

# WORLD SUSTAINABLE DEVELOPMENT SUMMIT 2021

REDEFINING OUR  
COMMON FUTURE:  
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ENVIRONMENT FOR ALL

February 10-12, 2021



WSDS 2021 Pre-event

# COP 26 Webinar Series

'Adaptation and Resilience: Towards Resilient  
Countries, Communities and Corporates'

**Date:**

4 December 2020

**Time**

3.30-5.30 P.M. (IST) | 10.00 A.M.-12.00 P.M. (GMT)

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UN CLIMATE  
CHANGE  
CONFERENCE  
UK 2021

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UK Government

# AGENDA

3:30 – 3:50 p.m.	<b>Opening Session</b>
	<b>Opening Remarks</b> <ul style="list-style-type: none"> <li>• <b>Dr Ajay Mathur</b>, Director General, TERI</li> </ul> <b>Keynote address</b> <ul style="list-style-type: none"> <li>• <b>Mr. Ken O’Flaherty</b>, Regional COP26 Ambassador for Asia-Pacific and South Asia, Government of UK</li> </ul>
3:50 – 4:40 p.m.	<b>Panel 1: Building on The Call for Action</b> <p>The Call for Action on Adaptation and Resilience (A&amp;R) advocates for a vision that puts adaptation at the centre of decision making and urges for action to be taken to protect people, economies and the environment. Building on this Call, the panel discussion will steer a dialogue around best practices; integrating adaptation and resilience into long-term planning; increasing the resilience of economies and financial systems by integrating climate risk into investment decision making and business planning; accelerating transition to resilient land use and ecosystems; urgently increasing the availability of adaptation and resilience finance; and building a coalition of front runner countries to ensure a future with resilient countries, communities and corporates</p>
	<b>Moderator:</b> <ul style="list-style-type: none"> <li>• <b>Mr Vel Gnanendran</b>, Climate and Environment Director, FCDO</li> </ul> <b>Panelists:</b> <ul style="list-style-type: none"> <li>• <b>Mr Sandeep Poundrik</b>, Director General, Coalition for Disaster Resilient Infrastructure (CDRI)</li> <li>• <b>Ms Jaehyang So</b>, Programs Director, Global Center on Adaptation</li> <li>• <b>Prof Saleemul Huq</b>, Director, International Centre for Climate Change &amp; Development (ICCCAD), Bangladesh</li> <li>• <b>Ms Anu Jogesh</b>, Policy and Governance Lead, Acclimatise South Asia</li> <li>• <b>Mr Anirban Ghosh</b>, Chief Sustainability Officer, Mahindra Group</li> </ul>
4:40 – 5:30 p.m.	<b>Panel 2: Risk Informed Early Response</b> <p>Enhanced information of climate risks is the stepping stone for better planning and adaptation actions. In India, the State Action Plan on Climate Change (SAPCCs) were mostly around adaptation actions and climate impact modelling. However, there is a pressing need in improving the understanding in climate risks and impacts, and strengthening social safety nets. It is understood that investing in capability development of communities and promoting scientific and community based management of eco-systems, capacitates them to better cope with stressors and disturbances and reorganise effectively. Promoting effective early response system would also allow timely integration of climatic risks to investments and plans by public and private sector actors, thus contributing to the development of climate resilient economies.</p>
	<b>Moderator:</b> <ul style="list-style-type: none"> <li>• <b>Mr RR Rashmi</b>, Distinguished Fellow, TERI</li> </ul> <b>Panelists:</b> <ul style="list-style-type: none"> <li>• <b>Mr Benjamin Webster</b>, Head, Secretariat for the Risk-informed Early Action Partnership (REAP)</li> <li>• <b>Dr D. S. Pai</b>, Scientist G &amp; Head, Climate Research &amp; Services, IMD</li> <li>• <b>Dr Joseph Daron</b>, Science Manager, International Climate Services, Met Office, UK</li> <li>• <b>Mr Saurabh Bhardwaj</b>, Fellow and Area Convenor, Centre for Climate Modelling, TERI</li> <li>• <b>Ms. Ritu Bharadwaj</b>, Senior Researcher, International Institute for Environment and Development (IIED)</li> </ul>
	<b>Concluding Remarks</b>
	<ul style="list-style-type: none"> <li>• <b>Ms Anna French</b>, Deputy Development Director, British High Commission, New Delhi</li> </ul>

## Welcome and Keynote address

**Dr Annapurna Vancheswaran, Senior Director, TERI** opened the session with a presentation on the specially curated COP26 webinar series being held in partnership with the British High Commission, New Delhi. Dr Vancheswaran noted that discussions held in the webinar and in the past three days will feed into the deliberations that take place at the main summit from 10–12 February, 2021. The summit is TERI's annual flagship event and February 2021 marks 20 years in its journey. The summit series has brought together several luminaries to speak on this platform over the years. The theme of WSDS 2021 is “Redefining Our Common Future: Safe and Secure Environment for All”. While it is reflective of the current global health crisis, the deliberations at the summit will focus on affirmative and accelerated action ahead of the COP26 being hosted in the UK in November 2021.

**Dr Ajay Mathur, Director-General, TERI** highlighted that while mitigation is important there is a need to manage the unavoidable—the impacts of climate change we are already experiencing (in the form of extreme weather events such as floods, droughts and cyclones or because of higher temperatures and lower rainfall in some parts of the world). India is one of the most vulnerable countries in the world. Scientific evidence clearly indicates a changing climate in India with the monsoon being a classic example. The overall amount of rainfall has not changed very much, but what has changed is the number of rainy days, which have decreased dramatically. This volatility and the increase in extremes cause major problems in the country. In the recent years, there have been studies to identify pathways of development that take into account that there will be more volatile events and extreme weather events. He noted that there is a need to quickly move to scale the kinds of learnings that are available from these small-scale pilots. He highlighted that there is a need not only for accelerated action but coordinated action at the

international level.

The shift towards climate resilient development will not only require considerable amount of financial resources but also resources in terms of experts and sharing experiences. As ‘the one size fits all’ does not work anymore, the kinds of resources that are needed both for the design and the maintenance of the newer climate resilient infrastructure and services are significantly different from the ones of yesterday. Therefore, there is a need to understand international cooperation in this perspective along with accelerating action on adaptation and resilience.

**Mr Ken O’Flaherty, Regional COP26 Ambassador for Asia-Pacific and South Asia, Government of UK** said it is already known that climate change is no longer a distant future. It is here and is happening now in varying degrees all across the world. The frequency and the intensity of extreme climatic events make the vulnerabilities faced by the marginalized communities even worse. It is no longer unusual to hear regular news on heat waves, droughts, flooding, cyclones and concurrent damage inflicted on lives, livelihoods, biodiversity, the economy, social bonds, and networks. There is a realization setting in that the mitigation efforts need to accelerate in pace. Simultaneously, efforts in accelerating action to build adaptive capacity of the most vulnerable and the resilience of various systems is equally crucial. COVID-19 is a clear example of what happens when systemic risks interact with climate change. The damages are magnified, the vulnerabilities are exacerbated, and progress on climate, economic and social fronts are stalled, if not taken a few decades back. The recent Poverty and Shared Prosperity Report by the World Bank notes that extreme poverty in 2020 due to COVID-19 is not only pushing the already poor further into poverty but also creating new poor. This year India has witnessed first-hand the compounded impact due to the interaction of multiple risks. The country faced climatic events, such as cyclone Amphan, cyclone Nisarga and floods while still reeling from severe socio-economic and infrastructural challenges posed by

COVID-19. Global economy has been severely impacted and is predicted to shrink further, directly pushing millions into poverty. There is a need to focus on resilient development and transformative adaptation for a green and inclusive recovery. India has taken conscious steps towards achieving its nationally determined contribution (NDC) targets by delineating and, therefore, decentralizing its policy landscape, international and sub-national levels through the national and state action plans on climate change. Furthermore, Prime Minister Narendra Modi's announcement to launch the Coalition for Disaster Resilient Infrastructure at the UN Secretary General's Climate Action Summit in New York in 2019, will no doubt play a crucial role in replicating and scaling best practice in disaster resilient infrastructure development. Since climate adaptation actions are central to India's development goals, it is also a focus area under the India-UK partnership. For example, the UK is working with India through the Mahatma Gandhi National Rural Employment Act, the country's largest social protection scheme to improve the abilities of the poor and vulnerable people to cope with climate change impacts. He highlighted the UK's commitment to continue working with the Government of India as a key partner on the path to a successful ambitious COP including on shared priorities such as clean energy transition, adaptation and resilience, and clean transport. The UK is working towards an ambitious international campaign on adaptation and resilience in the run-up to COP26 and beyond. This will be focused on four key areas—increasing public funding (ensuring developed countries mobilize a hundred billion finance); shifting private finance towards climate resilient investments; building on the coalition for climate resilient investment launched by the UK and other countries; encouraging and supporting countries to develop political momentum of the call to action on adaptation and resilience; expanding protection against climate-linked disasters through insurance and investment in early warning systems.

In conclusion, **Mr Ken O'Flaherty** said the UK and India are working as a joint force for good

and their shared commitment to tackling climate change and environmental stress makes the UK and India natural partners. As COP President, the UK will work together with its partner Italy to bring the world together to drive momentum on climate ambition and green growth and ensure that no one is left behind. In lieu of this, the UK is trying to lead by example—in November 2020, the UK Prime Minister had announced a new ambitious target to reduce the country's emissions by at least 68% by 2030 compared with 1990 levels. This new target commits the country to reducing emissions by the fastest rate of any major economy. The UK is keen to hear from the public practitioners, grassroots representatives, researchers, policymakers, corporates and development partners through events such as the present webinar series.

## *Key Takeaways:*

- The impacts of climate change are already being experienced. The pandemic has also shown that the interaction of systemic risks with climate change can seriously magnify damages and exacerbate vulnerabilities
- There is a need to accelerate coordinated action at the international level for both mitigation efforts and to build climate resilient development, which would require both extensive financial as well as technical resources
- Recovery efforts from the pandemic should be green and inclusive, fostering resilient development and transformative adaptation
- India and the UK's shared commitments towards tackling climate change and environmental stress makes for a natural partnership for supporting actions towards climate adaptation.

## **Panel 1: Building on the Call for Action**

**Moderator: Mr Vel Gnanendran**, Climate and Environment Director, FCDO

*Speakers:*

- **Mr Sandeep Poundrik**, Director General, Coalition for Disaster Resilient Infrastructure (CDRI)
- **Ms Jaehyang So**, Programs Director, Global Center on Adaptation
- **Prof Saleemul Huq**, Director, International Centre for Climate Change & Development (ICCCAD), Bangladesh
- **Ms Anu Jogesh**, Policy and Governance Lead, Acclimatise South Asia
- **Mr Anirban Ghosh**, Chief Sustainability Officer, Mahindra Group

**Mr Vel Gnanendran, Climate and Environment Director, Foreign, Commonwealth and Development Office (FCDO)** started by stating that we are all well aware that climate change is upon us, and we have to deal with those changes, at a time when COVID-19 pandemic has challenged the entire world. The pandemic has really shown us that we are incredibly vulnerable to systemic risks and this fact is particularly true for the most climate-vulnerable countries and as countries start to emerge from this crisis, we really need to do that in a way that makes us more resilient to all shocks.

He felt that as adaptation and resilience are top priorities for the COP26 campaign and the present session was called 'building on the call to action' and the call to action was a declaration of intent to prioritize adaptation and resilience work, which was launched at the Climate Action Summit in September 2019. He said that so far over 120 countries have signed up and this has to be turned into a commitment to action. There is a need to identify opportunities and challenges associated with the integration of adaptation and resilience, international planning, and climate risk into investments.

**Mr Sandeep Poundrik, Director General, Coalition for Disaster Resilient Infrastructure (CDRI)** said that CDRI was launched by the Prime Minister of India in September 2019 during the UN Climate Action Summit. It is a partnership of countries, organizations, private

sector, academia and it works both on resilience of infrastructure against climate as well as disasters. As of now, there are 18 member countries and four multilateral organizations that have already joined the coalition. He also informed that due to the COVID-19 situation, there has been some delay in more countries and organizations in joining the coalition. He highlighted that the main mission and priorities of the CDRI are on three themes—building the capacity of countries of national and sub-national governments; working as a platform on research and knowledge management on disaster and climate resilience; and advocacy and partnerships.

**Mr Sandeep Poundrik** also informed that the CDRI coalition carried out work despite the COVID-19 pandemic. The first of such projects was on Odisha's power sector—this study would examine the resilience of power sector in view of the cyclone Fani and this study would be extrapolated to similar geographies in other countries. Work is also being carried out for resilience of airports that would examine how to make airports resilient to natural disaster events due to climate change. The coalition is also working on risk and resilience assessments for national and sub-national level and these will be focused broadly on three infrastructure sectors—roads or transport, telecom and power because these will be the focus sectors for CDRI. He also said the CDRI will be coming out with a biannual report on the resilience status of infrastructure sectors in the world. This will be a flagship report similar to human development report or other reports which are released on a global level. This report is expected to be released in 2022. However, there will be an interim output or interim report which is expected to be released during COP26. The CDRI also has a fellowship programme for researchers and students who will be working or are working on disaster resilience issues and is open to all member countries.

**Ms Jaehyang So, Programs Director, Global Center on Adaptation (GCA)** said that the GCA was established in 2018 with the singular purpose of enabling adaptation at scale. The GCS hopes

to be a solutions broker to enable best practice innovations to reach scale faster. This would require the work to be carried out in partnerships. She also informed that the GCA has identified five areas where they think they can enable solutions to reach faster scale, at larger scale, and with more impact on the population. The first is on locally led action—there's probably no better definition of how important locally led action is than in disaster relief. For example, the Government of Bangladesh's network of national early warning systems as well as locally-led communities have in fact saved thousands and millions of lives from the successive cyclones that have affected the country. The second area is water—as water is not equitably distributed in all regions of the world. South Asia is the most water-stressed region in the world and there is a lot of excellent work that is being done. **Ms Jaehyang So** said the GCA will support water security within the countries, around the countries, and especially with a focus on delta regions. The third is nature-based solutions—the Bay of Bengal is an amazing example of a successful large-scale nature-based solution. There are also other examples such as Brazil's Itaipu dam—the second largest hydroelectric dam in the world—whereby because of reforestation around the area in the dam, Brazil is saving hundreds of millions of dollars of dredging costs and ensuring a longer life of this dam, which provides important livelihoods and electricity for the population around the dam. However, she felt that we are only seeing large-scale nature-based solutions. We want to make sure that it is scaled up everywhere in the world and that there are many more such examples. Therefore, GCA will be starting with nature-based solutions resilient infrastructure study in Bangladesh, which is a three-phase study starting with a climate risk assessment of all the infrastructure assets, policy conditionalities as well as financing. The fourth is climate finance—the GCA has commissioned a global study on what has happened to adaptation finance in the current year of COVID-19 and what the opportunities for the future are. Finally, an area that we think is particularly important to all

of us is youth. South Asia has the largest youth workforce in the world and there are more than 800 million young people in the region. The GCA is making sure that the youth are made aware, educated, trained and have career prospects, which is a critical part of the success of adaptation in the future. She informed that in lieu of this, the GCA has started their youth network, youth internship and youth career-based programme, which started with the launch of the South Asia office.

**Mr Vel Gnanendran** then asked **Ms Jaehyang So** about the locally-led action and the centre opened by the GCA in Dhaka. Ms So replied that the GCA wants to support the excellent work being done at the global hub in Dhaka. She informed that the GCA shall be looking at it in three respects—one is about already collecting all the knowledge about the practices that are ongoing. Second, the GCA wants to provide technical assistance to ongoing programmes that are not called locally-led action. The aim is to ensure that every single adaptation programme has a locally-led action component. The third is regarding the fact that the GCA will continue to support—how much money gets to the local communities and to make sure that local communities have an impact on the larger programmes.

**Prof. Saleemul Huq, Director, International Centre for Climate Change & Development (ICCCAD), Bangladesh** said the funding for adaptation is only 20% and just 10% of that 20% goes to the most vulnerable communities. This anomaly needs to be corrected and everybody who is involved in doing these programmes and in the funding process should be looking at themselves and trying to improve their delivery. He felt that if adaptation funds are not prioritized for the most vulnerable communities in every country—it is a dereliction of duty of the decision makers at the global level. To achieve this, one has to engage with them and not simply think of them as beneficiaries or targets from above. We need to involve them in decision making and learning from them because they have a lot of knowledge. In fact, currently the people on planet earth who know how to deal

with the impacts of climate change are the people who are actually dealing with the impacts of climate change. They are learning how to do that, especially in the present COVID-19 scenario. He felt that we must start working with them to be able to take the opportunity of building resilience towards mitigating the effects of climate change going forward. **Prof. Saleemul Huq** also said that his institute in Bangladesh, that is, the International Center for Climate Change and Development, is essentially showing how these communities are actually doing things themselves and what they need is support to do more of what they are doing rather than being told what to do, which is very often what the authorities at the national level tend to do when it comes to their poor populations. Lastly, he also highlighted an initiative in Bangladesh called ‘Gobeshona’—which is a colloquial word for research and is a platform for more than 50 universities and research institutes working on climate change.

**Mr Vel Gnanendran** summarized by saying that it is not just local action, but locally led and locally-designed action, which is really very powerful. He then asked Prof. Saleemul Huq about the barriers to financing for these solutions and why is it that so little reaches local levels?

**Prof. Saleemul Huq** replied that the climate fund, the adaptation fund, and the bilateral funders are basically leaving it to national governments to spend that money. There is no clarity on delving into where it goes and how it is being spent. National governments tend to decide what they want to do with their national budgets.

**Ms Anu Jogesh, Policy and Governance Lead, Acclimatise South Asia** started by saying that climate change as a systemic risk and COVID-19 has shown us systemic risks essentially—not just multiple shocks and stressors but also a non-linear progression of the sort of impacts and fallouts and deep system interdependencies. She felt that is where work is not happening in India and South Asia because we made a lot of progress in developing plans, in putting together projects for funding, accessing grants, etc., but not really thinking about it

from a systemic perspective. She stressed that there is a need to make sure that whatever is happening on the ground is linked to political economy at the national and the sub-national level. Floods, heat waves, cyclones, etc., impact not just vulnerable communities and ecosystems but also businesses, both at the micro and the macro-economic levels. In India alone, droughts, cyclones and a couple of disasters, for instance, have actually doubled in terms of monetary losses over the last decade. So, when you do have these plans and actions on the ground, they’re not looking at it from the macroeconomic perspective either at the state level or at the country level—recognizing that financial institutions, which sit at the heart of the global economy, are naturally susceptible to these risks both directly in terms of what they face but also through their borrowers. There occur disruptions in production and trade, credit risks not only because of loan defaults but also due to increased demand for liquidity. She highlighted that in India for the first time you have a small set of banks and financial institutions that recognize that they need to green the financial system. While some of these banks are talking about the fact that they’re going to be hit by some of these risks—there is a very tenuous link. Outside the sustainability teams that are putting together these disclosure reports, there is a very tenuous link. She said that for the first time this year the Reserve Bank of India in its annual report has actually said that climate change in all uncertain terms will impact financial stability of the country. So clearly, it is a question of incentives and capabilities and to make a business case. There is also a window of opportunity for some of these institutions to go ahead and fund and finance to build resilience both for the communities and for businesses. This can happen through money that is lent to small investors in climate proofing homes. This can be either money to businesses in terms of looking at their own supply chain risk, or money for PPP projects for climate proofing infrastructure and disaster-resistant infrastructure; it can also be funding mechanisms for governance to fulfil their adaptation targets. She also said that we all know

that funding for adaptation or green finance for adaptation is very nascent and there are massive challenges. To address the gaps and risks, there needs to be a shared conversation from countries that have had a head start. There are two things to note here—the conversations must happen industry to industry, between regulatory agencies, and the climate community can convene this conversation. Another important point to note is much of this conversation is actually transition risk-led which are the risks that a lot of the financial institutions are likely to face because of transitioning to a low-carbon economy.

**Mr Anirban Ghosh, Chief Sustainability Officer, Mahindra Group** started by saying that in financing adaptation there isn't return for the lender, there isn't even return for the government because it does not necessarily translate into votes. It does protect other investments but then there is no business model to monetize that either in the financial world or for the governments. So, it will continue to be a problem and we will have issues in funding adaptation unless it is done through development sector funds. In fact, when thinking about this question it comes to mind that while the climate commitments, conversation and action got a step up at Paris, the conversation was actually moving with two punctured tires. One punctured tire was about nature-based solutions which got addressed at Madrid and the second one was about adaptation. In Paris, there was no conversation about these two. So, **Mr Anirban Ghosh** felt that people in the private sector were delighted that these conversations are finally on the table. As far as the private sector is concerned, it will have to play a part in building solutions that will enhance adaptation and resilience because there will be technology involved, newer solutions will be required, which he felt is the biggest role that the private sector will have to play in ensuring that we are able to do adaptation better. As a society and community, despite COVID-19, the biggest thing we talk about is connectivity and one of the reasons why connectivity worked was because there was electricity. Therefore, one obviously has

to move quickly into adaptation because we have too much emissions in the air, due to which we are facing increasing temperatures and we must go forward and do it and the private sector must bring forward solutions to be able to do it innovatively, inexpensively, and effectively.

## *Key takeaways:*

The Call for Action on Adaptation and Resilience (A&R) advocates for a vision that puts adaptation at the centre of decision making and urges for action to be taken to protect people, economies, and the environment. This webinar was organized to generate rich dialogue on raising the profile of adaptation.

Building on this call, the deliberations of the first panel focused around best practices; integrating adaptation and resilience into long-term planning; increasing the resilience of economies and financial systems.

### *Key Points:*

1. The occurrence of COVID-19 is a clear example of the interaction of systemic risks and climate change. With the realization that 'mitigation' efforts need to accelerate in pace—simultaneous acceleration in building the adaptive capacity and the resilience of various systems is crucial.
2. It is crucial to build adaptive capacity and resilience of the countries, communities, businesses, and infrastructure.
3. There is a need to involve the vulnerable population in the adaptation making and decision making because of their inherent and rich knowledge base. Vulnerable populations must be enabled and empowered to deal with the economic, social, cultural, and political implications of climate change
4. On financing adaptation: There is a need for shared conversation, dialogue and partnership—the conversation must happen between industry between regulatory agencies. The climate change community can play a crucial role in convening such meetings.



## Panel 2: Risk Informed Early Response

**Moderator: Mr RR Rashmi**, Distinguished Fellow, TERI

*Speakers:*

- **Mr Benjamin Webster**, Head, Secretariat for the Risk-informed Early Action Partnership (REAP)
- **Dr D S Pai**, Scientist G & Head, Climate Research & Services, IMD
- **Dr Joseph Daron**, Science Manager, International Climate Services, Met Office, UK
- **Mr Saurabh Bhardwaj**, Fellow and Area Convenor, Centre for Climate Modelling, TERI
- **Ms Ritu Bharadwaj**, Senior Researcher, International Institute for Environment and Development (IIED)

**Mr R R Rashmi**, Distinguished Fellow, TERI then highlighted that climate resilience is something which every stakeholder needs to work on and there are different communities that are deeply affected by climate change. The question which we need to be able to answer at the regional level in South Asia is what kind of response is needed and how do we empower the communities and the stakeholders at different segments of the society to be able to meet the challenges of adaptation. Early response can be defined in different ways and as we know in India, adaptation and resilience actually takes place mostly at the grassroots level. In a federal system like that of India, we may have a national plan but the adaptation actions or private resilience is actually something which the communities experience and address.

Therefore, the resources also have to be focused at that level. There is a need for these practices to be learned and replicated at that level. There are different kinds of challenges at the community level. Early responses at the community level, perhaps needs to be looked at the granular nature of adaptation at the community level. We need the ability to really understand what the need

of the community is and accordingly shape our responses. What is important for this response is the kind of information that we can feed to the community. It is not just a question of modelling but also of conveying the scientific information to the communities in a precise and understandable manner so that they can design their responses accordingly. Similarly, industry or other segments of the society also have to structure their responses and they also need climate information. **Mr R R Rashmi** stressed that this discussion aims to address these different kinds of needs of the community and industry and other stakeholders in building the kind of responses that we need to have.

**Mr Benjamin Webster**, Head, Secretariat for the Risk-informed Early Action Partnership (REAP) noted that it is fair to say that in recent years we have seen real advances and real strides in climate information and early warning systems' forecasting capability, predictive capacity risk analytics, and so on. At the same time, we've seen organizations such as the UN agencies, Red Cross, Red Crescent movement, civil society organizations as well as governments using that forecasting capability in order to trigger actions before hazards, storms, floods, droughts, and so on become disasters. Therefore, those approaches are able to mitigate and reduce the impact of those hazards on the communities in their path. However, we have huge potential to scale up these approaches. They currently remain as pilot projects and programmes at a local level but the Risk-informed Early Action Partnership (REAP) was launched at the UN Climate Action Summit in 2019 by the Prime Minister of Bangladesh, with the view of scaling up these approaches to reach a billion people in the coming five years. The partnership brings together 15 convening countries and around 30 partners from Red Cross, Red Crescent movement, civil society organizations, and so on. **Mr Benjamin Webster** further said that climate change is upon us and we need to accelerate the speed at which we are adapting and therefore using climate information early warning systems to enable early action that mitigates the impact of

climate change. We are aiming to bring together the climate community, the humanitarian community, the development community, and the science community because while this is a very practical issue around preparedness and planning for these specific crises, we need to embed the approaches in the longer-term planning processes, development approaches, and so on. Therefore, we have to work beyond our usual silos and usual communities. As a partnership we are aiming to bring together these different stakeholders, reduce the silos, strengthen the relationships and understanding, bringing in the private sector so that we can really capitalize upon the advances that are being made for the benefit of people at the community level. It is fair to say that often or sometimes at least the investment in our early warning systems has stopped at the infrastructure development. As a partnership we really want to ensure that what we currently refer to as the last mile—the communities who will benefit are actually seen as the first mile. This is where we need to begin and work bottom up to ensure that everything we do is user-centred so that people can really benefit from the advances in technology and investments. **Mr Benjamin Webster** also felt that as has been mentioned throughout this conversation, adaptation is taking place at the local level. As a partnership, we are open to all and we want to grow this partnership so that it does incorporate countries, UN agencies, international finance institutes, humanitarian actors, and local civil society actors. There is an opportunity to receive as well to hear the experiences, to learn lessons, to share knowledge so that together we are able to maximize on the opportunities that are ahead. There is a need for this approach to work beyond existing silos that might be government departments working together. As a partnership, we often work with the national disaster management authorities as it is the natural place to begin but of course these decisions around releasing financial resources in advance of a crisis to be able to mitigate the impact has to involve many different departments. We need to be able to work beyond our existing silos, understand each other's perspectives and use

common language so that we can begin to exploit the benefits of better collaboration when it comes to these approaches. Finally, we need to ensure that we are people-centred and that the solutions we are aiming to adopt are really focused on the people who need to benefit the most. As a partnership, we really aim to empower country-level approaches but also local-level approaches to ensure that all these partners we are convening are building on what's already in place and empowering local leadership and local ownership.

**Dr D S Pai, Scientist G & Head, Climate Research & Services, India Meteorological Department (IMD)** started his address by stating that the IMD has got long experience of early warning system concerning heavy rainfall, flood risk, thunderstorms, lightning, and so on. The improvement that we have made in the early warning system can be measured from the last few cases of cyclones. During Odisha cyclone in 1999, the deaths were around 10,000. In 2013, the deaths were reduced to 50. In the more recent years, the cyclone deaths were only 5-10. This shows that there has been a significant improvement in our early warning system. In India, weather and climate-related early warning system is provided by the IMD and ocean-related early warning is provided by the Indian National Centre for Ocean Information Services (INCOIS), Hyderabad. Other agencies which are involved in the early warning system and response system are the Central Water Commission, Defence Research and Development Organisation (DRDO), etc., and as for the response to disaster, the National Disaster Management Authority (NDMA) is the main coordinating agency and they also work on capacity building in disaster resilience. He also informed that the Ministry of Earth Sciences has developed almost all aspects of early warning systems, like collecting risk information. The IMD has an international standard weather observation network consisting of surface and upper air observatories, radars, satellites, etc., and they have been updated with the use of latest technology regularly; the data are also regularly and systematically collected and analysed

and risk assessments are being performed.

Inputs are also provided to the World Meteorological Organization (WMO) regarding heavy rainfall events, increasing temperature data and so on. Similarly, in the case of monitoring and warning system, the IMD has been developing various hazard monitoring systems on early warning system. For example, in 2010 under the project Monsoon Mission Model, the IMD has developed NWP models for predicting different time scales starting from short range, medium range, extended range, and long range. Through this, the IMD is actually able to make predictions about short-range cyclone and heavy rainfall in a lead time of at least five days. He also informed that even for Mumbai type of urban flooding and other such eventualities we have now developed heavy rainfall monitoring and flood warning system based on AWS and a specific NWP model. It has been implemented and tested in the current year (2020) and it will now be going on to other metro cities, such as Kolkata, Chennai, and Bangalore.

He also informed that INCOIS works on tsunami monitoring and warning system. On a regional scale in South Asia, they have got regional flash flood guidance system implemented in the current year with the help of WMO and other international agencies. They have got early warning system for air quality in Delhi and will be implementing it in other cities as well. As far as dissemination and community communication, they have also developed some mobile applications, such as Mausam, Meghdoot, Damini for lightning purpose, and so on.

**Dr Joseph Daron, Science Manager, International Climate Services, Met Office, UK** focused his intervention on the importance of foreign partnership in the work that Met Office does with partners in India and elsewhere. Working in climate services when the aim is to provide information to inform early response and adaptation decision making and he felt that partnerships and collaborations are not just desirable, they are absolutely essential. This is because we not only require a breadth of experience and skills but also

diversity of perspectives. It is vital to understand stakeholder needs and develop information that addresses those needs in more often complex decision-making contexts. **Dr Joseph Daron** focused on two examples in particular, out of which the first one is the weather and climate science for service partnership and there'll be a CSSP India project. This project is advancing the science and modelling capabilities on weather and seasonal time scales to help improve weather and climate services to protect lives and livelihoods across India. It is a collaborative initiative between the Met Office, supported by the UK government's fund and the Ministry of Earth Sciences, Government of India. The Met Office is working with the IMD to lay the research foundation for implementing impact-based forecasting operationally. This is for providing forecasts not only of what the weather will be but actually how the weather will put its impact on people, communities, and economic sectors. He also informed that through this collaboration, a new tool has been developed to help predict flooding impacts several days in advance using a process to identify key weather patterns that link with flooding and forecasts that can then be tailored to potential flooding impacts on specific industries, such as agriculture, energy, and transport. This helps in enabling the stakeholders in these sectors to respond to the event. In parallel, data is being gathered on the impacts of extreme weather across India to evaluate the effectiveness of these impact-based warnings and demonstrate the benefits over traditional weather forecasts. This impact-based forecasting is also being advanced under the Asia regional resilience to a changing climate or ARRCC programme, funded by the UK's foreign commonwealth and development office. This is a multi-year programme enhancing capacity for provision and uptake of weather and climate services across all time scales and to support improved resilience to disasters and climate change across South Asia. This programme has not only a regional but also a national focus with activities centred on Afghanistan, Pakistan, Nepal and Bangladesh and Met Office, UK is working

closely with a wide range of partners including the World Meteorological Organization. Partnerships are crucial to the work being done as Met Office has partnered with the International Center for Integrated Mountain Development (ICIMOD) based in Nepal to help build institutional capacity in the region for weather and climate services. Collaborations and partnerships are essential in the programmes being done. He said that a key takeaway for him in the work that his organization does in collaboration is the importance of empowerment and ensuring sustainability within individual project time frames. It is often difficult to implement new operational practices so taking the long-term views is key and with donor coordination and alignment with other investments that are happening is really central to this. Finally, he also highlighted the importance of humility and ongoing learning in this work. Collaborating with organizations in South Asia and elsewhere is very humbling according to him. The majority of people working in this area have both a considerable knowledge but also share an incredible passion for protecting lives and livelihoods and we can continue to learn to inform best practices and achieve the goal of climate resilience.

**Mr Saurabh Bhardwaj, Fellow and Area Convenor, Centre for Climate Modelling, TERI** started by saying that India has been rapidly warming in a way that 11 of the 15 warmest years in our entire recorded history have been in the last 11 years. The decline of summer monsoon has been around 6% in the last 50 to 60 years. He then gave a statistical information that in the last decade we have seen an increase of 11% cyclonic disturbances in Indian waters and in the last five years this has been alarmingly at 32%. It is also projected that India may warm up to more than 4 degree Celsius by the end of the century and the incidences of such extremes (warm days and extreme temperatures), and the incidences of droughts and floods would be very high. As we see, we are currently living in a multi-hazard world and the current pandemic situation has also shown that we need to manage and plan for multitude of concurrent risks around

us. Thus, for designing any solution we need to have a clear understanding of these risks and their interactions. Therefore, we need to design a solution which is not only robust but has a holistic and integrated early warning mechanism as it pays. This will be the key for any adaptation and mitigation action and it is also imperative for success of Sendai Frameworks. Many international bodies have advocated that the application of scientific knowledge is key for the seamless transfer of experiences and knowledge sharing. Such kind of solutions have to be developed or provisioned with a shared vision of all the stakeholders. **Mr Bhardwaj** also pointed that we are currently in a time when we should emphasize on 'science of where'. This is required to ensure that location-based scientific services can be effectively deployed and used and can be mainstreamed in our policy mechanisms at sub-national level. TERI has in collaboration with NDMA and IMD has developed a flood early warning tool for the cities of Guwahati and Jorhat. TERI has also provisioned a climate atlas and a climate tool for planning purposes at local level at regional scale level. Procuring granular data and enhancing Public-Private-People partnership has to happen at these local scales as well. We need to prepare such kind of action plans right now for having a greater preparedness for the future. This necessitates that we strengthen our current data sets to make any anticipated design changes. He further stressed that as scientists we need to understand the public policy problems as the data has a spatial and temporal variability and even the policymaking has spatial and temporal granularity. So, we should really understand that and factor that in our data product. There is a need to build easy and comprehensible tools for the policymakers and in the end and not the least we need to build capacities at sub-national and local scales to understand these regional level skill risks, to own up this risk, and manage this risk at their level.

**Ms Ritu Bharadwaj, Senior Researcher, International Institute for Environment and Development (IIED)** started by sharing her experience about an ongoing programme supported

by the FCDO, which is an ICRG programme. Ms Bharadwaj elaborated upon some of the learnings from this business unusual approach that they have tried out within this programme. The Mahatma Gandhi NREGA scheme is one of the largest social protection initiatives in India and it provides for about 100 days of employment and supports creation of NRM assets as a result of the wage employment provided. Significantly, this scheme also has a climate risk management instrument that provides for an allocation of additional 50 days of employment to a household in areas that are declared as facing severe drought. Therefore, apart from 100 days of employment it provides additional 50 days in case of severe drought. She further said that her organization's research showed that majority of these households in the affected region were not able to access this entitlement primarily because of the lack of climate and other related information or parameters that can help the authorities declare drought in time. This delay in drought declaration results in distress migration by the time the family returns in the financial year because they normally adopt the circular migration approach. By the time these families return, the financial year is almost towards the end and they are not able to avail it. There are other issues also such as delay in wage payment. Her organization's intervention within the ICRG programme was two-fold. One they are trying to create a drought early warning and preparedness system that can help Mahatma Gandhi NREGA scheme functionaries and the community with real-time information. Second, giving them alerts as to when they are getting into different forms of drought and help them provide decision support system for planning for labour budget for additional 50 days or for other livelihood activities in advance. The second component of their work is focused on integrating climate information in the existing GIS-based planning by integrating climate information into that system.

Also, a strong history of data collection and monitoring provides opportunity for excellent climate forecast, impact-based assessments and

analysis from them. There are pockets of great expertise which includes individuals as well as institutions such as IMD, IITM, National Institute of Hydrology, IIFM and so on. The great advancement in remote sensing and other tools and techniques have been made. However, there are also issues because there's a very limited coordination among these organizations as well as the decision makers.

She further stated that significant investment was made in bringing all these institutions together which are managing climate data as well as climate analysis. This includes government organizations which are responsible for decision making as well as the community. By creating a data climate, data governance and sharing arrangement and a protocol, people who need climate information for decision making can get it in a timely manner. She also said that they provided them with expertise, information and support they needed to enable them to produce these tools themselves which is housed within the existing system. This helped in internalizing the whole concept of building the capacity within their system and their staff members and institutionalizing this approach rather than a project-based approach. They also invested a lot of effort in bringing all the targeted stakeholders on board, to try to understand their needs and then help them in developing a decision support tool. This exercise aimed to facilitate both early preparedness as well as planning for better coping and recovery algorithm through labour budgeting and through better planning of livelihood activities, and so on. They also tried to build on climate information by using the top-down model of climate risk impact-based assessment and combined it with a bottom-up approach of participatory vulnerability assessment.

**Mr R R Rashmi** closed the discussion by noting that all these issues can be addressed if we have proper science-based tools for assessing the risks in those areas and they are available. Our agencies are doing extremely commendable work as all the speakers pointed out the task before us now is to develop a long-term management system for sharing this information and using it and communicating it

to the effective people and the decision makers in a manner that they can use it in the best possible manner and develop early responses.

### ***Key takeaways:***

The deliberations of the second panel focused on enhanced information of climate risks as the stepping stone for better planning and adaptation actions. Investing in capability development of communities and promoting scientific and community-based management of ecosystems, capacitates them to better cope with stressors and disturbances and reorganize effectively. The discussions highlighted the importance of integrating climate risk into investment decision making and business planning; accelerating transition to resilient land use and ecosystems.

#### *Key Points:*

1. Early warning responses must look at requirements at a granular level. There is a need to convey climate information at that level in a manner that can be used and perceived with ease. There is a need to move beyond working in silos, use common language to explore better collaborations.
2. Eleven of the last 15 years in India were warmest. We currently live in multi-hazard world and the current pandemic has also shown that we need to manage and plan for multitudes of concurrent risks.
3. On reducing climate risk: From “science of what” to “science of how” and now to “science of where” should be emphasized so that location-based scientific services can be effectively planned and deployed to meet the last mile challenge of risk reduction.
4. It is important to ensure that science-based

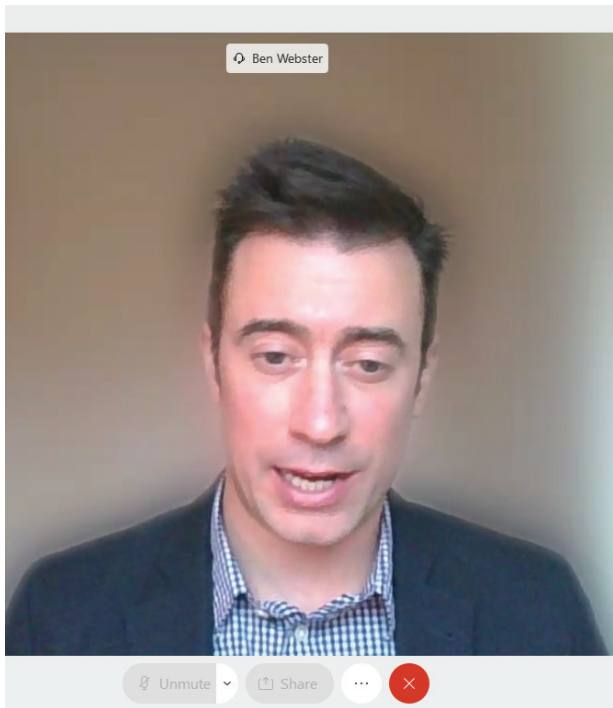
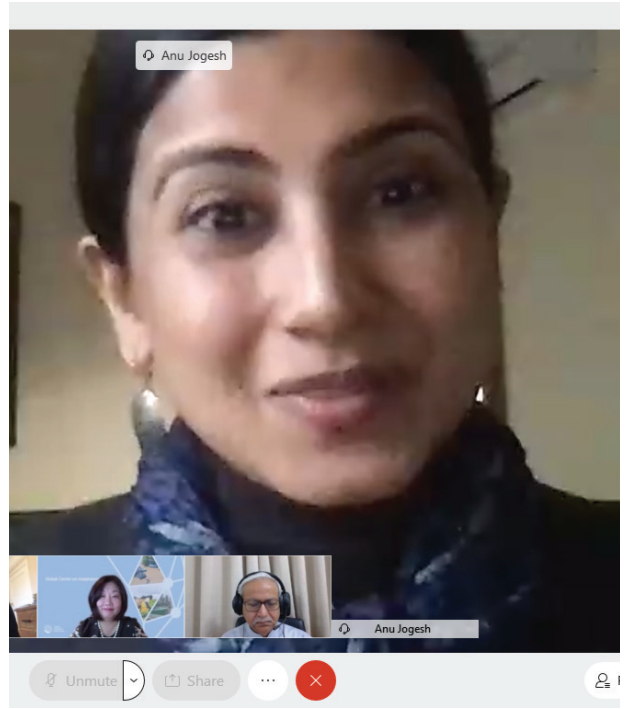
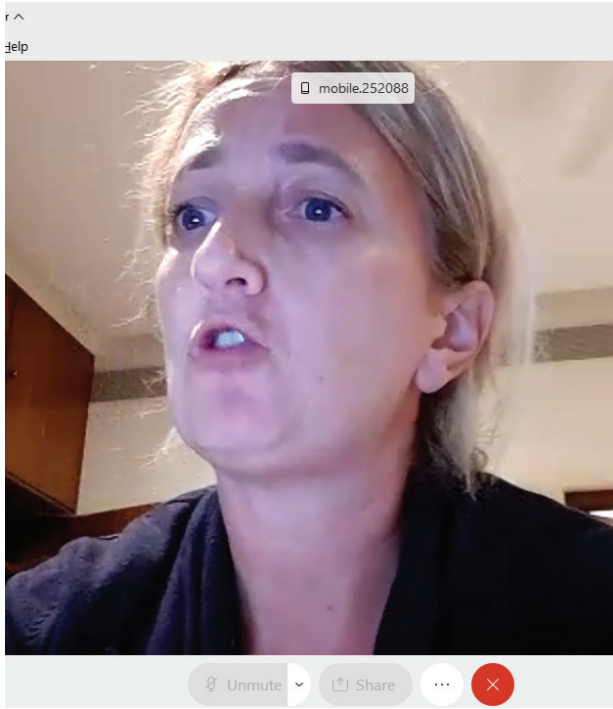
solutions are scalable, shareable and integrated so that seamless transfer of experience and greater access to data is achieved in action. Tools developed must be easily comprehensible by policymakers.

## **Concluding Remarks**

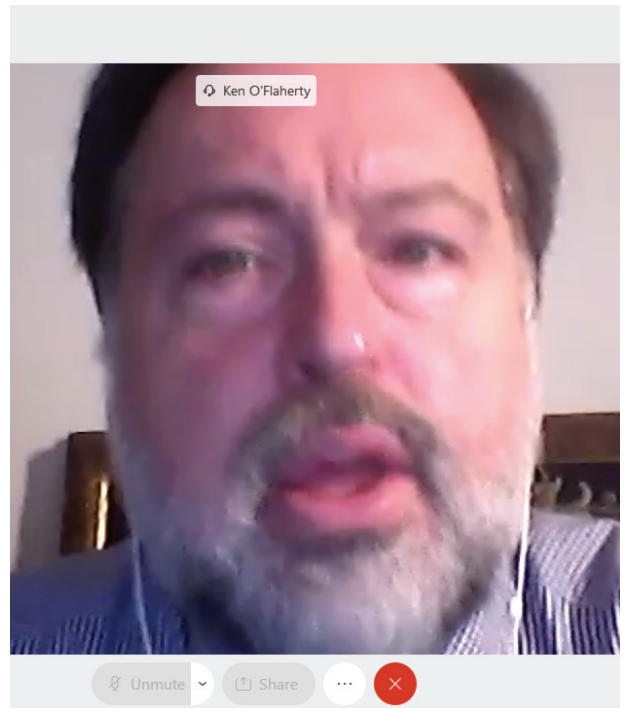
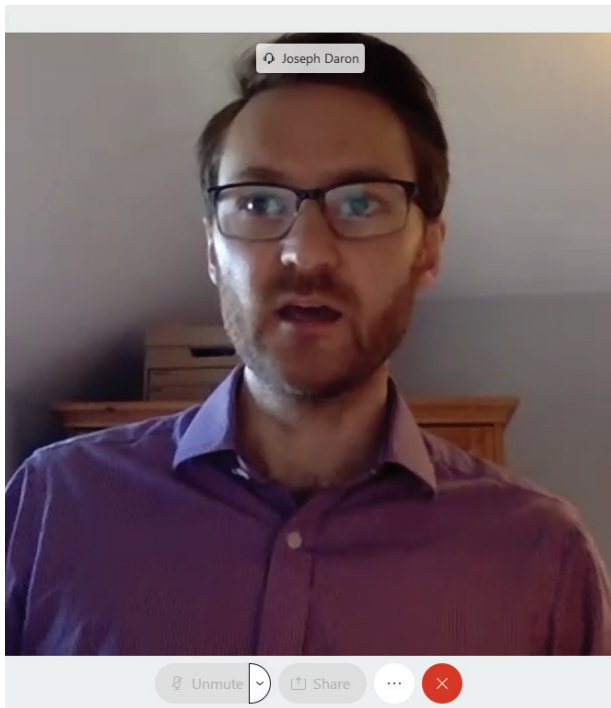
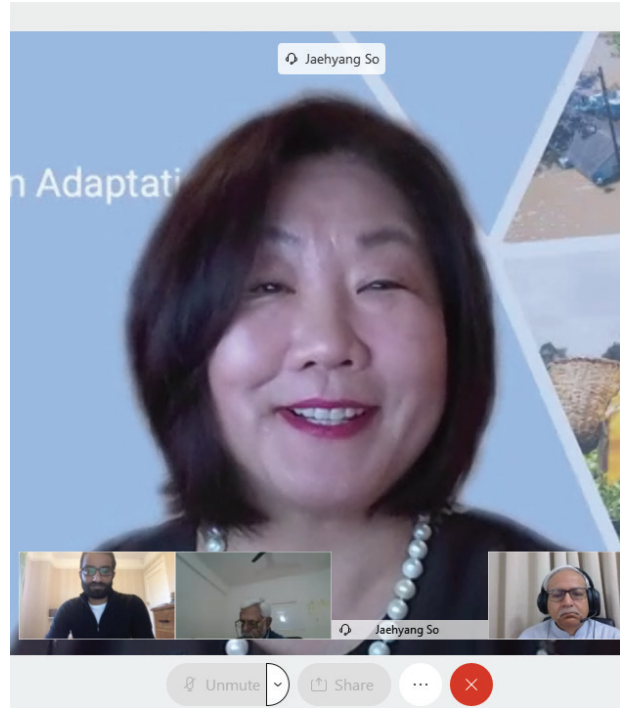
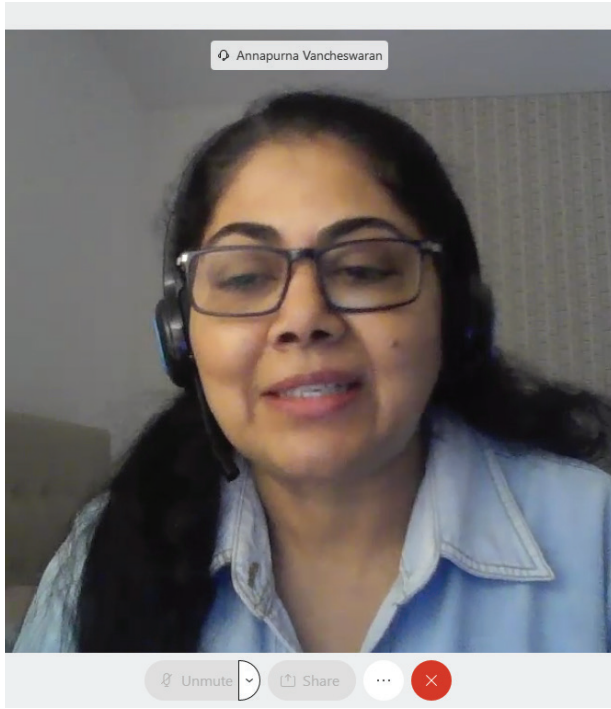
**Ms Anna French, Deputy Development Director, British High Commission, New Delhi** then elucidated on risk informed early action partnerships and the importance of making the last mile, the first mile and how we can leverage partnerships and collaborations to do this. She thanked TERI for all the work that they had done on ensuring high-level engagements on global issues and the future of e-mobility. She stressed on the need to increase adoption and manufacture to come up with really good quality and certified Indian condition specific designed electric vehicles. The green finance session again covered a huge range of initiatives at the domestic level and the diversity of different projects and different investment mechanisms we should be looking at, and also on what we should do about India’s financial system and the corporate sector. On the role of nature-based solutions in carbon sequestration, she felt that it was a webinar full of fruitful deliberations seeking to understand diverse set of nature-based solutions. As hosts of COP26, the UK is really committed to working with all countries and joining forces with civil society, companies and all people on the frontline of climate change to inspire climate action.

**Dr Annapurna Vancheswaran** thereafter thanked all the speakers and participants for the enriching discussions that happened over the last four days during the webinar.

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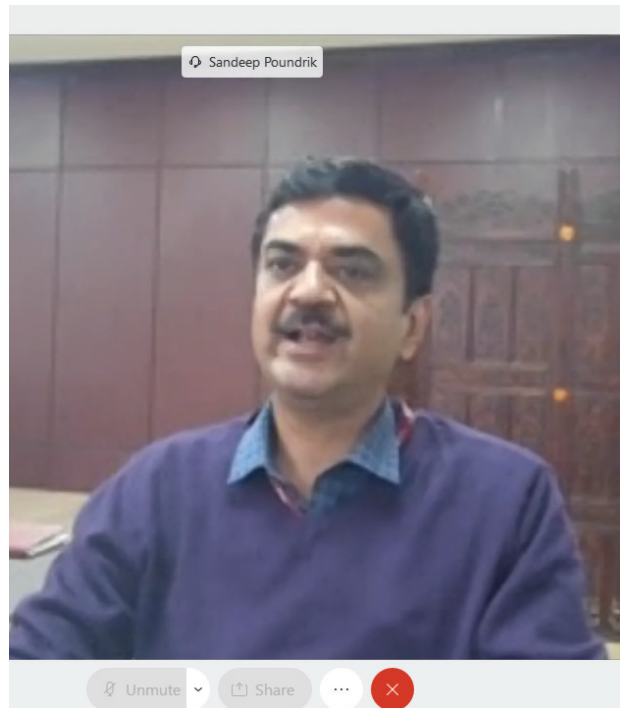
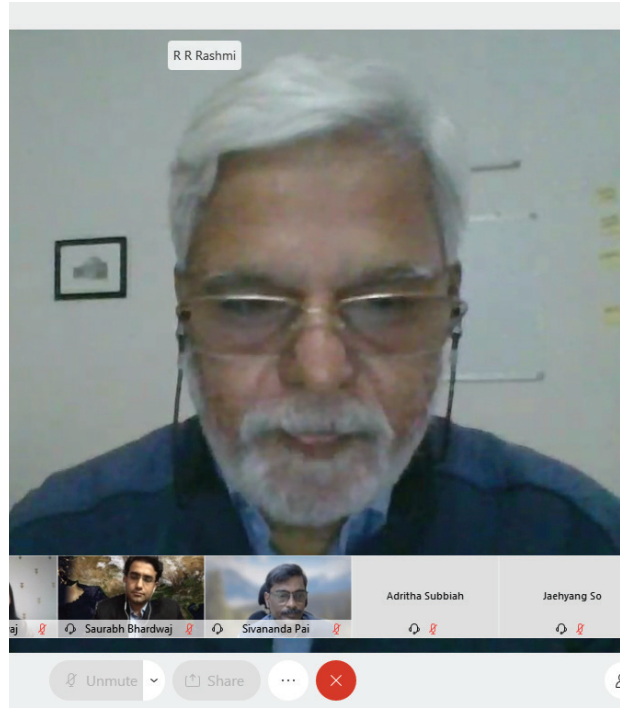
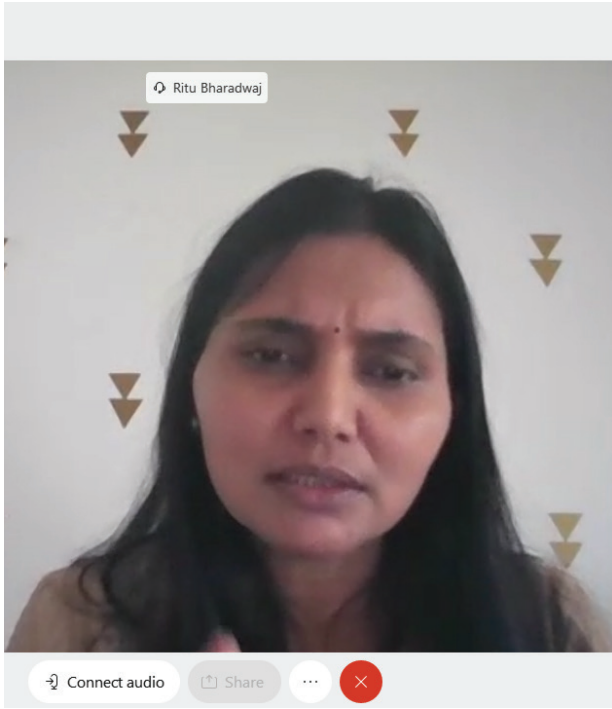


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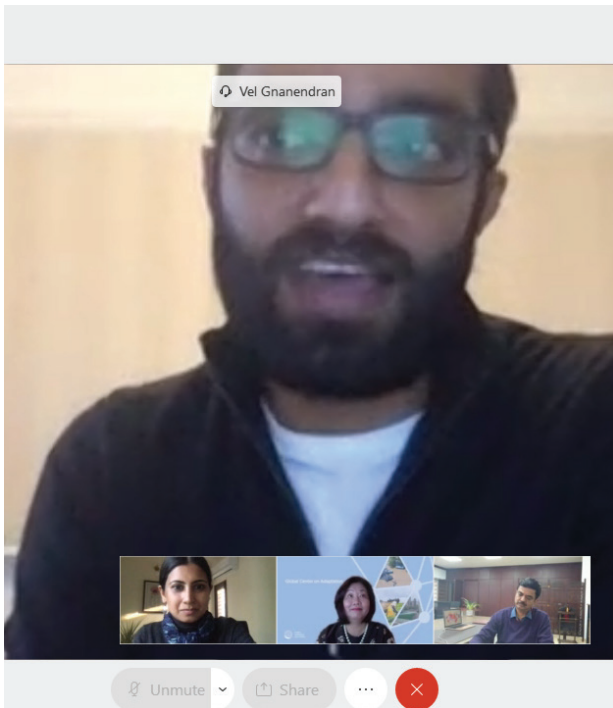
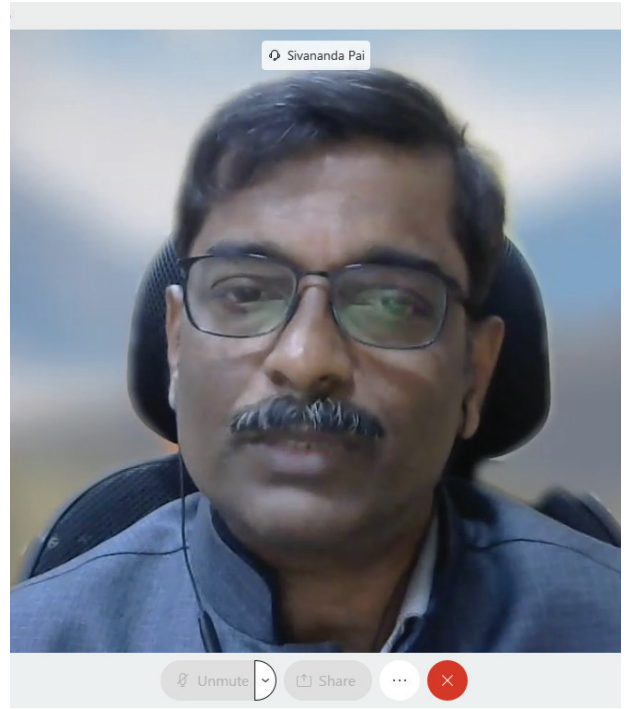




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