Workshop Report on:

MEDIA DIALOGUE ON CLIMATE CHANGE TOWARDS COP 28: EQUITY, SCIENCE AND POLICY

Thirty years of international effort since the Earth Summit has witnessed the global dialogue on climate change and sustainability steadily widening in scope and depth. They have brought forth many new initiatives and efforts, leaving no sector of human activity and social and economic life untouched by scrutiny through the lens of resilience and sustainability.

In building such a scientific understanding, the media has an essential role to play. Given the pace and breadth of scientific advance across the world, and across different branches of natural and social sciences, including technology and disciplines such as public policy, the role of the media is rising in importance as an essential part of the knowledge dissemination that is essential to informed climate action. However, this requires a nuanced understanding of climate science and policy that is adequate to the task of representing uncertainty, of representing policy debates fairly, or not giving up a critical outlook and not surrendering to groupthink, all of which are key to understanding the global discourse on climate change. Building such an understanding in the media needs regular interaction between scientists and media persons through in-depth interaction that provides the foundations for informed and insightful media coverage of sustainability and climate change.

MSSRF and its work have been featured in the media on a regular and continuing basis, together with some media coverage of its annual conference and other thematic meetings held from time to time. Keeping this in the background, it was proposed to restart a series of media dialogues at MSSRF. The first of these was held on the topic of climate change. The dialogue titled “Media Dialogue on Climate Change Towards COP 28: Equity, Science and Policy” covered critical aspects of the current climate debate and its nuances, especially the linkage between science and policy, and issues of equity in climate change policy and showcased current and potential climate change solutions on the ground. The dialogue also focussed on the issues that would be a point of focus in the upcoming COP 28 to be held in UAE.

Mode of the media dialogue:
The dialogue had keynote/background lectures and panel discussions. The lectures provided background material in a pedagogical fashion, while the panel discussions explored the debates on particular aspects of climate policy and climate action. Both had adequate Q&A time for the participants to interact closely with the speakers.

Participants:
Based on applications invited for the workshop, journalists and media who were actively engaged on issues of climate change, environment and development with an interest in broadening their perspectives on climate issues were invited and selected to attend the two-day media dialogue/workshop. More than 75 applications from throughout the country were

received. Out of those, a total of 20 participants from around the country were selected and attended the workshop.

Day 1- September 4, 2023

The media dialogue started with a welcome address from Dr G.N. Hariharan, Executive Director, MSSRF, who explained to the participants the vision and work of the Foundation. Ms. Sangeetha Rajeesh, Director of Communications, MSSRF, introduced the dialogue and set the agenda for the media dialogue. Dr T Jayaraman, Senior Fellow, Climate Change, briefed the participants on the Climate Change programme in the MSSRF and the important work the foundation has been engaged in on issues of adaptation and livelihoods since its inception.

Mr. N. Ram, former Editor-in-Chief of The Hindu and Group publications and Director of The Hindu Publishing Group, formally set the stage for the media dialogue on Climate. Mr Ram spoke on the importance of media, the need for media to be accessible to young people, and the role of evidence and the magnitude of the threat in science-based reporting and journalism. He pointed out the role that journalism should play in keeping the epistemic trespassing by scientists in fields which are beyond their area of expertise. He spoke on the threat climate change posed to the global South and their development imperatives. Mr Ram further spoke on the role India has played in climate agreements and how India has never been a country of climate deniers. Mr Ram, in conclusion, spoke on the importance of critical analysis in journalism, the role of credible information and independent thinking and the importance of the media dialogue to cater to this.

Session 1: Climate science for climate journalists

Session 1.1

The first part of the first session of the workshop was on the topic "**What and how of global warming**" and was delivered by **Mr Sandeep Mahato**, Consultant, Climate Change, MSSRF. The speaker's talk on global warming and climate change highlighted several key points:

- **Interconnectedness of Global Warming and Climate Change:** Global warming serves as a major catalyst for broader climate shifts, and feedback loops exacerbate these effects.

- **Forces Behind Climate Change:** The speaker emphasised that both natural and human-made factors impact our climate. Understanding radiative forcings is crucial in this context.

- **Role of Greenhouse Gases (GHGs):** Greenhouse gases, each with varying energy absorption capabilities, play a critical role in heat retention. Carbon dioxide (CO_2) was highlighted as a dominant contributor to the greenhouse effect.

- **Variability and Climate Models:** Warming effects are not uniform across regions, and climate models, while valuable for predicting future scenarios, carry inherent uncertainties.

- **The Importance of the Bigger Picture:** The speaker stressed the significance of comprehending the science behind these changes. This knowledge is essential for making informed decisions and effectively communicating strategies to address climate challenges.

Overall, the talk provided a comprehensive overview of the intricate relationship between global warming, climate change, and the forces driving these phenomena, emphasising the need for informed action and communication

Session 1.2

The second part of the first session of the workshop was on the topic "**Cumulative emissions, carbon budgets and temperature targets: The new insights from IPCC**". The session was handled by Dr. Tejal Kanitkar, Associate Professor National Institute of Advanced Studies (NIAS).

The speaker covered the following topics:

- **Cumulative Emissions:** The near-linear relationship between cumulative anthropogenic CO_2 emissions and the global warming they cause. From a physical science perspective, limiting human-induced global warming to a specific level requires limiting cumulative CO_2 emissions.
- **Global Carbon Budget**: Explanation of the need to stay within a global Carbon Budget for a specific temperature target drawing from the science of cumulative emissions. How the global carbon budget is calculated based on historical emissions and the remaining levels of carbon budget based on different assumptions.
- **Historical Responsibility:** The cumulative emissions share of Annex 1 and Non-Annex countries and the disproportionate share of emissions from the Annex 1 countries with respect to their population.
- **Net Zero Targets:** The issues with net-zero emission targets and the importance of cumulative emission targets and not the timing of "net-zero". The speaker demonstrated through data and examples how the time of reaching net zero does not determine the level of warming but the amount of emissions during the period of reaching net zero. The Climate Equity Monitor website was used as a tool to explain many of the topics covered.
- **Unpacking the Shared Socioeconomic Pathways:** Concepts of storylines (pathways) in SSPs and the differences between RCPs and SSPs. Discussion on the carbon debt owned by Annex-1 nations to the rest of the world.
- **Fair Share of Carbon Budgets:** The remaining amount of carbon budgets for specific temperature targets and the net-zero timelines that need to be followed to meet those targets.

Based on the questions asked by the participants, there was a discussion on the topics related to the significance of peaking year of emissions, the challenges in terms of cost and storage

for integrating renewable energy in the energy infrastructure, the technological progress and barriers in carbon capture and storage, and climate finance. Some of these topics were later also discussed in depth by other speakers in the later sessions of the workshop.

Session 1.3

This session was titled **"Cattle and Chulhas: The story of methane and black carbon"** and was delivered by Dr. T Jayaraman, Senior Fellow, Climate Change, MSSRF.

The speaker highlighted the following topics:

- **Key Issues for Mitigation:** The speaker gave a brief on the role of different GHG gases, different anthropogenic activities responsible for their emissions and discussions around limiting temperature increase to appropriate limits and relationships of different mitigation strategies to economic and social well-being.
- **The Methane Story:** The difference between methane and carbon dioxide, standard procedures to measure the impact of methane in terms of equivalent carbon dioxide and the problems associated with those measurement procedures. The speaker stressed that methane reduction is of value only when it is additional to rapid CO2 reduction and that independent methane pledges may be misleading as they suggest methane reductions can be traded for CO2 increase.
- **The Global Methane Pledge: The speaker described the** Zero Methane Pledge and highlighted its inadequacy. Focus on methane is a distraction from cumulative CO2 emissions, which needs to be the real focus. Methane reduction is of value only when it is additional to rapid CO2 reduction.The pledge has primarily been promoted by the United States and there has been a fixation of the United States with methane while they continuously refuse to stay within the remaining carbon budgets. The speaker showed how the emission models continuously assume high levels of methane reduction (short-lived climate forcer) to estimate carbon budgets while the methane pledge divests from the more critical carbon dioxide emissions.
- **The Black Carbon story:** It is another short-lived climate forcer that comes from biomass burning in chullahs and diesel exhausts. Black Carbon has a positive effect on warming but compared to other GHGs it is a very small contributor. Black carbon and other aerosols are emitted from incomplete burning of fuels.
- **Effect of Aerosols:** The speaker stressed that air pollution and climate mitigation are not conjoined issues and these needed to be addressed separately. Aerosols have a net cooling effect and in South Asia more aerosols in comparison to Europe has masked the effect of increased precipitation from global warming.

In the end the speaker emphasised that addressing environmental issues and greenhouse gas (GHG) mitigation doesn't always lead to automatic win-win outcomes. While reducing air pollution is certainly a highly desirable objective in itself, it's misleading to promote it as a direct solution for GHG mitigation. Additionally, the rapid reduction of emissions can inadvertently decrease the net cooling effect of aerosols, presenting a complex technological challenge with no clear solution at hand. The speaker cautioned against attempting to resolve this challenge by juggling calculations involving methane reduction and aerosol reduction, as it may generate theoretical scenarios but doesn't necessarily translate into practical and effective actions to combat climate change.

Session 1.4

The session titled "**Disasters and extreme events: What is and what is not climate change"** was conducted by Dr. T. JayaramanThis session provided insights into the science and debates around the detection and attribution of climate extremes and disasters.

The speaker covered the following topics:

Disasters: Dr. Jayaraman highlighted that while disasters have a relatively short history of intense study, considerable actionable knowledge has been accumulated over the years. Major positive achievements were discussed, including the decline in mortality rates for various types of disasters, showcasing the effectiveness of disaster management efforts.
The importance of global cooperation and knowledge exchange in addressing disasters was emphasised.

Extreme Events and Climate Change: The speaker explained how climate change will change the behaviour of extreme events and in a warming world, there may be an increase in the intensity and frequency of extreme weather events, but it may not be uniform and will have a lot of regional variations and different probabilities. The speaker showed examples of how these nuances on many occasions are either missed or misrepresented in the reporting of extreme events in media

Major Shortfalls: A major concern discussed is the disparity in aid and finance allocation, particularly evident in developing countries like those in the Caribbean. Global inequalities were shown to be reflected in the relative vulnerability of different regions to disasters, which requires more attention. The speaker pointed out the challenges of recovery, particularly in Least Developed Countries, where the resources and infrastructure to bounce back are limited.

Detection and Attribution (IPCC Definitions): The session delved into the definitions and significance of detection and attribution in climate science. Detection was explained as the process of demonstrating climate change without necessarily providing reasons for it, while attribution involves evaluating the various causal factors contributing to a specific change or event.

Key Role of Uncertainty and Probability: Uncertainty and probability were stressed as central to weather and climate change predictions. Dr. Jayraman noted that it is common for the public discourse to vacillate between certainty and unpredictability, which can be challenging for scientists and policymakers alike. Acknowledging uncertainty and probability and seeking accuracy was emphasised as a legitimate approach and not climate denial.

Challenge of Detection and Attribution: The session highlighted the dependence on climate models and data for detection and attribution studies. Climate variables that are more predictable, like temperature-driven phenomena, were identified as more amenable to detection and attribution, while precipitation-related events posed greater challenges.
Dr. Jayaraman provided examples, such as the UK's use of distributed computing for attribution studies.

Political Challenges: Common avoidance of detection and attribution studies was discussed, with potential implications for some global civil society organisations and developing countries seeking economic assistance. Concerns about the promotion of alarmism and the sidelining

of equity with alarmism while equating all poverty eradication and development goals with climate mitigation and adaptation were discussed.

In conclusion, the session shed light on the complex landscape of disasters and extreme events, with a particular focus on detection and attribution and the problems with climate alarmism. The session also shed light on the issue that we need to be wary of conflating mitigation and adaptation measures that may arise in many scenarios and resist the bogie of maladaptation.

Session 2: The global agenda: Implementing the UNFCCC and its Paris Agreement

Session 2. 1

The session was titled as **"From Binding Commitments to Voluntary Contributions: The Making of the Paris Agreement".** The session was delivered by Dr. T. Jayaraman.

The speaker covered the following topics:

1. **UNFCC and subsequent summit:** History of the UNFCCC and other treaties before the Paris Agreement. Role of India in framing the UNFCCC document and the importance of the treaty in terms of its devotion to equity and recognising a differentiated world in responsibility and allocation of rights. US withdrawal from the Kyoto Protocol and the inadequate targets, parties who met and did not meet the targets of the Kyoto Protocol, were discussed.
2. **Emission track and changing of goalposts:** Discussions and actions of essential summits like the Bali Summit and Copenhagen Summit with the return of the US, voluntary actions and introduction of 2-degree Celsius targets, Durban summit and agreement to have an agreement which led to Paris Agreement.
3. **Global climate action from 2021 and onwards:** The speaker discussed the changing of goalposts of emissions post-2021, the coming back of the US, and the pressures to enhance NDCs for 2023 without the discussions of historical over-use of carbon space.
4. **New focus on Net-Zero by 2050:** The speaker covered issues of global requirement being interpreted as regional and national goals, the use of IPCC AR6 to push net-zero narrative that are scientifically insufficient measures to define temperature rise and implications of overuse of remaining carbon space by Annex-1 and China. The speaker also briefly talked about the myth of energy transitions created by the developed nations where the transitions have mostly happened from coal to gas or oil and not renewables as widely regarded.

Session 2.2

The session was titled "**Global warming in an unequal world: Equity in the climate negotiations"** and was delivered by Dr. Aravindhan Nagarajan, Assistant Professor, Azim Premji University, Bengaluru. The session aimed to elucidate the concept of equity in the context of climate discussions and its significance for developing nations. Dr. Nagarajan also

discussed the application of equity framework to assess various mitigation approaches using Integrated Assessment Models (IAMs) as a case study.

Key Points Discussed:

1. **Equity in Climate Negotiations:**
    - Dr Aravindhan described the concept of equity in climate negotiations, highlighting its centrality within the United Nations Framework Convention on Climate Change (UNFCCC).
    - He emphasized the need for a consensus on operationalizing equity, making it a key challenge in international negotiations.
    - The assessment of mitigation targets set by different country groups was discussed as a crucial aspect of equity discussions.

2. **Four Aspects of Equity Operationalization:**
    - Equity was defined across four broad aspects: scientific (carbon budget and temperature), historical responsibility, Annex-1 and Non-Annex equity (fair sharing of carbon space and entitlements), and equitable development.
3. **Carbon Space and Fair Sharing:**
    - Dr Nagarajan emphasized that the carbon space for a given temperature target is a common global resource that is limited and diminishing rapidly.
    - He pointed out that a disproportionate share of this resource has already been consumed by developed nations, making fair sharing a fundamental principle of equitable climate action, especially for the future.
4. **Targets and Flows:**
    - Two different approaches to mitigation targets were discussed: flow-based and cumulative emission-based.
    - Flow-based targets were critiqued for not specifying how a country will achieve emissions reductions and their potential to exceed equity and fair share principles.
    - Flow-based approaches were described as a "fair share of the mitigation burden."
    - The carbon budget approach, exemplified by the TISS-DSF model, was presented to consider historical emissions, fair sharing, and entitlements.
5. **Pathways and Integrated Assessment Models (IAMs):**
    - Dr. Nagarajan introduced how IAMs as models are used to project future scenarios for meeting temperature targets using various modelled scenarios with their inherent assumptions.
    - The speaker raised essential questions about the equity implications of these pathways and their potential to perpetuate global inequalities.
6. **Modelling Inequity and Insecurity:**
    - The Agriculture, Forestry, and Other Land Use (AFOLU) sector's role in mitigation in the scenarios and its implications for food security were discussed.
    - Dr Nagarajan pointed out potential issues related to land use for energy crops, food price increases, and the suppression of food consumption.
    - He emphasized how emission reductions are more allocated to regions where they can be achieved most cost-efficiently, disregarding ideas of equity and development for the developing world.

The session highlighted the highly unequal outcomes of most mitigation scenarios and how developing countries should be advised not to use these scenarios as benchmarks in negotiations due to their inherent regional inequalities. The session provided a comprehensive understanding of the equity issues in global climate negotiations, the complexities surrounding mitigation pathways, and their implications for the unequal world.

Session 2.3

The session was titled **"Show me the money-The story of Climate Finance"** and was taken by Mr. Indrajit Bose, Global Policy Lead, Climate Action Network International. The session discussed finance within the global climate regime, highlighting various aspects, including international agreements, international north-south political dynamics, financial instruments, and key issues in climate finance negotiations.

Key Topics Discussed:

1. **Climate Finance in the Convention:**
    - Explored key articles in the Convention (Article 4.3, 4.4, and 4.7) emphasizing the financial obligations of developed countries towards developing countries.
    - Climate Finance in the Paris Agreement (PA): Analyzed provisions in the PA (Articles 9.1, 9.2, and 9.3) regarding financial assistance for mitigation and adaptation, emphasising the role of developed countries in providing finance with a focus on adaptation.
2. **Key Political Finance Fights at UNFCCC:**
    - Examined critical issues, including climate finance definitions, funding sources (public vs. private), types of instruments (grants vs. loans), availability of finance, recognition of developing countries' needs, access to finance, and the balance between mitigation and adaptation finance required currently.
3. **Politics of the USD 100 billion goal:**
    - Delved into the political aspects surrounding the USD 100 billion per year by 2020 goal, including accountability, reporting mechanisms, and unfulfilled promises.
4. **UNFCCC Finance Institutional Architecture:**
    - Provided an overview of key financial institutions and critique like the Green Climate Fund (GCF), Global Environment Facility, Adaptation Fund, Least Developed Countries Fund (LDCF), Special Climate Change Fund (SCCF), and Capacity-building Initiative for Transparency (CBIT).
5. **Green Climate Fund (GCF):**
    - Highlighted GCF's mission, the requirement of a balanced approach to mitigation and adaptation, its governance structure, and resources committed.
6. **Typical Disputes in the GCF:**
    - Discussed common disputes within the GCF, including debates between donors and contributors, the choice between grants and loans, eligibility criteria for countries, shifting of responsibilities from the global north, and the balance required between mitigation and adaptation with the current finance shift towards mitigation.
7. **Key Finance Issues for COP 28:**
    - Outlined important finance-related topics for COP 28, such as fulfilling the USD 100 billion per year goal, defining climate finance, doubling adaptation finance, and addressing issues related to GCF and the Loss and Damage Fund.
8. **Tips for Finance Negotiations:**
    - Provided practical advice for navigating finance negotiations to media, including monitoring webcasts, understanding stakeholder positions, reviewing submissions, and asking critical questions about funding instruments, beneficiaries, and allocation channels.

In conclusion, Mr. Indrajit Bose's workshop session comprehensively covered the multifaceted landscape of climate finance, from international agreements to practical negotiation strategies.

It shed light on the challenges and opportunities in funding climate-related initiatives and emphasized the importance of transparency and accountability in the process.

Session 2.4: Panel Discussion on Looking ahead to COP 28

Chaired and Moderated by: **Dr J R Bhatt**, Former Advisor, MOEFCC, GOI and Adjunct Professor, NIAS, Bengaluru

Dr Tejal Kanitkar:

Dr. Kanitkar's discussion during COP 28 focused on key issues in climate negotiations. She highlighted the concerted efforts by developed countries over the past two years to undermine the principles of equity and differentiation across various climate agenda items, even in scientific and technical discussions. This has led to a false dichotomy between equity and ambition, with some arguing that ambition can only be achieved by sacrificing equity, which lacks a scientific basis.

She stressed the urgency of addressing climate change, particularly for vulnerable nations like small islands and least developed countries (LDCs). Dr. Kanitkar criticized the global targets that have gained widespread attention, such as a 43% reduction in greenhouse gas emissions by 2030 and net-zero emissions by 2050. She questioned the equity of these targets and their underlying basis. Dr Kanitkar elaborated on how the scenarios being imposed on the world do not consider equity; instead, they perpetuate levels of global poverty for a majority of the Global South and even project increasing hunger into the future. This poses a significant problem, as whether this science should be used as a benchmark against which equity should be measured remains a serious question.

The pre-2020 period was a point of contention, with developed countries seeking to exclude it from assessment under the Paris Agreement. Dr. Kanitkar argued that this approach lacked scientific or logical justification.

Regarding adaptation, she pointed out that developed nations preferred vague goals, while developing countries sought concrete targets. The blurring of mitigation and adaptation in discussions posed challenges, as did the introduction of terminology like "transformational adaptation," "maladaptations," and "limits to adaptation" in IPCC targets. She elaborated on how any conversation on adaptation is likely to focus on maladaptation, defined as any adaptation action that increases emissions or changes ecosystems, potentially including human shelter or irrigation. Transformational adaptation, which does not simultaneously mitigate, is considered bad, and limits to adaptation indicate that beyond a certain temperature rise, adaptation becomes impossible.

Dr. Kanitkar emphasized that just transitions should focus on a global perspective rather than national economies. This approach would operationalize equity and common but differentiated responsibilities (CBDR&RC). She highlighted the unique challenges developing nations face, including energy needs and workforce impacts in transitioning to cleaner energy sources. Energy security and affordability remained vital concerns for these countries.

In conclusion, Dr Kanitkar's remarks underscored the importance of maintaining equity, differentiating responsibilities, and ensuring fairness in climate actions and targets, particularly for developing nations. She emphasized the need to address the false dichotomy between equity and ambition, scrutinize global targets, and consider the specific challenges of each country in the context of climate transitions.

Mr Indrajit Bose:

Mr Bose began by highlighting the significance of COP 28, emphasizing the substantial media attention it would receive, with numerous announcements and the first-ever Global Stocktake taking place. He noted that traditionally, Western media has dominated this space and often portrayed developing countries as villains due to a lack of understanding of their context and reality. He called on journalists to provide a balanced perspective that reflects the voices of people and to expose the politics at play.

The focus of COP 28 would include calls for phasing out fossil fuels, with civil societies advocating for an equitable phase-out led by developed countries and accompanied by a just transition plan. Dr Bose questioned why developed nations continued to invest in offshore fossil fuel projects, shut down renewable energy plants, and return to coal, issues that needed scrutiny.
He emphasized the interconnectedness of mitigation, adaptation, finance, loss, and damage. Developing countries consistently called for balanced progress across these issues, as insufficient mitigation had occurred due to unfulfilled promises by rich nations, leading to the growing impacts that made adaptation crucial. Mr. Bose pointed out that the weakening of the text regarding finance support for adaptation during COP 27 was concerning.

Loss and damage were highlighted as key outcomes of COP 27. Dr. Bose focused on two key areas: the loss and damage fund and funding arrangements. He mentioned that while COP 27 established the loss and damage fund and new funding arrangements, the transitional committee had been tasked with recommendations for operationalizing the fund and funding arrangements. Developing countries argued that there are already institutions and structures in place, such as the World Bank and humanitarian organizations, working on loss and damage. They suggested capitalizing on these existing systems for faster funding delivery to vulnerable communities. However, the challenge lay in how UNFCCC could influence institutions outside its regime, like the World Bank, to align their policies with loss and damage funding.

Another significant issue was the question of who should pay for loss and damage. The Convention and Paris Agreement had placed the obligation on developed countries. Still, the U.S. proposed that countries willing and able to do so should provide financing, a proposal contested in the transitional committee. Developed countries have repeatedly attempted to remove the differentiation between developed and developing countries, citing changes in the world since 2020 as a reason.

Innovative funding sources, such as levies on emissions from shipping and aviation, were discussed, with developed countries showing enthusiasm for them. Developing nations argued that historical emissions were responsible for the 1.1-degree rise in temperature and held developed countries accountable. The U.S. opposed discussions on historical responsibilities and CBDR, agreeing to the agenda only if compensation was not involved. These issues were expected to be significant during COP, with civil society organizations keen on operationalizing the loss and damage fund while also recognizing the importance of developments in adaptation, mitigation finance, and equity in climate negotiations.

Dr. Diego Balanza :

Dr. Balanza began by stressing on the importance of focusing on what will be the overall narrative set by the upcoming COP, beyond the discussions on particular issues such as mitigation , adaptation, finance, and loss and damage. On finance, he said that developed countries will push to dilute their responsibilities by trying to open a specific way for discussing long-term finance under 2.1 (c). Responsibility on finance will be shifted away from what was agreed towards the private sector including carbon markets, and MDBs are expected to make

finance aligned to specific goals. Mitigation work program has to continue and global targets have to be on the basis of equity, CBDR&RC and climate justice. He remarked that discussions have been on for several years regarding how adaptation will be implemented in the context of the Paris Agreement. Developed countries have tried to dilute the adaptation agenda including the ongoing discussions on Global Goals on Adaptation (GGA). GGA, he said, should be linked to the implementation of national Adaptation Plans including means of implementation. Regarding Loss & Damage, it is important to operationalise a structure for L&D funds. Developing countries have maintained that the responsibility lies with developed countries in line with UNFCCC and the Paris Agreement. Negotiations on this is going to be a complex process. On Just Transition, Dr. Balanza stated that the main issue is the framing of the Just Transition work programme. Just transition should be related to the operationalisation of equity and CBDR&RC. This should also be linked to means of implementation in the context of equity and differentiation. On the question of how to proactively take up equity as an agenda item in COP 28, Dr. Balanza remarked that developed countries have consistently tried to eliminate any discussion on these issues, and refused to engage in negotiations where equity and CBDR&RC is made a part. Therefore, this is going to be challenging. However, it must be pursued since equity cannot be eliminated, diluted or removed. It is the key piece of the climate change negotiation process and is transversal to all the topics of the Paris Agreement.

Ms. Meena Raman:

Ms. Raman started off by drawing attention towards the importance of COP negotiations, stating that although the negotiations are fraught with broken promises and iniquitous positions by the developed countries, there is no other option available to address the global problem of climate change since the only agreement so far has been the UNFCCC and its Paris Agreement. Giving an example of the Bonn inter-sessional meetings this year, Ms. Raman highlighted the constant efforts by developed countries to delete references to the Rio Convention and to shut down all discussions on pre-2020 commitments or their failure to meet these commitments. CBDR is now sought to be replaced with common but shared responsibilities. She highlighted that Global Stocktake (GST) will be the most important outcome of COP 28, which is, however expected to be politically contentious. Developing countries must be united during the negotiations to achieve their targets, failing which developed countries would wipe out all references to historical commitments. On climate finance, Ms. Raman observed that Article 2.1c remains a challenge as there is little idea of what it means. She also drew attention to the tension in negotiations between Article 2.1 (c), which calls for “making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development”, and Article 9.1, which directs developed countries to “provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation”. Moreover, 2.1 (c) finance is also sought to be linked to setting up carbon markets, carbon pricing, net zero pledges and other conditionalities. On the Carbon Border Adjustment Mechanism (CBAM) implanted by the EU, she remarked that it is unjust. UNFCCC is unwilling to discuss the matter, instead referring it to the WTO, where the negotiating position is unfavourable to the developing countries.

Dr. Andrew Macquard:

Dr. Macquard began by explaining the context of climate change in Africa. The continent has very little contribution to historical emissions and is extremely vulnerable to the impacts of climate change. He said that the current geopolitical situation is challenging for developing strong multilateral responses. Echoing Ms. Meena Raman's statement, he said that the multilateral process, as flawed as it is and has several issues with how it unfolds, is better than not having any such process. The developed countries promote Article 2.1(c) and market mechanisms as the core of climate without recognising Article 9. An outcome on mitigation is

not achievable unless there is a clear idea and agreement about the source of finance. A large part of the investment to stay on the pathways will have to occur in the global South, but most of these countries are heavily indebted, especially after COVID. To foster finance flows, reforming Bretton Woods institutions is important as they have done little to facilitate climate action despite their rhetoric and African countries were not present when these institutions were set up. He said that for Africa, just transition is an important agenda at COP 28. Just transition needs to bring together sustainable development, decarbonising pathways and availability of finance. Dr. Macquard further stated that GST and its outcome is the only thing that will integrate all these various elements into the system. However, currently there is fault lines between global North and South mainly on issues around how climate finance is linked to other pillars of the Paris Agreement, and whether the focus needs to be solely mitigation or also include other aspects.

Session 3: India and climate change

Session 3.1

The session was titled **"Climate Impacts on India"** and was delivered by R. Krishnan, Director, Indian Institute of Tropical Meteorology, Pune, India. This session focused on assessing climate change over the Indian subcontinent, providing insights into the influence of human-induced global climate change and its regional impacts on India. The session drew from scientific literature, observations, climate model projections, and published IPCC reports to present a comprehensive analysis.

Key Topics Discussed:

1. **Assessment of Climate Change over the Indian Region:**
    - Dr. Krishnan discussed a report by the Ministry of Earth Sciences (MoES), Government of India, which synthesized historical and future climate changes in the global and regional context. The report serves as a valuable resource for researchers, practitioners, and policymakers.
2. **Regional Climate Response over the Indian Subcontinent:**
    - The unique geographical features of India, including high-elevation areas like the Himalayas and the influence of the Indian Ocean, were highlighted. The session emphasized the significance of the Indian monsoon, which dominates the region's climate.
3. **Main Focus Areas:**
    - The workshop covered various aspects of the physical climate system, including temperature trends, precipitation patterns (including monsoons), greenhouse gas concentrations, atmospheric aerosols, droughts, floods, synoptic weather systems, extreme storms, sea level rise, Indian Ocean warming, and Himalayan cryosphere changes.
4. **Approach to Regional Climate Change Assessment:**
    - Dr. Krishnan explained the methodology for assessing climate change in the region, including the use of multiple lines of scientific evidence, peer-reviewed literature, observational data, and climate model projections. He also introduced the IITM Earth System Model (IITM-ESM), the first climate model from India to participate in international assessments.
5. **Key Findings:**
    - Notable findings included the annual mean surface-air temperature rise in India and the Indian Ocean, attributed to anthropogenic activities. Projections

indicated further warming in the future. The Himalayan region has experienced significant warming and changes in snowfall and glacier extent, with elevation-dependent warming observed.

6. **Monsoons:**
    - The session discussed global and Asian monsoons, highlighting their variability and trends. Anthropogenic aerosols were identified as a contributing factor in monsoon precipitation changes.
7. **Precipitation:**
    - Precipitation patterns, both average and heavy, were expected to increase over Asia, including South Asia and Southeast Asia. The East Asian winter monsoon's influence on climate and extreme events was also noted.

Future with Earth Visualization Engines (EVE):

- Dr. Krishnan hinted at the future prospects of using Earth Visualization Engines (EVE) to enhance climate visualization and understanding.

In conclusion, Dr. R. Krishnan's workshop provided a comprehensive overview of climate change impacts on India, emphasizing regional nuances and their implications. The session underscored the importance of ongoing research and modelling to address the challenges posed by climate change in the Indian subcontinent.

Session 3.2

Dr. T. Jayaraman delivered a workshop session titled **"India's Nationally Determined Contributions and Long-Term Low Carbon Development Strategy."** This session discussed India's commitments and strategies related to climate change mitigation and its vision for a sustainable, low-carbon future.

Key Topics Discussed:

1. **India's Nationally Determined Contributions (NDC.):**
    - The session highlighted the significance of N.D.C.s, which are voluntary commitments made by countries under the Paris Agreement. India's N.D.Cs were first submitted before signing the Paris Agreement in 2015 and were updated under the Prime Minister's National Statement at COP26 in Glasgow.
2. **Summary of India's updated N.D.C. Commitments:**
    - Dr. Jayaraman summarized India's N.D.C. commitments, which include promoting a sustainable way of living under the L.I.F.E mission, adopting a climate-friendly and cleaner path for development, reducing the emissions intensity of G.D.P., increasing non-fossil fuel-based energy capacity, creating a carbon sink through afforestation, enhancing adaptation measures, mobilizing funds, building climate technology capacities, and promoting joint collaborative research. The speaker emphasized that the Emission Intensity of the N.D.C.s of the country did not include emissions from agriculture.
3. **L.I.F.E.- Lifestyle for Environment:**
    - The concept of "L.I.F.E. - Lifestyle for Environment" as a foundation for environmental consciousness. It encouraged mindful and deliberate utilization instead of mindless and destructive consumption. Dr Jayaraman noted that this is particularly true for consumption patterns of the developed world and should not be used to target populations like small and marginal farmers who already have minimal per capita emissions compared to the world.
4. **India's Long-Term Low-Carbon Development Strategy (LT-LEDS):**
    - Dr. Jayaraman discussed India's submission of a long-term low-carbon development strategy, marking the third major milestone after the National Statement at COP26 and updated N.D.C.s. This strategy outlined India's commitment to achieving net-zero emissions by 2070.
5. **India's Approach to Low-Carbon Development:**

- The session highlighted India's unique position in contributing less to global warming while having significant energy needs for development. India is committed to pursuing low-carbon development strategies tailored to its national circumstances and building climate resilience.

6. Key Elements of India's LT-LEDS::

- Dr. Jayaraman discussed the six major sectors covered in India's LT-LEDS, including low-carbon development of electricity systems, efficient and inclusive low-carbon transport, adaptation in urban design, low-emission industrial systems, CO2 removal, and economic and financial aspects of low-carbon development.

7. Elaborating the Key Elements of LT-LEDS:

- Each key element was elaborated in three dimensions, considering the domestic and international context, current policies and targets, and long-term low-carbon growth strategy elements. The session also addressed potential benefits and challenges.

8. India's Key Messages on Policy from L.T.S.:

- The session outlined India's key policy messages, including focusing on equity through access to a fair share of the remaining carbon budget. India emphasized the accountability of developed countries for their carbon debt and the importance of proactive low-carbon innovation and development.

In conclusion, Dr. T. Jayaraman's workshop session provided insights into India's climate commitments, strategies for low-carbon development, and the significance of equitable and sustainable approaches in addressing climate change. It emphasized India's proactive role in climate action and innovation.

Session 3.4

Dr. Soumya Swaminathan, Chairperson, MSSRF, ex-Chief Scientist WHO, delivered the session on **"Climate Change and Health**". She began by highlighting the centrality of climate change's impact on human health. She stressed that climate change isn't an abstract concern but a real threat to the well-being of both humans and the diverse species that share our planet. This interconnectedness between climate, biodiversity, and human health has led to the growing use of the term "planetary health."

Dr. Swaminathan highlighted various ways in which climate change affects health. Some of the key remarks during her speech are as follows:

1. **Zoonotic infections:** One of the major concerns she addressed was the rising risk of zoonotic infections. Dr. Swaminathan explained that the loss of biodiversity, deforestation, and urbanization had brought humans into closer contact with wild and domesticated animals, increasing the chances of diseases spilling over from animals to humans. She cited examples such as Ebola, Lassa fever, Zika, and coronaviruses, all of which have emerged due to such factors. The rate at which viruses jump from animals to humans has increased in recent decades, resulting in various outbreaks such as Ebola, Lassa fever, Zika, and coronaviruses. She noted that zoonotic infections are occurring at an accelerated rate in recent decades, leading to outbreaks with serious consequences for global health.
2. **Vector-borne diseases:** Additionally, Dr. Swaminathan discussed the impact of climate change on vector-borne diseases like malaria and dengue. Climate change has allowed disease-carrying vectors, such as mosquitoes, to thrive in new regions where they were previously uncommon due to warming temperatures. This has led to the spread of diseases like malaria in areas where it was previously rare and a rapid global increase in dengue cases, with India being one of the most affected countries. Dengue, in particular, has become a rapidly spreading global health concern.

3. **Illegal wildlife trade:** The illegal wildlife trade also plays a role in promoting the transmission of infectious diseases. Dr. Swaminathan mentioned that the illegal trade in wildlife contributes to the spread of infectious diseases, as various species coexist in close quarters in markets, increasing the likelihood of virus transmission. She cited the examples of wet markets in Southeast Asia and China, where diverse species are kept in close proximity, providing ample opportunities for viruses to jump between species and spread in cramped quarters.
4. **Infectious diseases:** Dr. Swaminathan emphasized that infectious diseases are not limited to known pathogens but also involve emerging and re-emerging pathogens. She pointed out the urgent global discussions on how to handle pandemics, including the development of pandemic treaties by organizations like the World Health Organization (WHO) and the United Nations (UN).
5. **Heat-related health impacts:** Dr. Swaminathan discussed the direct impact of rising temperatures and heatwaves on human health. Prolonged exposure to extreme heat can lead to distress, reduced productivity, and even mortality, particularly among outdoor workers and those in urban areas with limited access to cooling. She mentioned the importance of wet bulb temperatures, which combine temperature and humidity and can have a severe negative impact on the human body's ability to cool itself. High humidity levels in coastal areas, combined with rising temperatures, can lead to distress, affecting not only physical health but also potentially causing cognitive and cardiovascular problems.
6. **Heat-related impact on food production**: She also emphasized that rising temperatures and heat waves are not only a concern for humans but also for food production. She gave the example of heatwaves in North India starting as early as March, impacting not only human health but also wheat production.
7. **Issues with climate and health data**: Throughout her lecture, Dr. Soumya Swaminathan emphasized the need for better data collection, especially in low and middle-income countries, to understand the long-term health impacts of climate change. While there is some data on the immediate impacts of severe weather events, such as cyclones and floods, there's a lack of long-term data on how exposure to heat stress affects physical and mental health, productivity, and income.
8. **Climate Health Action Plans**: She also discussed the importance of implementing and monitoring climate health action plans at the local and regional levels, particularly for addressing heat-related challenges, involving various government departments, to mitigate health risks associated with climate change. However, she stressed the importance of going beyond plans on paper and implementing effective mechanisms with governance, financing, clear responsibilities, and interdepartmental cooperation.
9. **Air pollution:** She highlighted the link between air pollution and climate change, emphasizing that the same sources generate both greenhouse gases and air pollutants. She highlighted the disparity in air quality between developed and developing countries, with air pollution being a major global health risk, affecting various organ systems and contributing to conditions like diabetes and cancer.
10. **Food systems and nutrition:** Dr. Swaminathan stressed the importance of addressing the impact of climate change on food production and agricultural productivity, which ultimately affects nutrition. She stressed the need to transform food systems to adapt to changing climate conditions and ensure access to nutritious diets. She pointed out that food systems play a critical role in both reducing carbon footprints and providing access to healthy, locally produced food. She emphasized the significance of addressing nutrition pathways impacted by climate change and optimizing the use of marine resources, which are currently underutilized.

In conclusion, Dr. Soumya Swaminathan's speech provided valuable insights into the multifaceted relationship between climate change and human health. She underscored the urgency of addressing this issue comprehensively, from preventing zoonotic infections to mitigating the impacts of rising temperatures and air pollution and transforming food systems

to ensure access to nutritious diets. Her speech highlighted the need for data collection, effective action plans, and international cooperation to safeguard planetary health in the face of climate change.

Session 3.4: Panel discussion on India and climate change vulnerability and adaptation by Dr. R Rengalakshmi, Director of Ecotechnology

Dr. R Rengalakshmi's panel speech on Day 2 of the Media Dialogue on Climate Change focused on the importance of understanding vulnerability and adaptation in the context of climate change. She mentioned that earlier discussions at the dialogue had covered various aspects of climate change, including its physical sciences and impacts. Now, the emphasis should be on taking action.

Key points from her speech included:

1. **IPCC Working Group 2**: Dr. Rengalakshmi highlighted the significance of the IPCC Working Group 2 report, which focuses on climate change impact, adaptation, and vulnerability. She threw some fundamental insights into the report that defines vulnerability, adaptation, and resilience in a specific way, linking these concepts together.
2. **Understanding Vulnerability**: Vulnerability was explained as a propensity or disposition towards being adversely affected by climate change. It encompasses sensitivity (susceptibility) and the ability to cope or adapt to the changing situation.
3. **Report Chapters**: She mentioned that the IPCC Working Group 2 report has several chapters addressing critical topics such as agriculture, water, food, poverty, livelihoods, sustainable development, and cross-sectoral issues.
4. **Local Impact**: Dr. Rengalakshmi stressed the importance of understanding local nuances, such as semi-arid tropics and land degradation, to comprehend how climate change affects specific regions.
5. **Climate-Resilient Development**: Dr. Regalakshmi highlighted that the IPCC Working Group 2 report suggests climate-resilient development pathways based on vulnerability and adaptation.
6. **Shift to Risk Focus**: The AR5 report shifted from focusing on hazards to focusing on risks, with hazard exposure and vulnerability as crucial elements determining the risk associated with climate events.
7. **Elements of Vulnerability**: Dr. Rengalakshmi explained various basic concepts. For example, vulnerability includes sensitivity (susceptibility) and adaptive capacity (the ability to cope). Gender and other social factors play a role in adaptive capacity.
8. **Vulnerability Assessment**: Different frameworks and assessments are used to understand vulnerability, helping identify hotspots and intervention priorities.
9. **Adaptation**: Adaptation is described as a process of adjustment to cope with climate change. It aims for sustainable and transformative changes to reduce exposure and vulnerability, often using both hard and soft measures.
10. **Local Knowledge**: The report emphasises the importance of local knowledge in adaptation, considering perspectives from gender and vulnerable sections of society.
11. **Financial Allocation**: The speaker also discussed the need to balance financial allocation between adaptation and mitigation efforts, especially at the local level, where livelihoods and food security are at stake.
12. **Agriculture**: Dr. Rengalakshmi mentioned the role of agriculture in climate adaptation and cited examples of measures such as climate information services, farm-level technologies, and ecosystem-based approaches.
13. **Barriers and Limitations**: She acknowledged the existence of barriers and limitations in implementing adaptation measures, including social, institutional, economic, and

ecological factors. She emphasised the importance of addressing these challenges to bridge the gap in adaptation efforts.

In summary, Dr. R Rengalakshmi's panel speech highlighted the critical role of vulnerability assessment and adaptation measures in addressing the challenges posed by climate change, with a focus on understanding local contexts and the need for effective and sustainable actions.

Water and Climate Change by Prof. E J James, Pro Vice-Chancellor, Karunya Deemed University & Former Director, CWRDM

During the Panel discussion, Professor E.J. James spoke on "*Water Management and Climate Change*", where he focused on the attributed changes to the hydrology and water resources, projection on precipitation changes, regional climate models (RCMs), probable impact of hydrologic extremes on ecosystems as well as policies and strategies required for a paradigm shift in the management of water resources.

1. In his lecture, he began by emphasising the relative nature of climate change predictions and mitigation recommendations rooted in statistics, probability, stochastics, and artificial neural networks. He highlighted the uncertainty and complexities involved in climate modelling.

2. Professor James discussed the United Nations' three key water and climate change commitments: Sustainable Development Goals, the Paris Agreement on climate change, and disaster reduction through the Sendai Framework. He stressed the interconnectedness of these commitments in addressing water-related challenges.

3. He then delved into the physics of climate change's impact on water. He explained that warming increases evaporation and an intensified hydrologic cycle, affecting precipitation patterns, runoff, reservoirs, and various water-related activities. He also mentioned the potential adverse effects on soil moisture, groundwater recharge, and waterborne diseases.

4. Professor James expressed concern about glacial melt in the Himalayas, leading to reduced snowmelt and summer rainfall, potentially affecting North India. He also discussed the consequences of sea level rise on coastal communities and ecosystems, including the risk to biodiversity and coral reefs. Additionally, he discussed the potential for more intense summer cyclones in certain regions.

5. Prof. James noted regional variations in climate change impacts in India, particularly the challenge of adapting agriculture to changing conditions. He mentioned the importance of rice and food grain production to the country's economy. In addition, he also highlighted that glacial melt could affect water availability, leading to changes in agriculture. He emphasised the need for adaptation strategies for agriculture, water, and health sectors, mentioning the importance of the Green India mission and sustainable agricultural initiatives, absorbing carbon, and redesigning national missions for water and agriculture.

6. He presented findings from model studies in Maharashtra, Andhra Pradesh, and Odisha, highlighting the specific regional impacts of climate change on agriculture and livelihoods. These studies indicated the need for tailored adaptation strategies.

7. Professor James emphasised that drought and flood management strategies must be region-specific due to India's diverse climate zones. He also urged clear communication with the public about the impacts of climate change on water resources and the importance of

conservation. He also emphasised the need to consider both climatic and non-climatic factors when addressing water management and climate change.

In conclusion, he urged caution in attributing all changes to climate change, as non-climatic factors also play significant roles. He encouraged acknowledging climate change when it is the most influential factor in a situation. Overall, Professor E.J. James' lecture underscored the complexity of climate change's impact on water resources and the need for region-specific and adaptable strategies to address these challenges.]

Renewable Energy and Low Carbon Growth by Dr. Tejal Kanitkar, Associate Professor, NIAS, Bengaluru

During the Panel discussion, Dr. Tejal Kanitkar discussed several key points related to India's renewable energy goals and the challenges associated with transitioning to renewable energy sources. Below is a summary of the main points made by her:

1. **Misleading Headlines**: Dr. Kanitkar mentioned a misleading newspaper headline that claimed India would achieve 40% of its energy from renewable sources by 2030. This headline was inaccurate because it referred to installed capacity, not actual energy production.
2. **Installed Capacity vs. Energy Production**: Dr. Kanitkar emphasised the importance of understanding the distinction between installed capacity and energy production. Installed capacity refers to the maximum potential output of power plants, while energy production depends on factors like the capacity factor, which determines how much electricity is generated over time.
3. **Intermittent Nature of Renewable Energy**: Dr. Kanitkar also pointed out that renewable energy sources, such as wind and solar, are intermittent, meaning they are not available all the time. This intermittency poses challenges for meeting consistent energy demand.
4. **Demand-Supply Mismatch**: Dr. Kanitkar discussed the issue of demand-supply mismatch, where peak electricity demand does not always align with when renewable energy sources are generating power. This mismatch requires solutions like energy storage, which is itself a huge challenge ahead and often overlooked in the complete picture.
5. **Geographical Distribution**: India's renewable energy resources, particularly wind and solar, are geographically distributed across the country. Hence, transmission infrastructure is needed to transport electricity from generation hubs to areas with high demand.
6. **Hydro and Gas as Balancing Resources**: Hydroelectric and gas-based power plants are capable of quickly balancing fluctuations in electricity supply. However, the availability of these resources is limited, leading to challenges in balancing the grid efficiently.
7. **Cost Challenges**: Dr. Tejal also acknowledged that the costs of renewable energy, including storage and grid integration, are not yet competitive with coal. The actual cost of renewable energy should consider factors like the cost of storage, especially during periods of low generation.
8. **Technological Challenges**: Lastly, Dr. Tejal highlighted that there are significant technological challenges associated with renewable energy adoption. These challenges are often underestimated, and addressing them is essential for a successful transition.

In summary, Dr. Tejal Kanitkar discussed the complexities and challenges associated with India's transition to renewable energy sources, including issues related to intermittency, demand-supply balance, geographical distribution, and cost competitiveness. They

emphasised the need for a comprehensive approach to address these challenges and ensure a sustainable energy future.

Challenges for Climate Policy Making by Dr. J R Bhatt, Former Advisor, MoEFCC and Adjunct Professor, NIAS, Bengaluru

Dr. J R Bhatt delivered a panel speech on the topic of "Challenges in and challenges for making climate policy." In his speech, he addressed several key points:

1. **Grid Balancing Challenges:** Dr. Bhatt highlighted the challenges of balancing the grid with intermittent renewable energy sources like solar and wind, emphasising that these sources are not available 24/7.
2. **Must-Run Status Costs:** He discussed, along with Dr. Tejal Kanitkar, the additional costs associated with the must-run status policy, where solar and wind energy must be absorbed when available, which can cost around 15,000 crores per year for one state in the Southern region.
3. **Costs of Solar Deployment:** Dr. Bhatt, along with Dr. Tejal Kanitkar, explained that as solar deployment increases, the cost of solar energy generation decreases, but the added cost of storage (batteries) becomes a new challenge for consumers to bear.
4. **Climate Change as the Epitome of Environmental Challenges:** He highlighted that climate change is the epitome of all environmental challenges because its impacts affect all sectors of the economy, even if other environmental issues are addressed.
5. **Complexity in Policy Making:** Dr. Bhatt raised questions about policy-making challenges in a global collective action problem, where India's emissions are relatively minimal. He emphasised the need for comprehensive policies addressing climate change, renewables, and related aspects.
6. **Multiple Government Departments Involvement:** He mentioned that 23 government departments in India are directly impacted by climate change, making it challenging to coordinate and prioritise policy actions.
7. **India's Emissions:** Dr. Bhatt acknowledged that India's emissions are increasing at around 4.5% annually, which was anticipated even in 1992 when the climate treaty was established. He emphasised that development is a key strategy to address climate change.
8. **Policy vs. Strategy:** He discussed the distinction between policy and strategy and the need for evidence-based, science-based policies or strategies to guide climate action.
9. **Guiding Principles:** Dr. Bhatt emphasised that policies/strategies should be informed by India's developmental needs, adherence to UNFCCC principles, recognition of the remaining carbon budget, and the promotion of climate-friendly lifestyles rooted in cultural traditions.
10. **Positive Perspective:** He concluded by quoting the slogan of our Honourable Prime Minister of India – "*Sabka Saath, Sabka Vikas, Sabka Vishwas, Sabka Prayas*", by which he meant emphasising on the principles that India should approach climate change from a position of strength and responsibility, offering hope and optimism rather than focusing solely on the challenges.

In summary, Dr. J R Bhatt's panel speech highlighted the challenges and complexities in making climate policy in India, emphasising the need for evidence-based, comprehensive strategies that align with the country's development goals and cultural values.

Concluding remarks by the speakers at the panel discussion:

1) **Dr. T Jayaraman's concluding remarks:**

He suggested the creation of a central portal to collect and disseminate information on climate change. He emphasised the need for a more accurate assessment of the current state of climate change. Believes such a portal would benefit all sectors within and outside the government.

2) **Dr. Tejal Kanitkar's concluding remarks:**

She highlighted that climate change is caused by human-induced global warming due to greenhouse gas emissions, with CO2 being a major contributor. And hence, not to get distracted from created buzzwords and alternate-created agendas (mostly by the Global North) for the common masses. She emphasised that the fossil fuel industry is the largest emitter of CO2. She stressed the importance of transitioning to energy sources that do not emit CO2, such as solar, wind, nuclear, hydro, and biomass.

3) **Dr. J R Bhatt's concluding remarks:**

Encouraged the need for a common data platform but cautioned against neglecting the development of new crop varieties. He emphasised the significance of agriculture and food security in the context of climate change. Underlined the importance of balancing data solutions and agricultural advancements to combat climate challenges.

Session 4: Local and regional climate action (World Cafe model)

This session of the workshop was held in an interactive World Café model. The participants were divided into 3 groups, and each group spent around 30 minutes with the session's speakers. The experts discussed key issues on the topics and asked the participants to give their reviews on them and ask questions that they found pertinent to the subject. After every 30-minute session, each group of participants moved to the next speaker and a fresh round of discussions was held with the new group.

Climate adaptation and agriculture - Dr. E.D. Israel Oliver King, Director-Biodiversity, MSSRF and Dr. R. Rengalakshmi, Director-Ecotechnology, MSSRF

The speakers discussed the work that MSSRF has actively been doing around climate and adaptation. This included work on millets and under-utilised crops, creating people's seed banks, market linkage for produce, weather advisories and the importance of agriculture extension to the farmers. The participants discussed various issues that the farming communities have been facing in different parts of the country, including access to improved varieties and seeds, agricultural losses from extreme weather events, and challenges of marketing faced by farmers and FPOs. The discussions allowed participants to understand the various challenges, solutions and opportunities that revolved around agriculture and climate in different regions of the country.

Energy and development – Dr. Tejal Kanitkar, Associate Professor, National Institute of Advanced Studies, Bengaluru

The session had discussions on the importance of energy for development, especially from the context of India and the global south. Challenges relating to energy requirements for growth and development in different sectors, cost and challenges with renewable energy, availability of different renewable and non-renewable energy sources and their respective limitations were widely discussed. The speaker also discussed the technological importance, challenges and advances in battery storage for renewable energy sources. Another area of discussion was the role of grids and grid management for incorporating renewables to meet the country's needs for development.

Ecosystems and climate impacts: Coastal ecosystems - Dr. R. Ramasubramanian, Senior Fellow, Coastal Systems Research, MSSRF and Dr. S. Velvizhi, Head-Fish For All Research and Training Centre, Poompuhar

The session had small presentations on the work being done by MSSRF on costal ecosystems focusing on Mangrove restoration programme, costal aquaculture, algal farming, fishery advisory through Fisher Friend Mobile App (FFMA) and opportunities and challenges that fishing communities face. The participants asked questions on the topics discussed. The functioning of FFMA was discussed in-detail during the discussions.

Valedictory Session:

The Media dialogue ended with an overview and key messages from the two day dialogue by T Jayaraman. Dr. Soumya Swaminathan, Chairperson, MSSRF awarded certificates to the participants and gave a valedictory address. A vote of thanks was given by Ms. Sangeetha Rajeesh to formally conclude the 2-day media dialogue.