



Bi-Monthly
e-Magazine

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2021

Climate Change Forum for Youth in India

Special Issue



Theme

Azadi ka Amrit Mahotsav



Climate Change Research Institute
Science & Technology Solutions for Sustainable Energy Future

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About CCRI and CCFYI

CCRI

Climate Change Research Institute (CCRI) is a not-for-profit organization registered under Registration Society Act 1860. The website is www.ccri.in.

The Institute has been founded with a vision to promote understanding of climate change, mentoring and developing human resource capabilities for finding solutions. The ultimate goal of climate change adaptation and mitigation is to reduce accumulation of greenhouse gas (GHG) emissions in the atmosphere and reduce *carbon footprints*.

The Institute has a mission to inform youth in schools and colleges about the environment, ecosystem changes and consequences of climate change through awareness and capacity building on topics of scientific & societal interest such as Energy, Health, Water and Air pollution among others.

CCFYI

Climate Change Forum for Youth in India (CCFYI) is a platform for open discussions on the climate change related issues for the youth of our nation. We compliment young authors for their expression to climate change and contributions by articles and posters.

Climate change education is under-represented in the formal education system in India. There's an urgent need of introducing an interwoven integration of environmental knowledge with the learning on how an individual reduce emissions by connecting the dots between major factors of lifestyle and major contributors of the carbon emissions.

The CCFYI aims to build a responsible and environmental citizenship amongst the targeted audience using environmental and climate change knowledge sharing, a sense of responsibility and self-awareness about scientific solutions to mitigate the ongoing climatic impacts.

e-Magazine of CCYFI

The **e-Magazine** is a science outreach initiative by the **Climate Change Research Institute** started during COVID-19. Our lives took a drastic shift in year 2020, as we were locked inside our houses by a microscopic organism COVID-19 and there was a big full stop on all mobility!

Everything and anything went digital and we all started working from home. The Climate Change Research Institute (CCRI) also resumed its work from home. On 4th September 2020 in the opportune virtual Teachers' day celebration, we decided to launch **Climate Change Forum for Youth in India**, with following **Aims and Objectives**;

- To raise awareness about environment and climate change, liaise with Climate Change Research Institute and interact with other bodies to achieve the goals.
- To provide members with information and to encourage community participation with climate change solutions in their locality.
- To promote welfare and sustainable development goals.

We have opened the membership of the Forum. Anyone within the age bandwidth of 15-35 years could apply for it by responding to a brief questionnaire and there is no membership fee. We received applications from teachers and students from different schools of Delhi-NCR.

Focusing on outreach and youth engagement, the e-Magazine is before you. Since the e-Magazine is started as a two-way communication between the members and CCFYI, each issue has a unique theme for knowledge sharing, members' contribution related to each theme, surveys on topics related to Climate Change and e-News Alerts on climate change, among others.

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Dr. (Mrs) Malti Goel, Former Adviser, DST and Chief Executive, CCRI
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From President's Desk

"The purpose of education is to make good human beings with skill and expertise. Enlightened human beings can be created by teachers."

- Dr. APJ Abdul Kalam

What is anthropogenic Climate Change? Is it manifestation of climate science? This brings us to another question, what we understand by Science? Science is a way to decipher what we see around us, natural or manmade. We observe and then make scientific theories.

Remember how a falling apple led to the discovery of Newton's Law of Gravitation. By observing weather and climate around us we developed climate theories. Then using them we made predictions about the future climate. Seeing a match between the prediction and observation proved that our theories were correct. This is the basis of climate science.

I congratulate [Climate Change Forum for Youth in India \(CCFYI\)](#) for celebrating 75th year of *Azadi ka Amrit Mahotsava* and reach out the youth of the nation with best of the knowledge on climate change and related topics.

You are our motivation to serve the society. Through this e-Magazine, I thank you all for making an effort to learn about climate change and look for solutions to save the planet. Each one of you needs to take action to reduce your 'carbon footprints' and make it a habit.

I would urge you individually to raise questions, write your thoughts, share experiences and make it a habit to take climate change control actions.

With Best wishes

Dr (Mrs) Malti Goel

President, Climate Change Research Institute



Dr.(Mrs.) Malti Goel, being facilitated as **Chief Guest** by the Delhi State Science Teacher's Forum (DSSTF) at the Science Teachers' Congress held in the Vivekanand Public School, Anand Vihar, Delhi

Dr.(Mrs.) Malti Goel is Former Adviser & Scientist 'G', Ministry of Science & Technology, Government of India, where she was engaged in catalyzing and promoting scientific research and technology development in the emerging areas relevant to the national needs. She has been CSIR Emeritus Scientist at Jawaharlal Nehru University and Adjunct Professor at Jamia Hamdard University. She is Peer Reviewer for journals on 'Energy' and 'Applied Energy'; international publications of Elsevier. Currently, she is Founder President of Climate Change Research Institute and Board Member & Convener, Renewable Energy Group, India Energy Forum.



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Message from Persons of Eminence

Dear Students

I was one of the lucky people to have born before we got independence. I often say I am a product of the Quit India Movement-1942.

I have, as a young person, seen people migrating from Pakistan to India on Camels via Pugal -a border town of India. The young children who came with their parents worked hard to settle. They went to school and also worked to sell toffees made at their home. Their families also ensured that they are clean and well dressed. The basic thing in life is cleanliness, the clean environment, clean habitat, and lush green ambience. Pugal and Bikaner were and are a desert area. The water was scare. Now with the Rajasthan Canal water is available in good measure. But using water efficiently became part of living. With this habit, every drop of water was used for drinking, cleaning, and watering plants. You may be wondering what kind of plantation can grow in the desert areas! They grow trees- called Khajeri, its fruit is called Sangri- Desert Beans, small buses- Kair,- its fruit used for pickle, and household plants Bouganvelia and Kandil to give a green effect.

This small action by young children often made changes in the environment. Public Gardens were relished by young and olds. Water harvesting was also a part of living. Worshiping the trees, protecting water bodies formed part of the culture. Today when we are busy with the technology revolution and you are busy with smartphones, but let us not forget to have and water a flowering plant, see how it grows, measure it in the number of days it takes to flower, name the flowering plant, write its properties, measure the amount of water it consumed during flowering, write about its fragrance and share it with your friends on Whatsapp. Please do share with me also. Email:seedicf@gmail.com

Let us celebrate our Azadi Ka Amrit Mohotasv by planting a flower pot, harvesting water, and protecting a water body.

GOOD LUCK

About Dr. G.D.Sharma



An eminent educationist Prof G. D. Sharma served as Secretary, University Grants Commission (UGC) in 1990s. He was first Director, Consortium for Educational Communications (CEC), India and headed the Higher Education Unit, National University of Educational Planning and Administration (NUEPA). He is a distinguished economist, has earlier served as Director and as a Consultant for premier organizations viz. UNESCO, UNDP and IIEP, Paris. He has also worked in various capacities in the Department of Economics, University of Mumbai and Association of Indian Universities, New Delhi.

As Member/Convener of several committees of UGC and Government of India, he guided higher education growth in the country. He was Honorary Professor of Kyung Hee University, Seoul, Korea and Founder Member of International Year of Peace. Currently, he is Founder President, Society for Education of Economic Development, New Delhi and member, Governing Council of Climate Change Research Institute.



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Members' Contribution

Aadhya Tripathi student of Grade 11 in the Mt. Carmel High School, San Diego, California is keenly interested to know more about climate change and how to fight it. She is a *Modernite* from New Delhi, shifted recently to USA.



Here's what Aadhya expressed her feelings about climate change.

Climate Change

As a 16-year-old high school student, I have several concerns about my future. The classes I am taking, my grades, preparations for applying to various colleges, the career I want to pursue, and so on are all things I have to consider. Another, somewhat different item on this list of my worries for what the future holds is climate change. I hear things in passing, like “hottest year on record,” “rising sea levels,” and “shrinking ice caps,” but the term “climate change” is rarely brought up compared to other current events.

I listen to people talk about these things, and sometimes it sounds as if they have accepted them, as if they are inevitable, as if it is already too late, as if there is nothing to be done. Teenagers and 20-year-olds make jokes about the planet being dead by the time they reach the midway point of their lives. When asked about it, however, not many can accurately describe what climate change actually is or what really causes it. It is disheartening to see people have such a negative outlook on such a crucial issue, and the worst part is that it often stems from ignorance. This is why I believe that we need to educate people, and especially young people, regarding the issue of climate change.

The only way forward is to identify causes and treatments in a way that the average person can comprehend so that large-scale, individual efforts can be produced. It is crucial that we teach our children the true complexities of global warming so they may recognize that there is still hope and that action can be taken to prevent the dark future they imagine. All of this is meant to compel the young minds of today to make informed decisions that create a better future for themselves and others.



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Members' Initiative

Tisya Diwan, an Active Member of CCFYI, student of class 12th student at Shri Ram School, Mousari, has started an Initiative, a youth environmental organization called Nitara in partnership with Anushree Pratap, a second year Ashoka University student and member CCFYI. Nitara aims to Undertake various projects to bring about social, educational, and environmental change and the first project is **Eco-net**.



Eco-Net is a youth-run climate education initiative especially for school students has following seven researched and curated modules:

1. Introduction to Climate Change
2. Energy
3. Waste Management
4. Agriculture and Industry
5. Intersectionality and Social justice
6. Policy and Implementation
7. International Environmentalism

Eco-net goal: To provide free resources for everyone, perhaps through a curriculum, but we want our resources to be trustworthy and verified by experts in the field.

Course of action:

Currently, curating the material and designing the module for each of the topics identified with near and distant future goals as:

- Uploading all the content on their website which is yet to be released. They hope that within a few years, they will be able to translate the content to different languages to ensure wide accessibility.
- The modules would serve as a blueprint for the curriculum which they're trying to build. By 2022, they hope to reach out to state boards with their curriculum to see if it can be incorporated into the material taught to school children. Before this, they plan to reach out to different NGOs and climate action groups to present our material and get feedback so they can improve on what we have.
- They hope to disseminate information in 2 formats: The first would be a summer and winter workshop held by Nitara in which students would join and they would teach them their seven modules in an interactive and discussion-based format. The second would be during the school year, when they hope to reach out to schools to do presentations in them directly. For this, they plan to incorporate relatable and relevant information such as the climate issues our audience is currently dealing with or what panels are going on in the world

The CCRI wishes success to Tisya in her Sustainability goals. You may like to contact her in case you would like to join the project.

Website : <https://nitaradeeplyrooted.wixsite.com/nitara>



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CCRI Gets Award of Excellence

Global NGO Expo(GNE) is a platform for NGOs, Non-Profits, Charities and Foundations to collaborate and connect with the biggest Entrepreneurs, Donors, Philanthropist and CSR Companies enabling the participants to Raise funds, Network, Ideate, Learn, Collaborate, and showcase their Social Contributions and Initiatives to stakeholders, marking the beginning of new collaborations and better service to the society.

Thousands of NGOs participated in the Global GNE Expo held in June 2021. The GNE Award of Excellence Certificate was issued to Climate Change Research Institute (CCRI) as one of the Best NGOs in India for setting up and promoting impactful social practices.

GNE AWARDS 2021 Ceremony was Live on YouTube, on June 28, 2021.



Tiranga at IIT Delhi

Alumnus of IIT Delhi 1969 batch, **Dr Malti Goel, President, Climate Change Research Institute and Former Scientist 'G' and Emeritus Scientist, Ministry of Science & Technology**, has contributed INR 25,000/- towards this historical initiative of "Tiranga at IIT Delhi".

The monumental 'Flag Point' will have a pole height of 100 ft, and the flag size will be 16 ft X 24 ft ! It could be the 1st time that such a flag is installed on any IIT campus. Flag prototype is developed in-house to suit diverse climatic and geographical conditions in India by IIT Delhi researchers from Textile Department.

IIT Delhi has collaborated with the "Flag Foundation of India" for advanced fabric development for the **National Flag** and plans to install it near main building.

Self-Actualized Leaders Network - Global Summit

Dr. (Mrs.) Malti Goel, President and CEO, Climate Change Research Institute, was honored to be invited as **Chief Guest and Panelist** in **Self-Actualized Leadership Network Global Summit 2021 (SALN Global Summit 2021)** conducted by **Defined Values Consultants Pvt Ltd**. The **Project Yug Parivartan** is a project of DVC focusing on Sustainable Development Goals and Self-Actualization.

In the **Technical Session** theme **UN SGD 7- Affordable and Clean Energy**, **Dr (Mrs) Malti Goel** elaborated on the Sustainable Development Goal (SDG) - 7, which aims to ensure access to affordable, reliable, sustainable and modern energy for all. Lack of energy access is a big constraint for human and economic development. Our energy systems must change to develop sustainably.

The SDG7 Sub-Targets

- 7.1- By 2030, ensure universal access to affordable, reliable and modern energy services
- 7.2 -By 2030, increase substantially the share of renewable energy in the global energy mix
- 7.3 -By 2030, double the global rate of improvement in energy efficiency
- 7.a -By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
- 7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small-island developing States, and land-locked developing countries, in accordance with their respective programs of support



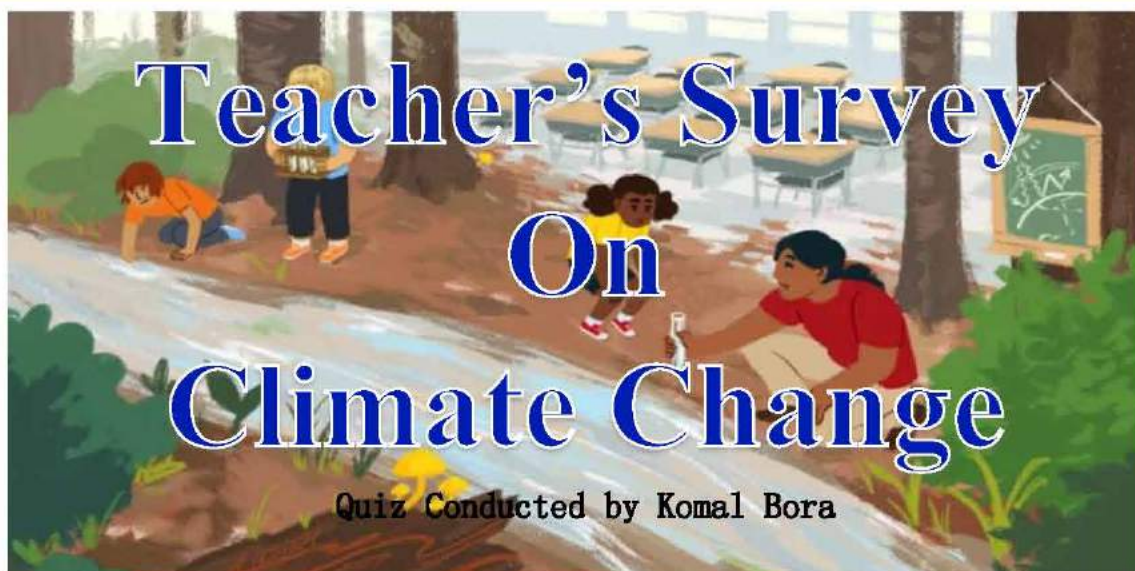
Webinar on EV Charging

Dr. (Mrs.) Malti Goel, had privilege to be the Convener for the event '**EV Charging Infra and Battery Storage-Challenges & Way Foreword**' held on 6th August 2021 and delivered Vote of thanks. The Webinar was organized by India Energy Forum (IEF), a body of top energy professionals in the country. Eminent personalities having wide experience about energy policies, programmes and electric vehicles participated as speakers and delegates. Shri R.V. Shahi, Former Secretary, Power is the President of the Forum. INDIA ENERGY FORUM (IEF) is a non-profit professional think tank body dedicated to the development of the energy sector in India.

An IC engine fuel vehicle emits harmful gases like carbon dioxide and CO due to petrol or diesel. An electric car is a vehicle propelled with electric motors that use energy stored in rechargeable batteries. It has fewer components than a petrol or diesel car. As the growing pollution has become a serious concern, electric vehicles (EVs) are better for the environment. Dr Malti pointed out that we need to create cost-effective electric vehicles charging infrastructure for their successful operation.



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“For students to experience transformative learning, teachers too must be given the opportunity to learn and be empowered with the knowledge, skills and values to address such a complex subject as climate change, in the context of a wider transformation of society”-Vibeke Jensen, Director of the Division for Peace and Sustainable Development, UNESCO



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Teachers Survey on Climate Change

"An investment in knowledge pays the best interest".

- Benjamin Franklin

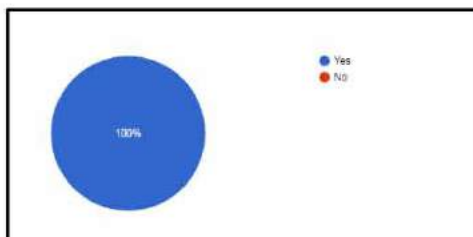
Very well said by Benjamin Franklin and endorsed by UNESCO, how education especially when focusing on the school children and youth, **is a key factor in helping to curb climate change**. Indeed, education is one of the very important components to fight the global emergency i.e., climate change. Education can play a very important role in tackling the climate change as even a small behavioural change can tweak the system.

Teachers have a very vital role to play for the fight against the climate change. The Earth is the only planet where life exists. It is called the blue planet as 71% of Earth surface is covered by water. The journey of the earth from a rock to a planet nurturing life in each inch of it has been a way long. Unfortunately, the human greed is forcing this planet to go back to early stage with no signs of life. There is no one solution to this issue, as vast as global warming and climate change.

Keeping the above thought in mind, Climate Change Research Institute (CCRI) has adopted a mandate to create awareness education and capacity building among the Youth. We conducted a survey among the school teachers, the questionnaire was designed with basic questions to get an idea about the awareness level, the source of their knowledge, how much they trust the different sources of information, how much are they afraid to tackle the climate change. We were overwhelmed with the responses. The questionnaire consisted of a set of thirty questions.

Responses to the Quiz

Question 1: Do you feel that the pattern of weather is generally changing due to global warming?

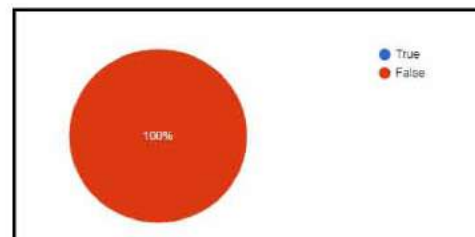


The correct answer : True

Yes, the pattern of weather is changing due to global warming and all the respondents were sure that the statement is true.

The rising global temperature is associated with change in the weather pattern. Global warming is giving rise to extreme weather events with increased intensity and frequency.

Question 2: The most important and basic question, whether climate and weather are similar?



The correct answer : False

100% correct response, there is difference between weather and climate. How they are different?

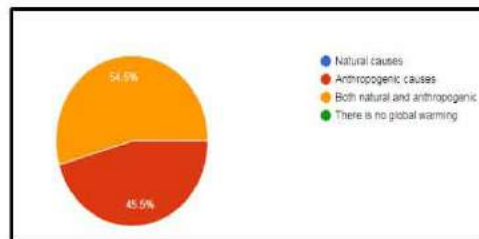
Weather is the state of the atmosphere at any given time and place. Whereas Climate is the long-term average of the weather at a given place.



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Quick Facts: Familiar aspects of weather include temperature, precipitation, clouds, and wind that people experience throughout the course of a day. Severe weather conditions are hurricanes, tornadoes, flash floods, and droughts. **The weather can change in minutes or hours but change in climate develops over longer periods of decades to centuries.**

Question 3 : Do you assign the reason for global warming as natural or anthropogenic activities?

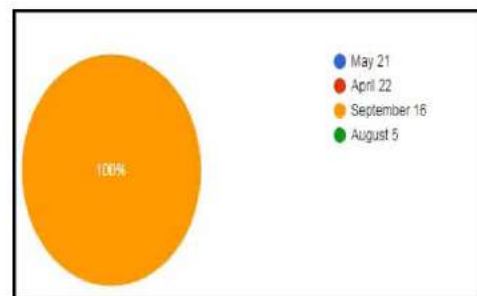
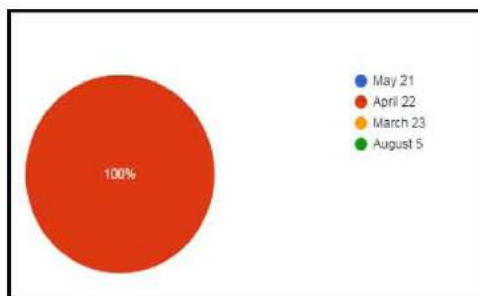


The correct answer : Anthropogenic Activities

The 54.5% respondents believe that global warming is caused due to anthropogenic activities while, 45.5% believed it is due to both natural and anthropogenic causes.

Global warming has resulted from long-lived gases in the atmosphere. It is caused by increased concentrations of greenhouse gases in the atmosphere, mainly from human activities such as; combustion of fossil fuels, industrialization, agriculture and transport.

Question 4 and 5: When is the World Earth Day celebrated? When is the World Ozone Day celebrated?

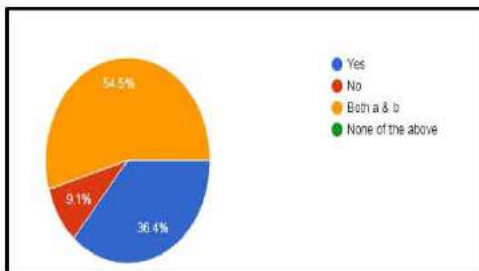


The correct answer: World Earth Day is celebrated on 22nd April and World Ozone Day on 16th September, every year. The response was hundred per cent.

From the above responses, one thing is clear, that there is widespread awareness among the masses and it has quite evidently reached to the people on a broader aspects.

Quick Facts: The first time Earth Day was celebrated on 22nd April 1970 and it has been 50 years and we are still struggling to protect our mother earth. About the Ozone Hole it became evident in 1970s, the ozone layer is the gift of humanity to the earth is depleting. In 1985, the world adopted the *Vienna Convention for the Protection of the Ozone layer* and Montreal Protocols was agreed in 1987.

Question 6 : Is ozone good or bad for humans?

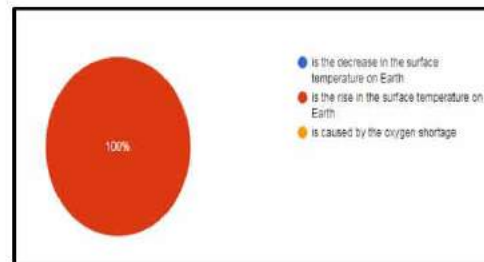


The correct answer : **both a & b**

We received a mixed bag response on yes, no and both while; majority voted for ozone is both good and bad for humans.

Ozone is like the two sides of coin and is both beneficial and harmful to us. It protects us from harmful ultraviolet radiations and supports life on the earth on the other hand, it aggravates skin cancers, respiratory conditions, moreover its corrosive nature can cause more harm.

Question 7 : What is the Greenhouse Effect?

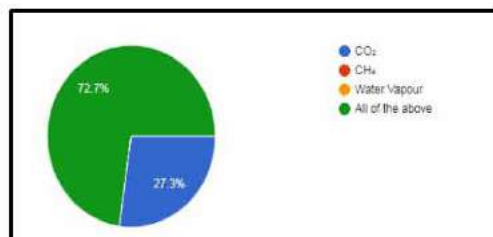


The correct answer: **is the rise in the surface temperature on Earth.**

All the participants answered it correctly.

The greenhouse effect is *a natural process that warms the Earth's surface. When the Sun's energy reaches the Earth's atmosphere, some of it is reflected to space and the rest is absorbed and re-radiated by greenhouse gases.*

Question 8 : Greenhouse effect is due to increasing concentrations of:

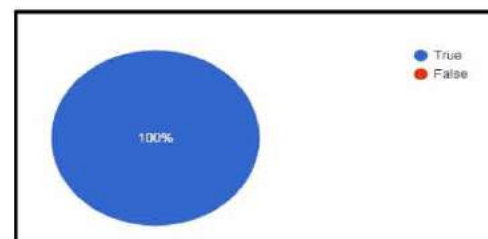


The correct answer : **carbon dioxide**

While 27.3% of the respondents believe that CO₂, CH₄ and water vapour are the reason behind the increase, while 72.7% believe that **CO₂ is the main culprit.**

Carbon dioxide has a major role to play in greenhouse effect so it's the most contributing greenhouse gas
The greenhouse gases are the gases that emit and radiate the thermal infrared energy and causing greenhouse effects.

Question 9 : Compared to other greenhouse gases, carbon dioxide is the most effective at trapping heat near the Earth's surface:

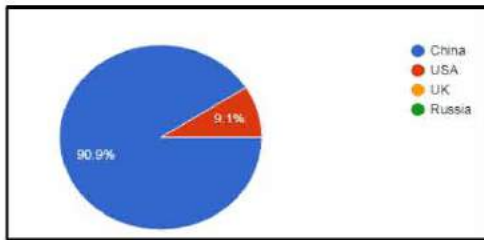


The correct answer : **True**

All the responses are correct. Although carbon dioxide is not the most powerful greenhouse gas, it is the largest contributor to climate change because its concentration is more compared to other gases.

Compared to other greenhouse gases, carbon dioxide is the most effective at trapping heat near the Earth's surface.

Question 10 : Which of these countries emits the most carbon dioxide?

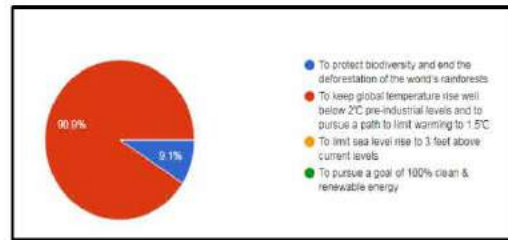


The correct answer : China

From the responses received, 91% believed China is the largest emitter, while the rest responded USA.

According to International Energy Agency, China is the largest emitter of carbon dioxide followed by USA and India with 10.06GT CO₂, 5.41 GT CO₂, and 2.65 GT CO₂ respectively, in 2018.

Question 11 : What was agreed to in the “Paris Agreement” on Climate Change Paris in 2015?

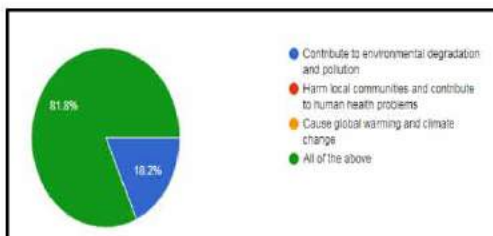


The correct answer : to keep global temperature rise well below 2°C pre-industrial levels and to pursue a path to limit warming to 1.5°C

91.9% respondents correctly recognized the goal of Paris Agreement.

The goal of the agreement was to limit the global temperature to well below 2 degrees, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

Question 12 : Which of the following are negative impacts of burning fossil fuels?

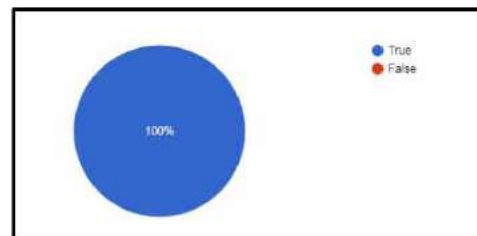


The correct answer : all of the above

81.8% participants correctly responded with all the three negative impacts, while 18.2% think the only negative impact is to contribute to environmental degradation and pollution.

Burning of fossil fuels have many negative impacts, like to contribute to environmental degradation and pollution, harm local communities and contribute to human health problems and causes global warming and climate change.

Question 13 : Wasting less food is a way to reduce greenhouse gas emissions. (T/F)

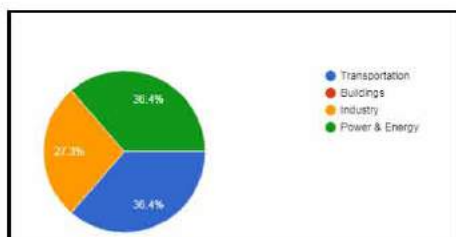


The correct answer : True

All the respondents correctly answered. Its true that less wastage of food is a way to reduce GHGs.

More than a third of food produced globally never makes it to the table. Some of this wasted food spoils in transit, while consumers throw some of this food out. Food loss and waste account for around 8.2% of the total human-made greenhouse gas emissions.

Question 14 : Globally, which of the following economic sectors emits the largest percentage of greenhouse gas emissions?

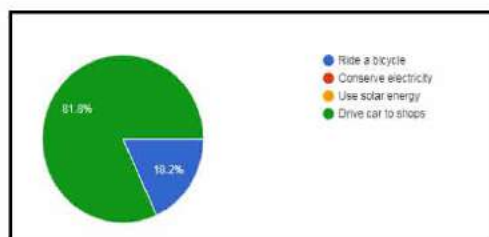


The correct answer : **Power & Energy sector**

The participants have responded in a very accurate manner. With equal number of votes for power & energy and transportation followed by industry.

The power and energy sector are the largest emitter of the GHGs globally, followed by transportation and industry.

Question 15 : What you should avoid to help fight climate change?

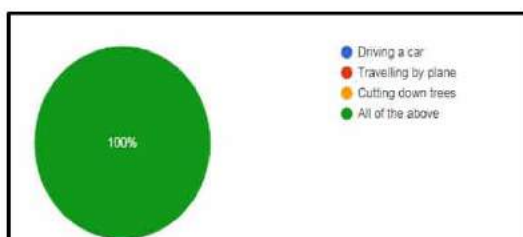


The correct answer : **Driving car to the shops**

Other three of above should be practiced to fight climate change.

Climate change is serious threat to the places, species and people's livelihoods. To adequately address this crisis there is an urgent need to reduce carbon pollution in the atmosphere by taking actions and make it a habit. Go Green, Go Healthy!

Question 16 : Increases in the level of carbon dioxide in our atmosphere is due to:

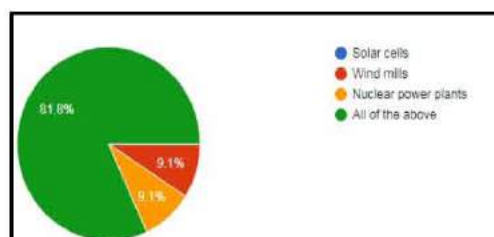


The correct answer : **All of the above**

All the respondents correctly answered that all of the above are reasons for increase in CO₂ emission.

The concentration of carbon dioxide in Earth's atmosphere is currently at nearly 412 parts per million (ppm) and is rising. This represents a 47 % increase since the beginning of the Industrial Age, when the concentration was near 280 ppm, and an 11% increase since 2000, when it was near 370 ppm.

Question 17 : Energy sources that do not increase carbon emissions include-

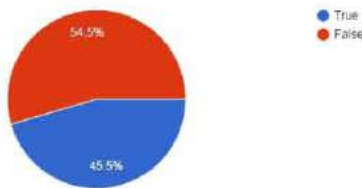


The correct answer : **All of the above**

81.8% respondents answered correctly, while 9.1% felt wind mills and another 9.1% nuclear plants

Solar is carbon free source of electricity, so are wind and nuclear energy. Nuclear energy is a mature low-GHG emission source of baseload power, but its share of global electricity generation has been declining (since 1993).

Question 18 : Sulphur dioxide in the atmosphere can act to cool the planet by reducing the amount of solar radiation that reaches Earth's surface.

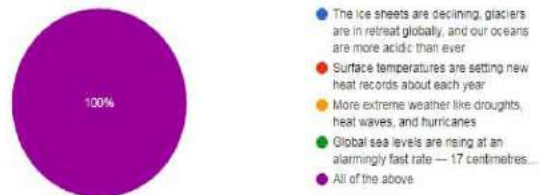


The correct answer : True

Only 45.5% knows the fact that sulphur dioxide will help in reflecting the incoming solar radiations.

Sulphur dioxide in the atmosphere can act to cool the planet by reducing the amount of solar radiation that reaches Earth's surface as it combines with the water to form sulphuric acid aerosols, which reflect the incoming sunlight.

Question 19 : Impacts of climate change are:



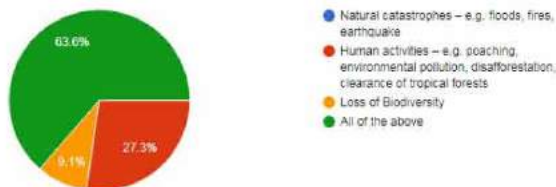
- The ice sheets are declining, glaciers are in retreat globally, and our oceans are more acidic than ever
- Surface temperatures are setting new heat records about each year
- More extreme weather like droughts, heat waves, and hurricanes
- Global sea levels are rising at an alarmingly fast rate — 17 centimetres...
- All of the above

The correct answer : All of the above

All of the options mentioned are correct and we received 100% correct answer.

The few and major life threatening impacts of climate change are the melting of ice sheets causing glacial outburst which we see as Glacial Outburst. Others are rising temperature, extreme climatic events, and rising global sea levels.

Question 20 :In your opinion what is the main cause of the extinction of many living species?



- Natural catastrophes – e.g. floods, fires, earthquake
- Human activities – e.g. poaching, environmental pollution, deforestation, clearance of tropical forests
- Loss of Biodiversity
- All of the above

The correct answer : All of the above

The 27.3% participants think that solely human activities are responsible for this loss, while 9.1% thinks loss of biodiversity is the cause.

The main causes of extinction include human-induced activities, climate change and natural catastrophes along with loss of biodiversity.

Question 21 : The number of reported hydro-meteorological hazards (droughts, floods, wind storms, etc.) in recent decades



- Has increased
- Has decreased
- Has remained about the same

The correct answer : has increased.

Participants agree that number of reported hydro-meteorological hazards (droughts, floods, wind storms, etc.) in recent decades has increased.

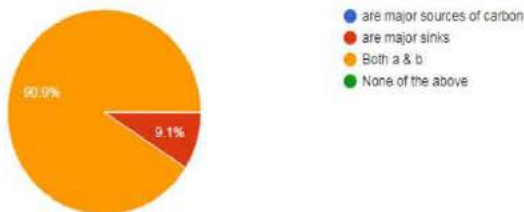
By Hydro-meteorological hazards we understand “process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage”



Get your knowledge booster!

It is the **hydro-meteorological** (floods, storms, heat waves) and climatological disasters (droughts, wildfires) rather than geophysical ones (earthquakes, volcanic eruptions) that are on the rise giving rise to climate crisis. *Climate factors have been a significant factor in the rise in frequency of intense hydro-meteorological disasters in Asia and the Pacific in the past four decades, clearly linking climate change to disaster risks.*

Question 22 : What role do the oceans play in the carbon cycle?

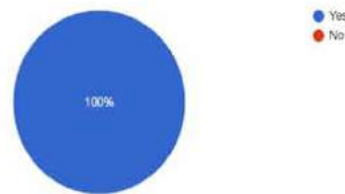


The correct answer: **Are the major sinks.**

Unfortunately, only 9.1% respondents believe that oceans are major sinks, while the rest think oceans are the sources of carbon.

When it comes to the sources and sink of the carbon dioxide, oceans plays a critical role by absorbing 25% of all the atmospheric carbon dioxide emissions. Oceans are the world's largest carbon sinks.

Question 23 : Can we slow or stop human-caused global warming?



The correct answer: **Yes.**

For reducing the impact of climate change, there's always a solution to reduce the amount of GHG emissions and all the participants agree with it!

The ocean plays a critical role in carbon storage, as it holds about 50 times more carbon than the atmosphere. Two-way carbon exchange can occur quickly between the ocean's surface waters and the atmosphere. Carbon may be stored for centuries at the deepest ocean depths.

Check your Facts : Oceans have most promising role to sequester carbon. It stores thousand times more heat than the atmosphere and act as climatic buffers. Around 25% of all CO₂ emissions are absorbed by the ocean, making it one of the world's largest 'carbon sinks'. *And therefore, estimates suggest that around a quarter of CO₂ emissions that human activity generates each year are absorbed by the oceans.*

Question 24 :Reducing the amount of greenhouse gas emissions is called:



The correct answer : Mitigation

100% correct response

We can either mitigate the impacts of climate change or adapt to them. Mitigation in simple words can be defined as “reducing emissions and stabilizing the levels of heat-trapping greenhouse gases in the atmosphere” whereas adaptation is defined as adapting to the climate change that has occurred.

Question 25: Why are forests important for mitigating climate change?

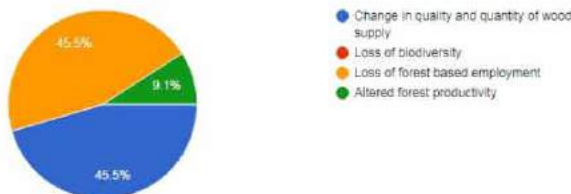


The correct answer : Forest acts as carbon sink

100% correct response

Forests are the most important mode of mitigating the climate change. Forests help in stabilizing the climate by regulating ecosystems, protect biodiversity, play an integral part in the carbon cycle, support livelihoods, and can help drive sustainable growth.

Question 26 : Which of the following do you think has the least impact of climate change on forests?

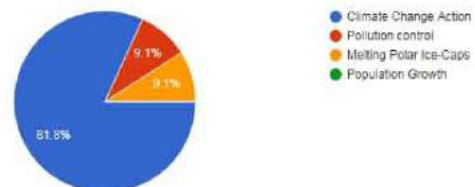


The correct answer : Loss of forest based employment

9.1% believed in altered forest productivity.

If we talk about the least impact of climate change, it will be on loss of forest based employment. The participants have a 50-50 opinions on loss of forest based employment and change in quality and quantity of wood supply, while the forest based employment would be less affected.

Question 27 : What is Sustainable Development Goal 13, about



The correct answer : Climate Change Action.

81.8% answered correctly.

There are 17 Sustainable Development Goals (SDGs) which we need to achieve by 2030. Saving lives and livelihoods requires urgent action to address both the pandemic and the climate emergency.

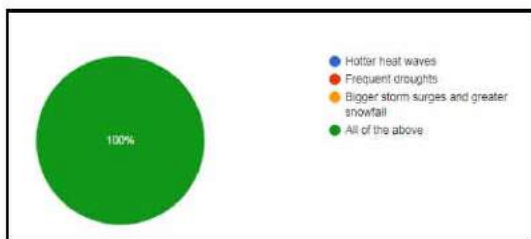
Information Alert!

“The seventeen Sustainable Development Goals (SDGs) are our shared vision of humanity and a social contract between the world’s leaders and the people,” UN Secretary-General Ban Ki-moon

- They were introduced on January 1, 2016
- These 17 Goals build on the successes of the Millennium Development Goals (MDGs), with new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities.
- The goals are interconnected and even more ambitious set of goals to banish a whole host of social ills by 2030.



Question 28 : What are Extreme Weather impacts of Climate Change?

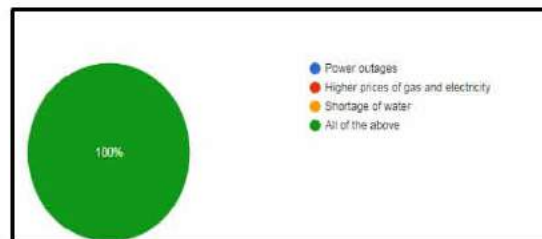


The correct answer : All of the above

The respondent correctly answered that all the above mentioned options are the extreme weather impact of climate change.

One of the most visible consequences of a warming world is an increase in the intensity and frequency of extreme weather events.

Question 29 : How can extreme events like hurricanes, drought and wildfires impact the energy infrastructure?

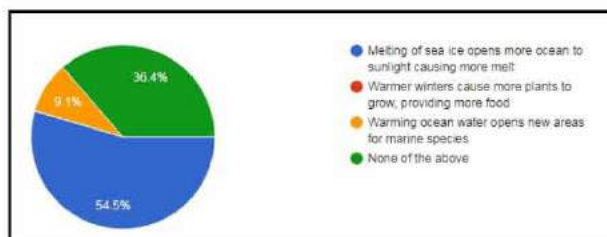


The correct answer : All of the above

The respondents correctly answered that extreme climatic events impact the energy infrastructure very adversely.

Extreme weather and climate-related events also affect human health as well as having large socioeconomic impacts.

Question 30 : Which of the following is not an example of “positive feedback loop” in polar climate system?



The correct answer : None of the above

Only 36.4% of the participants were correctly able to answer.

Positive feedback is a process that occurs in a feedback loop which exacerbates the effects of a small disturbance. The absorption of heat energy at the Earth’s surface melting of ice, warmer winters and warming oceans are all positive feedbacks. This whole sequence is an example of a positive feedback loop.



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Climate Change Research Institute

Celebrating

A Decade of Achievements (2010-2020)

The Journey of CCRI (2010-2020)

2010

1st Workshop on Awareness and Capacity Building in Sustainable Energy (ACBSE-2010)

Climate Change Research Institute organized the first Workshop on “**Awareness and Capacity Building in Sustainable Energy(ACBSE-2010)**” at **India International Centre(IIC)** on August 6th 2010. The workshop was held in collaboration with **India International Centre, Council for Scientific and Industrial Research and Centre for Studies in Science Policy, JNU**.

The programme was split into two technical sessions, Technical Session I - Climate Change and Sustainable Energy and Technical Session II - Beyond Carbon Capture: Science of Geo-modeling Studies. The objective of the workshop was creating awareness on the need to develop technology R&D imperatives for accelerating low carbon energy growth

Dr. V. K. Garg, Chairman, Joint Electricity Regulatory Commission delivered by Inaugural Address and highlighted the importance of economic feasibility of a resource as a crucial step towards deployment of a technology. **Prof. P. N. Desai, Chairman, Center for Studies in Science Policy**, presided over the Technical Session 1 and delivered the Welcome Address. He said that bridging the gap between science & society through public participation is a critical phase of policy making. **Sh. V. S. Verma, Member, Central Electricity Regulatory Commission** chaired the Session. He said ‘Footprints in power sector are targeted to reduce by schemes like mandatory Renewable Purchase Obligations (RPOs). The ACBSE-2010 has provided a meeting of eminent experts from different disciplines.

Dr. Pradeep Chaturvedi, Chairman, IAAS; Dr. Chhemendra Sharma, National Physical Laboratory; Prof. T. Satyanarayana, University of Delhi; Dr. D. M. Kale (Director General, ONGC Energy Centre, Delhi); Dr. A. K. Singh, Head Methane Group, CMMFR Dhanbad; Dr. S. N. Charan, NGRI, Hyderabad; Dr. P. S. R. Prasad, NGRI, Hyderabad participated in technical rounds.

Teachers and students from academic institutions found it very enlightening as it gave an insight into recent developments and the need for reducing carbon footprints in the energy sector.

2011

1st Workshop on Awareness on Green Building Responsible Education in Schools (AGBRES -I)

The workshop on **Awareness on Green Building Responsible Education in Schools (AGBRES-2011)** was held on 7th September 2011, dedicating to the Teachers’ Day at India International Centre (IIC). The workshop was sponsored by IIC and was organized by **Climate Change Research Society**. The workshop was unique in that the multi-disciplinary perspectives about **Green Buildings** were deliberated.



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Dr. T.N. Hajela (President, CCRS and Former Joint Secretary, UGC) presided over. Introducing the Workshop **Dr. Malti Goel (Programme Coordinator and Executive Director, CCRS)** observed that green buildings are necessary in view of the fact that India is going to witness huge infrastructure growth in the coming decades.



Glimpse from the event

Prof. D.P. Agrawal (Chairman, UPSC) inaugurated the Workshop. He highly commended this effort and said

that there is lack of awareness about the Green Building principles in the country. **Ms Maria-Sube Elodie (EU-India Action Plan)** spoke on the occasion about the green building policies & plans in European Union. Eminent scientist, **Dr. S. Z. Qasim (Former Secretary, DoD and Member, Planning Commission)** released the book “ABC of Green Buildings Responsible Education” on this occasion.

Sh. R.G. Gupta, (Former Commissioner, DDA) chaired the Technical Session. **Sh. Sushant Baliga (Ex-ADG, CPWD)** said minimizing the use of energy without loss of functionality is the need of the day. **Sh. Deependra Prashad (Principal Architect and Chief Consultant, DPAP)** outlined the need for environment learning and presented architectural design. Certificates were given to participating teachers. Vote of thanks was presented by Ms. Neha Tripathi, Ph.D. Scholar, SPA

Participation was open and included teachers and architectural students by invitation. It was a unique workshop aiming to create awareness about the green building concepts and solar energy use in schools.

2013

2nd Workshop on Awareness and Capacity Building in Carbon Capture and Storage (ACBCCS - II)

A National Level Workshop on Awareness and Capacity Building in Carbon Capture and Storage: Earth Processes (ACBCCS 2013) has been organized from January 15-19, 2013 in New Delhi. **Shri R.V. Shahi, Former Secretary, Ministry of Power** chaired the workshop. This awareness program was so conceived as to create understanding about the stabilization of carbon dioxide concentrations in the atmosphere through an emerging process of Carbon Capture, Utilization and Storage (CCUS) among the participants from academia and industry.

Dr. Harsh K. Gupta, Member, National Disaster Management Authority and Former Secretary,

Department of Ocean Development was the Chief Guest. In his Inaugural Address he said that the workshop is very timely and highly commendable. **Shri M. P. Narayanan, Ex-CMD Coal India** in his address suggested the need for involvement of coal sector in CO₂ sequestration research.

Shri D.K. Agrawal, ED NTPC described the NTPC's initiatives and action plan for reduction in the CO₂ footprints. The eminent faculty included **Dr. M.A. Atmanand, Director, NIOT, Chennai, Dr D.M. Kale, Director General, ONGC Research Center, Shri Prakash Hirani, NTPC and Prof P.S. Yadav, Manipur University, Imphal** among other distinguished experts.



Glimpse from the event

The five days workshop extensively covered different themes viz., ‘Carbon Capture, Status, International and National Overview’, ‘CO₂ Reduction in Power Sector’, ‘Earth Processes for CO₂ Sequestration’, ‘CO₂ Utilization and Policy and Regulatory Interventions in Abatement of CO₂ Footprints’.

2nd Workshop on Awareness on Green Buildings Responsible Education in Schools - (AGBRES - II)

A Workshop on Awareness in Green Buildings and Responsible Education in Schools (AGBRES II) was held on 13th March 2013 at the Seminar Hall-III, Kamala Devi Block, India International Centre, New Delhi. It was the second workshop in the series on Green Buildings organized by the Climate Change Research Institute (CCRI) in collaboration with the India International Centre on the theme **A Solar Rooftop**.

Dr. (Mrs.) Malti Goel, Executive Director CCRI extended warm welcome to all distinguished participants and presented the framework. Giving the background of solar energy programme. The Chief Guest, **Shri V. S. Verma, Member, Central Electricity Regulatory Commission (CERC)** described the current electricity scenario in the country and gave an overview of the total installation and generation capacities and how the regulatory mechanism is developing in the country for promotion of renewable energy sources.

Prof. N. K. Bansal (Late), Syntax Chair Professor in his Keynote Address gave an introduction of Green Buildings and Energy Conservation Building Codes (ECBCs) in Buildings. **Mr. Lavleen Singal, President,**

ACIRA Solar described the selection criteria for Rooftop installations and the economics of it. Students of Architecture attended the workshop with zeal and enthusiasm.



2014

3rd Workshop on Awareness on Green Buildings Responsible Education in School (AGBRES - III)

In an attempt to turn the spotlight on these recent developments emerging fast on economic scene in India Climate Change Research Institute jointly with India International Centre organized a workshop on ‘Green Buildings and Smart Cities’ on January 31st, 2014. India has immediate plans to develop seven ‘Smart Cities’ along the Delhi-Mumbai-Industrial-Corridor (DMIC) for freight transport; and in the medium term each State is expected to have at least one ‘Smart City’. **The workshop is supported by Ministry of New and Renewable Energy (MNRE).**



Shri Gireesh Pradhan, Chairman, Central Electricity Regulatory Commission and former Secretary, Ministry of New and Renewable Energy inaugurated the workshop. On Green Buildings, it is the third workshop in the series. Introducing the theme of the workshop **Dr. (Mrs.) Malti Goel, Executive Director CCRI** said that we have to find solutions for Green Buildings and Smart Cities, having sustainability concerns.

Glimpse from the event



Dr. Arun K. Tripathi, Director, MNRE in his address said that India has installed capacity of 2,30,000 MW and the share of renewable sources in 30,000 MW, which is more than 13% of total capacity. **Prof Mahavir, Head, Environment Planning, SPA** chaired the Technical Session. Panelists included from UNDP, TERI, SPA (Bhopal). Solar cities and Innovations (**Dr. Malti Goel**); What about Smart City and Green Buildings (**Mr. Karan Mangotra**); Use of information technology in assessing the solar potential of a region in Bhopal city (**Dr. Kakoli Saha**) and Solar rooftop programme of TERI (**Dr. Sudhakar Sundaray**) were the topics discussed.

The workshop was special in a way that architectural fraternity, teachers, students from Universal Public School as well as youth from various universities actively participated

2nd Interactive Workshop on Sustainable Habitat & Learning Environment

The Climate Change Institute jointly with India International Centre (IIC) and Society for Education and Economic Development organized the Workshop as part of World Environment Day Celebrations. Sgadesignlab was knowledge partner in this workshop. A number of real-time architectural



Glimpse from the event

design features in buildings especially educational campuses were presented in achieving sustainability.

Dr S. Y. Quraishi Ex- Chief Election Commissioner of India graced the occasion. He shared experiences from Haryana as **Power Secretary** and stressed on the need to adopt best practices in energy as well as water resources in the building sector. **Prof. G.D. Sharma, Former Secretary UGC**, in his Inaugural Address gave an account of an alternate model for development and linkages with general awareness about the issues of sustainability and environment. **Dr. S. Chatterjee, Registrar JNU** in his Address highlighted lack of discipline and chaos that exists in mega cities without a concern for environment.

Mr. Peter Cox, PCA Directions Australia in the Keynote Address described smart & sustainable cities in Australia from a building economist perspective. **Er. Ajay Raj, A2S Consulting Engineers** explained use of high efficiency chillers and automation for energy conservation. **Ar. Sandeep Goel, Sgadesignlab** in

his presentation on Green Educational Campuses in India, drew a holistic approach for considering sustainability in design of buildings in campuses through traditional and modern scientific approach. **Mr. Christopher Mitchell, AWW Inspired Environment, UK** gave highlights about the Sustainable learning environment in UK with an eye on interiors for School & Colleges.

Mr. Avinash Kumar SGS India Ltd on Green Building rating systems suggested the need for trust delivery between people, organization and government and making green buildings economical. **Ar. Sachin Rastogi, Zero Energy Design Lab** on a case study of NIAB campus in Hyderabad threw light on integration of micro climatic parameters in the building design stage. **Mr. Karan Mangotra, BEE (UNDP)** talked about energy efficiency and improvements achieved in commercial buildings through ECBC guidelines. Importance of Smart Cities was highlighted.

In the Workshop both national and international perspectives of experts towards low carbon pathways in building sector and also smart city development with case studies on challenges faced in academic complexes were shared.

2015

3rd Workshop on Awareness and Capacity Building in Carbon Capture and Storage and Utilization (ACBCCS-III)

CCRI had already organized two successful capacity building workshops on “**Awareness and Capacity Building in Carbon Capture and Storage and Utilization**” in 2009 and 2013. The 3rd workshop was organized from July 27-31, 2015 at India International Centre. The theme of the workshop was “**Carbon Dioxide Removal Processes in Energy Intensive Industry**”. **Dr M.O. Garg, Director General, CSIR** delivered the **Inaugural Address**. Esteemed personalities **Prof. D.P. Agarwal**, Former Chairman UPSC, **Dr. Ajay Mathur**, Director General, Bureau of Energy Efficiency, **Dr. Anupam Agnihotri**, Director, JNARDDC, Nagpur, **Dr Jyoto Parikh**, Executive Director, IRADe, **Prof. G.N. Qazi**, Vice Chancellor Jamia Hamdard University, **Shri Gautam Sen**, Member Ex-Executive Director, ONGC graced the event and addressed the participants.

Prof. Prabhat Ranjan
ED, TIFAC, **Dr. M. Sudhakar**, Member Advisor/Scientist 'G', MoES & Director, CMLRI, **Shri V. S. Verma**, Member Former Member, CERC, **Shri S. K. Pati**, Member Chief Environment Management, Tata Steel
Prof. T. Satyanarayan, Member Professor, University of Delhi, South Campus, **Prof. Tapas Bhattacharya**, ICRISAT, Patancheru, **Prof. V. B. Gupta**, Devi



Glimpse from the event



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Ahilya Bai University, Indore, **Prof. B.C. Tripathy**, JC Bose National Fellows School of Environmental Science, JNU, **Dr. K. Palanivelu**, Director, CCCAR, Anna University, Chennai, **Dr. (Mrs.) M. Premalatha** NIT, Tiruchirappalli, **Prof. P.S. Yadava**, Manipur University **Dr. P.S.R. Prasad**, NGRI, Hyderabad were part of the National Advisory Board as well as distinguished speakers.

2016

Brainstorming Discussion Meeting on Science Diplomacy

The Climate Change Research Institute (CCRI) organized a brainstorming discussion meeting on 'Science Diplomacy' jointly with Trans-

Disciplining Research Cluster in Sustainability Studies (TRCSS), JNU at IIC, New Delhi. The first 'brainstorming discussion on Science Diplomacy in South Asia' was held on 12th May 2016. **Prof. D. P. Agrawal, Former Chairman UPSC** said that Science diplomacy is crucial subject and we must safeguard



Glimpse from the event

interest of people who are partners in diplomacy.

Dr. (Mrs) Malti Goel, President & CEO, Climate Change Research Institute, described role of Science & Technology in Science Diplomacy, its importance, examples of various models and a brief background of South Asian countries.

Prof. P. N. Desai, Project Coordinator TRCSS & Director SASH & KN, JNU delivered the Keynote Address and said that development of productive linkages is prevented due to socio-economic, political, historical and technological barriers. **Dr. Kavita Sharma, President, South Asian University** talked of education diplomacy between USA and India. She questioned the very sense of science diplomacy in South Asia. **Sh. A. B. Agrawal, Executive Director, NHPC** talked about diplomatic relationships in hydropower development among South Asian countries.

Sh. A. K. Jain, Ex. Commissioner (Planning) DDA said India has a long history of cultural diplomacy since 2500 years when Buddhism spread all over South East Asia. **Sh. R. K. Sharma, Scientists 'E', DST** gave the background of S&T Collaborations in DST with 80 countries and said that there is need for S&T cooperation among the South Asian countries. **Dr. Nafees Meah, Director, Research Council UK, British High Commission** talked about UK's commitment to meet the global challenges and initiatives for science diplomacy. The concluding remarks were made by **Sh. Gautam Sen, Member, GC, CCRI**



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World Environment Day-2016 Workshop

The Climate Change Research Institute (CCRI) in a Social Responsibility initiative organized an Awareness Workshop on the theme “Implementation of Sustainable Development Goals” on the World Environment Day 2016 jointly with IIC, New Delhi on June 7th 2016.



Glimpse from the event

Dr. S.Y.Quraishi, Former Chief Election Commissioner of India delivered the **Inaugural Address** and highlighted the need for reducing consumption and conservation of natural resources in sustainable cities. **Shri A. K Jain, Ex-Commissioner (Planning), DDA** delivered the Guest Lecture on **Sustainable Green and Smart Cities** on this occasion. In his special address **Prof. D.P. Agarwal, Chairman of the Governing Council of CCRI** stressed on the importance of waste reduction and management as an important SDGs strategy. **Dr. Malti Goel, President & CEO, CCRI** introduced the theme and said that Sustainable Development Goals (SDGs) provide a vast canvas of activities. The CCRI mandate is to take actions for reducing carbon footprints by application of science & technology.

Prof. Meenakshi Dhote, Head-Environment Planning Division, (SPA) delivered the lecture on Urban & Environment Planning Strategies for Implementation of SDGs. Students and Environment activists participated in the workshop in large numbers. **Sumeet and Shailendra Singh**, students of School of Planning & Architecture presented their projects on ‘strategies to enhance the ecosystem services of Asola’ and ‘sustainability guidelines for planning of Rohtak’ as SDGs initiatives.

4th Workshop on Awareness on Climate Change Responsible Education in Schools (ACCRES - 2016)

Climate Change Research Institute organized Special Lectures in the Environment and Earth Care (EEC) series. On Children’s Day Prof. P.B. Sharma, Vice-Chancellor, Amity University Gurgaon delivered the Guest Lecture in “Innovative Solutions to Tackle the Monumental Challenges of Climate Change– Sharing Research & Innovation Experience at Delhi College of Engineering/Delhi Technological University, Rajiv Gandhi Proudyogiki Vishwavidyalaya and Amity University Gurgaon”. The event was organized at India International Centre Annexe on 16th November, 2016. The programme was organized by the Institute to create awareness among children about the climate change and the adverse effects on us and how to we can prevent these changes and sustain the environment.



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The welcome remarks of the programme were given by **Dr. (Mrs.) Malti Goel, CEO, CCRI**. Chairman's address was given by the **Prof. D.P. Agrawal, Chairman Governing Council, CCRI and Ex-Chairman, UPSC. Prof. P.B. Sharma**, in his lecture gave many examples of how climate change impact was tackled by innovative solutions by engineering student in various institutions under his guidance.



Glimpse from the event

The event was celebrated and was participated by large number of school children from class IX, X & XI from four different schools. After the lecture children raised many questions and there was a lively question and answer session.

2017

Awareness and Capacity Building on Advancing Sustainable Development Goals: Role of Science, Technology and Innovation (ACBSDG-2017)

The workshop was organized by **Climate Change Research Institute (CCRI)**, in association with **UN Global Compact Network India (GCNI)** and **India International Centre (IIC)**, the three distinguished organizations on July 27-28, 2017. The workshop theme on **Advancing Sustainable Development Goals: Role of Science, Technology and Innovation (ACBSDG- 2017)** gave a unique and first of its kind platform for the multi-stakeholders' consultations to create a suitable policy framework for realizing and discussing the on-going practices India. The invited speakers for this two days' workshop included eminent policy makers, leaders from various civil society groups, academic researchers, policy analysts, administrators, industrialists, bankers as well as corporate professionals.



Glimpse from the event

The students and teachers from the Academic and Management Institutes in Delhi and around namely; **EMPI Business School, New Delhi; Amity Institute of NanoTechnology, Noida; Jagannath Institute of Management Sciences, Kalkaji, G.L. Bajaj Institute of Management and Research, G. Noida and Institute of Management Studies, Ghaziabad** participated. Graduate and postgraduate students enthusiastically interacted with the speakers during the workshop.

2018

World Environment Day Workshop

The Climate Change Research Institute in a scientific social responsibility initiative organized a half-day Awareness Workshop on **Implementing Sustainable Development Goals in India: Beating Plastic Pollution** in line with the World Environment Day 2018 theme. **Conducted in collaboration with Indian International Centre, New Delhi**, the Workshop was held on 8th June, 2018 for wider dissemination of information and education about plastic pollution and control. **Prof. D.P. Agrawal,**

Chairman, GC, CCRI & Former Chairman, UPSC chaired the Proceedings of the World Environment Day 2018. **Dr. (Mrs.) Malti Goel, Chief Executive, Climate Change Research Institute (CCRI)** extended warm welcome to all the dignitaries, invitees and students present and introduced the Theme.



Glimpse from the event

Prof. R.K. Khandal, President, R&D and Business Development, India Glycols Limited, Ex-VC, UPTU & Former Director, SIIR delivered the Guest Lecture in the EEC Lecture Series. Shri A.K. Jain, Former Commissioner (Planning), DDA gave the Keynote Address. The other distinguished speakers; Shri Gautam Sen, Ex-ED, ONGC and Ex-Sr. VP, Reliance; Shri Rakesh Solanki, Independent Consultant, Plastic Waste Management; Shri Satish Sinha, Associate Director, Toxic Links; Er. Sourabh Manuja, Associate fellow and Areas Convener, TERI graced the occasion and shared their views describing innovative solutions about control of plastic pollution with the participants from educational institutions and civil society.

4th Workshop on Awareness and Capacity Building workshop on ‘Recent Advances in CO₂ Capture Technology and its sectoral Applications’ (ACBCCS IV)

The Climate Change Research Institute has specialized in Capacity Building workshops for young researchers and youth in the country to address critical challenges of carbon capture, storage and utilization to address climate change and benefit the environment. The workshop was organised in collaboration with Institute of Infrastructure Technology Research and Management, Ahmedabad. The workshop titled as ‘Recent Advances in CO₂ Capture Technology and Its Sectoral Application’ was held from August 29 - September 1, 2018, at IIC Convention Center, New Delhi. A Roundtable discussion on relevance of CCU to Power Sector and new Environment Norms was also held.

Honorable Shri Suresh Prabhu, Union Minister for Ministry of Commerce & Industry and Civil Aviation inaugurated the workshop. On this occasion high level dignitaries and experts from Academia as well as Industry delivered lectures on how carbon capture can become an opportunity. The Workshop held



Glimpse from the event

Lecture Sessions and field visit to NETRA the premier research center of NTPC Ltd. The ACBCCU-2018 created awareness and sensitized the researchers about challenges of CO₂ capture and utilization. Delegates had an opportunity to share very insightful and visionary deliberations.

2019

World Earth Day Workshop

The Climate Change Research Institute organized World Earth Day on April 25, 2019 at India International Centre, New Delhi, attended by 50 children from different schools in Delhi. Dr. (Mrs.) Malti Goel, Chief Executive and President, CCRI spoke on Global Warming and its relation to the World Earth Day 2019 theme on 'Protect Our Species'. An Essay Competition was held among the students from class X-XII from different schools to express our concerns for the need of improving our air quality and possible solutions.

Dr. M. Sudhakar, Director, CMLRE, Kochi delivered the Guest Lecture on **Conservation and Sustainability of Biological Resources on the Planet Earth: Present and Future.**



Glimpse from the event

The students were encouraged to make short presentations on **Environment in Delhi** from Universal Public School, Preet Vihar; Navyug School, Laxmi Bai Nagar and Navyug School, Moti Bagh. Dr. M. Sudhakar, Director, CMLRE, Kochi presented a copy of his book on **TAXONOMIC DISCOVERIES FROM**

NORTHERN INDIAN OCEAN, Eds. M. Sudhakar et al. to Dr. (Mrs.) Malti Goel.

Awards were given to the Winners in the Essay Writing Competition. The Institute distributed **WWF Badges and Certificates of Attendance** to all school children. The Institutes facilitated Guests and Participating teachers, on this occasion.

Bulletin Climate SAR on 'Plastic Pollution and Climate Change' Vol.5, No.2- published by CCRI was released on this occasion.

World Environment Day 2019 Workshop

The Climate Change Research Institute (CCRI) in association with India International Center held a Teachers' Training Workshop on **Activity Based Learning in Chemistry** on June 6-7, 2019 on World Environment Day 2019. The workshop was conducted in collaboration with the **Royal Society of Chemistry, Bangalore office.**

In the Inaugural Session Honorable Chief Guest Dr. V.K. Garg, Ex- CMD, Power Finance Corporation Ltd said that future development of any nation is in the hands of teachers. He described importance of chemistry in our life and gave innovative ideas on how to mitigate plastic



Glimpse from the event

pollution. Dr. (Mrs.) Malti Goel, President CCRI in the welcome remarks said that chemicals produced from natural resources enhance our life in many ways, but their overuse is accompanied by environmental pollution as well as adverse health impacts and cited example of Ozone Depleting chemicals.

Guest of Honor Prof. G.D. Sharma, Ex-Secretary UGC enlightened the participants about the need for changing the life styles to deal with the environment crisis due to climate change. Mrs. Maya Gupta, Director-Principal Universal Public School in the Keynote address gave examples from ancient Vedas and provided insights about teachers' role in creating environment awareness among children.

This was a unique workshop participated by forty teachers and mentors from different schools, who learned different techniques and playful tools in science learning.

World Ozone Day Workshop on Marine Ecology: Implementing Sustainable Development Goals 14

The Climate Change Research Institute in association with the Centre for Marine Living Resources & Ecology (CMLRE), Ministry of Earth Sciences and the Swadeshi Science Movement (SSM) organized the 'Marine Ecology: Implementing Sustainable Development Goals 14' workshop held in Kochi on 21st September 2019 at Atal Bhavan, Puthuvype. On this occasion Director CMLRE, Dr. M. Sudhakar, welcomed and introduced the **Deep Sea Mission** of Ministry of Earth Sciences to the students and faculties.

Chief Guest, Prof. D. P. Agrawal, Chairman, CCRI and Former Chairman, UPSC delivered the Inaugural Address. Dr. V.N. Sanjeevan, President, Swadeshi Science Movement addressed the participants about the SSM. Prof. Malti Goel, President & Chief Executive, CCRI gave the theme address on 'Ocean and Us: Marine Environment, Ecology and Sustainability'.

Distinguished speakers Shri V. S. Verma, Shri Gautam Sen, Scientist and Professor from Climate Change Research Institute, Prof. E. V. Ramasamy, from Mahatma Gandhi University and Scientists from Central Marine Fisheries Research Institute delivered lectures. Children participated in large



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number. The CMLRE event had wide media coverage.




Glimpse from the event

2020
Post COVID-19

World Environment Day Workshop

In collaboration with the **India International Centre (IIC)**, **Dr (Mrs) Malti Goel, President and Chief Executive, Climate Change Research Institute (CCRI)** delivered the environment day lecture on **"Post COVID-19: Future on Biodiversity"** as part of World Environment Day celebration on 5th June 2020. This year the Environment day marked the society's unified and digital response to our environmental crisis. **COVID-19 was declared as Pandemic on 11th March 2020.** Due to lockdown the event could not take place physically. The lecture was divided into four parts, i.e., **COVID-19, Biological Diversity, Challenges and Future Motivation.**

Synergy with Climate Change



- Increasing Greenhouse Gas accumulation giving rise to warming
- Almost three quarters of land surface and two thirds of ocean areas affected
- Growing Ocean Acidification
- The coral reefs are bleaching and been reduced to half
- Dramatic glacier melt are Polar Ice melting
- Extinction of various wildlife species leading to **Loss of Biodiversity**



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Shri V S Verma, Distinguished professor at Central Power Research Institute, Bangalore delivered the welcome address. The lecture was hosted during the World Environment Day week on the IIC Website. The link to webinar is <https://youtu.be/pFqUamiqYKc>.

Workshop on COVID-19 and 3Es for Atmnirbhar Bharat

Climate Change Research Institute (CCRI) conducted a virtual workshop in the honor of Teachers Day in association with Universal Public School, which falls on 5th September every year. The COVID-19 has posed many challenges in the way we live and the workshop aimed to discuss post COVID-19 challenges of 3Es; as Education, Environment and Economy of health for *Atmanirbhar Bharat*. The programme began with the beautiful *sholaks* recited by the students of Universal Public School with divine note.

Prof. D.P. Agrawal, Chairman GC, CCRI extended a warm welcome to all the teachers, students and participants create continued awareness among students and parents about safety from corona virus and the Challenges of 3Es are being faced at the national level. **Mrs. Maya Gupta, Director- Principal, Universal Public School** began with throwing light on how the education system in India has evolved since the ancient



Glimpse from the event

times and got transformed from traditional Gurukuls to Schools. She added that during corona times there have been many challenges for School Education. The COVID-19 has changed the dynamics of schooling, but no year can be called as “zero learning year”.

Prof. G. D. Sharma, Former Secretary UGC and Ex-Director CEC gave a Guest Lecture on “Challenges reaching out to Students during Pandemic and Post Pandemic”. **Dr. Dr. Bhawana Awasthi, Chief Medical & Clinical Oncology, Indian Spinal Injuries Centre, Dr. Neha Tripathi, Assistant Professor, SPA and Dr. (Mrs) Malti Goel, President CCRI and Former Senior Adviser DST** also spoke on the occasion highlighting the Environment and Health challenges.

The Webinar was attended by 125 school teachers and students from different schools. Proceedings have been brought out.

International Conference on Recent Advances in Mechanical Infrastructure

Dr.(Mrs.) Malti Goel, President and CEO, Climate Change Research Institute, delivered the Keynote Lecture on 6th August 2021 at the Inauguration of the International Conference organized by Prof A.K. Parwani, IITRAM Ahmedabad, Gujarat. Dr Malti talking on Energy Infrastructure for Climate Change Mitigation, shared concepts of climate change, India's commitment made in Paris and the challenges in development of climate friendly energy infrastructure, as below.

Is Climate Change Happening Now?

- Understanding of future Climate Change are made from learnings of past climate change or paleo-climate record.
- Climate Change occurs as natural and anthropogenic.
- Anthropogenic climate change date backs to 125 years, but natural climate changes have occurred for millions of years.

Third International Conference on Recent Advances in Mechanical Infrastructure(ICRAM-2021) conducted by Institute of Infrastructure Technology Research and Management(IITRAM),Ahmedabad,Gujarat from 6th to 8th August 2021



Commitments to Paris Agreement-2015

- India Plans to reduce its carbon emission intensity,i.e., the emission per unit of GDP, by 33-35% from what it is was in 2005,by 2030
- The aim is to have 40% of the total electricity capacity from sources other than fossil fuels
- To enhance CO₂ sinks by 2.5-3 Billion tonnes per year by 2030. it may require increasing forest cover to 25% from 22%

Basic Steps in Carbon Capture Utilization and Storage (CCUS)

- Capturing of Carbon Dioxide (CO₂) from the Atmosphere from point sources or direct air capture,
- Liquefying and transporting the captured CO₂ to appropriate locations for storage or utilization
- Storing CO₂ either in terrestrial or geological formations or converting it into value added products.



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e-News Alert on Climate Change

Northwest heat wave impossible without climate change

Date: July 8, 2021

Published by: The Times of India

Summary: The deadly heat wave that roasted the Pacific northwest and western Canada was virtually impossible without human-caused climate change that added a few extra degrees to the record-smashing temperature

[Read more...](#)



How climate change and fires are shaping the forests of the future

Date: July 14, 2021

Published by: Science Daily

Summary: As temperatures rise, the risk of devastating forest fires is increasing. Researchers are using artificial intelligence to estimate the long-term impact that an increased number of forest fires will have on forest ecosystems. Their simulations show how Yellowstone National Park in the USA could change by the end of the century.

[Read more...](#)

Extraordinary carbon emissions from El Nino-induced biomass burning estimated

Date: July 15, 2021

Published by: Science Daily

Summary: In 2015, massive biomass burning events occurred in Equatorial Asia which released a large amount of carbon into the atmosphere, whose signals were captured by in-situ high-precision measurements onboard commercial passenger aircraft and a cargo ship. A simulation-based analysis with those observations estimated the fire-induced carbon emissions to be 273 Tg C for September - October 2015.

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Climate change to bring more intense storms across Europe

Date: July 16, 2021

Published by: Science Daily

Summary: Investigating how climate affects intense rainstorms across Europe, climate experts have shown there will be a significant future increase in the occurrence of slow-moving intense rainstorms. The scientists estimate that these slow-moving storms may be 14 times more frequent across land by the end of the century. It is these slow-moving storms that have the potential for very high precipitation accumulations, with devastating impacts, as we saw in Germany and Belgium.

[Read more...](#)

How climate change fueled the devastating floods in Germany and northwest Europe

Date: July 16, 2021

Published by: Vox

Summary: After historic rainfall caused devastating flooding that killed more than 100 people in northwestern Europe and left more than 1,000 missing, officials and scientists aren't being coy about the main culprit: climate change. There are two main links between climate change and extreme rainfall events. First, a one-degree rise in temperature has the potential to give you a 7% increase in the intensity of rainfall," and "the second point is that the poles are increasing in temperature at two to three times the rate of the equator.



[Read more...](#)



Catastrophic floods to be 14 times more frequent across Europe, study blames climate change

Date: July 22, 2021

Published by: India Today

Summary: Climate change is unleashing new challenges across the world, while one part burns under intense heatwaves and wildfires, another is submerged due to heavy flooding and excess rains. At least 171 people were killed in Germany when small rivers swelled quickly into raging torrents following heavy downpours.

Climate scientists have long predicted these extreme events due to climate change.

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Heavy rain in India triggers floods, landslides; at least 125 dead

Date: July 24, 2021

Published by: Reuters

Summary: Rescue teams in India struggled through thick sludge and debris to reach dozens of submerged homes as the death toll from landslides and accidents caused by torrential monsoon rain rose to 125. Maharashtra state is being hit by the heaviest rain in July in four decades, experts said. Downpours lasting several days have severely affected the lives of hundreds of thousands, while major rivers are in danger of bursting their banks.



[Read more...](#)

The impact of climate change on Kenya's Tana river basin

Date: July 23, 2021

Published by: Science Daily

Summary: Many species within Kenya's Tana River Basin will be unable to survive if global temperatures continue to rise as they are on track to do - according to new research. A new study outlines how remaining within the goals of the Paris Agreement would save many species. The research also identifies places that could be restored to better protect biodiversity and contribute towards global ecosystem restoration targets.



[Read more...](#)

A round-up of India's worst climate change events in 2021

Date: July 26, 2021

Published by: First Post

Summary: The monsoon from June to September also brings danger from the skies. In 2019, lightning strikes killed almost 3,000 people. Swathes of India are battling deadly floods and landslides after heavy monsoon rains, just the latest example of how the vast country is on the frontline of climate change. In the first seven months of this year alone the impoverished nation of 1.3 billion people has experienced two cyclones, a deadly glacier collapse in the Himalayas, a sweltering heatwave and killer floods.



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Achieving equitable access to energy in a changing climate

Date: August 5, 2021

Published by: Science Daily

Summary: Access to modern, reliable, and affordable energy services is a must for development and ensuring a decent quality of life. Researchers used a novel bottom-up approach to analyze how access to energy services may evolve over time under different scenarios of socioeconomic growth and policy scenarios that meet climate mitigation goals.

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Climate change: The IPCC environmental warning India cannot ignore

Date: August 10, 2021

Published by: BBC News

Summary: If the Intergovernmental Panel on Climate Change (IPCC) report was just about rushing countries to cut their carbon emissions to avoid a climate catastrophe, India could perhaps afford to look the other way. India has not followed suit even after several other major carbon emitters announced that they would become carbon neutral by 2050, not even after China set for itself the 2060 deadline. India has ranked seventh in a major climate risk index of 2019.



[Read more...](#)



UN climate change report warns India of a rise in extreme weather events

Date: August 13, 2021

Published by: Scroll.in

Summary: Throughout the world, heatwaves are likely to become more intense and frequent in the 21st century. The latest IPCC report has also devoted a separate chapter to extreme weather events, emphasizing compound events: compound extreme events are the combination of multiple drivers and/or hazards that contribute to societal or environmental risk. The 6th IPCC Report clearly mentions Indian sub-continent will have a 20 % surge in extreme rainfall events.

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India to meet climate goals, be green hydrogen hub: Modi on Independence Day

Date: August 15, 2021

Published by: The Hindustan Times

Summary: Prime Minister Narendra Modi set the country a target of 2047, India's 100th year of freedom from British rule, to achieve self-reliance in energy production. On the occasion of India's 75th Independence Day, he said it is the only country among the G-20 nations that is on the path of meeting its climate goals. The country aims to become a net-zero carbon emitter by 2030 and highlighted that work was underway for 100% electrification of Indian Railways.



[Read more...](#)

Increased snowfall will offset sea level rise from melting Antarctic ice sheet, new study finds

Date: August 19, 2021

Published by: Science Daily

Summary: A new study predicts that any sea level rise in the world's most southern continent will be countered by an increase in snowfall, associated with a warmer Polar atmosphere. Using modern methods to calculate projected changes to sea levels, researchers discovered that the two ice sheets of Greenland and Antarctica respond differently, reflecting their very distinct local climates.



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The Environment Is Still Not an Idea Whose Time Has Come

Date: August 5, 2021

Published by: The Wire Science

Summary: The environment is still not an idea whose time has come, notwithstanding the shock value of the latest climate assessment, of nations failing to adhere to their climate commitments. India is not far behind. It is estimated that we will soon become the world's third largest energy consumer after China and United States with India likely to claim a quarter of the global energy demand between 2019-2040 which will be the highest for any country



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Climate change: In Glasgow, India should take the lead

Date: August 24, 2021

Published by: Deccan Herald

Summary: In the developed countries, the IEA report has resulted in governments holding discussions to make appropriate policy changes in the energy sector; in India, there has been a deafening silence. India feels that since the developed countries have precipitated the climate change crisis, they should shoulder the main burden.

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BRICS adopts 'New Delhi Statement', India stresses on climate equity

Date: August 28, 2021

Published by: India TV

Summary: The Environment Ministers adopted the New Delhi Statement on Environment, which is aimed at furthering spirit of Cooperation for Continuity, Consolidation and Consensus in Environment among BRICS Nations. India, at the 7th meeting of the BRICS Environment Ministerial 2021, stressed on the need for taking concrete, collective global actions against global environment and climate changes, guided by equity, national priorities and circumstances, and the principles of 'Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)'



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India is indeed walking the green talk

Date: August 31, 2021

Published by: The Hindu

Summary: Even with all its challenges, the country is setting a global example in meeting its Nationally Determined Contributions. At the 5th anniversary of the Paris Agreement on Climate Change (December 2020), India was the only G20 nation compliant with the agreement. Also has been ranked within the top 10 for two years consecutively in the Climate Change Performance Index, released by an independent international organization that evaluates the performance of countries emitting 90%+ of global greenhouse gases (GHGs).



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Picture courtesy- Internet

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Climate Change Research Institute is publishing the bimonthly e-Magazine. This is fourth issue in the series. We hope you will enjoy reading it, if you want to share your views or send any article related to climate change, or if you want to apply for the membership to climate Change Forum for Youth in India, please feel free to reach us out at president.ccyf@gmail.com, contactus@ccri.in.



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