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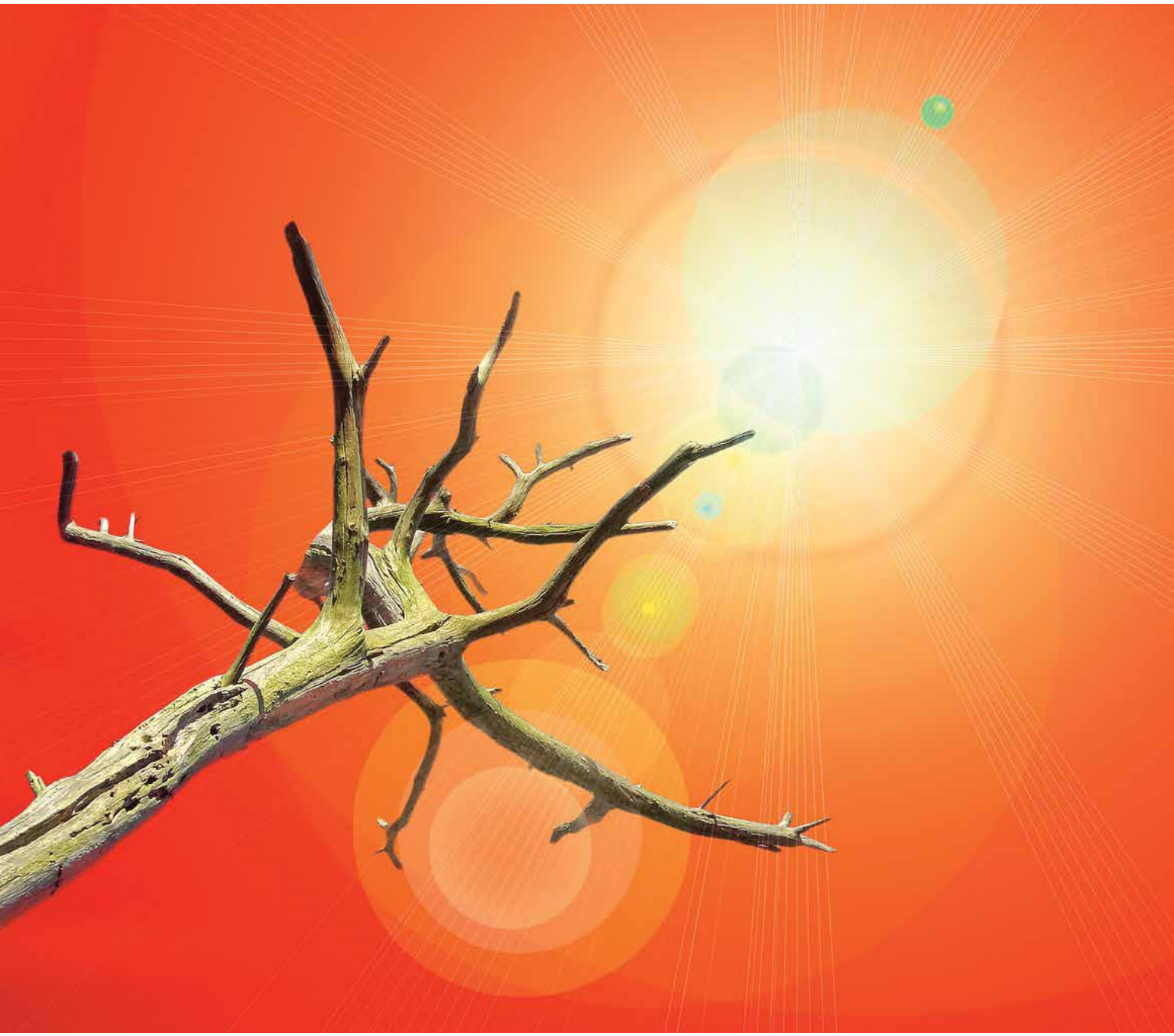

BANGLADESH STARTS ITS JOURNEY TOWARDS CLIMATE RESILIENCE

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Editor's note

Dear Readers
We get the ball rolling in 2019 with a wrap up of the recently concluded fifth edition of the Gobeshona Climate Conference. Five years in, the conference has truly come into its own, and its scope and reach are only expanding every year. Bangladesh now stands at the forefront of dialogue on Climate Change Adaption, and has provided a wealth of case studies and blueprints for the rest of the world to build on.

Of particular interest is the engagement of the youth, since they will not only be inheriting our problems, but may hold the key to solving them. Gobeshona 5 included the youth in the sessions, and organized workshops to include them, and to facilitate the mobilization of an international network of young minds and future leaders. In this month's issue of Climate Tribune, we let them speak and share their experience.

Amongst some of the exciting adaptation strategies to be adopted to fight the effects of climate change, Bangladesh might be the first to implement solar radiation technology. We shed a little light on the implications.

With a successful wrap for Gobeshona 5, it is hoped this year will take bold strides forward in facing the future ■

COVER: SARAH CERVANTES

MAHMUD HOSSAIN OPU

BANGLADESH STARTS ITS JOURNEY TOWARDS CLIMATE RESILIENCE

Saleemul Huq

At the beginning of January 2019 Bangladesh started to take the required steps to become a climate resilient country by 2030 by achieving transformational adaptation to climate change impacts.

While there are many strands to fulfil this important strategy, one of the first is to generate, disseminate and use good quality scientific knowledge so that the process is a rigorous learning-by-doing one.

Thus the recently completed fifth annual Gobeshona Conference at the Independent University, Bangladesh, with several hundred researchers and scientists from over fifty universities and research institutes, participating over three days with nearly a hundred scientific papers presented in over twenty different thematic sessions, has got us off to a good start.

The fourth and final day consisted of a science-policy-dialogue with senior policymakers with whom the scientists shared some of the latest research findings and also received advice on what kinds of research would help the decision-makers in future. The annual Gobeshona Conference has thus become a major means of assessing the state of our scientific knowledge as well as setting future research agendas.

The first major cross-cutting issue was to emphasise the need to invest in our youth in order to make them not just ready for employment but to turn them into problem solvers.

We had a group of university students selected from universities in Bangladesh, Nepal and Bhutan participating in the conference who then stayed an extra day to develop their own work plan going forward.

This work plan goes well beyond simply raising awareness about the climate change problems and focuses on how to solve some aspect of the problem by each of the youth in their own respective settings. This network of university students will be both Bangladesh-wide as well as students in universities which are part of the Least Developed Countries Universities Consortium on Climate Change (LUCCC).

It is important to note that transformation will take place over the next decade and today's youth will be the leaders of tomorrow. Another important point to note is that coming up with solutions for tackling climate change in Bangladesh will also be applicable in other countries which means we can export our knowledge in future.

> "It is only by enabling the country to institute effective means of learning from practice that we can continuously improve our actions in order to achieve transformational adaptation outcomes"

PIXABAY

The second major cross-cutting theme was on gender, but going well beyond simply focusing on the vulnerability of women and girls to the adverse impacts of climate change. Here the emphasis will be on empowerment of women to become agents of change in tackling and solving climate change impacts in different settings. This also related to the first point of empowerment of youth but with an emphasis on girls over boys.

The current generation of women in Bangladesh have already demonstrated their ability to contribute to the economy of the country, such as in the garment industries. The next generation will have to move from employment as labour to using their minds to become problem solvers and not just employees.

The third major cross-cutting issue that came up time and again in different thematic sessions, including urban, coastal and migration sessions, was the need to anticipate and ensure that future migration due to climate change is done in a planned and enabled manner and not under distressed conditions.

The challenge here is to make the current problem of environmental migration due to distress conditions into a possible adaptation to future climate change by investing in education and empowering the youth, primarily girls, in the low-lying coastal parts of the country and at the same time investing in setting up climate resilient migrant friendly cities and towns around the country so that the future climate migrants don't all end up in Dhaka.

The fourth and final point to make is that the three cross-cutting issues described above are not separate but intertwined together and while funding will be a key requirement, an even more important requirement and investment will be in knowledge and education of the right kind. It is only by enabling the country to institute effective means of learning from practice that we can continuously improve our actions in order to achieve transformational adaptation outcomes.

In this context the Annual Gobeshona Conference will continue to play a key role in taking stock of our progress each January and building on what is successful and dropping what is not. Also from January 2020 onwards the event will become a truly global event where we will invite the rest of the world to come and learn from Bangladesh how to go about achieving transformational adaptation at national scale. ■

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(This article first appeared in The Daily Star newspaper. It has been republished here with permission.)

CLIMATE DATA MATTERS

INTEGRATING CLIMATE INFORMATION INTO DECISION-MAKING PROCESS

BIGSTOCK

Tasfia Tasnim

Better understanding on Climate Services

Climate change science has witnessed incredible progress in recent times. Climate services offer science-based information and forecasts that empower decision-makers to manage the risks associated with climate variability and climate change and to discover opportunities.

While the generation of climate information and forecasts is growing rapidly by climate scientists, many developing countries in the world still lack the capacity in the form of data, technology, knowledge and expertise they need for their people to benefit from using that climate information.

The International Research Institute for Climate and Society (IRI) at Columbia University defines the climate services with four pillars which are Production, Translation, Dissemination and Use.

When generating climate information, it's important to first identify the need for the information. After generation, climate information needs to be translated by analyzing the data for the user group such as agriculture, public health, disaster, natural resource management or other relevant sectors.

After climate information has been translated, it comes to the point to transfer the information, which can be through different formats or media. The transferred climate information then needs to be used in various operational decision-making processes, policies or plans. However, if there is no institutional buy-in, the impact of climate services would be very negligible.

Uncertainties and challenges with Climate Services

In reality, there are gaps in the use of climate information from decision making at different levels. The first challenge is the quality and availability of climate data, as climate data is the foundation for climate services. Even if the data is available, limited access, understanding and use of the available data makes the process difficult.

A gap also remains in integrating climate into policy and practice level. There are lots of uncertainties associated with climate change and its impacts, and other socio-economic factors, and adaptation can be characterized as decision-making under uncertainties.

As we all know that with the climate change and variability, the function and services of a system, the outcome and effectiveness of an activity and policy decision, or the longevity of an infrastructure would be compromised. So, the providers of climate services need to consult with users to determine what kind of information they need, when and how often, and in what format. They then deliver the information and assist their clients to interpret and apply it.

Temperature, rainfall, solar radiation, evaporation, sea level, wind, pressure, humidity, sea surface temperature are the common climate variables used for climate impact and risk assessment. All these climate variables have several impacts on various agriculture, water resources, human health, infrastructure, forest and biodiversity, disaster and in many more sectors.

Adapting to climate change requires long term capacity building and planning, but information at shorter timescales is also crucial for decision-making under uncertainty. Climate services is needed to identify constraints, risks, tolerance to uncertainty, and temporal components of climate information and decision-making processes, as decision makers working in climate sensitive sectors requires better information to act quickly.

The Rohingya camps in Cox's Bazar is a hilly area facing rapid deforestation with biodiversity loss and crammed dwelling conditions. The area is extremely vulnerable to

Participants at the first BACS Training Dialogue in October 2018 DANNIE DINH

potential landslides and flooding. During the rainy season, water quality and sanitation are major issues, since a lot of latrines are not respecting international standards and there is a high risk of latrines contaminating tube wells. The shelters are made of plastic and bamboo, and hence they are not resistant to strong rainfall and winds.

It is very challenging to disseminate information to a mass population within a short period of time. There are a lot of people who are sending climate data to the organizations working there, and sometimes when it is out of context, it is not necessarily useful. It can be confusing and potentially harmful if it is not used in the right way. So, there is huge concern from the organizations in the camps about the availability of good quality data and how to link the data to specific decisions.

When the work is mostly dependent on climate sensitive ecosystems, the rapid transmission of critical information is necessary. Hence the timescale of climate information is an important issue to consider when it comes to decision making.

> “When generating climate information, it’s important to first identify the need for the information”

Bangladesh Academy for Climate Services (BACS) to bridge the gap between climate information producers and users

To meet this demand and bridge this gap between climate scientists and decision makers, Bangladesh Meteorological Department (BMD) together with the International Center for Climate Change and Development (ICCCAD), the International Wheat and Maize Improvement Center (CIMMYT), and the International Research Institute for Climate and Society (IRI) at Columbia University have jointly founded a climate services academy.

The academy was presented and discussed in the 4th symposium called “Gobeshona” in Bangladesh held during January 2018. Since then, this academy has become a dynamic, participatory platform to centralize and coordinate efforts on climate services, that brings together multiple actors and sectors, with various levels of knowledge on climate information in the form of design workshops and training dialogues. The intention of the academy is to link data providers and data users, and make the information more accessible, clearer and informing people about what is relevant in their field, for a wide variety of people those are outside of the science community. ■

Tasfia Tasnim works at ICCCAD. Her working majors are climate finance, livelihood resilience and natural resource management connected to socio-cultural dynamics.

The grim face of Climate change PIXABAY

TECHNOLOGY AND CLIMATE CHANGE

A ONE-CLICK TECHNOLOGY OPPORTUNITY FOR CLIMATE CHANGE ADAPTATION

Anne- Laure Pilat and Ambalika Singh

The fight against climate change means reducing greenhouse gases. But it also necessarily entails adaptation to the climate change impacts on the environment and livelihood, especially for the most exposed and vulnerable people to climate change.

Mitigation and adaptation efforts in developing countries can only be achieved utilising capacity building, coupled with technology transfer. Indeed, technology is an inseparable part of today's world and is continuously changing our ways of living and pushing back limits of what we thought was possible.

Technology development and innovation is part of the drivers of countries development and economy. It is, therefore, logical to see technology as a provider of 'creative solutions' to some of our current challenges such as climate change.

As such the Paris Agreement in article 10 paragraph 4 does recognise the potential of new technologies to improve adaptation capacities and limiting greenhouse gases emissions by establishing a technology framework for the Technology Mechanism established at the COP 16. The United Nation Framework Convention for Climate Change also created a state-to-state obligation to assist and provide technological and financial support for climate mitigation and adaptation, especially for the developing and most vulnerable countries.

Adaptation tech needs to serve the local market

One of the first climate change technologies were renewa-

There's a storm on the horizon. Are we ready? **RUSHOW KHAN**

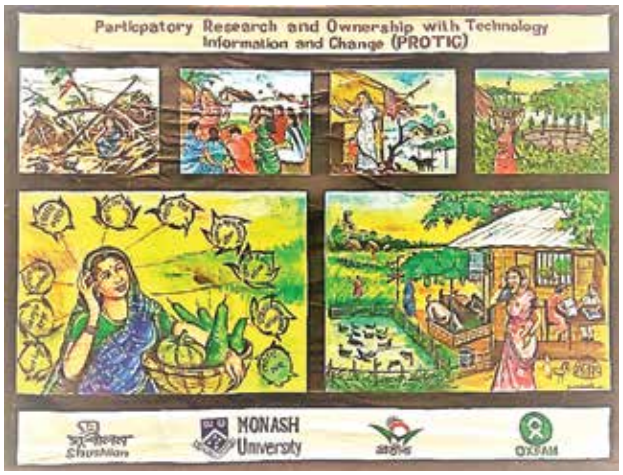
ble energies, at the forefront of this change were solar products. They represented an enormous opportunity to cut back greenhouse gas emissions and therefore comply with the mitigation obligations decided by a given country. At first, the adaptation pillar of the climate change fight received less attention and therefore less financial support and attention for developing climate adaptation technology.

Indeed, adaptation is a complex question consisting of a variety of causes of community's vulnerabilities and situations, shifting migration pattern, etc - making it more difficult to assess the technological need of a country. However, in recent years, a stronger focus on the question of adaptation at the international level of climate change negotiations put the question of adaptation technologies on the table.

Adaptation technologies designated particular technical solution to a climate risk (building sea walls, drought-resistant crops, use of the natural capital of a given communities in a more resilient way), as well as other technologies such as digital information and communication to improve access to information and knowledge of climate conditions (short and medium weather forecast to inform farmers when to plant their crops).

The technology transfer can have two forms: first the technology transfer of a given technology developed by a research institute for the private sector for commercial use within a given country, and the second (indented by the climate change negotiation) the flow of a given technology and associate knowledge from one country to another and adopted by the private sector and the population in the receiving country.

ADAPTATION ENABLED BY TECH



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However, a number of barriers still exist for an international technology transfer despite the numbers of measure taken to facilitate and finance the technology transfer from developed countries to the developing ones (exception of patent protection price control, etc.). The currently existing barriers, defined as any limitation that diminish the effect and use of a technology, can be divided in three categories: technical (need for a high level technical knowledge), organizational/economic (different perception of the use of a technology between the provider and end users), and system barriers (lack of infrastructure).

Therefore, the real underlying question for any technological transfer need to be addressed first; such as the assessment of the needs of a particularly vulnerable community and secondly their capacity to use a given technology. In other terms, it is about understanding the market and who the users are of a given adaptation technology.

Local solutions - making use of tech that already exist

The International Conference on Climate Knowledge 'Gobeshona', 2019 addressed such issues by bridging gaps in the rural areas through the use of technology, as the means of adaptation and also as an integral part of capacity building. At the conference, national and international participants discussed their research work based solutions demonstrating the technology capacity already existed within Bangladesh.

PROTIC (Participatory Research and Ownership with Technology Information and Change), one of the interesting project shared, is in collaboration of OXFAM and Monash University, Australia. The project is in the implementation stage (2017-2019) and it focuses on empowerment of rural communities, specifically women by providing them technological tools to raise awareness, increase interactive community information services and then fulfil the needs of the communities.

Beginning with the access of mobile phones in remote areas, which includes only 'one click' to learn about the weather conditions, get disaster alerts, agriculture and crop information. Above all, it provides knowledge and information as a part of educating the communities at large. The usage of mobile phones is becoming an integral part of people lives, such as climate change and its impact has developed, sadly, is also a part of their daily life now. The innovative technological projects help in engaging village communities to be part of the participatory action research and connecting them to the cities and developments actions. The widespread use of technology and more importantly making it accessible to vulnerable communities will only provide fruitful benefit regarding fostering human capacity and becoming more adaptive to climate change impacts.

One of the key recommendations proposed at the conference is, to focus on improving the existing mechanism of technology that we have currently, rather than finding new solutions. The use of mobile phones could be explored and it does not require significant investment. The technologies could be useful with the opportunities of knowledge sharing and establishing a link with local communities, understanding of the basic requirements, to upgrade traditional knowledge and identify gaps to intervene.

At the same time, exploring more on how local technologies could be improved and developed without relying much on outside help and on the other side, making sure that the technologies reach the most vulnerable people, as it should be easily accessible and affordable.

Furthermore, in developing countries there are already some technologies that are widely available and used by the population and therefore don't need to rely on the international technology transfer and its barriers, and thus can be used for climate change adaptation project such as mobile phones. Moreover, in this essence, adaptation technologies need to be developed with a community-based approach and with technologies that are already used, innovative methods need to be explored and used in finding solutions to climate change impacts. ■

Dr Saleemul Huq is the director of ICCCAD at the Independent Anne-Laure Pilat, is a visiting researcher at ICCCAD with a background in Public and European environmental law.

Ambalika SIngh, is a visiting researcher at ICCCAD and has a LLM in Global Environment and Climate Change Law, University of Edinburgh.

WOMEN ARE SOLDIERS, NOT VICTIMS

TIME TO CHANGE THE NOTION OF WOMAN AS A MARGINALIZED CLASS TOWARDS A RESILIENT-ADAPTIVE GROUP OF THE SOCIETY

Women are navigating the tricky terrain of climate change with strength SHEKHAR MONDAL

Farah Anzum

Gender sensitivity has always been one of the most contested parts of climate change negotiations. Often, the most devastating impact of climatic events affects women and children, especially if they belong to the poorer segments of a given society. UNFCCC found that "From rising sea levels to drops in farming yields and urban floods, the impacts of climate change are being acutely felt by women". In addition to this women have a higher dependence on natural resources, experience greater rates of social stigmas and are often absent from the decision making processes, this ultimately puts them in a more vulnerable position due to climate change.

COP 24 in 2018 has been a crucial year for gender perspective as it adopted the Paris Agreement Work Programme, "Rule Book" which reviewed the Lima Work Programme on gender and the Gender Action Plan. It discussed the essentials of gender participation in the various policies, and how these may be implemented by governments worldwide.

Recently, for the fifth time, Gobeshona has arranged their international conference on climate knowledge at the Independent University of Bangladesh. Gobeshona brought together more than five hundred climate scientists, researchers and participants from home and abroad. On the third day of the conference, a session was conducted on "Gender" issues. It highlighted questions around gender and the significance of higher integration of women in climate change policies across the globe.

GENDER AND CLIMATE CHANGE

If we raise the question, "*Why do we need to be concerned about women specifically due to climate change?*" many rationales would be stacking up in favour of the concern. A study of UNICEF found, globally 80 percent of people displaced by climate change are women. Aguilar (2004) mentioned that women and children are 14 times more likely to die than men during a disaster.

In the 1991 cyclone which claimed 140 thousand lives in Bangladesh, 90 percent of the victims were women. "*Bangladeshi women as a socially disadvantaged group are confronting serious negative consequences of climate change, impacts through their daily life experiences, depending on their geographic location and socio-economic conditions,*" said Dr Mumita Tanjeela, Chairman of Sociology Department at East West University.

Though women have a long history of adaptive knowledge on climate change, their role in agriculture, household, water management and community involvement have never gained the real recognition of the contributions. Instead, they are portrayed as a victim of the malnutrition, food security, safety and natural disasters.

Unfortunately, most formal adaptation programs consider women contribution as a 'tokenism' involvement of gender-equal participation. Dr Mumita says that national climate change policies, like National Adaptation Programme of Action (NAPA) in 2005 and Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2009 could not recognize the need of women dynamics properly. They are instead indicated as a vulnerable group in most of the policy papers.

Bangladesh government has adopted SDG's in 2015, and since then, many NGOs and government entities are working relentlessly towards implementing the commitments within 2030. Among the various goals, "gender equality" is a major one which is broadly categorized under SDG 5 - 'Achieve gender equality and empower all women and girls'.

Sajal Roy, a lecturer at Department of Women and Gender Studies, Begum Rokeya University, said that in spite of efforts, it is not evident yet how far women are adapting with climate change shocks and capable of mitigating their impacts.

Roy said the southwestern part of Bangladesh represents the most biologically diversified area. It is the home to 36 percent of the country's population, and more than half of them are women. Many organizations claim that women's

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> Though women have a long history of adaptive knowledge on climate change, their role in agriculture, household, water management and community involvement have never gained the real recognition of the contributions

RAJIB DHAR

JOHN MAGRATH

SHEKHAR MONDAL

productivity has increased over time and yet concerning labour pricing, there is a massive difference between men and women. He mentioned that even a more significant part of Green Climate Fund, government intend to spend on the productivity enhancement of southern women, but it is still in a complicated situation to understand. Hence, it is crucially significant to integrate women in policy measures to take proper actions accordingly.

Roy further said that until we can raise the voice of women, it will be hard to grasp our goals of climate change adaptation. "Our women have been dealing with natural shocks for a long time but from a perspective of recovery," he said.

On the other hand, at international level, gender mainstreaming is often explicitly invisible among various climate change agreements. In Paris Agreement, gender specifics were mentioned in only three sections (preamble, Article 7 on adaptation and Article 11 on capacity building), whereas there is no recognition in several significant areas such as mitigation and finance and technology.

Edith Ofwona, Senior Programme Specialist of Canada's International Development Research Centre (IDRC) said that both finance and technology are essential to enable adaptation and mitigation. It is important to ensure that both women's and men's voices are heard equally in deciding allocations and priorities.

The session, nonetheless, brought up several recommendations to gender mainstreaming in policies and implementing strategies at the national and global scale. It is crucial to integrate gender transformative approach to climate change adaptation policies and practices.

Dr Tanjeela recommended that governments need to initiate the periodical review of the BCCSAP-2009 which will provide a clear picture of the climate change adaptation situation in Bangladesh and will help to identify the gaps and challenges. Papia Sultana, Assistant Director, Department of Environment also suggested that capacity building activities on gender and climate change should be enhanced at the national to local level and gender disaggregated data should be monitored in the implementation of Gender Action Plan.

So there is still the need to develop a proactive force. However, local government has a major role to play as well in reaching rural, marginalized people to provide them with climate service related facilities. It's also important to include men in the process otherwise it will be gender blind development.

Among countless negotiations and agreements, we should develop our strategies in a way where women will be our resilient soldiers, and at the same time, gender justice can be implemented. ■

Farah Anzum is an undergraduate student of Environmental Management and Economics from North South University. She has been involved in many development organizations and worked as Research Assistant.

LAURA PRATT

A RAY OF HOPE

UNDERSTANDING THE HEALTH IMPACTS OF SOLAR RADIATION MANAGEMENT

Sobiya Aziz Badat

Current global emission trends indicate that it is unlikely we will be able to limit the temperature rise to below 1.5°C above the preindustrial levels. The global temperature at the current pace is predicted to rise about 3°C by the end of the century.

Clearly, the global community has not been doing enough mitigation. While there is no alternative to reducing greenhouse gas emission, the projected increase in temperature is also making scientists think about radical approaches to limit temperature rise, at least temporarily. Solar radiation management (SRM) is one such proposal which involves reflecting a small amount of inbound sunlight back out into space, for instance, by spraying reflective aerosol particles into the upper atmosphere.

The technique, albeit highly controversial, in computer simulations have shown to be capable of quickly reducing the rate of global warming – the models however also indicate that there might be implications, such as reduction in rainfall. There are still significant uncertainties around the full impacts of SRM. It could end up increasing, not decreasing climate risks.

So, in essence, it is highly problematic despite the possibilities of SRM. The political dimensions could be much more challenging than the physical dimensions: SRM could distract from emission cuts or even provoke conflict between nations if used unilaterally. As such the debate is increasingly moving, from engaging in SRM, to the social and moral hazards it pertains. The question is, therefore: should we do it?

Climate and diseases are closely linked. Changing climatic conditions, such as temperature and rainfall, bring about

significant changes in the occurrence of infectious diseases. SRM models project that the tropics may become cooler if it is used. Altered rainfall patterns and reduced temperatures may have implications on an outbreak of infectious diseases such as malaria and cholera.

Therefore, understanding how the deployment of SRM may affect the global burden of infectious diseases and the implications for the governance of SRM are important. Unknowns surrounding the SRM are many, and as such, it is argued to proceed with caution and get all the research done meticulously prior to deployment.

The global south comprises of countries which are most climate vulnerable. These countries will be directly affected by any future decision to employ SRM. They need to, therefore, have a central role in the global debate on SRM. Understanding their own regional issues, pertaining to climate vulnerability and be able to apply it to other countries in the region is of utmost importance.

To fund regional research, as a part of the SRM Governance Initiative (SRMGI), a USD400 thousand fund called DECIMALS (Developing Country Impacts Modelling Analysis for SRM) has been undertaken. More than 70 teams of scientists from the Developing-world applied to DECIMALS for funds to model SRM impacts that matter most to their regions. Eight projects were selected, including one from Bangladesh, which will focus on understanding the implications of SRM on infectious diseases.

The DECIMALS- Bangladesh research team is led by researchers from ICDDR,B (International Centre for Diarrhoeal Disease Research, Bangladesh) - a global leader in cholera and malaria research. The country has successfully overcome its high cholera fatality rate, after decades of research and medical care. Any future anticipated changes in the climate systems may affect the infectious diseases in the country, an unfortunate burden on its economy. As much as warming is detrimental to health, the cooling achieved by SRM may also bring its own challenges. Understanding and comparing these linkages are central to the DECIMALS project in Bangladesh.

The team brings together a diverse group of researchers from Bangladesh and America. The project will begin with a systematic assessment of possible links between SRM and altered health outcomes, identifying knowledge gaps where closer collaboration between climate and health scientists can improve understanding of SRM health impacts.

The team will then conduct the first simulation-based projections of how SRM could affect infectious disease transmission. The modelling teams will work with data generated by large climate model runs, such as the Geoengineering Model Intercomparison Project (GeoMIP) or the NCAR Geoengineering Large Ensemble (GLENS).

The overall goals are an attempt to understand the unknowns surrounding SRM. It is only right that Bangladesh begins its own research and builds an evidence base to find out the linkages between infectious diseases and the change in climate due to SRM. Bangladesh has a strong education and research system and can provide leadership, helping other Least Developed Countries to understand how SRM could affect them, if and when the time comes for global actors to decide on the deployment of SRM.

Building the country's capacity to be able to start a wider conversation about the risks and benefits of SRM is an achievement in itself. ■

Sobiya Aziz Badat is an Environmental Science student at IUB and an intern at ICCCAD. She is also part of the DECIMALS team in Bangladesh

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VOX POP

YOUTH EXCITED TO SPRING INTO ACTION AFTER GOBESHONA CONFERENCE

YOUTH REFLECTIONS FROM GOBESHONA 5

Youth Day

PHOTOS: COURTESY

Jennifer Khadim

Twenty four youths from different public and private universities attended all six days of the conference including the two youth days. They talked to experts, policymakers and development practitioners about climate change problems and possible solutions on topics they found interesting.

Students were involved in sessions which included engaging with country-specific discussions about climate change, where students were asked to identify potential climate change problems in the global south depending on which countries the students came.

Sessions focused on the role of the youth in identifying climate change solutions. Students discussed possible approaches they can take to help in solving these issues. Also discussion on the importance of building a more extensive cross-country network of youth took place. Students were then asked to come up with ideas as to how they can create this network, which virtual platform can they use, who and how they will manage a year-long communication with other universities/youth groups and what will be the common themes they can work on.

Gobeshona 5 initiated the Youth Days as a way to identify the future climate change leaders in Bangladesh and the Least Developed Countries (LDCs). While the prime objective was to introduce a small group of university students to the world of climate change science and policy research, the outcome turned out to be much better.

It began the journey of a broader youth network in Bangladesh and expanding to the South Asian countries. How will they contribute to the climate change research community while they are still studying? Will they spread their newfound knowledge among the climate - vulnerable populations?

Dr Saleemul Huq, Director of the International Centre for Climate Change and Development (ICCCAD) says otherwise. It is not sharing knowledge but action which will bring chang-

es in the student's locality hence the larger community of the country.

He also emphasized the fact that while a joint action plan might be useful to guide what needs to be achieved in the long run, immediate action will convey an even stronger message to the world. Dr Huq's note to the Youth participating at the 5th Gobeshona Conference was 'to go home, identify a local problem, make a plan to tackle the problem and then mobilize supporters to tackle it. After six months they will report back on their action.'

He also opined that the concept of raising awareness has been going on for a long time and the time for youth to take action is now. As an example, he talked about 16 years old Greta Thunberg from Sweden who came to media attention with her action on climate change and a powerful speech to the world leaders at COP24 in Katowice, Poland.

If a school student can make an effort by striking in front of her school to fight climate change, then everyone should be able to do some small everyday task which in turn will help in tackling climate change. All that is needed is an intention to do something good for Mother Earth.

International Youth Participants

"I enjoyed all three segments of the conference; youth day, science conference and science policy dialogues which were indeed great and knowledgeable.

During the science elements of the conference, I received a lot of information mostly about climate-induced problems in Bangladesh and some innovative ideas to tackle those problems. It highlights the problem of climatic change in the different sector from food security to migration.

The conference has been tremendously useful in terms of gaining new understandings, as researchers brought forward brilliant ideas such as genetic changes to cope with the changing climate and the use of different techniques for solving the problem.

Likewise, another segment that focused on science policy dialogues on the conclusion of COP24 and NDC targets was very illuminating. It also discussed the ongoing process of NDC targets implementation in Bangladesh.

In spite of the above positive aspects of the conferences, both the science conference and science policy conference had a very broad approach and the presenters could only speak in general terms rather than going into their research in more details.

I see the youth days as the most attractive part of the conference, as there was considerable interaction between youths of different cultural and geographical background where we were free to express ourselves.

Communication amongst us was so good. We were able to find the real burning problem of climate change and ready to highlight some approaches to solve those problems. To make the learning of the conference effective, the organizer requested all the youth participants to develop an action plan to tackle the environmental issues and do some action for better environment change within six month time period which I think is a beautiful initiative.

Overall, the platform of the conference was useful for knowledge gaining and sharing. Beyond that, the networking opportunity was very exciting."

- Lata Neupane, Student of Masters of Science in Environmental Management at the School of Environmental Science and Management in Kathmandu, Nepal.

"Gobeshona is a network where the researchers on climate change get together and share their experiences. Moreover, to discuss the plans and projects to adapt ourselves to climate change impacts and to be resilient.

We know that climate change is a global problem and it is necessary to involve people globally in working towards minimizing the impacts of climate change. So, we become more knowledgeable in the subject and build resilience to climate change impacts.

As a youth participant in Gobeshona 5, I got to learn more on climate change its related issues so that I can work on becoming more resilient. We need to go one step ahead to mitigate its problems. We have to start from within if we want to achieve a lot, as it is said that everybody's work becomes

nobody's work.

For me, the one of the best outcomes from the conference is, I will first look into the issues relevant to my locality. Then I will look for a solution to that, which will help in mitigating climate change and adaptation."

- Ugyen Penjor, Student at the College of Natural Resources at the Royal University of Bhutan.

Local Youth Participants

"Climate change is no longer an issue we can ignore to accommodate economic growth. The main danger of climate change is its chronic nature, where a significant amount of damage may occur without immediate signs or symptoms. For this reason, many people, including some important public figures, dismiss climate change as false. However, people are more aware of climate change each day in countries like Bangladesh, which, even though a developing country itself, has positioned itself at the frontline to take actions against this global problem.

Bangladesh is now a focus of extensive research, and the involvement of youth in this sector is remarkable. As an undergraduate student of Environmental Management in Dhaka, I get to witness many of the works being done and attend workshops, seminars and conferences on environmental issues.

Gobeshona is currently the largest platform dealing with climate knowledge issues in Bangladesh. Entering its 5th year, Gobeshona 5 spread its wings beyond the national boundary to attract professors, practitioners and specialists from the world over.

This experience has been beneficial for youth participants such as myself, because we got to know in detail about the ground-breaking work being done across the globe and also personally interact with the people behind such innovations, something which would not have been possible otherwise.

In my personal experience, I have learned about many of the innovative studies going on in Bangladesh and across the world, such as Solar Geo-Engineering, Sandbar cropping, innovative utilisation and management of polders, etc.

The organizers of Gobeshona recognise the importance of youth involvement, and in this year's event, we had two special days only for the youth participants. We were briefed on various aspects of the conference before it started. The youth days helped to rekindle our curiosity for knowledge.

We were encouraged to socialize and exchange ideas with the specialists attending, as well as build a network of fellow national and international youth participants. This has really helped expand our horizon of thinking.

Finally, we prepared an action plan for one year with our pledge to personally take action regarding climate change. Overall, Gobeshona 5 has been a unique experience for me and all the other youth participants, and it has motivated us to take action both individually and collectively.

- Shaiyan Siddique, Undergraduate student at the Department of Environmental Science and Management at North South University, Bangladesh.

"International conference on climate knowledge, 'Gobeshona 5' is my first ever experience of an international conference.

I learned about many new topics and gained a bunch of new experiences, particularly from the youth day, where we planned to make an action plan for next one year from our acquired knowledge and experience from the conference.

After four days, we all have a lot of ideas, and we cannot decide which one we should select for our action plan, they all were great ideas. Collectively, as a group we made a cross-disciplinary, cross-university and cross-national team for the year. There are pupils from environmental sciences, environmental management, forestry, disaster management, geography and environment and even from economics included in this group.

Working on the same topic like climate change with peoples from different backgrounds is a hard job. We have two foreign members of our team, one is from Nepal, and other is from Bhutan.

Regarding climate change, Nepal and Bhutan are facing entirely different problems than Bangladesh. Their hilly terrains have different characteristics than our floodplains and delta. So, it is also a great experience to know the spatial varieties from the citizens of other countries, their geographies, and their climate change-induced problems.

Researchers from different parts of the world described problems in their countries and steps taken to solve these. The conference had many sessions. I attended most of the sessions and every single one of them was interesting to me. From the rhizobacteria as an adaptation technology to the floating house as an amphibious architecture, every presenter had an interesting topic.

As a second-year undergraduate student, this was a tremendous opportunity to know climate change from different approaches, viewing angles, the multi-disciplinary and national-scale views.

-Sakib Rahman Siddique Shuvo, Student at the Department of Geography and Environment at Jahangirnagar University, Bangladesh

"Attending conferences is meaningful to me and I have participated in a couple. I have acquired remarkable experiences from Gobeshona 5 because the conference had considered youths' perspective for their future climate-related work.

I think the conference was very well organised. I thoroughly enjoyed the event with so many interesting plenary and parallel sessions including science policy dialogues on climate change research.

Several of the sessions were hosted by ICCCAD, BRAC, Friendship, VSO, BCAS, UIU, IDRC, and Water Aid. The sessions I attended were very informative and insightful on their distinct subjects. I got a chance to connect with researchers, practitioners as well as policymakers from all over the world and shared experience with them. They had also given me valuable feedback, and I had returned home with new ideas.

The conference was an opportunity to learn what other people in the field of climate are doing and become motivated by their acts. Particularly, I can mention Dr Elizabeth C English's 'amphibious housing' concept. Amphibious housing is an alternative flood mitigation sustainable strategy for the flood-prone region. This idea was entirely new to me. I also had a chance to listen from world-leading climate scientist Dr Saleemul Huq.

Last but not least, it was a fabulous time to make some great international new friends from Nepal, Bhutan, India and Zimbabwe and know about the climate challenges in their countries. I would like to express my heartfelt thanks to the organisers of Gobeshona 5 and good luck for Gobeshona 6."

-Afrida Nurain, graduate of Environmental Sciences from Jahangirnagar University, Bangladesh. ■

Dr Saleemul Huq is the director of ICCCAD at the Independent University, Bangladesh. This article originally appeared on The Daily Star

'BANGLADESH'S GEOGRAPHY WILL NATURALLY COUNTER SEA LEVEL RISE UNTIL IT BECOMES TOO RAPID DUE TO CLIMATE CHANGE'

ENVIRONMENTAL SCIENTIST JONATHAN GILLIGAN TALKS TO CLIMATE TRIBUNE

Jonathan Gilligan speaks at gobeshona 5 conference COURTESY

Saqib Sarker

Sea level rise is a concern in all coastal regions in the world. Bangladesh happens to be among the most vulnerable areas. But for all the talk about how vulnerable the country is, the river laden land has evolved to create mechanisms that naturally counter sea level rise. Environmental scientist Jonathan Gilligan says this aspect is often not understood.

This is not to say there is no risk from human induced sea level rise and all the commotion about part of the country submerging underwater deserves less attention. But the geographical area known as Bangladesh has for centuries acted as the big basin that paves the way for the mighty Brahmaputra and Ganges to unite with the sea at the Bay of Bengal. The land has learned how to survive rise of water.

It does so through the fascinating natural mechanism of depositing sediment. That is how it has managed to stay above water for thousands and thousands of years, said Prof Gilligan. But this might change quite soon.

An associate professor at Vanderbilt University in the United States, Gilligan studies the interactions between human society and the environment.

His work requires an interdisciplinary approach, as a result he often works with teams that have social scientists, natural scientists and engineers. This is necessary to understand how the actions of communities affect environment around them and how the changing environment - that is changed both by the actions of the community and also actions from the outside like climate change then affect the livelihood of the community.

"And by trying to understand the two together, we can

then understand better how the environmental change will affect the community and how the community might adapt," he said.

Gilligan, who worked in Sri Lanka on how paddy farmers are affected by water scarcity, has carried out a lot of research work in the southwest coastal areas of Bangladesh.

"Climate change has a lot of effects on the ground. My focus primarily is on how the coastal communities are affected by increased flood hazards due to subsidence of the land combined with sea level rise and also how increasing salinity is affecting community," he said.

To understand the effects of sea level rise Gilligan looks at how the communities are using their land, how the polders are affecting the changing rivers and how they are affecting the land inside the polder.

"My group is currently studying how the erosion of the river banks and the formation of 'ghashland' is going to affect communities. And how climate change interacts with all the activities along the river; and the combination of the land use and the communities with the sea level rise. You need to understand the combination to understand the effect on the communities."

Gilligan says the impacts of climate change and sea level rise is going to be very visible in the next 20 to 30 years and they will become increasingly severe through the rest of this century, because the sea level rise is speeding up.

"But what often doesn't get understood is there's also a tremendous natural resource that Bangladesh has and this is the sediment that is carried in the rivers. Over the last several thousand years there has been natural sea level rise, which is not as severe as the human sea level rise. But with the natural sea level rise the land has risen at the same rate as the sea level rise, because there is a natural balance between the sea level rise and the sediment that comes with the rivers and deposit on the land," he said.

This will allow Bangladesh to survive natural sea level rise as it has for millenia. And if the sea level rise does not exceed a certain level the land will simply rise at the same rate as the sea.

"But if the sea level rise become too rapid or something stops the sediments coming in the river, either of those would mean sea level rise would become much more severe," said Gilligan.

With the Polar ice melting at unprecedented rates, the worse case scenario is not out of the picture. In fact, as scientists estimate, it is imminent.

MAHMUD HOSSAIN OPU

MAHMUD HOSSAIN OPU

"Some lands can be rescued from the sea level rise, because there's enough sediment to build up the land by several milimetres per year. The question is how the rivers and the land and the polders are managed to try to get the maximum benefit from that sediment, to raise the land up as much as possible, so that the sea level rise does not drown too much."

Gilligan is currently studying how the changes from human contribution are affecting migration.

"There will be migration from places where the rise is too rapid. But migration does not happen just because of environmental stresses. It happens for economic reasons. What becomes very important to understand is that migration can be a valuable response to climate change. But it can also bring economic opportunities to pull people out of poverty," he said.

Bangladeshi people have traditionally employed many mechanisms to cope with the natural floods that occur regularly in the delta. Embankments are one of the methods that have been used for many years. A previous study by Gilligan found that embankments across the coastal plain of Bangladesh for preventing tidal inundation of the landscape also caused disruption in sediment flow.

While these embankments were necessary for rice cultivation and to prevent food shortages in Bangladesh, these also cut off Bangladeshi lands from their riverine sediment supply. Consequently, most lands today have subsided far below mean high water levels, making them increasingly susceptible to severe flooding from waterlogging and the impacts of storm surges.

The study, where Gilligan was one of the researching scientists, found that embankments constructed since the 1960s are the main reason for lower land elevations along coastal areas in Bangladesh. Within this area, some are experiencing more than twice the rate of the most worrisome sea-level rise projections from the United Nations' Intergovernmental Panel on Climate Change.

Disruption to sediment transfer is also likely to happen from river diversion projects by India. The Farakka Barrage has caused significant political tension since the 90s between Bangladesh and its big neighbour. But Farakka actually does not stop sediment flow to any significant level, Gilligan said.

"The Farakka Barrage has been very controversial. The research by some of my colleagues who I work closely with, they are geologists - that research is suggesting that Farakka Barrage has not been significantly affecting the sediment transport," said Gilligan.

However, this will not be the case if India implements its other river diversion projects.

"If India implements the big river diversion project that is being considered, that could have very serious impact. That could divert a lot of sediment out of the river. An it could cause harm to Bangladesh," he said.

Jonathan Gilligan is currently developing models to study how the diversion of sediment could affect the adaptive capacity of sea level rise within Bangladesh.■

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