attribution (WWA), a global consortium of climate scientists who work to assess the role climate change plays in the intensity of extreme weather events, attributes the excessive monsoon rainfall over Pakistan to global warming, especially for Sindh and Balochistan. Both the provinces received seven and eight times more rainfall than

countries, in terms of both population and deaths (see 'Lost and damaged', p30-31).

Besides, climate-vulnerable low-income countries lack the safety nets and resources to cope, compared with rich countries. A report by international non-profit Oxfam, "Footing the Bill", released in September, explains this: Former German Chancellor Angela Merkel announced a reconstruction fund of €30 billion (\$29.5 billion) just weeks after the 2021 summer floods. By contrast, the Pacific island nation of Vanuatu, which is highly vulnerable to extreme weather events, has seen its public debt double in recent years, largely due to rebuilding after cyclone Pam in 2015.

There is enough evidence by now

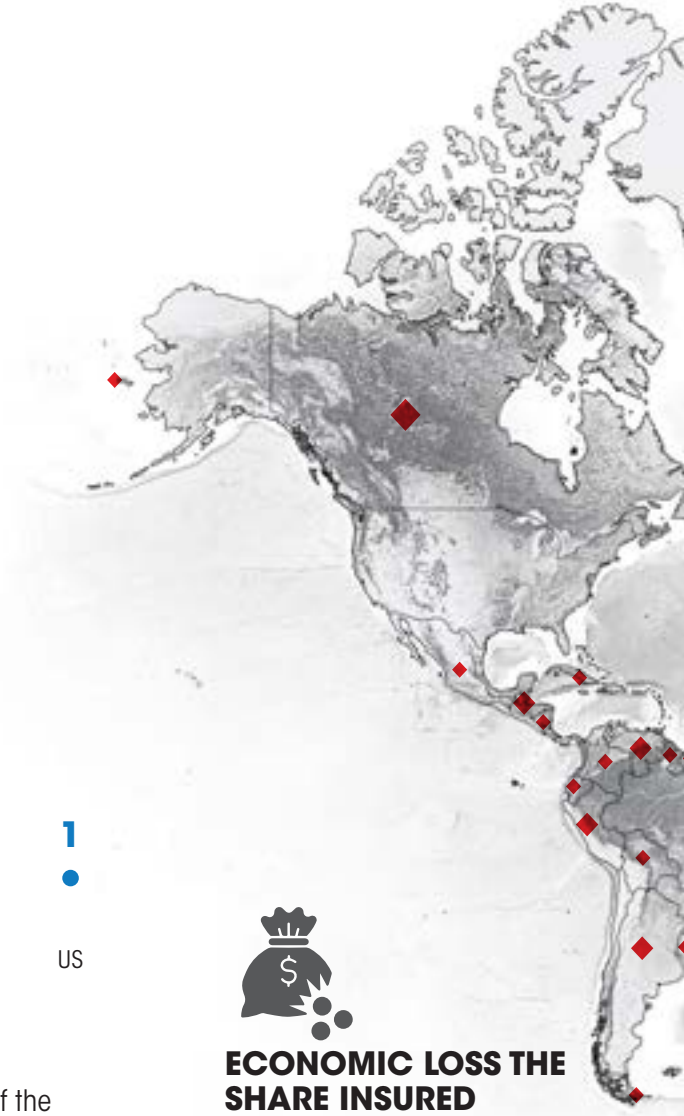
Continued on page 32>>

# LOST AND DAMAGED

While all regions have incurred losses due to extreme weather events, developed countries remain the least affected and most insured from the shocks

**KIRAN PANDEY AND RAJIT SENGUPTA**

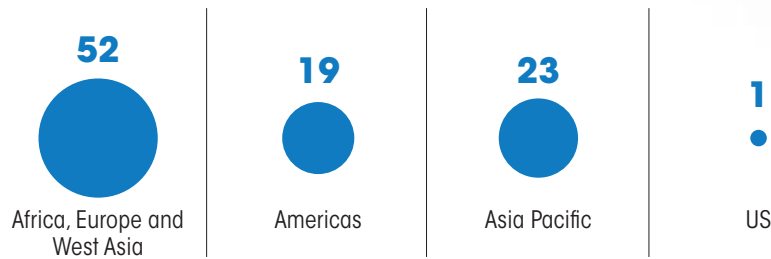
◆ **Countries with extreme weather events between January 1 and October 10, 2022**



## COUNTRIES AFFECTED



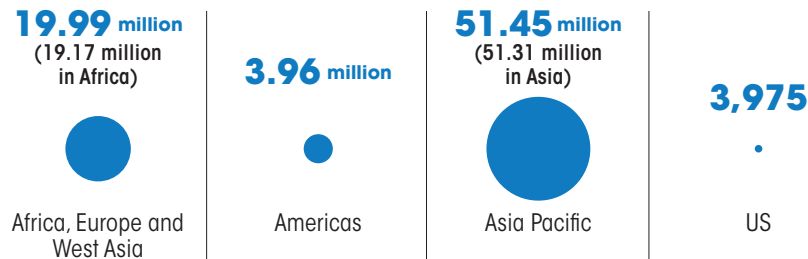
At least 95 nations have suffered losses due to extreme weather events this year



## POPULATION AFFECTED



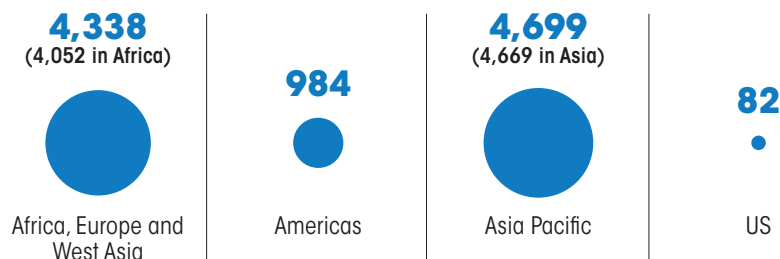
Asia and Africa are home to almost 94 per cent of the 75.4 million people affected by extreme events this year



## DEATHS

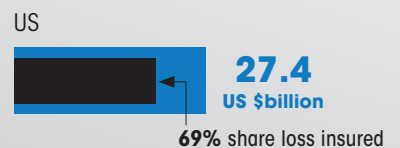
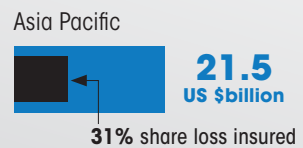
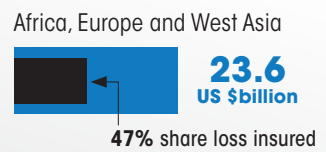


The two continents account for 87 per cent of the 10,000-odd deaths caused by extreme weather events this year



## ECONOMIC LOSS THE SHARE INSURED

The US reported the highest economic losses and insured share, indicating better preparedness

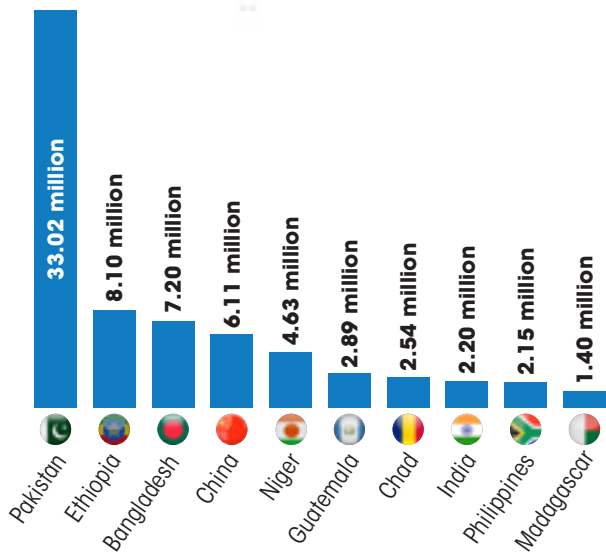




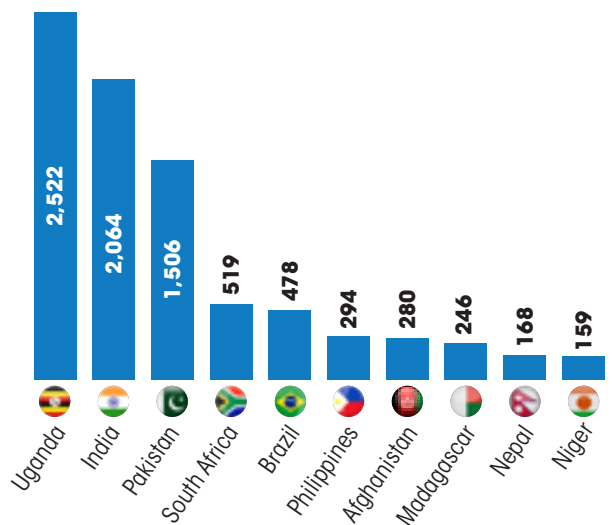
None of the top 10 worst affected countries, in terms of population or deaths, are located in **Europe or North America**



### HIGHEST AFFECTED POPULATION



### MOST DEATHS



**SOURCE:** Extreme weather events considered for total deaths, people affected and countries includes wildfire, drought, extreme temperature, flood, landslide and storm. The data has been sourced from EM-DAT database, United Nations Office for the Coordination of Humanitarian Affairs, International Organization for Migration, as on October 7, 2022. Extreme weather events considered for total economic loss include EU windstorm, tropical cyclone, flooding, Severe convective storm, drought, winter weather, wildfires and others. The data has been sourced from Catastrophe Insight published by financial services firm AON, as on October 10, 2022

that losses and damages are unavoidable despite collective measures to curb greenhouse gas emissions and building resilience against climate change impacts. It is therefore critical for countries to include loss and damage in the national climate plans (Nationally Determined Contributions or NDCs) of individual countries to assess the costs of disasters and document responses to address it. Loss and damage, however, does not feature in the NDC targets of most developing countries. A study by the International Institute for Environment and Development, an independent policy research institute in the UK, released in August 2022, shows that just 10 of 46 least developed countries mention “loss and damage”

in instance, is coordinating for Pakistan, by asking for \$160 million. So far, the US had pledged \$30 million, the UK roughly \$17.3 million and Canada \$3.8 million. World Bank has also assured \$2 billion, while Asian Development Bank has promised \$2.5 billion to Pakistan. This is pittance when compared with the Pakistan’s initial estimate of \$30 billion—a figure that could rise based on results from rapid needs assessments being led by the government in at least three provinces—Balochistan, Sindh and Khyber Pakhtunkhwa, as per OCHA.

To estimate the costs, countries usually follow two internationally accepted methodologies: rapid needs assessment and, the other being the

## VANUATU, A HIGHLY VULNERABLE COUNTRY, HAS SEEN ITS PUBLIC DEBT DOUBLE DUE TO REBUILDING AFTER CYCLONE PAM IN 2015

in their document. Another 35 countries’ ndcs only make indirect references to loss and damage.

A 2018 estimate by researchers at the Basque Centre for Climate Change, Leioa, Spain, by 2030, shows that the total annual estimate of loss and damage for developing countries could be between \$290 billion and \$580 billion. Without political intervention, this cost will continue to be borne by populations that emitted the least.

### INCOMPLETE PICTURE

Currently, developing countries deal with climate catastrophes either by paying from their own coffers or in an ad hoc way: by holding emergency appeals for aid. These are highly inadequate to meet the losses and damages, which can be economic as well as non-economic. The UN, for

more detailed post-disaster needs assessments. These are done by the affected countries’ governments, with support from global bodies. Rapid needs assessments are conducted immediately after a disaster strikes. “The purpose of the Rapid Needs Assessments is to perform a broad-based assessment that can help governments identify the critical impact and resulting priority needs and interventions in a matter of days instead of conducting a detailed analysis that might take months,” says a 2020 World Bank report. Post-disaster needs assessments, on the other hand, are conducted over a longer period.

### NOT QUITE ADEQUATE

The estimates provided by both assessments are often confused with finance for adaptation to future cli-





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**A**s countries in the Global South experience rapid economic growth, they are also striving to reach the water supply, sanitation and hygiene ambitions embodied under the Sustainable Development Goals (SDGs). Their success in reaching the targets by 2030 will depend on how quickly and effectively their public service delivery to rural areas will improve – considering the fact that over 60 per cent of the population in the countries of South Asia and Sub-Saharan Africa live in rural regions. Not an easy task, by any measure.

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**Batch 1: October 7-21, 2022**

Last date to apply for Batch 1: **September 30, 2022**

Early bird offer for Batch 1: **For applications received before September 10, 2022**

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**CERTIFICATES AND AWARDS:** All participants will receive participation certificate at the end of course (e-certificates).

**COURSE IS OPEN TO:** Government officials, elected representatives, academics, researchers, students, consultants, waste management practitioners, and members of non-profits and CSR agencies.

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**Shivangi Aggarwal**

Research Associate, Rural Water and Waste Programme, Centre for Science and Environment, India

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mate events. In a 2022 discussion paper, a group of global non-profits led by Climate Action Network International, point out that loss and damage finance is “often wrongly conflated with adaptation finance which contributes to minimising L&D [loss and damage], and to some extent mitigation finance which can avert L&D”. However, the fact is loss and damage compensation should be considered reparation for climate change impacts happening now, rather than to avert future impacts.

Moreover, the current methodology for both assessments, though accepted globally, does not account for the full scale of long-term damages such as displacement and unemployment. While all climate impacts are a result of historical emissions, fixing accountability of disasters to historic polluters and calculating compensation remains a challenge.

There are also differences in loss and damage between developed and developing countries. In the former, economic losses are more from infrastructural damage and therefore the immediate figures are much higher than in developing countries. In developing countries, losses are more in terms of human lives and livelihoods, like in Pakistan. In the recent floods, OCHA says, the country lost 1.2 million livestock, while prime minister Sharif has claimed that crops covering 1.6 million hectares have been washed away, leading to massive losses for agriculture.

Developed countries are also better equipped to assess loss and damage. In the EU, for example, continent-wide assessments of loss and damage from past and future events are done by ECHO and the European Environment Agency (EEA). Wouter Vanneville, climate change adaptation expert at EEA, tells DTE that loss and damage assessments require

multi-decadal datasets of past events, which are only with the insurance industry in the developed countries. In developing countries, it will be difficult for the insurance sector to maintain such datasets as it is not as well entrenched.

In 2018, the World Bank, EU and the UN Development Programme highlighted the challenges in the current post-disaster needs assessment methodologies. In a report that reviewed assessments being conducted since 2008, the organisations highlight that the current approaches need to be altered to be more suitable for smaller countries, smaller disasters and atypical recovery requirements, and mention the need for greater accountability to affected people and inclusion of the most vulnerable and socially marginalised groups to inform future loss and damage assessments.

## INNOVATING STRATEGY

A major limitation of current assessments is that they do not take into account losses accruing from large-scale environmental damage and non-economic impacts such as loss of cultures, traditions, languages and even of entire communities, which are irreplaceable and hence extremely difficult to estimate. They also overlook historical socio-economic vulnerabilities already present in populations. Vanuatu may have made a start in correcting some of the inadequacies.

In 2020, following tropical cyclone Harold, Vanuatu created a new section to calculate the loss and damage to environment in the worst hit areas. The prime minister’s office engaged with communities and visited key habitats to gauge impacts on forests and marine ecosystems. It calculated economic effects by estimating the area affected and

multiplying this by an economic value, including discounting for future effects. For example, for forests, it considered a value of \$5,264 per hectare per year, based on findings of research from 2012. Similarly, in marine ecosystems, economic value for coral reefs, mangroves and seagrass was considered at \$352,915, \$193,845 and \$28,917, respectively, per hectare per year. The country concluded that cyclone Harold led to loss and damage of \$3.8 billion in the case of forests, and \$8.2 billion in the case of marine ecosystems. The country's official post-disaster needs assessment placed the total economic cost at \$617 million, without the environmental damage.

deal with loss and damage with help from the World Bank, Japan, EU and Canada. CCRIF has 19 member countries from the Caribbean region, three from Central America and one electricity utility member. It has paid out 54 insurance claims till date worth \$245 million.

There are international proposals for financing loss and damage outside the UNFCCC process such as an International solidarity fund proposed by international non-profit Heinrich Boell Foundation where it plans to bring together public, private and innovative ways of financing loss and damage. Under this, the non-profit envisages \$150 billion coming from developed countries by 2030. It predicts that

## **DEVELOPED COUNTRIES ARE BETTER EQUIPPED TO ASSESS LOSS AND DAMAGE FOR EVENTS HAPPENING NOW AS WELL AS FOR FUTURE RISKS**

Innovations are also going on to develop mechanisms for addressing loss and damage at the local, national and inter-governmental levels, according to a policy brief on loss and damage prepared by Brussels-based think tank Global Governance Institute in 2017. At the national level, Bangladesh, under its Climate Change and Strategy and Action Plan, has established two funds to address various climate-related actions, including loss and damage. In eight years till 2017, the country had allocated \$0.5 billion for immediate disaster relief in the two funds and is implementing a national mechanism on loss and damage using these funds.

On the intergovernmental level, the Caribbean region in 2017 established Caribbean Catastrophe Risk Insurance Facility (CCRIF) to

the public fund would then mobilise additional funding from alternative and innovative sources of up to \$150 billion every year. Some of these alternative and innovative sources could be special drawing rights of the International Monetary Fund, reduction in fossil fuel subsidies by developed countries, financial transactions tax on financial instruments like stocks, bonds climate damages tax, air passenger levy and debt relief.

For other non-economic costs to cultural and social systems, methodologies are yet to be developed globally. But these examples do suggest the approaches that could be followed in future assessments. **DTE**

*(With inputs from Bennett Oghifo in Nigeria, Rivonala Razafison in Madagascar and Charles Mangwiro in Mozambique)*

# ‘TRANSLATION BETWEEN CHANGE IN WEATHER AND DAMAGES IS NOT LINEAR’

Attribution science has grown leaps and bounds to trace the link between climate change and weather events. But this link does not extend to estimating loss and damages, **FRIEDERIKE OTTO**, climate scientist at Grantham Institute of Climate Change and the Environment, Imperial College London, tells **AKSHIT SANGOMLA**. Excerpts:



## How has weather attribution grown as a scientific discipline?

Weather attribution science has come a long way in the last five years. There are emerging best practice methodologies now. Through that we now know, without having to do a new study, that every heatwave has been made more likely and more intense because of climate change. We also know that in most cases of heavy rainfall events there is a role of climate change, though that is smaller than in heatwaves. For droughts there are some hotspots where we do see the fingerprints of climate change. These are southern Africa, the Mediterranean region and parts of South America. There are also many droughts that cause huge damage and food insecurity even though they do not have a climate change signal. Highlighting that vulnerability and exposure plays a crucial role.

## What are some open questions in weather attribution science?

There are certain types of events for which attribution studies are still

difficult to do. These are mainly events happening on small scales like flash floods or glacial lake outburst floods. When it is 40°C in Delhi, some place 30 km away will also have very high temperatures. You do not need 100 weather stations within Delhi and the surroundings to have a good representation of the temperatures. When it comes to heavy rainfall, which is not monsoon rainfall, it often changes within a few kilometres. So to know what is happening you need a much denser network of weather stations, which in most parts of the world, we do not have. Also, to simulate such an event properly, you would need very high resolution climate models that are expensive to run. Even though recent Intergovernmental Panel on

responsible for 25 per cent of the emissions so they are responsible for 25 per cent of the increase in the heatwave. But the translation between the change in the weather and the damages is not linear. Say there is 50 per cent increase in the intensity of rainfall that might lead to 700 per cent increase in flooding. This may be because some thresholds got breached. I think it would be a much better starting point to apportion historic responsibility than to go to the damages.

### **But would such a translation be possible in the future?**

I am not sure you necessarily want to do that from a loss and damage point of view because lots of other dimensions play a role as well. There are

## **WITH ATTRIBUTION STUDIES, WE SEE HOW EMISSIONS FROM COMPANIES OR COUNTRIES CHANGE GLOBAL MEAN TEMPERATURE**

Climate Change models we use are a lot better than they were just 10 years ago, for small-scale events, they are just not good enough.

### **How do attribution studies fix responsibility on polluters?**

With attribution studies, we see how emissions from individual companies or countries lead to changes in global mean temperature, how that in turn leads to changes in weather and additional losses and damages.

### **The US accounts for 25 per cent of historical emissions. So for a heatwave made more likely by climate change, would it pay 25 per cent of compensation?**

From a scientific point of view, you can say that they [the US] are

events like the drought in Madagascar two years ago, which led to famine. That is an event where climate change does not play a role. The fact that southern Madagascar is so vulnerable to these types of events has a lot to do with its colonial heritage. So if we just translate loss and damage for only events with a strong climate change signal it would not lead to the fairest way of compensation. The better and also simpler way of apportioning loss and damage would be to not do it to every weather event that in principle could be influenced by climate change. Say, there is a loss and damage fund that can be used to help increase climate resilience, and to this end the global north countries pay according to their historic emissions. [DTE](#)





#### UNITED STATES

Boats damaged by Hurricane Ian at a Fort Myers Beach dock in Florida, US, on October 5, 2022. With winds reaching speeds of 240 km per hour, the disaster killed over 100 people in Florida and disrupted power supply in the state for days. Initial estimates by market research firms in the US suggest the losses from the hurricane could go up to US \$75 billion. . Nine of the 10 costliest Atlantic hurricanes have struck in the past two decades—five of them witnessed 2017 onwards. Warmer sea surface temperatures, sea level rise and warming mid-latitudes are changing patterns of tropical storms

# WHAT THE SCIENCE SAYS

**Attribution studies fix responsibility on historical polluters. But will they be open to the evidence?**

**AKSHIT SANGOMLA and AVANTIKA GOSWAMI**

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It is well known that human activities going as far back as the beginning of the Industrial Revolution in the 18<sup>th</sup> century have led to an increase in greenhouse gas emissions in the atmosphere and global warming. Over the past two decades, a small group of scientists has been working to prove that this warming has been linked to rising intensity and frequency of disasters. The efforts of World Weather Attribution (WWA), a global initiative that studies the influence of climate change on extreme weather events, was cited in the UN Intergovernmental Panel on Climate Change's assessment report last year, which confidently said that humans have a role in the world's changing weather patterns.

But now, the question arises, who will accept responsibility for the historical emissions and therefore compensate for the loss and damage from the resultant disasters? "The relationship between global warming and extreme weather events is quite linear and this can be extended to the rest of the calculations of historic responsibility," Friederike Otto, climate scientist at the Grantham

Institute for Climate Change and the Environment, Imperial College London, tells *Down To Earth* (DTE). Otto, who also leads WWA, says that once climate change's role in an event is calculated, one can fix responsibility on historic polluters—the UK, US, EU countries, Russia, Japan, Australia and Canada were responsible for most emissions till the 1980s (see 'The numbers behind climate change', *Down To Earth*, 1-15 November, 2021).

Such application of attribution science can help in holding polluters to account, including through lawsuits, says Harjeet Singh, head of global political strategy at Climate Action Network International, a coalition of environmental non-profits. In May 2022, Singh co-authored a paper titled "Loss and Damage Finance Facility—Why and How", which states that attribution science can "inform risk appraisals and provide evidence for litigation in addressing L&D [loss and damage]". In other words, evidence from attribution science can open countries to lawsuits for compensation based on their historical emissions.

Echoing this view, a climate

Continued on page 44>>





# WALMI, BHOPAL - AN INSTITUTE COMMITTED FOR PROMOTING ECOLOGICAL RESTORATION THROUGH SCIENTIFIC AND INNOVATIVE APPROACHES OF NATURAL RESOURCES MANAGEMENT

India is gifted with various types of natural resources such as fertile soil, forests, minerals and water and covers a multitude of biotic and a biotic resources. India also has a variety of natural vegetation since the country has a varied relief and climate.

A healthy ecosystem is a source of wealth for society, whether they be forests, rivers and lakes, oceans and coasts, mountains, grasslands and peat lands, or farmlands, they provide us benefits such as food, fibre, medicine, climate regulation, water purification, fresh air, and aesthetic value.

However, through several decades injudicious use of natural resources by human beings for short-term economic interests have resulted in a diminished ability of ecosystems to provide and support both humans and biota in the long-term. Homogenized landscapes, reductions in the productivity of land and aquatic systems, in water quality, and genetic and functional diversity, alongside increasing risks of soil erosion, land degradation, water availability, climate change, global warming, spread of zoonoses and episodes of disasters bear witness to a fractured relationship with nature.

As the UN Decade is launched, the message that it brings is not one of despair but of hope; hope that in restoring our relationship with nature, our health and quality of life can be restored. Established in the year 1984, MP water and Land management Institute (WALMI) Bhopal is an apex level institute under the Panchayat and Rural Development Department, Government of Madhya Pradesh, dedicated for better water, land and natural resource management. Its picturesque landscapes sprawled over an area of 89 ha at right Bank of Kaliyasote dam comprises of hillocks, slopes, plains and plateau with lush green campus full of flora and fauna, endorsing ecological development and biodiversity.

To address various emerging environmental challenges and biodiversity concerns, WALMI Bhopal has taken lead to implement various water and land management measures based on sound scientific and innovative approaches, particularly in recent past. These include: 1. Soil and water conservation techniques - Contour trenches and bunds, Gabion structures, Sand bag structures, Doha pattern channels, Percolation tanks, Saucers, loose boulder structures etc. under Nano Watershed development concept (2) Irrigation management techniques (3) Watershed management techniques (4) Auger hole innovation for ground water recharge (5) Forestry management (6) Traditional plantation and WALMI forest (Modified Miyawaki method) plantations (7) Agro forestry and orchard development (8) Plant protection through organic means (9) Bulb

(kand), Haldi (Turmeric), khas (vetiver) plantations in tree shades (10) Roofwater Harvesting (11) Organic and Inorganic waste management etc.

WALMI has pioneered in the development of its own improvised 'WALMI Forest concept' based on Japanese Miyawaki technique which guarantees dense forest creation within a period of 1 year. 'WALMI Forest' plantations have been implemented in WALMI Campus and also at various other locations in Madhya Pradesh. More than 35000 sapling have been planted in Institute's Campus which have now grown into dense forests. The Institute has also planted about 50000 plants of subabool, neem, amla in 100 acres using "Vanya" technique. An 'organic boundary wall', and 'habitat of biological diversity' have been developed in the Campus. The

Campus and in the adjoining residential colonies, iv) biodiversity improvement, and v) improvement in forest cover and forest density.

In addition to these activities, appropriate management of vegetation in the WALMI Farm area by way of plantation based on land capability classes, protection from stray cattle and promoting natural regeneration has led to increase in vegetation density.

The management of natural resources through systematic interventions at WALMI Bhopal, which resulted in enrichment of vegetal cover and density, minimal soil erosion in sloppy terrain, increased surface and ground water availability, biodiversity development and a sustainable eco system is a step towards climate resilient development in cities as these measures lead to increase in i) natural carbon



Institute has a rich gene-bank of wild species of Van-Angoor, Van-Tulsi etc. Within its Campus, about 175 species of plants and about 151 species of insects, birds, snakes, python, peacocks, partridge, monkeys, jackals, rabbits etc. co-exist. The Institute has also developed saucer pits of drinking water for wild animals and birds. A Green and Clean WALMI has developed in the campus area of 89 hectares with around 2 lakhs old existing and newly planted trees. As per an impact assessment study on various soil and water conservation measures and rainwater harvesting in WALMI campus by National Institute of Hydrology, Roorkee's Central India Hydrology Regional Centre, Bhopal in 2020, significant impacts were found which include i) increase in groundwater recharge, ii) reduction in soil loss, iii) increase in the groundwater table in the

sinks of vegetation (carbon sequestration), ii) natural soil carbon sinks levels and iii) Soil Organic Carbon (SOC) levels.

Rich biodiversity in the area with an increase in vegetative cover, grass lands has transformed WALMI Campus to Oxygenpark which is now being recognized as "GREEN LUNGS" of Bhopal. WALMI campus and its adjoining area has now become a corridor for wild animals. Recent movement of Tigers and other herbivores in the farm area is an indication of a conducive environment for wild life shelter.

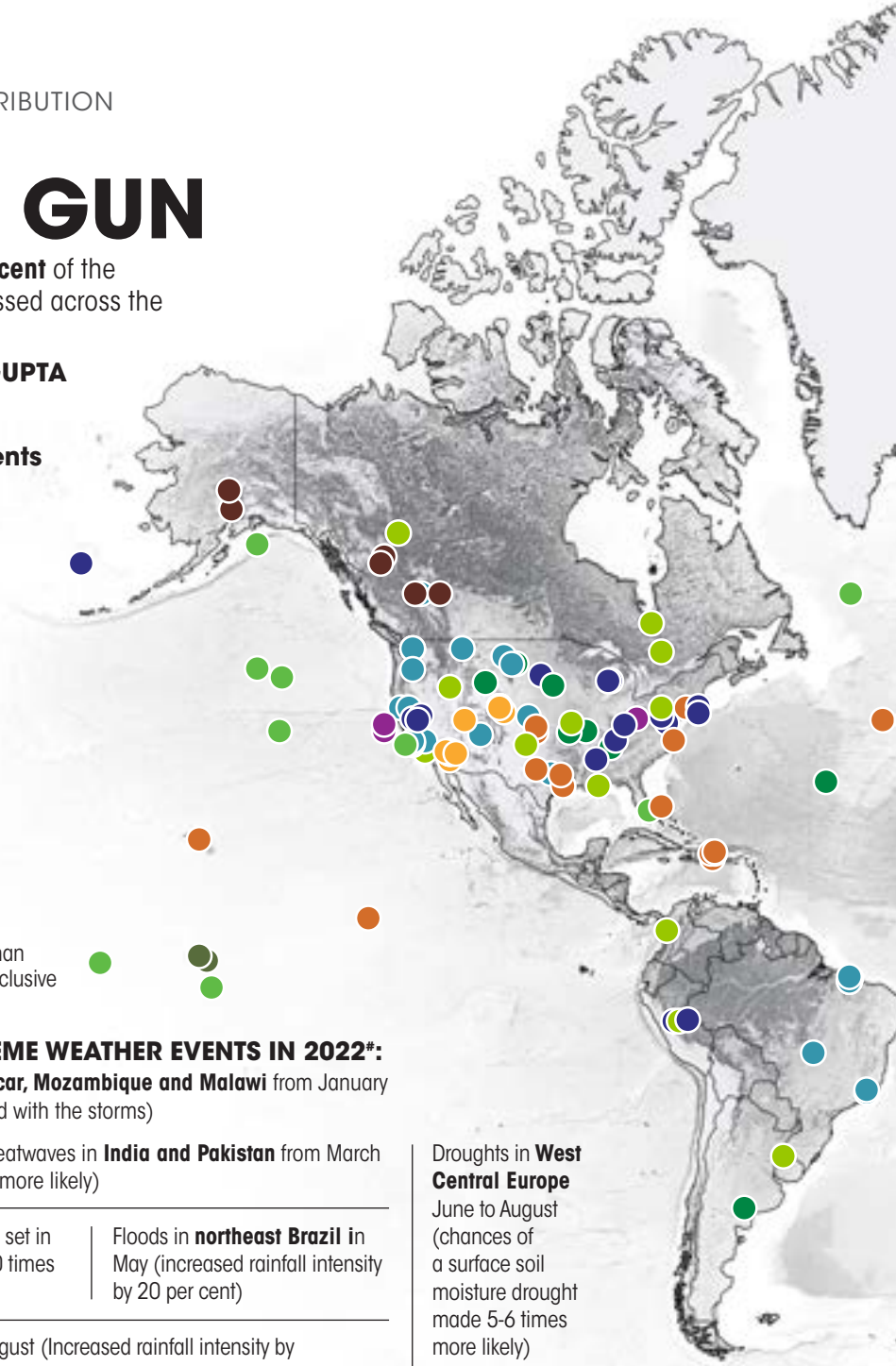
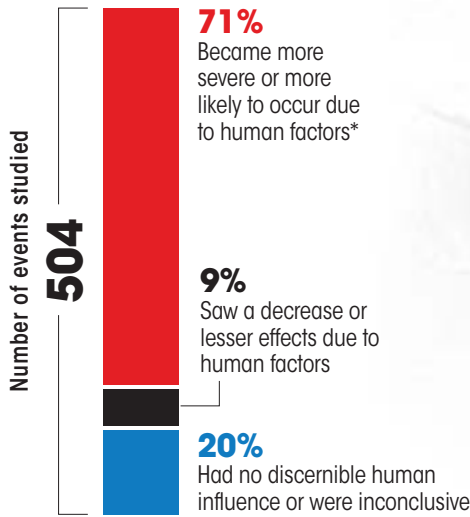
The holistic approach by WALMI towards improving and managing the natural resources, biodiversity and ecology in the Campus is a great step for the development of Green Cities with climate resilience..

# SMOKING GUN

Human imprint\* is evident in **71 per cent** of the **504 extreme weather events** witnessed across the planet between 2003 and 2022

**KIRAN PANDEY AND RAJIT SENGUPTA**

## Role of human-induced climate change in extreme weather events (2003-2022)



## CLIMATE CHANGE-LINKED EXTREME WEATHER EVENTS IN 2022\*:

Five tropical cyclones and storms in **Madagascar, Mozambique and Malawi** from January to March (partially increased rainfall associated with the storms)

Two-day extreme rainfall event and subsequent floods and landslides in **eastern South Africa** in April (made twice more likely)

Early onset of intense heatwaves in **India and Pakistan** from March to May (made 30 times more likely)

Temperature above 40°C set in **the UK** in July (made 10 times more likely)

Floods in **northeast Brazil** in May (increased rainfall intensity by 20 per cent)

Floods in **Pakistan** in August (Increased rainfall intensity by 50 per cent)

Droughts in **West Central Europe** June to August (chances of a surface soil moisture drought made 5-6 times more likely)

\*These events are in addition to the 504 studied events. Source: World Weather Attribution

## TYPES OF EXTREME WEATHER EVENTS STUDIED

- Atmosphere**  
 Climate change **exacerbated five of the seven** events that have been studied
- Cold, snow & ice**  
 Climate change has **decreased the severity of 22 of the 39** cold spells and snow events. It has made **five** of the events **more severe**
- Coral bleaching**  
 Climate change has **increased the severity of all the three** coral bleaching events studied
- Drought**  
 Climate change made **55 of the 81** studied drought events **more likely or severe**. It **decreased the intensity of just one** drought
- Ecosystem function**  
 Climate change made **more likely three of the six** ecosystem functions, such as early cherry-tree flowering in Kyoto, and **two less likely**
- Heat**  
 Climate change **exacerbated 142 of 152** heatwaves that were studied



**● Compound**

**Three studies** found climate change has multiple impacts on a region. For example, a 2021 study found climate change had contributed to the “high likelihood” of combined dry and hot events in recent decades over most of China

**● Storm**

Climate change made **28 of the 39 storms** that were studied **more severe or likely**

**● Rain & flooding**

Of the **126** studied events, climate change **increased the severity in 71** and **decreased the severity in 19**

**● River flow**

The river flow **decreased in two and increased in one** of the three studied occasions due to climate change

**● Wildfire**

Climate change had a direct impact in **19 of the 22** events that were studied

**● Oceans**

The **20** studied ocean disruptions were related to marine heatwaves, storm surges and strength of El Niño events; **18 became more severe or likely**

**● Sunshine**

The intensity of sunshine **increased in all the three** studied regions due to climate change

\*Weather attribution is the link between anthropogenic climate change and extreme weather that can be established either through a clear link or if human role can increase the likelihood of an event  
**SOURCE:** Carbon Brief weather attribution map, accessed on September 13, 2022

negotiator representing small island nations, on the condition of anonymity, adds that attribution science results in more knowledge about actions and harm. “If countries know that they may be held liable, it might actually spur them to start investing resources into addressing loss and damage, which they otherwise would not,” the negotiator tells DTE.

Developing nations, at the 26<sup>th</sup> UN Conference of the Parties (COP26) to the Framework

manoeuvre loss and damage discussions away from such accountability. Paragraph 51 of the decision to “adopt” the deal “agrees that Article 8 of the Agreement [which recognises loss and damage] does not involve or provide a basis for any liability or compensation”.

This explains why countries like the US frequently refer to the Paris Agreement as an umbrella framework for loss and damage discussions, says a negotiator from a developing country, who did not

## APPLICATION OF ATTRIBUTION SCIENCE IN THE CONTEXT OF LOSS AND DAMAGE REPARATIONS IS A POLITICAL ISSUE

Convention on Climate Change (UNFCCC) last year, demanded for a loss and damage financing facility. Singh says such a facility can support further improvement in attribution studies, particularly in underrepresented regions.

### BOON OR BANE

At the upcoming COP27, if loss and damage is made a part of the primary agenda, discussions are likely to allude to attribution science. Some believe that this could, in fact, end up muddling the debate. Attribution science, in the context of reparations, confronts power and references historical wrongdoing. In an ideal scenario, it should then be referenced to apportion payments from historical emitters. The US, for example, is responsible for 25 per cent of carbon dioxide emissions between 1870 and 2019, which makes it liable for a quarter of compensation for a hypothetical disaster. But a loophole in the 2015 Paris Agreement allows developed countries

wish to be named. On the other hand, developing and Group of 77 nations refer to the “dual governance” of the Paris Agreement and the UNFCCC, which enshrines the principle of “common but differentiated responsibilities and respective capabilities” and contains no loopholes to avoid historical responsibility, the negotiator adds.

Emphasis on attribution will also lead to debates on the “timeline” of emissions (see ‘Social studies are needed to increase the scope of attribution’, p46-47). Developed countries are keen to refer to current emissions, which places the blame on countries like China and India.

Hence, many are less sanguine about wielding the attribution card at negotiations, for it is likely to see resistance from developed nations. “I think it is a matter of who the powerful players are, that are influencing the historical responsibility discussions,” says the negotiator for small island nations. **DTE**



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AND EFFLUENT  
MONITORING  
SYSTEM**

**Last Date of receiving applications  
15 November, 2022**

CSE has launched an integrated online and onsite training programme on CEMS & CEQMS (**Continuous Emission monitoring system and Continuous effluent monitoring system**). The training programme will comprise of two parts: Basic learning (online platform-Moodle) and advanced learning (CSE's residential campus- AAETI, Tijara). These two parts—basic and advanced learning, will cover topics which needs to keep CEMS performing well and in compliance. The course is designed to provide an overall understanding of the CEMS which includes theoretical knowledge via lectures from experts and first-hand experience through group exercises, discussions and case studies.

**Program Design**

**Part A: Basic learning (Online Platform), November 22-30, 2022**

- Includes session on pollution monitoring regulations in India and developed countries, PM CEMS- available technology options and selection of technology, Gaseous CEMS- available technology options and selection of suitable technology and CEQMS available technologies and CPCB guidelines for correct installation of CEMS and CEQMS.
- It will be Conducted on Moodle Platform where participants will be provided with reading / audio-visual training material which they are expected to self-study. The course material will be for the duration of 2-3 hrs/day.

**Part B: Advanced learning (onsite), January, 18-21, 2023**

- Includes session on PM CEMS - correct installation, device operation and maintenance, calibration procedure, Gaseous CEMS - correct installation, device operation and maintenance, calibration procedure, CEQMS - correct installation, device operation and maintenance, calibration procedure, understanding of data acquisition and handling system, data interpretation and assessment, data tampering issue and how to check manipulation, CEMS guidelines and regulatory experience, how to conduct CEMS audit methodology and status of CEMS certification system in India.
- Field visits for hands on experience.
- Various problem-solving group exercises and discussions with experts.
- It will be Conducted at CSE's residential campus, Anil Agarwal Environment Training Institute (AAETI) in Tijara, Alwar, Rajasthan

**Who can Apply:**  
Industry professionals, regulators, environment consultants, environment engineers, researchers, academicians and students.

**Course date**

Part A (Basic Learning)- Online Training  
November 22 -30, 2022

Part B (Advanced Learning) at AAETI,  
Tijara January 18-21, 2023

**Course fees**

Part A: **Rs 3,500/-**

Part A+B: **Rs 28, 000/-** for single occupancy/ **25, 600** for double occupancy room. \*Online part A is totally free.

**Special discounts**

**25 % discount on course fees (Part A+B) for Industry, Researchers, consultants and academicians.**

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## ‘SOCIAL STUDIES ARE NEEDED TO INCREASE THE SCOPE OF ATTRIBUTION’

Researchers have established that the Pakistan deluge was made worse by global warming. But fixing responsibility of such events on historical polluters is not easy, **KRISHNA ACHUTARAO**, climate scientist at the Centre for Atmospheric Sciences, Indian Institute of Technology, Delhi, tells **AKSHIT SANGOMLA**. Excerpts:



### What can attribution studies tell us about historical responsibility of countries?

In weather attribution studies we estimate how much of a particular extreme weather event was made worse by cumulative greenhouse gas emissions coming up to this point. So you compare the two scenarios—one with emissions and the other without. Then a fractional attribution is calculated which informs that a particular part of the event is due to human-made climate change.

So if it were just about who is emitting today, then it is easy to fix responsibility. But when you go back and say it is the cumulative of everything that has happened, then you start your accounting at some point, from where you say this is who has emitted the most and therefore, cumulatively their share is highest.

**In the recent study on Pakistan floods, you analysed five-day and 60-day extreme rainfall events to say that the downpour in Sindh and Balochistan was**

**75 per cent more intense due to warming. How would you link this with historical emissions?**

The five-day and 60-day rainfall extremes that we have used would not be useful in such a calculation, because if you have one fractional responsibility assigned to a five-day event and another to a 60-day event, which one would you say was the cause of the damage? But if we take another example—the India-Pakistan heatwaves in the summer [this year] were made 30 times more likely due to climate change. You can fix 30 per cent of responsibility and distribute it evenly among historical emitters.

western world has emitted more, but how much more is the question. The 1991-92 UN documents show people were generous with owning up to their responsibility because they did not have to pay. To account for historical vulnerabilities and increase the scope of attribution studies, there should be studies conducted in the social sciences where we ask, without colonisation, what could have been different?

**How should attribution models be refined to inform the loss and damage discussion?**

There are all kinds of technical

## **1991-92 UN DOCUMENTS SHOW PEOPLE WERE GENEROUS WITH OWNING UP TO RESPONSIBILITY BECAUSE THEY DID NOT HAVE TO PAY**

**There are debates on the point in time from when emission responsibility should be considered. What is your view?**

Of late, there have been few papers where people are trying to start [accounting for emissions] in 1991. Their argument is that before that time, there was no awareness of climate change and the science. But there is enough evidence to go back, even into the 1960s and 1970s, and show people and big emitters knew that climate change is a problem. So I think in terms of loss and damage, the “beginning” of emissions is going to be a distracting argument.

**Does the timeline also apply to developing countries?**

If you look at emissions calculations, everything before 1947 is in India’s basket, which is a colonial artefact we are carrying. I do not think anybody can dispute that the

issues with doing attribution. If there is a heavy downpour, like seen in Bengaluru recently, how much of the flooding that led to the loss is due to the extra rain and how much of it is due to other human interventions, like building construction in the lake beds and governance issues? We also do not model what happens after the rain.

There are efforts ongoing [to fill these gaps]. For example, there was a hurricane that came into Houston, US and stalled there. People have modelled the resultant flooding and how vulnerable populations were disproportionately affected by the flooding. With this study they’ve been able to go that next step and account for which vulnerable neighbourhoods got affected more and break it down by income levels. In India, at least, we are a long way from doing that. It is expensive and it takes a lot of effort. **DTE**







#### **ARGENTINA**

A wildfire consuming trees and pastures in San Luis del Palmar town of Argentina's northeastern province of Corrientes, on February 19, 2022. Unseasonal wildfires in the Latin American country since the start of 2022 led to damage worth US \$234 million by late February, according to the Argentine Rural Society, a civil association. The fires were a result of a drought that began in November 2021 as the region saw its second consecutive La Niña summer. During La Niña events, clouds and rainfall turn sporadic over the central and eastern Pacific Ocean, which can lead to dry conditions in parts of Latin America

# DENY, DISTRACT AND DELAY

The developed world has so far derailed all discussions on loss and damage. Will this change at COP27?

AVANTIKA GOSWAMI

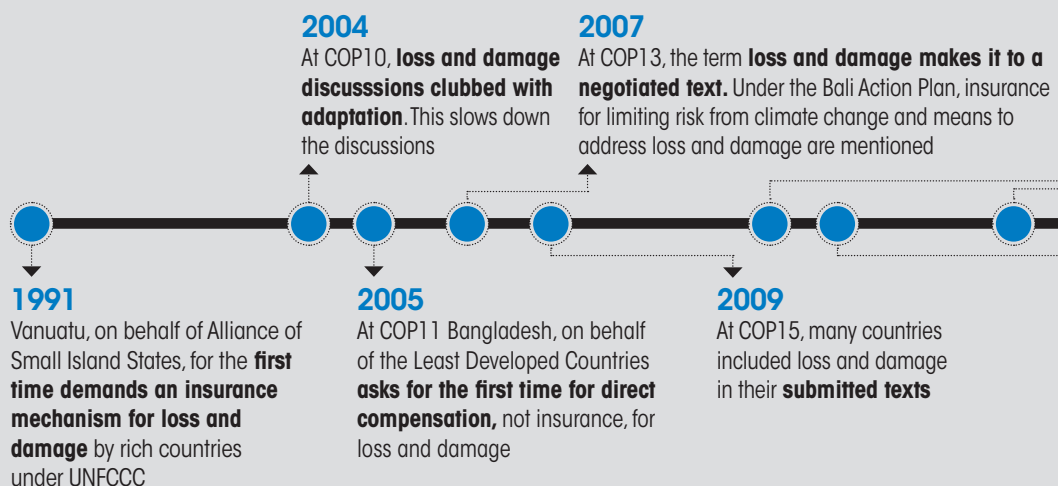
**C**OP27 must be the place for action on loss and damage,” António Guterres, the UN Secretary-General, told the media on October 3 at a meeting ahead of the Conference of Parties (COP27) to the UN Framework Convention on Climate Change (UNFCCC). Countries vulnerable to climate change impacts have been demanding a loss and damage finance facility for a while now, and the recent events, from the crippling heatwaves and forest fires in Europe and the US to floods in Asia and protracted droughts in Africa, might finally convince the developed world to have a serious conversation on the topic at COP27 on November 6-18 in Egypt, the first

such summit to be held outside Europe in six years. But the process might not be easy as a loss and damage finance mechanism is closely linked to the principle of “polluter pays” and as a result puts the onus on countries for their historical emissions.

At the last COP in Glasgow, Scotland, the Group of 77 nations (G77) and China united in their demand for a loss and damage finance facility to disburse funding to rebuild the lives of communities facing the worst impacts of the climate crisis. G77, currently chaired by Pakistan, represents over 80 per cent of the world’s population. But their demand was

## INDEFINITE TALKS

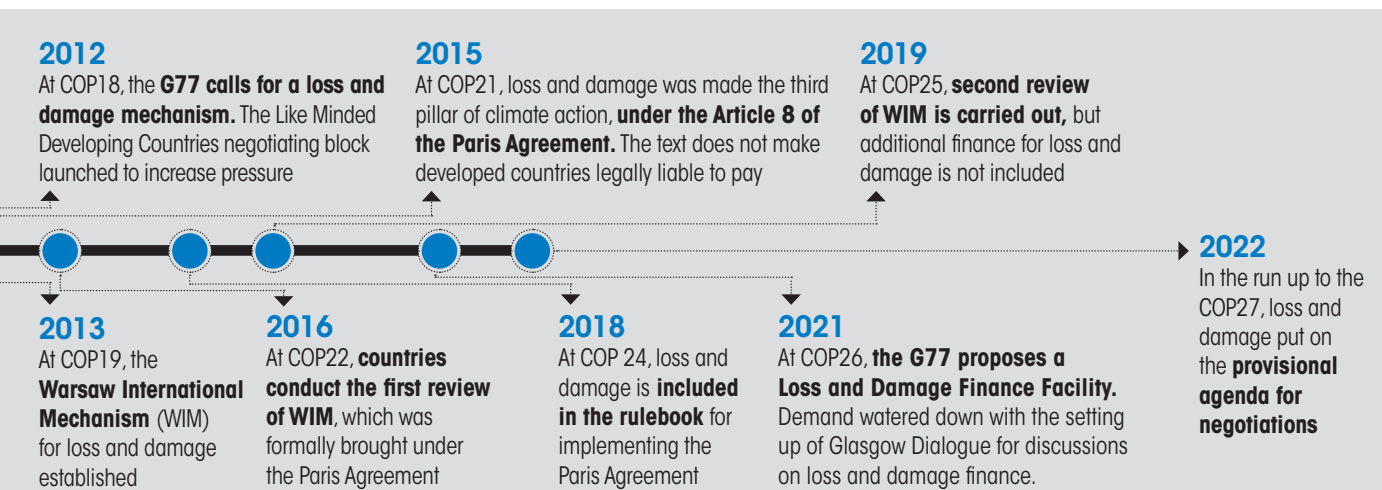
Even after two decades, the world is yet to come to a consensus on loss and damage funding



pushed back by developed countries such as the US and Switzerland. It was watered down to a compromise: a non-binding Glasgow Dialogue, which will continue till 2024, and explore the possible institutional arrangements to address loss and damage in the future. Differing voices could also be heard at the dialogue, which commenced at the UN's mid-year climate change conference, the 56<sup>th</sup> meeting of the Subsidiary Bodies (SB56) in Bonn, Germany this June. At SB56, G77 put forth a request to include the global goal on adaptation and loss and damage finance as part of the formal agenda, which ensures there will be an outcome at the end of the event. While adaptation was added to the agenda, loss and damage was dropped. On June 10, Marianne Karlsen, chair of the Subsidiary Body for Implementation, the body responsible for the implementation of the Convention, the Kyoto Protocol and the Paris Agreement, informed civil society that while parties agreed that loss and damage was important and urgent, not everyone agreed that “establishing a financial mechanism is the right response”.

Later in August, loss and damage was included in COP27's provisional agenda after G77 sent a request to the executive secretary of UNFCCC. There is now consensus to establish it as a formal agenda item, which will be decided on the first day of the summit. “Including loss and damage in the formal agenda of COP27 can derive something substantial from this talk shop,” says Sindra Sharma, senior programme officer at Climate Action Network International (CAN-I), a global network of more than 1,800 civil society organisations.

Still, Kelly Sims Gallagher, professor of energy and environmental policy at Tufts University, US, believes the current framing of “polluter pays” will make it a tough sell to bring the US on board. US climate envoy John Kerry, at an event hosted by the New York Times on September 20, dodged the question on UN inaction on loss and damage by responding somewhat irately, “I’m not going to take to feeling guilty. You think this Republican Congress, where we couldn’t get one vote for this legislation, is going to step up and do loss and damage?”



In a speech on September 5, Frans Timmerman, the European Commission's executive vice president, highlighted that even EU citizens would not buy the historical polluter argument today "because their worries are linked to their own existence in this energy crisis, in this food crisis, in this inflation crisis".

The mood of developed countries is also palpable at the Glasgow Dialogue, held in Bonn, where Switzerland, US and Canada brought up humanitarian assistance as an example of finance already being provided, with the latter noting that a funding arrangement for loss and damage need not be under UNFCCC alone. Developed countries also raised the question of how to define the "most vulnerable". Civil

## Disjointed voices

A negotiator representing the small island nations, who wishes to remain anonymous, says that given the current political situation, it would be "political suicide" for any developed country not to discuss loss and damage finance at COP27. "If there is a strong push back from the US or others, it may actually lead to a further disintegration of trust in the UNFCCC multilateral process," the negotiator says, adding that some developing countries are convinced that climate diplomacy over the past 30 years has not yielded results.

Some developing countries are also willing to accept a political commitment to establish a loss and damage financing facility at COP27, as a starting point. "What we would

## MANY DEVELOPING NATIONS WILL LOSE TRUST IN UNFCCC IF THE US OR OTHERS STALL CONCRETE ACTION ON LOSS AND DAMAGE AT COP27

society observers say that such language can be strategically used to narrow the scope of responsibility and eliminate many victim countries from being eligible for finance.

"The question is whether you want to indulge yourself in public demands for reparations, or, are involved in conversation that could lead to compromises and deals," says Adam Tooze, British historian and economic commentator. He says rather than pushing for loss and damage finance, focusing on the unmet demand for US \$100 billion in climate finance will give developing countries more leverage. "I'd say raise it to \$200 billion and keep on asking," he adds.

expect from that [COP27] agenda item would be the establishment of a finance facility, not the complete operationalisation which would take years. We are very conscious of this," says the negotiator. "I would also expect that there would be an agreement that the Glasgow Dialogue would have a clear link into the decision-making process and not just a side talk fest."

Angela Rivera, a Colombian negotiator for the Latin America and the Caribbean bloc, says they will push for assured funds to address loss and damage. "We are open in terms of discussion, but we need predictability, and we think it is important to allow all vulnerable countries to get access without any kind of differentiation, because at this point all of us are

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suffering the losses and damages due to climate change.” Rivera adds that loss and damage funding can be through “a new facility or a new trust fund under the Adaptation Fund (established by UNFCCC in 2001 to finance concrete adaptation projects and programmes in developing countries), or a new window under the Green Climate Fund (established in 2010 to assist developing countries in adaptation and mitigation practices).

But is it sufficient to accept a political commitment to set up a new facility or beat the already worn-out climate finance drum, without radically pushing for more of what is due, and greater specificity in commitment? This question is pertinent when considering that the

sence of any concrete vision from anybody, we came up with this paper and shared it widely at the Bonn negotiations. We called it a discussion paper because we wanted input from everybody [including developed countries],” says Harjeet Singh, head of Global Political Strategy at CAN-I.

Barbados Prime Minister Mia Mottley laid out a plan at the UN General Assembly in September to “transform the global finance architecture”. Known now as the “Bridgetown Agenda”, it includes proposals to reform institutions like the World Bank and International Monetary Fund and “secure long-term funding” for poor and vulnerable nations through a

## THE PROJECTED ECONOMIC COST OF LOSS AND DAMAGE IN DEVELOPING COUNTRIES ALONE IS ESTIMATED TO RISE TO \$290-580 BILLION IN 2030

projected economic cost of loss and damage in developing countries alone is estimated to rise to \$290-580 billion in 2030, as per a 2018 estimate by Anil Markandya and Mikel González-Eguino at the Basque Centre for Climate Change, Leioa, Spain.

### Other solutions

Outside of the long and tiring loss and damage discourse, alternative proposals are being tabled. CAN-I has released a paper outlining what a future loss and damage finance facility could look like. It outlines the guiding principles and functions such as provision of full-cost grant funding and two distinct funding windows for rapid and slow onset events. It is among the few proposals that have been put forth. “In the ab-

greater redistribution of special drawing rights, greater investment in climate resilience, development of long-term instruments that can mobilise \$3-4 trillion in finance for carbon-cutting projects and a mechanism to raise reconstruction grants.

Debt-for-climate swaps have been proposed to provide debt relief in exchange for climate investment. Pledges from countries like Denmark, which committed 100 million krone (\$13.2 million) in September for loss and damage, create a precedent for other wealthy countries to also open their wallets and correct historic wrongdoing.

Meanwhile, with every step towards a new and innovative funding stream, communities on the frontline are losing time. **DTE**



**ONLINE TRAINING ON**

# Understanding Environmental Laws for Better Environmental Management

**Course date:** November 15 - 24, 2022 | **Course fees:** INR 2500  
**Last date to apply:** November 12, 2022

India has a comprehensive system of regulations to protect its natural environment and the health of its people. From the enactment of Water Act in 1974, a number of laws and regulations have been put into force in this regard. However, the intended purposes of these laws are far from being fulfilled due to various reasons. One of the issues which stems out is a holistic understanding of the different laws and how they should be looked into in a concerted manner for better environmental management.

Considering the need to fill the gaps, Centre for Science and Environment, is organizing a 10 days online training course on "Understanding Environmental laws for improving environmental management".

### Course Objective:

This 10 days online course has been designed to capacitate the people working in the field of environment and the prospective environmentalist with an objective to develop a better understanding and knowledge of the laws and their interrelationship. This course will also be beneficial for students as well who aspire to develop their carrier in environment field.

The course will be conducted through **technological learning tools such as presentations, videos, discussion with experts and reading material.**

### Learning from the Programme

- Better understanding of the environmental governance structure of the country, major institutions and their implementation statistics;
- Learning about laws and rules waste management, forest and wildlife, air, water and Environmental Protection Act;
- Increased understanding of the obligations of industry and individuals under various environmental laws and regulations and how to meet these obligations;
- Role of National Green Tribunal (NGT), environmental courts and public interest litigation (PIL);
- Understanding of international treaties and agreements Government of India subscribes to the impact of non-compliance with such agreements on business.

### Who can apply?

- Industry professionals; Environment Consultants; Environment Engineers
- Researchers and academicians
- Students aspiring to work in environment field

### COURSE COORDINATOR

#### ISHITA GARG

Programme Manager, Industrial Air Pollution; **Email:** [ishita.garg@cseindia.org](mailto:ishita.garg@cseindia.org)

**\*PARTICIPANTS  
 WILL BE AWARDED  
 WITH A "CERTIFICATE  
 OF COMPLETION"  
 ON SCORING  
 50% MARKS IN  
 THE QUIZ**

## ‘AFTER FANI, WE FOCUSED ON DISASTER-RESILIENT INFRASTRUCTURE’

Odisha, one of the most climate-vulnerable states in India, is hit by numerous extreme weather events every year. Cyclone Fani, which devastated the state in 2019, is one such event that forced Odisha to mount a post-disaster needs assessment. This multi-sector assessment on loss and damage provided new insights on building back better,

**GYANARANJAN DAS**, executive director, Odisha State Disaster Management Authority (OSDMA), tells

**SEEMA PRASAD. Excerpts:**



**For India, the National Disaster Management Authority (NDMA) considers “losses” as changes in economic flows due to adverse effects of a disaster, while “damages” refer to destruction of infrastructure and physical assets. Does OSDMA have a different view on loss and damage? How do you apply the concept to post-disaster needs assessments?**

We follow the definition of loss and damage given by NDMA.

When it comes to post-disaster needs assessments for loss and damage, the teams involved receive training at the national level, with support from the UN, World Bank, NDMA and other bodies. Approaches for income generating assets and non-income generating assets are different, but OSDMA officials are well-versed with both.

Teams coordinating from different



departments, such as water, agriculture, power and housing are informed about the theoretical concepts of loss and damage and the practical assessment procedures involved.

In, say, agriculture, impacts on wages, income and livelihood are considered under the definition of losses. Initially, we would just measure the standing crop loss according to inundation. But now with increasing awareness of losses, we also calculate how many people are dependent on agriculture; how many families, workers and marginal farmers are affected. For example, we can also consider to create water diversion to prevent crop loss. Such perspectives in

infrastructure. Take the example of a metal road that has been damaged in a disaster and is located in a disaster-prone zone. Previously, we would simply restore it with the same material, without considering disaster resilience. Now, according to the post-disaster needs assessment, we will rebuild it using concrete. The assessment added this component to recovery methods.

Moreover, earlier, infrastructure damage assessment was done for public property and permissible private properties. Now, it is conducted on all properties.

**Which recovery and resilience projects resulted from the**

## **A POST-DISASTER NEEDS ASSESSMENT DOES NOT DEAL WITH PREPARATION AND WARNING OR RESPONSE MANAGEMENT**

post-disaster needs assessments add a new dimension to the way we do things.

**Odisha is prone to extreme weather events and already has systems in place to deal with their impacts. What new insights did the state gain from its first post-disaster needs assessment in 2019?**

The main difference between a post-disaster needs assessment and other systems is that the former does not deal with preparation and adequate warning or response management. It provides information and data on risk resilience infrastructure.

After cyclone Fani, we were focused not only on building back better but also on disaster-resilient

**assessment post cyclone Fani?**

We formulated the Odisha Disaster Recovery Program which includes three main components—rebuilding broken infrastructure, reinstating and building new houses, and building more cyclone shelters.

In terms of infrastructure, education and health are important sectors. Cyclone Fani impacted the former more. We ensured that school buildings were redesigned and retrofitted for disaster resilience. The assessment also exposed remote places where cyclone shelters were not present.

In another example, fishers in Ganjam district were living in *kutch*a houses in low-lying areas near the coast. With insights from the assessment, we relocated them. **DTE**



### Nigeria

The West African country grappled with an unprecedented flood early October. The floodwater has spread across all the 36 states, killing more than 600 people and affecting 2.5 million people. The government, which raced to provide relief to hundreds of thousands of people being evacuated from their submerged homes, blamed climate change for the unusually heavy rains. Nigeria experiences flooding every year, especially in its coastal areas, but this year's floods are the worst in more than a decade.





**AAETI**



**INTEGRATED ONLINE AND ONSITE TRAINING PROGRAMME ON**

# **ENVIRONMENTAL IMPACT ASSESSMENT**

CSE is launching an integrated online and onsite training programme on EIA. The training programme will comprise of two parts: Basic learning (online platform) and Advanced learning (at our residential campus). The course is designed to provide an overall understanding of the EIA process which includes theoretical knowledge via lectures from experts and firsthand experience through group exercises, discussions and case studies.

## **PROGRAMME DESIGN**

### **PART A: BASIC LEARNING (ONLINE)**

DECEMBER 6-15, 2022

- Includes sessions on methodology for preparing an EIA, approach for baseline data collection, identification and assessment of impacts alongwith the Environmental Clearance process and understanding of EIA process and legislation from developed countries.
- Conducted on Moodle Platform where participants will be provided with reading / audio-visual training material which they are expected to self-study. The course material will be for the duration of 2-3 hrs/day.

### **PART B: ADVANCED LEARNING (ONSITE)**

FEBRUARY 14-17, 2023

- Includes practical experience on assessing impacts for different sector projects and developing their Environmental monitoring & management plans;
- Hands on experience of presenting case to committee members for environmental clearance;
- Review of EIA reports;
- Understanding of Risk assessment studies;
- Working on case studies through group exercises and role play.
- Conducted at CSE's residential campus, Anil Agarwal Environment Training Institute (AAETI) in Tijara, Alwar, Rajasthan.

### **WHO CAN APPLY**

Industry professionals; environment consultants; environment engineers; researchers; academicians and students aspiring to work in the field of environment.

### **LAST DATE TO APPLY**

**December 4,  
2022**

### **COURSE FEE**

**Part A** (online): **Rs 3,000/-** (Indian participants)  
**USD100/-** (Non-Indian participants)

**Part A+B** (online+ onsite): **Rs 25,600/-** (Indian participants)  
Full waiver on online fees for participants applying for onsite programme.

### **Special discounts**

25% discount on course fees (Part A+B) for industry professionals, professors and consultants.  
50% discount on course fees (Part A+B) for NGO, PhD researchers and students.

To avail the discount, contact the course coordinator.

**CERTIFICATE OF COMPLETION WILL BE AWARDED FOR BOTH PROGRAMMES**

**FOR ANY QUERY, KINDLY CONTACT THE TRAINING COORDINATOR**

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