# Proceedings *of*

## 3rd CSD Annual Conference on Sustainable Development 2018


CSD Center for Sustainable Development

3rd CSD Annual Conference on Sustainable Development

ULAB University of Liberal Arts Bangladesh

# Proceedings


20-21 October 2018
ULAB, Dhaka, Bangladesh

This publication is based upon the outcomes of the conference and has been compiled from the notes taken by the faculty members of Center for Sustainable Development (CSD), ULAB and respective rapporteurs. The publication is a summary from the organizers' point of view, and does not necessarily express the views of each individual participant.

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# Preface

The CSD Annual Conference is an International Conference organized once a year by Center for Sustainable Development (CSD) at University of Liberal Arts Bangladesh (ULAB). Operational from February 2006, CSD is the oldest of the eight renowned research centers of ULAB. The center's research practices contribute rigorously in strengthening the university's Liberal Arts teaching and attaining the United Nations Sustainable Development Goals (SDGs) in Bangladesh. CSD has been organizing International Conference on Sustainable Development every year since 2016. This year CSD has organized its **3rd CSD Annual Conference -** *Collaborations for Change: Integrating Sustainability Research into Policy and Practice* at University of Liberal Arts Bangladesh (ULAB) on 20th – 21st October 2018.

This year's conference features four main themes - **Climate Change Migration**, **Urbanization**, **Natural Resource Management,** building a **Green Economy** and **Sustainability in Project Design and Implementation**. Besides, a **youth-led campus sustainability programme** with photography and posters, as well as a display of local vendors promoting sustainable consumption and production were organized.

The 3rd CSD Annual Conference placed a strong emphasis on public policy impact, identifying cutting edge research with clear and urgent implications for the current national and international policy debate, as well as on achieving several of the UN Sustainable Development Goals. Participants and Professors from different countries, academics from different universities in Bangladesh, several NGOs personnel, and members from private companies who are working on sustainability participated in this conference.

Some important features of the conference were:

- International partners co-hosting sessions including United Nations Environment Program (UNEP) and Action Aid Bangladesh (AAB)
- Strong involvement of the Private Sector in the Green Economy and Urban Sustainability Sessions
- Platform for Youth Engagement in Sustainable Development Agenda
- Bridging barriers to advance global sustainability by promoting science-policy dialogue
- Promoting interdisciplinary research across different disciplines such as anthropology, political science, architecture, finance, and natural sciences.

We thank all the sponsors of 3rd CSD Annual Conference for their generous support: IPDC Finance, Mercantile Bank Limited, BENGAL INSTITUTE, OXFAM, Christian aid, CONCERN Worldwide, Adam Smith International, Actionaid, FUTURE CITIES LABORATORY. We are also thankful to the ULAB Board of Trustees, ULAB Vice Chancellor, Senior Administration and all General & Academic departments, without whose expert input this conference would not be possible. Finally, we wish to thank all participants who have contributed to the conference with their papers, posters, and invited talks.

Conference organizing committee

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# Committees

## Conference Advisory Board

| | |
|---|---|
| **Professor Imran Rahman** | Special Advisor (Board Of Trustees) & Dean, University of Liberal Arts Bangladesh (ULAB) |
| **Dr. Samiya Selim** | Director and Associate Professor, Center for Sustainable Development, University of Liberal Arts Bangladesh (Conference Convenor) |
| **Professor Dr. Carolyn Roberts** | Professor Emerita of Environment, Gresham College, London, UK.Water and Environment Consultant. Entrepreneur-in-Residence, Keele University, UK |
| **Professor Dr. Vally Koubi** | Senior Scientist and Professor (Titular) at the Center for Comparative and International Studies (CIS) |
| **Mahir Aliyev** | Regional Coordinator for Europe of the UN Environment Programme's Europe |
| **Leila Urekenova** | Programme Analyst at the UN Environment Programme's Europe Office |
| **Dr. Saleemul Huq** | Director of the International Centre for Climate Change & Development (ICCCAD) |
| **Mr. Kazi Khaleed Ashraf** | Director General, Bengal Institute |
| **Dr. Haseeb Irfanullah** | Programme Coordinator IUCN |

## Organizing Committee

| | |
|---|---|
| **Dr. Samiya Selim** | Associate Professor and the Director of Center for Sustainable Development (CSD) |
| **Md. Shafiqul Islam** | Assistant Professor |
| **Dr. Shantanu Kumar Saha** | Assistant Professor-cum- Research Fellow |
| **Dr. Rumana Sultana** | Assistant Professor-cum- Research Associate |
| **Joy Bhowmik** | Lecturer-cum-Research Associate |
| **Dr. Oliver Scanlan** | Research Fellow |

# Partners and Sponsors










# Program at glance

<table>
<tr><th colspan="5">DAY 1- SATURDAY, 20 OCTOBER 2018</th></tr>
<tr><td>9:30 onwards</td><td colspan="4">Registration</td></tr>
<tr><td>10:00-11:30</td><td colspan="4">Inaugural Ceremony<br>Welcome Address:<br>Professor Imran Rahman, Special Advisor to the Board of Trustees, University of Liberal Arts Bangladesh (ULAB).<br>Opening Address:<br>Dr. Samiya Selim, Associate Professor & Director, CSD-ULAB and Conference Convener.<br>Keynote Speaker:<br>Professor Dr. Vally Koubi, Senior Scientist and Professor, Center for Comparative and International Studies (CIS), ETH Zurich.<br>Special Guest:<br>Mr. Kazi Nabil Ahmed, M.P., People's Republic of Bangladesh & Member, Board of Trustees, ULAB.<br>Special Guest:<br>Dr. Fazle Rabbi Sadeque Ahmed, Director (Environment & Climate Change), Palli Karma-Sahayak Foundation (PKSF).</td></tr>
<tr><td>11:15-11:45</td><td colspan="4">Tea Break and Registration</td></tr>
<tr><td>11:45-1:15</td><td colspan="4">Plenary Session<br>Dr. Kasia Paprocki<br>Assistant Professor, Department of Geography and Environment, London School of Economics and Political Science.<br>Professor Dr. Stephen Cairns<br>Programme Director, Future Cities Laboratory, ETH Zurich and Singapore ETH Centre.<br>Dr. Bhaskar Bhatt<br>Associate Dean and Program Director of Product Innovation; Indian School of Design and Innovation, Mumbai.</td></tr>
<tr><td>1:15-2:30</td><td colspan="4">Lunch</td></tr>
<tr><td>2:30- 3:15</td><td colspan="4">PARALLEL SESSIONS</td></tr>
<tr><td></td><td>Climate Change & Migration<br>Chair: Prof. Dr. Vally Koubi</td><td>Urban Sustainability<br>Chair: Prof. Dr. Stephen Cairns</td><td>Green Economy<br>Chair: Dr. Atiur Rahman<br>Former Governer, Bangladesh Bank</td><td>Natural Resource Management<br>Chair: Mr. Farid Uddin Ahmed<br>Executive Director, Arannayk Foundation</td></tr>
<tr><td>3:15-3:30</td><td colspan="4">Tea Break</td></tr>
<tr><td>3:30-5:00</td><td>Climate Change & Migration</td><td>Urban Sustainability</td><td>Green Economy</td><td>Natural Resource Management</td></tr>
<tr><td></td><td colspan="4"></td></tr>
</table>

| DAY 2- Sunday, 21 OCTOBER 2018 | | |
|---|---|---|
| 9.30 onwards | **Registration** | |
| **PARALLEL SESSIONS** | | |
| **9:00-11:30** | **Workshop on Youth Leadership and Sustainability Workshop**<br>**Facilitators: BYLC, BYEI & OXFAM** | |
| **10:00-12:30** | **Panel Session on Sustainability in Project Design and Implementation**<br>Facilitator:<br>**Dr. Saleemul Huq**, Director, International Center for Climate Change and Development (ICCCAD).<br>Special Guest:<br>**Mr. Md. Anwar Hossain**, Joint Secretary, Development Effectiveness Wing, Economic Relations Division (ERD).<br>Special Guest:<br>**Dr. M. Asaduzzaman**, Professional Fellow, Bangladesh Institute of Development Studies.<br>**Panel Discussants for Project Design:**<br>**Ms. Hasin Jahan**, Country Director, Practical Action.<br>**Dr. Md. Khalid Hossain**, Economic Justice and Resilience Programme Manager, Oxfam International.<br>**Mr. Sayeed Mahmud Riadh**, Head of Programme, Coastal, Haorand Char Context, Concern Worldwide.<br>**Mr. Ikramul H. Sohel**, Programme Manager, Inclusive Market Development, Christian Aid.<br>**Panel Discussants for Project Implementation:**<br>**Ms. Anowara Khanam**, Assistant Director, Shushilon.<br>**Mr. Salim Reza**, Programme Manager, Pallisree.<br>**Mr. Fakhrul Islam Chowdhury**, Friends in Village Development Bangladesh.<br>**Mr. Shah Sufi Md. Motoakkel Billah**, Project Coordinator, Bikash Bangladesh. | |
| 11:30-11:45 | **TEA BREAK** | |
| 11:45-1:30 | **Urban Sustainability**<br>Chair: **Mr. Kazi Khaled Ashraf**,<br>Director-General, Bengal Institute for Architecture, Landscapes and Settlements. | **Climate Change - Migration, Adaptation and Resilience**<br>Chair: **Md. Ashfaqur Rahman Khan,**<br>Senior Programme Associate, International Organisation for Migration |
| 1:30-2:30 | **LUNCH** | |
| 2:30-3:30 | **Poster Session** | |
| 3:30-5:00 | **Closing Ceremony** | |
| | Closing Speaker:<br>**Professor Carolyn Roberts**, Professor of Environment, Gresham College, London.<br>Chief Guest:<br>**Mr. Abdullah Al Mohsin Chowdhury**, Secretary, Department of Environment, Ministry of Forest, Environment and Climate Change.<br>Special Guest:<br>**Dr. Sultan Ahmed**, Director General, Department of Environment, Ministry of Forest, Environment and Climate Change.<br>Special Guest:<br>**Mr. Md. Khurshid Alam,** Assistant Country Director, United Nations Development Programme.<br>Chairperson:<br>**Professor H. M. Jahirul Haque**, Vice Chancellor, ULAB and<br>**Dr. Samiya Selim**, Associate Professor & Director, CSD, ULAB.<br>Vote of Thanks:<br>**Mr. Kazi Inam Ahmed**, Member, ULAB Board of Trustees. | |
| | | |

# Key Learning of the Conference

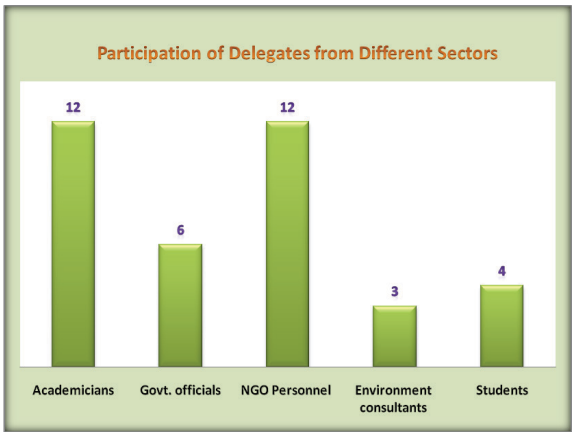
## Integrating Sustainability Research into Policy and Practice: Collaborations for Change

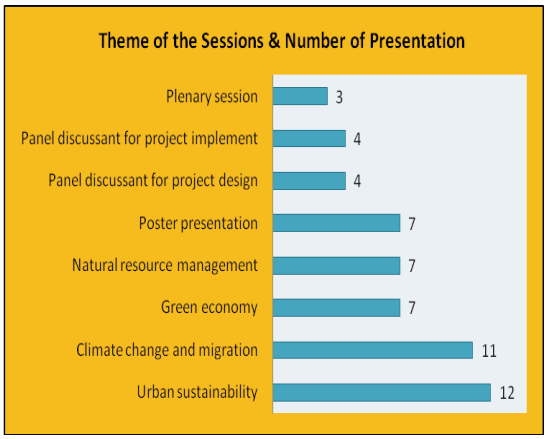
Global warming above the pre-industrial levels is a debatable issue of current time. It is reported that approximately 1.0°C of global warming above pre-industrial levels has been caused by anthropogenic factors. If these anthropogenic emissions keep continuing further long-term changes in the climate system will happen. The leaders from around the world agreed to do everything to slow global warming as much as possible during the Paris climate agreement and set a target of "no more than 2°C global warming above pre-industrial temperatures". But based on the concern that the 2°C global warming could be too dangerous for many participating countries especially island nations who are more vulnerable to sea level rise, a lot of research has been done on the climate impacts at 1.5°C vs. 2°C. It is predicted that "global warming will likely reach to 1.5°C between 2030 and 2052 if it continues to increase at the current rate" (IPCC). The current Special Report of IPCC in 2018 on "the impacts of global warming of 1.5°C above pre-industrial levels" intended to summarize "what it would take to achieve the 1.5°C limit and what the consequences would be of missing it". This report has given emphases on strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. In this context, "sustainability" is one of the priority concerns of the present century and the world is working on achieving the "Sustainable Development Goals". We know that the Sustainable Development Goals are ambitious, universal and holistic which requires cross-sectoral collaboration.

Bangladesh is one of the most vulnerable countries in the context of global warming that will most likely be affected by increased sea level rise, flooding, drought and increases in salinity of the soil. But, there are other related challenges such as migration of people escaping these difficulties which put threat on urban sustainability. We can realize if a huge population who live in vulnerable areas moves to another place that will absolutely affect everyone. In addition to this the other massive local problems, including ecological damage to the world-famous Sundarbans, loss of coastal communities' incomes as large conglomerates swallow up farmland for shrimp production, and overfishing in the Bay of Bengal are putting huge threats on the natural resources. Almost every country in the world has signed up to the United Nations Sustainable Development Goals, which is not only to address climate change, but also to work on sixteen more goals with the intention to have a sustainable future through making more sustainable cities and communities, promoting green economy and conserving natural resource management and few more. Bangladesh has been very clear in its policy statements about the sustainable development goals, but turning statements into action for genuinely sustainable development requires strong research and integration of different sectors for taking action based on research recommendations which is the most challenging part.

The Center for Sustainable Development at University of Liberal Arts Bangladesh organizes international conference on Sustainable Development every year since 2016. The 3rd CSD Annual Conference which was held on 20 – 21 October 2018 focused on a theme – "Collaborations for Change: Integrating Sustainability Research into Policy and Practice" to bring together local and international experts from across the globe to share and learn about transdisciplinary research on sustainable development issues and progress.

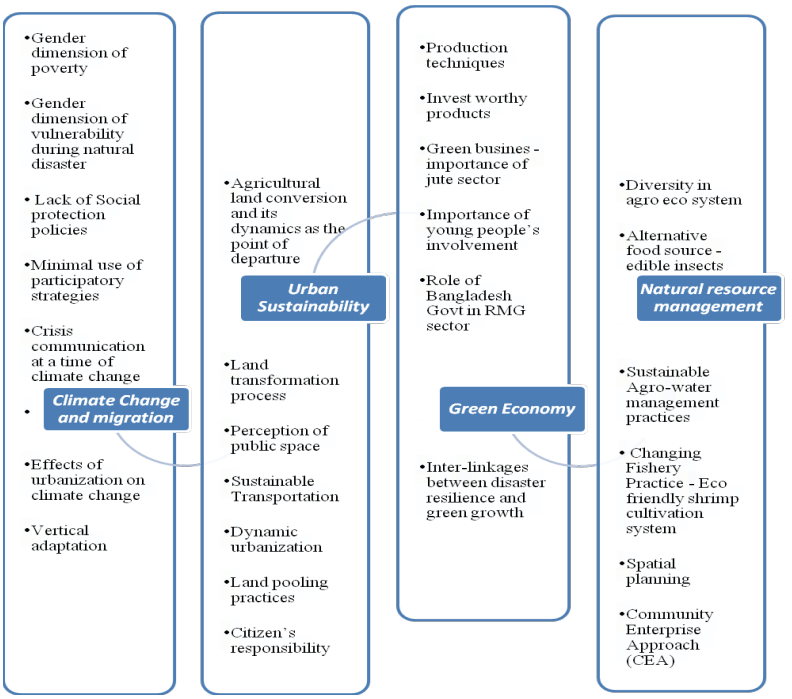
Delegates from ten different countries and national academics and researchers presented their researches to policy makers and civil society leaders and had discussion at this two days long conference.




IPCC AR5 report expert reviewer, Prof Vassiliki Koubi of ETH Zurich was the keynote speaker for this conference. Another international scholar Professor Stephen Cairns of ETH Zurich and Singapore's ETH Center chaired a session where a panel of leading researchers, discussed the problems and opportunities emerging from new visions of future sustainable cities. Among the national distinguished scholars - former Governor of the Bank of Bangladesh, Dr. Atiur Rahman, conducted an extensive session on the new green economy, which must be established if the Paris targets are to be achieved. Dr. Saleemul Huq, Director, International Center for Climate Change and Development (ICCCAD) presided over a session where some of the country's leading development experts discussed key issues surrounding the importance of project design and implementation in addressing sustainable challenges. Besides, there were heady mixture of themes, and plenty of opportunity for participants to talk to the researchers. A total of 50 number of high quality talks were given, and a poster competition also allowed students of different universities to present their research work to a national and international audience. A workshop was organized focusing on youth activity, where students put their minds to know how schools and universities could do their part in achieving the SDGs.

Actually interdisciplinary conferences are needed to pull out cutting edge researches with clear direction for the current national and international policy debate on achieving specific SGDs. The interdisciplinary conferences mainly help to identify key knowledge gaps and solutions; it also promotes collaborations, and stimulates uptake of the science into policy and action. The 3rd CSD Annual Conference served as an incubator for current research results and also tried to facilitate the uptake of these new results into practice at the local, national and international policy level. Addressing all seventeen Sustainable Development Goals was beyond the scope of the two day meeting, but key areas covered included natural resource management, climate-induced migration of farmers to the city, planning and green architecture to ensure the future of megacities such as Dhaka, and prospect of green economy in Bangladesh. Few of the interesting issues come out during the discussion of the conference are illustrated here:




## Climate Change and Migration

The relationship between climate change and migration remains a controversial topic, as outlined by Prof Koubi in her keynote address. While climate change is unlikely to cause the levels of mass migration commonly reported in media headlines, it will have a nuanced impact mediated by a number of different variables. While those who already have access to resources may well move to avoid the impacts of a changing climate, it is likely that the poorest communities will become "trapped" by these same impacts, with huge negative consequences for their welfare. It is reported that heat waves in the coastal cities have increased in summer over the decades and is creating a situation that is difficult to survive causing human suffering immensely. IPCC report shows the effect of increasing global warming that would have on earth by the end of 2052. This implies that many regions will experience heat waves especially the low lying coastal areas and islands, increasing the disastrous effect on flooding too. This would threaten the risk of livelihood, food security and water supply making the place vulnerable to survive. According to a recent report by the World Bank 143 million people may migrate in the upcoming years. Besides, the environmental changes due to climate change have also long been amongst the multitude of reasons for migration because the changes are coming in the form of natural hazards like Tsunamis, beach erosion, and also the environmental risks like drinkable access to water, pollution of environment and poor waste management and most importantly coral reef destruction and bleaching. In the case of Bangladesh, it is predicted that some low lying areas of Bangladesh and some islands in Indian Ocean will have an increased salinity intrusion and change in monsoon pattern that will affect the livelihood. Especially the coastal communities are heavily dependent on the environment to earn their livelihood therefore rapid climate change would increase the number of environmental migrants.

Consideration of migration as an option, however, was found to be reliant on numerous factors, from an individual's economic status, to culture, religion and local social status. But, in general women are more vulnerable to both disasters and slow-onset environmental change owing to pre-existing social and political marginalization. It was discussed in the conference that a large number of variables that affect the extent to which women are marginalised by climatic change over time. These variables include age, religion, access to remittances and social networks, and education. In general, female headed households were among the most vulnerable to becoming "trapped" by climatic change, with immobility emerging from lack of access to different spaces in the locality, and severe restrictions on social capital and engagement with networks.

Another cause of vulnerability in coastal areas is its lack of resilient infrastructure, particularly electricity. We know that fisheries provide a major source of local livelihoods, but potential incomes are limited by a lack of cold storage facilities due to insufficient electricity supply. In the case of Bangladesh, what electrical plants are present are not resilient to extreme weather events, being easily damaged and inevitably shorting out when a storm hits. However, in few areas of Bangladesh, resilient wind generators have recently been installed which is providing economic benefits to communities in areas like Kutubdia, both through enhanced resilience to climate shocks and for economic development in general.

Beside these issues there are few other issues came out during the discussion of climate change and migration session like maladaptation, local political unrest, minimal use of participatory strategies for decision and policy making, lack of vertical integration of local actions in national actions, strategies and plans as well as social protection policies. However, few solutions and recommendations have also been come out throughout the presentation and discussion which can be taken into consideration –

- Maladaptation to climate change is all too common where poor people do what they can to survive from one day to the next and everybody should work together to avoid maladaptation.

- Migration from affected areas should not be viewed as possible strategy in every cases. Sometimes migration causes local political unrest, therefore, successful adaptation strategies should avoid migration.

- Gendered impacts of migration are absolutely crucial for ensuring sustainable responses, emphasizing gender-equitable outcomes and this should be deployed by both government actors and supporting NGOs. Hence, the gender norms should be improvised to the benefits of both genders. In this regard, participatory strategies need to be developed to abolish gender inequalities.

- Through the use of renewable source of energy we can help in attaining the sustainable goals. There is a huge potential for decentralised renewable power sources for both adaptation purposes and development. Since the people living in the off-grid island do not have any options of electricity other than wind and solar power, the wind power plants along with the solar power installation will have a huge potential to increase the local economy.

- Effective and prompt government aid in the aftermath of disasters and social safety nets can play a key role in enhancing resilience and speeding recovery.

- Climate linked social protection policies such as crop insurance, microfinance can help ease the situation for those women who stayed back. Policy makers should address and find solutions to the vulnerability associated with immobilization through adaptation plans.

- A dataset to the Global Internal Displacement requires urgent attention in the near term because projected increases in the occurrence of extreme weather events and other climatic changes are set to rise and yet there is no alternative.

- Lessons from national and international cases should be taken into consideration. For example the case of failures in crisis communications in the Philippines where government language in crisis communications was overly conservative and technical, hence failed communicated to the public, leading to insufficient engagement with relief operations. Research suggests that the way to address this in the future is to ensure full community engagement with government communications through social media, so that communities are fully briefed on the potential implications of specific weather events and their impact ahead of a future crisis.

- Good local adaptation strategies both on water and land like desalinization and construction of new houses with higher elevation should be given more attention. .

## Urban Sustainability

A key tenet of development theory is that urbanisation is essential to facilitate industrialisation and the transfer of workers to more productive economic sectors. At the same time, unplanned urbanisation can lead to several negative externalities including, according to one research conducted by Mr. Muntasir Murshed, increasing greenhouse gas emissions. This further complicates the task of limiting global warming and, therefore, of keeping climatic change to manageable levels, a particularly pressing problem for Bangladesh in view of its extreme vulnerability to climate impacts. Research findings suggest that although in the near-term urbanisation causes a fall in GhG emissions, over time the relationship is reversed and urbanisation leads to heightened emissions, contributing to rising global temperatures and climate change. In view of projected urbanisation trends both in Bangladesh and globally, this poses major questions for urban planners and development sector actors.

There are few burning issues relating to the Urban Development and Environmental Sustainability that need special attention like identifying and mapping Urban Ecosystem Services, importance of green and public spaces in City Planning, building Climate Resilient Cities, address links between Urban Poverty and Environmental Sustainability, Rural-Urban Nexus. Moreover, new and effective urban solutions are required to optimize the use of green, blue and public spaces and energy resources leading to improvements in human welfare and the environment. An interdisciplinary forum of researchers, academicians, policy makers and practitioners from any professional discipline is needed to share a resolution perspective for urban sustainability. The Urban Sustainability Session of 3rd CSD annual conference addressed few aspects of urban environment aiming to provide solutions leading towards sustainability. Some of them are –

- Understanding urbanization from the empirical evidence of agricultural land conversion is important for sustainable city planning and management.

- It is important to understand the legacy of the urban-rural binary in conceptualizing urbanization in Bangladesh and there is need to develop a conceptual understanding of hybrid urban-rural developments in Bangladesh.

- State-led policy can be made keeping a number of alternatives that typically focus on lower-impact environmental strategies with strong encouragement for local resident participations' and relatively limited involvement from government.

- National level strategies implication and arrangement of appropriate monitoring program by government was suggested by Ms. Ria for sustainable urbanization in Dhaka city of Bangladesh.

- Appropriate management of transport sector should be the priority action area for sustainable development in Dhaka city. It is recommended to reduce per capita fuel consumption and per capita transport energy consumption to decrease the per capita emissions of greenhouse gases, by improving the portion of walking and bicycling. Besides, traffic noise levels should also need to be reduced.

- The perception of socio-demographic groups on cultural ecosystems services provided by the green spaces of Dhaka city should be given priorities while making policies. Heterogenous perceptions are necessary to reliably apprise city planners for developing sustainable urban development solutions.

- The residents of Dhaka city need to realize their role of making the city sustainable because sustainable urbanization or city development largely depend on citizens' discharging their duties in using the material growth of a city with the appropriate use of their non-material culture.

- Finally, proper creation and management of public space, incorporation of social perceptions to urban strategy, proper management of transport sector, and practicing appropriate nonmaterial culture are some of the key sector where more improvements are needed.

## Green Economy

Internationally there is a recognition for Bangladesh in their works of promoting green energy. Recently Bangladesh has been identified as the role model by the Global Commission of Adaptation (GCA). The government plan includes many policy, development programs and institutional reforms to address the sources of long term climate change vulnerability.

Bangladesh started from the tailor shop and now became a RMG hub. The tailoring shops in Bangladesh are doing some improved tailoring now. They are the original pioneers of this sector. They started working with Koreans and started RMG factory. Bangladesh RMG sector growth has happened mainly through trying and failing. The financial sector played a huge role in the growth of the RMG sector as it catapulted garments factories to go for exporting. Banks were taking lot of responsibilities in terms of providing bigger fund. Government has come to incentivize the system by providing cash incentive. New cash incentives were given for new destinations, new sectors. Government policies need to be credited with their role in the RMG sector boom. The bureaucratic sector can be time consuming and slow, but in this sector Bangladesh government played an exceptional role better than other countries by proving whole hearted support to RMG sector.

We know that financial incentives can lead to an increased efficiency. However, the small entities were not getting any incentives previously because they are not established companies without trade license. On the other hand, the finance ministry was not able to give small entities any cash incentives as well since

they don't have trade license, and also the BGMEA certification. It took a lot of persuasion, ultimately the finance ministry agreed to give cash incentive with the condition that these entities would have to get trade license and meet particular standard. But at present, even in remote rural areas we will find a lot of companies are doing business and earning foreign exchanges.

At present, more and more students are getting interested in agri-business. Many young entrepreneurs are getting into in the beef-fattening business or fish cultivation. But still many fresh graduates or current students do not have much idea about entering agri-business. The Green Economy session discussed issues related to agri-businesses like bio-fertilizer, green manure, organic mango cultivation and so on. There was discussion on the scope or prospect for these young students, who wants to get into agribusiness. The conference talks made us believe that the agricultural sector is going through a massive change as many young bright entrepreneurs are coming into the sector. The following topics came out during the discussion of the green economy session which need more attention for sustainable development -

- There should be a coordinated and conscious effort to work towards promoting more green business. There is an urgency of taking initiatives and learn from it rather than spend time in planning. Most of the successful things in Bangladesh, we are learning after trying it out. Therefore, we must focus on action rather than planning. The universities could be the meeting point for enhancing coordination between the young potential entrepreneurs with the market – mention by the former Governor of the Bank of Bangladesh, Dr. Atiur Rahman.

- According to Dr. Atiur Rahman Government should have an innovation fund in a large scale provided to the university so that it inspired young entrepreneurs to work towards innovation and get rewarded because the young people are turning left and right, we need to provide them guidance. In Bangladesh the missing components in the whole sector is coordination. The universities could be the meeting point for enhancing coordination between the young potential entrepreneurs with the market.

- More importantly, we are living in a challenging time, where environmental sustainability is one of the main concerns. About 1800 fields are cleared are every day, health dimensions are worse by the ever-increasing pollution and congestion. It is reported that capacity are still lacking in many some sectors. The long-term goals dominate the significant discourse of development. We need to reduce environmental risks through promoting "Green Industry" by new policy making, improving production process, efficient productivity while maintaining social status because green industry can reduce energy use, water use, which has wider implication for the future.

- Market structure and power structure is very important. Jute is future, as we know the European Union decided not to import any more goods and services. Jute has a big market in that sector. Jute has many reasons to make contribution to sustainability both in locally and globally. We need to create a market of jute not only for the international market, but also for national consumption. However, there are to challenges to overcome. For example – the high valued jute fabric is a big challenge for Bangladesh. Besides, the shortage of skilled man power to produce high end jute products is another problem along with the lack of adequate backward linkage. Due to low volume of export (Compared to Garment sector), the industry is failing to benefit from economic of scale. But we can make jute popular among the mass if we make awareness and establish the knowledge of the advantages of jute. Here big corporations can play a big role. In addition, diversification role should be played by existing jute product makers. Local jute companies should not only focus on exports but build campaigns to support sustainability with use of jute.

- Finance has critical importance in promoting green industry. Many regulators are already responding to just effort. Designing sustainable finance will have an immense role in the renewable energy sector. Some of the challenges that is hindering renewable energy sector is that many of us are not aware of the potential of green businesses and the potential return in the long run. Consumers must also look at the long-term return of changing behaviour and choosing a more environment friendly product. Government has taken initiative to make people use more environment friendly product for example their role in reducing the use of plastic bags.

- The city corporations need to come up with green urban infrastructures model like the underground rail system in Dhaka. It will help decrease heavy fossil fuel run transports, also can increase the GDP growth of the country.

Lastly, we believe that hope is the biggest resource of Bangladesh and with innovation and change in mindset we will move forward and be able to have a green revolution in Bangladesh.

## Natural Resource Management

"The plight of hundreds of thousands of Rohingya people is said to be the world's fastest growing refugee crisis. Nearly 700,000 have fled the destruction of their homes and persecution in the northern Rakhine province of Myanmar (Burma) for neighboring Bangladesh since August 2017 (BBC, 2018)." This forced migration is creating some other problems like environmental crisis in the migrated country, one of the current issues in Rohingya camp of Cox's Bazar, Bangladesh is the "The Firewood Crisis". The migrated Rohingya people were using wood to make fire so that they can cook. But it is making a huge impact because they were destroying the natural resources to cook their food. For example - a family of five would require about 1,570kg per year at a cost of Taka 18,834 (equivalent to US$226). Annual fuel cost per year family is BDT 18,834 (equivalent to US$ 226). It will require USD 38 million per year to supply 266,815 tons (731 tons per day). Equating to between 1,100 and 1,800 football fields of tress cleared per year.

We believe that living within our environmental limits is one of the central principles of sustainable development. Environmental sustainable development involves making decisions and taking action that are in the interests of protecting the natural world, with particular emphasis on preserving the capability of the environment to support human life. For environment conservation and development to go hand in hand, it needs to include people and society as a whole. Individuals, communities and policy makers need to change behaviour and make policy changes that will reduce environmental degradation, halt biodiversity loss and allow for sustainable development. For sustainable development we need socio-ecological approaches in addressing NRM, as well as nature based solutions for climate change adaptation and mitigation, ecosystem based management. We should promoting Sustainable Livelihoods that address NRM and biodiversity conservation through use of education, civic engagement and/or citizen science for engaging people in conservation.

The following key solutions/recommendations were made by the presenters (4 out of 6) from NRM session:

- Setting of Insect based food processing industry in Bangladesh can help in securing higher nutrition for the ethnic people and other people as well.

- Awareness and motivation training on fishing rules and practices make people aware for the conservation of fishes in the mangroves.

- Critically endangered species could be conserved efficiently through and improved reporting system in a time specific manner.

- There is urgent need to ensure easy and simple certification process for the community enterprise.

## Youth Leadership and Sustainability

Investing in youth is an investment in our future. It is also fundamental for the successful implementation of the global 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs). Young people today are not just recipients of knowledge and values; they have become agents of change through their social awareness and knowledge in new technologies. Their leadership in their own local contexts has shown to be remarkable, and it is believed that young people have the potential to design sustainable initiatives in their educational institutions, homes and communities.

Going further, Sustainable Development Goal 4 – Quality Education – and achieving its targets becomes a priority as it will enable young people to take their future into their own hands with dignity, freedom and responsibility. The challenge for young leaders then, is to design a new educational paradigm that integrates sustainability in education and lifestyle. Therefore, the proper valuation of educational initiatives and our moral obligation towards caring for our planet requires an "ecological conversion" and the participation of young people in global leadership. In this context, it is important to promote importance of campus sustainability, in order to engage youth in achieving sustainable development goals. The higher education institutions can acts as agents in promoting the role of universities in achieving the Sustainable Development Goals within society. The role of Campus Sustainability in achieving SDGs and the role of Youth Leadership to implement Sustainability both at campus and outside is a major area where more attention should be given. The workshop on "Youth Leadership and Sustainability" during the 3rd annual conference was able to provide the following recommendations based on the discussion of the young participants -

- Start recycling water at the different public and permanent campus of the private universities
- Start using LED bulb and sensor taps, if possible solar power panel in small scale
- Implement meatless Monday/or any other day at the canteen
- Started using handkerchief instead of using tissue paper
- Start using digital display screen for banner/poster/event news instead of printing
- Implement rain water harvesting system at the public and permanent campus of the private universities
- Beside the regular course studies there should be some courses on road safety and local act which all students should know.
- Start using color coded bin to identify separate garbage and practice a proper solid waste management techniques.
- Arrange more events/competitions/workshops and lessons learning activities on sustainable development to create the awareness on balancing the combination of people, planet and profit.

## Sustainability in Project Design and Implementation

The objective of this panel discussion was to generate a product which explores the best practices, opportunities, and challenges on ensuring sustainability in project based development work in Bangladesh. This session was designed in two parts. The first part was allocated for the project/program design of selected international NGOs who have been working in Bangladesh for 15+ years in various areas such as poverty reduction, climate resilient agriculture, sustainable alternate livelihoods and gender equality. The 2nd part was designed for the implementation phase of selected grassroot projects who are field level partners of the 1st session. The main learning of the session is presented below:

- The learning and the mistakes from the previous implementations make a new project more successful. An ideal project design must start with the previous learning of other projects and the project managers and the partner organizations.
- Individual stories and the community based organizational approaches are more helpful to attain significant changes during the project time.
- Nowadays the citizens are more aware of their rights and their surroundings. So they demand more of the government's involvement which is a new aspect for the country. The local people want more involvement of the government rather than seeing the NGOs to do any projects or work with them.
- There is a need to change the attitude of the rural people with regard to relief oriented mentality during disasters and the skepticism of them towards the government.
- Coaching and mentoring help participants to make plans to meet their goals, it also helps encouraging certain behavioral changes and offers guidance on how to address specific problems they faced

# Session Summaries

## *Inaugural Ceremony*

| | |
|---|---|
| Welcome Address | Professor Imran Rahman, Special Advisor to the Board of Trustees, University of Liberal Arts Bangladesh (ULAB) |
| Opening Address | Dr. Samiya Selim, Associate Professor & Director, CSD-ULAB and Conference Convener |
| Keynote Speaker | Professor Dr. Vally Koubi, Professor, Center for Comparative and International Studies (CIS), ETH Zurich. |
| Special Guest | Dr. Fazle Rabbi Sadeque Ahmed, Director (Environment & Climate Change), Palli Karma-Sahayak Foundation (PKSF). |
| Special Guest | Mr. Kazi Nabil Ahmed, M.P., People's Republic of Bangladesh & Member, Board of Trustees, ULAB |

## *Synopsis*

The inaugural session of CSD 3rd Annual conference on Sustainable Development 2018 started at ULAB, on the 20th of October, 2018 and brought many renowned researchers, academics, and scientists from different parts of the world who had shared their different knowledge and experiences in achieving sustainable development goals.

In this session the speakers emphasized on the idea of carbon foot print and talks about how the rapid urbanization is increasing the carbon emission. However, the inaugural speaker showed some current researches working to reduce the carbon emission in attaining sustainable goals. It was explained how heat waves in the coastal cities have increased in summer over the decades and is creating a situation that is difficult to survive causing human suffering immensely. Further, the effect of increasing global warming that would have on earth by the end of 2052 was discussed in the inaugural speech. The Special Guest enlightened the audiences about different policies initiated by the government which is now making easier for people living in coastal sides to manage disasters. The speech of another Special Guest reminds us that every individual is a part of this beautiful planet and we need to do things to survive and make the planet a healthy place to live in.

# *Plenary Session*

## Speakers

| | |
|---|---|
| Dr. Kasia Paprocki | Assistant Professor, Department of Geography and Environment, London School of Economics and Political Science. |
| Professor Dr. Stephen Cairns | Programme Director, Future Cities Laboratory, ETH Zurich and Singapore ETH Centre. |
| Dr. Bhaskar Bhatt | Associate Dean and Program Director of Product Innovation; Indian School of Design and Innovation, Mumbai. |

## *Synopsis*

This session started with discussion on Political Ecologies of Climate Change by Kasia Paproki and the way to recognize it. More specifically, examples of the conflicts and tradeoffs between rice farming and shrimp cultivation were pointed out. There were also discussion on the rural and urban transitions, adaptations and its response to social and ecological transformation. Then Stephen Cairns talked about his research groups - Urban Composter project and how raffic can be managed in a better way. The session also included discussion on the future cities and the Sustainable Development goals mentioning about resilient urbanization pathways. Bhaskar Bhatt then discussed about the innovation. During the Q&A time, discussion continued on several issues like recycling process, software on urban planning etc.

## Key Points

- Climate change provides a number of powerful discourses and narratives that can actually obscure complex changes in the agrarian political economy in certain contexts.
- In the case of shrimp aquaculture, the expansion of this practice actually increases soil salinity, as opposed to its common depiction as a successful "adaptation" to rising soil salinity.
- This shift has caused widescale underemployment locally, leading to out-migration. This is absolutely not a result of climate change, but rather a consequence of the move from rice agriculture to the more lucrative shrimp aquaculture; the population moves because it is now surplus to the requirements of capital.
- This trend has been successfully resisted in certain areas; a return to rice agriculture has been accomplished with a consequent reduction in soil salinity and improvements in local livelihoods and welfare.
- Every product needs to be recycled at least 98%.
- Indian Government has banned the radical use of plastic but in reality, there is good and bad plastic
- Overall use of plastic is not bad but to throw them away rather than recycling is harmful for the environment.
- 4Efor systemic impact which is to educate people, empower, evaluate and enforce.
- Mushroom cultivation has potential to replace cow leather which would be environmental friendly.
- New software development would be based on people; whether they want to use new software or will be continuing with a previous one.

# *Parallel Session: Climate Change and Migration*

***Day 1***

| | |
|---|---|
| Chair | Prof. Dr. Vally Koubi |
| Moderator | Dr. Oliver Scanlan. Research Fellow, CSD-ULAB |
| Presentations | *1. Rethinking Crisis Communication at a time of Climate Change: Lessons from the Philippines* - Jude William Genilo, Professor and Head, Media Studies and Journalism Department, University of Liberal Arts Bangladesh |
| | *2. Immobility and environmental change: Gender dimensions of poverty in coastal Bangladesh* - Basundhara Tripathy Furlong and Jeroen Warner, PhD fellow, Wageningen University and Research (WUR) |
| | *3. Climate Change, Resilience and Population Dynamics in South Asia: Why Some People Move and Others Stay?* - Robert Stojanov ,Migration Policy Centre, Robert Schuman Centre for Advanced Studies, European University Institute, Italy |
| | 4. *Understanding Resilience and Growth: A synopsis of Kutubdia Island, Cox's Bazar, Bangladesh* - Remeen Firoz, Dr. Syed Mortuza Asif Ehsan, Salma Islam and Tahmid Haq Easher, Environmental Consultant |
| | *5. Climate change and risk preference: Linking migration and household behavior in coastal Bangladesh* - Md. Hafiz Iqbal, Assistant professor, Dept of Economics, Government Edward college |

***Day 2***

| | |
|---|---|
| Chair | Md. Ashfaqur Rahman Khan, Senior Programme Associate, International Organisation for Migration. |
| Moderator | Dr. Oliver Scanlan |
| Presentations | 1. *Influence of contextual and governance factors on vertical integration of urban adaptations in NDCs* - Naznin N. Sultana, Assistant Professor, Dept of geography and environmental studies, University of Chittagong , Nicola Tollin, Professor in Urban Resilience, Civil and Architectural Engineering, Dept. of Technology and Innovation, University of Southern Denmark and Stelios Grafakos, Head of Urban Environment, Sustainability and Climate Change group, Institute for Housing and Urban Development Studies, Erasmus University Rotterdam |
| | *2. An investigation of the effects Urbanization on climate change: Evidence from Bangladesh* - Muntasir Murshed, North South University |
| | 3. *Climate change and internal displacement in countries of Latin-America and the Caribbean* - Daniel Esteban Quiroga, Universidad Nacional de Catamarca, Argentina. Javiera Fanta Garrido, Instituto de Investigaciones Gino Germani (UBA-CONICET), Argentina. Oscar Augusto Castellanos Ospina, Departamento Administrativo Nacional de Estadística, Colombia, Fabiola Barrenechea Riveros, Observatorio de Gestión de Riesgos de Desastres, Universidad Bernardo O'Higgins, Chile, Ana María González Villoria, Roberto Ariel Abeldaño Zuñiga, Universidad de la Sierra Sur, México. |

## *Synopsis*

Climate change and migration has been a critical issue worldwide especially among developing countries like Bangladesh with high levels of population density. In this session, the presenters focused on the reasons behind climate change, climate change stressor, vulnerable and endangered areas, vulnerability seg regression through gender, increasing salinity intrusion and changing monsoon pattern, adaptation and participatory strategies, research on specific areas and the risk factors behind migration in the upcoming future. The topics covered on the sustainable development goals (SDGs) during this session include: 1) No poverty 2) Quality education 3) Gender equality 4) Climate action 5) responsible consumption and production.

## Key Points

- Bangladesh being one of the most vulnerable country that had experienced around 200 disasters since 1980
- Environmental changes have long been amongst the multitude of reasons for migration
- Low lying areas in Bangladesh will have an increased salinity intrusion and change in monsoon pattern will affect the livelihood
- The adaptation strategies both on water and land like desalinization and construction of new houses with higher elevation are getting priorities
- Climate change variability are causing sea level rise, seasonal rainy shifts and also the increasing amount of disastrous flooding
- Migration from affected areas is not viewed as possible strategy in every cases
- Successful adaptation strategies can avoid migration
- Rapid climate change would increase the number of environmental migrants
- Rapid climate change implies sea level rise, salinization of agricultural land and desertification also influences the communities to migrate to different places
- Women tend to become more vulnerable to natural disasters more than a man.
- Woman experiences vary according to inequalities such as age, class, religion and family networks.
- Due to lack of mobility and flexibility, women become more vulnerable prone to climatic disasters
- The four factors affecting the immobility among women are resources, education, remittances and decision making
- Signs of empowerment were behind the veils, hence the gender norms should be improvised to the benefits of both genders
- Climate linked social protection policies such as crop insurance, microfinance can help ease the situation for those women who stayed back

- Policy makers should address and find solutions to the vulnerability associated with immobilization through adaptation plans
- Participatory strategies need to be developed to abolish gender inequalities.
- Frequent cyclones and storm surges have made cultivable lands infertile and salt farming increasingly becoming more popular
- People living on the coastal areas are making their business by becoming more dependent on power supply
- the sustainable development goals can be achieved through the use of renewable source of energy
- UNISDR reported that the Philippines was fourth in the world among countries hit by disasters over the past twenty years
- Traditional approach focused on the physical devastation and the social and economic status were not well appreciated
- In 2015, under Paris agreement 196 parties came under the consent of NDC through mitigation and adaptation in response to climate change
- Middle and low income countries (Asia and Africa) with high urbanization rate and vulnerability focused on urban adaptation measures.
- Contextual and governance factors have influence on Vertical integration (which refers to how local actions are integrated in national actions, strategies and plans) of urban adaptations in NDCs

# *Parallel Session: Urban Sustainability*

***Day 1***

| | |
|---|---|
| Chair | Prof. Dr. Stephen Cairns |
| Moderator | Dr. Rumana Sultana, Assistant Professor, CSD-ULAB |
| Presentations | 1. *Urbanization and Agricultural Land Conversion in Southeast Asia: Case Studies in Industrial areas in the Extended Metropolitan Regions of Jakarta, Indonesia* - Miya Irawati, PhD candidate in the Geography Department at NUS; PhD researcher at Urban-Rural System of Future Cities Laboratory, Singapore-ETH Centre |
| | *2. City-Nature Dynamics: Alternative Urbanization Pathways in Bangladesh* - Jennifer Lee, PhD candidate in the Architecture Department at ETH Zurich; PhD Researcher in Urban-Rural Systems of Future Cities Laboratory, Singapore-ETH Centre |
| | 3. *Bengal Delta: Critical, lived ecologies* - Victoria Marshall, PhD candidate at the Department of Geography, NUS; PhD researcher at Urban-Rural System of Future Cities Laboratory, Singapore-ETH Centre |
| | 4. *The Concentration Dilemma: Urban-Rural Transition in Metropolitan Area of Chengdu Since Early 2000s* - Chen Ting, PhD candidate in the Architecture Department at ETH Zurich |
| | 5. *Urban-Rural Systems in Monsoon Asia* - Prof. Dr. Stephen Cairns**,** Programme Director of Future Cities Laboratory, Singapore-ETH Centre; Principal Investigator of Urban-Rural Systems |

***Day 2***

| | |
|---|---|
| Chair | Mr. Kazi Khaled Ashraf, Director-General, Bengal Institute for Architecture, Landscapes and Settlements. |
| Moderator | Dr. Shantanu Kumar Saha, Assistant Professor cum Research Fellow, CSD-ULAB. |
| Presentations | 1. *Scenario Analysis of the Primary Socio-economic Issues of Dhaka's Established Slums, Korail and Satto* - Raisa Bashar, Sirajus Salekin Tonmoy, Alvira Farheen Ria and Nazmul Ahsan Khan, graduated from the Environmental Science and Management (ESM) department of North South University (NSU) |
| | 2. *Urban Sustainability: Citizenry and nonmaterial culture* - Anis Pervez, Additional Director, Dialogue and Communication, Center for Policy Dialouge (CPD) |
| | *3. Perception of public space in Urban Bangladesh* - Masud Shammo, Research coordinator, Bengal Institute for Architecture, landscape and Settlements |
| | 4. *Indicators of Sustainable Transportation: Role in planning, Current Status in Bangladesh and Suggestions to Improve* - Mehedi Mudasser, Al-Ferdous Ahmed, Md. Shojib Ali, Urban and Rural Planning Discipline, School of Science, Engineering and Technology, Khulna University, Muhammad Waresul Hassan Nipun, Department of Urban and Regional Planning, Jahangirnagar University |
| | *5. Heterogenous Sociodemographic Groups Perceptions on Cultural Ecosystem Services provided by Urban Green Infrastructures* - Rumana Sultana, Samiya A. Selim, Center for Sustainable Development, University of Liberal Arts Bangladesh, Md. Masudul Islam Shammo, Tazrin Ahmed, Bengal Institute of Architecture, Landscapes and Settlements, Bangladesh, Md. Shafiul Alam, Department of Geography and Environmental Studies, Rajshahi University, Bangladesh and Sam Folmenhoft, Brown University, USA |

## *Synopsis*

Urban Sustainability session addressed some aspects of urban environment aiming to provide solutions leading towards sustainability. The session started with the brief description of urban and rural areas of Bangladesh and how the monsoon season is always seen in Asian countries. The discussion also highlighted the importance of privatization in cities to regulate the use of resources as well as the collective use of floodplains. This session also included discussion on agricultural land conversion and its dynamics as the jump off point to understand urbanization in the Extended Metropolitan Region of Jakarta, the legacy of the urban-rural binary in conceptualizing urbanization in Bangladesh and alternative approaches to consider city-nature hybridity, state-led policy and its consequences with a number of alternatives, importance of national level strategies implication and arrangement of appropriate monitoring program by government, the perception of socio-demographic groups on cultural ecosystems services provided by the green spaces of Dhaka city. In the session the presenters also focused on appropriate management of transport sector, incorporation of social perceptions to urban strategy, proper management of transport sector, and practicing appropriate nonmaterial culture.

## Key Points

- 80% of Bangladesh consists of floodplains.
- In Bangladesh there is private landscape during dry season and in wet season there is public landscape.
- Hand woven textile markets are predominantly produced and consumed outside Dhaka city
- Peri- urban dynamics are active
- In India, land enclosure and water logging issues are continuing because people are still moving towards development even though there are organizations working to regulate
- Dynamic urbanization is a long process which consists of long scale development in Northern and Southern Cikarang. However, land pooling practices and its dynamics has occurred. Almost 90% land is owned by developers and there is no guarantee for agricultural livelihood. In this context, developers are the main actor who has the capital power and roles to play with the other actors including local gas
- Slum dwellers of Dhaka city have very poor supply of water, gas and electricity; however, the situation is changing as few slums (Korail and Sat Tola slums) now face less problems regarding water than they used to face earlier
- People in Korail and Sat Tola slums wash their hands after using bathrooms, before eating food and after eating food
- Lots of people are migrating to towns and it is getting difficult to take care of the cities.
- Citizen of Dhaka city can serve the community by maintain the environment, by voting for our rights and also by behaving in ways that do not harm people
- Dhaka city is getting wild as the industries are growing and more people are migrating.

- There is lack of limitation, lack of free time or free space in Dhaka city
- In Bangladesh, people have different perceptions on public space which includes University, home, shopping complex, parks, institutions, eateries, streets and many more.
- We can start to rectify our mistake and start developing new designs for our city.
- There are three sustainable goals which are economic, social and environmental
- Many people in Bangladesh who have lower income prefer walking or using bicycles
- Energy consumption is still higher in Bangladesh and increase in greenhouse gas will have severe impact on the country

# *Parallel Session: Green Economy*

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|---|---|
| Chair | Prof. Dr. Atiur Rahman, Former Governor, Bangladesh Bank |
| Moderator | Dr. Samiya Selim |
| Presentations | *1. Market assessment of alternative cooking options for Rohingya cam settings in Cox's Bazar* - Asif Uddin Ahmed and Nakib Abdullah Zia, Assistant Professor and Director-MBA Program,University of Liberal Arts Bangladesh |
| | 2. *Bio-fertilizer, the building blocks of a sustainable business model* - Dr. Shahana Afrose Chowdhury, Manager, Research and Development, KaziShahid Foundation and Jay Ohlamcher, Advisor, Biogas and Biofertilizer Program, Kazi Shahid Foundation |
| | *3. The Fruits of Our Labour: Producing Export Compliant Mangoes in Bangladesh* – M. M. Huda**,** Chairman, Naafco Group |

## *Synopsis*

This session started with the discussion on how modern farming practices and development works have imposed tremendous pressure on environmental security and sustainability. But the discussion asserted that green industry can reduce energy use, water use, which has wider implication for the future and there are scopes for investment. Besides, it was mentioned that the young entrepreneurs are interested in the digital culture, which stands for the mindset of trying something new and then learn from it as soon as possible. The session suggested that young entrepreneurs need to find what their passion is, which product is more investment worthy; more importantly, there should be a coordinated and conscious effort to work towards promoting more green business.

## Key Points

- People of Bangladesh have to get rid of the taboos that jute is an old fashioned material
- The students need to know that jute is the golden fiber of Bangladesh, and there's a lot more to be done on the sector
- The people of Bangladesh need to understand that jute is not simply for export rather they should realize the value of jute and buy it for their daily use
- There is a need to increase the knowledge and awareness of general people that jute can be taken forward through value addition rather than just being a farming product
- Along with the farmers, people from better socio-economic background can invest in jute related small enterprises and make profit
- Anything organic is perceived as very aspirational both in India and in Bangladesh and those products yields higher income
- Agricultural sector in Bangladesh is going through a massive change as many young bright entrepreneurs are coming into the sector

- The young entrepreneurs should keep the quality of the product as a priority; they must believe in the product they are producing
- Young entrepreneurs need to find what their passion is, which product is more investment worthy
- The universities could be the meeting point for enhancing coordination between the young potential entrepreneurs with the market
- If a company is based on a lot of plastic, more taxation should be imposed
- We can tell the restaurant to stop using plastic straws and polythene, and give them a timeline to abide by the rules.
- Entire nation or society must think about green business
- Bangladesh RMG sector growth has happened mainly through trying and failing.
- The financial sector played a huge role in the growth of the RMG sector as it catapulted garments factories to go for exporting
- Banks were taking lot of responsibilities in terms of providing bigger fund to RMG sector
- Bangladesh government has come to incentivize the system by providing cash incentive to RMG sector and in this regard, government policies need to be credited with their role in the RMG sector boom in Bangladesh
- To promote sustainable energy in Bangladesh, renewable energy plan was brought forward with 2015 to 2030 sustainably target
- Sustainable and Renewable Energy Development Authority (SREDA) is working solely to increase green energy investment in Bangladesh
- Bangladesh Bank has opened green banking units. 33 crore BDT (44 million USD) have been disbursed till 2018. There is another 200 million USD green transportation fund such as textiles, jute, transportation. The Bangladesh Bank are using paperless trail, and it has yielded really good results and are also calculating its carbon footprint and trying out new ways of reducing it.

# *Parallel Session: Natural Resource Management*

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|---|---|
| Chair | Mr. Farid Uddin Ahmed Executive Director, Arannayk Foundation |
| Moderator | Md. Shafiqul Islam, Assistant Professor, CSD-ULAB |
| Presentations | *1. Survey on edible insects among some ethnic groups of Bangladesh* -Md. Fuad Mondal, Saumik Dev, Kamrul Hassan, Md. Abu Saleh Abir and Md. Kamrujjaman, Professor, Dept of Entomology, Sylhet Agricultural University |
| | *2.Sustainable Agro-water management practices in south-west coastal Bangladesh* - Nazia Hassan, Sharmishtha Roy, Jafrin Sultana, Mumtahina Islam, Environmental Science Discipline, Life Science School, Khulna University And M. Shahjahan Mondal, Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET) |
| | *3. Fish for Future – Playing by the Rules: Changing Fishery Practices in the World's Largest Mangrove Forest* - Nadim Parves, Program Assistant, Education and Livelihood Wildlife Conservation Society - Bangladesh Program |
| | *4. Identifying marine protected areas to sustain fisheries and protect threatened marine biodiversity* - Shamsunnahar Shanta, Ashik Jahan Galib, Manzura Khan, Rubaiyat Mansur Mowgli, Elisabeth Fahrni Mansur, Hasan A. Rahman and Brian D. Smith, WCS Bangladesh Program, Dhaka |

## *Synopsis*

This session started with the argument that eating insects could be an alternate food source for this current world because almost 2000 species of insects are being used as edible insects around the world. The discussion continued if edible insects should be an alternate food source for Bangladesh as well since certain ethnic communities in Bangladesh already eat insects like some of Bangladesh's fellow Asian countries such as China, Cambodia and Laos. To maintain cultural sensitivity, the presenter consulted three Islamic scholars who stated that eating insects are makruh (not forbidden in Islam, but are suggested to abstain from it). Then, the session had a discussion on Sustainable Agro-Water Management Practices in South-West Coastal Bangladesh and it was reported that due to some drawbacks farmers adopted AWMPs but this is on the other hand creating some problems like loss of plant species and wild catch of fish, availability of sufficient water, conflict in water management and reduction is soil fertility. During another discussion on Marine Protected Areas to Sustain Fisheries the presenter defines marine protected areas as "an area designated and effectively managed to protect ecosystems, processes, habitats and species, which can contribute to the restoration and replenishment of resources for social, economic and cultural enrichment." The next discussion revolved around a conservation outreach initiative developed and implemented by WCS-BD Education and Livelihoods Program. An interactive event took place to give visitors an insight on "a visual experience and emotional connection with sustainable fisheries in ten communities adjacent to Sundarbans." Some key messages conveyed are that "poison fishing destroys fishery and fishing

livelihood", "monofilament gill nets entangle and kill dolphins and other aquatic wildlife", using the wrong mesh size is against the law, it is illegal to set fish nets along the entire river channels or mouth. The presentation ended summarizing the impacts of Community Enterprise Approach – which has increased social capital and productivity, strengthened local governance through enhancing voice and participation of wider community, enhances nutritional intake of the community, market transformation, demand-driver expansion of primary education and women's group activities, noticeable improvement of personal and social security and lastly social cohesion for sustainable development.

## Key Points

- The human population by 2050 will reach 9 billion which would create serious stress on food security. This might encourage the idea of consuming insects. However, the average Bangladeshi person may not be open to this idea just yet.
- Since the agro-ecosystems in Bangladesh are filled with a wide range of different species; even if Bangladeshis don't eat insects, they could still export them. And this could be a business scope for Bangladesh
- The south-west coastal in Bangladesh is one of "the most productive Agro-ecological Zone due to the brackish water exposure
- Since 1980, there have been enormous agricultural land use changes to let saline water inland in order to build *ghers* (shrimp culture pond)
- The yearly net benefit rose by 2.35 times due to shrimp mixed culture instead of just shrimp

# *Panel Session: Workshop on Youth Leadership and Sustainability*

Facilitators: **BYLC, BYEI & Oxfam**

## *Synopsis*

The workshop was held among the students of ULAB and other universities where they formed groups of three to four people. There were eight groups and each group was given a sustainable goal on which they had to give a two minute presentation. The first group talked about the sustainable development Goal 4 which is "Quality of education and how do you think quality education can play role in campus sustainability'. The second group worked on Sustainable Development Goal 6&14 which is 'clean water and sanitation'. The third group worked on sustainable Development goal 8 which is 'Green jobs and Innovation'. The fourth group was given Sustainable Development Goal 7 (Conserving Energy and score of renewable). The fifth group was given the topic "Sustainable Cities and Committee." Sustainable Development Goal 12 - "Responsible Consumption." was given to the sixth group. The seventh group worked on Sustainable Development Goal 15 - "Protecting Biodiversity and Natural Resources." The last group was given the Sustainable Development Goal 13 that is "Climate Action".

## Key Points

- Universities should offer a compulsory course on "Sustainable Development". Beside the regular course studies there should be some courses on road safety and local act
- More events/competitions/workshops and lessons learning activities on sustainable development are needed to create the awareness among students. Further, discussions on green economy for the students are needed to encourage then for green business or jobs.
- People should be encouraged to use handkerchief instead of using tissue paper
- Buildings should be designed in such way that will increase the scope of using natural energy like air, light and people should be encouraged to practice rooftop gardening
- Public and private universities can start recycling water at their campuses; Universities can implement rain water harvesting system at the campuses as well as can establish small scale waste water treatment plan
- Universities can start using LED bulb and sensor taps, if possible solar power panel in small scale
- Universities can initiate meatless Monday/or any other day at the canteen
- Universities should introduce digital display screen for banner/poster/event news instead of printing
- Start using color coded bin to identify separate garbage and practice a proper solid waste management techniques.
- Ensure hygiene issues at the different toilets and canteen of the different universities.

# Panel Session: Sustainability in Project Design and Implementation

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|---|---|
| Facilitator | Dr. Saleemul Huq, Director, International Center for Climate Change and Development (ICCCAD). |
| Special Guest | Mr. Md. Anwar Hossain, Joint Secretary, Development Effectiveness Wing, Economic Relations Division (ERD), People's Republic of Bangladesh. (DID NOTCOME) |
| Special Guest | Dr. Md. Asaduzzaman, Professorial Fellow, Bangladesh Institute of Development Studies. |

**Panel Discussants for Project Design:**

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|---|---|
| Ms. Hasin Jahan, | Country Director, Practical Action. |
| Dr. Md. Khalid Hossain, | Economic Justice and Resilience Programme Manager, Oxfam International. |
| Mr. Sayeed Mahmud Riadh, | Head of Programme, Coastal, Haorand Char Context, Concern Worldwide. |
| Mr. Ikramul H. Sohel, | Programme Manager, Inclusive Market Development, Christian Aid. |

**Panel Discussants for Project Implementation**:

| | |
|---|---|
| Ms. Anowara Khanam, | Assistant Director, Shushilon. |
| Mr. Salim Reza, | Programme Manager, Pallisree. |
| Mr. Kakhrul Islam Chowdhury, | Friends in Village Development Bangladesh. |
| Mr. Shah Sufi Md. Motoakkel Billah, | Project coordinator, Bikash Bangladesh |

## Synopsis

In this session, representatives from some Non-governmental organizations (Oxfam, concern worldwide, Christian Aid, FIVDB, Shushilon, Pollisree) shared their experience about project design and project implementation of some of their projects. They also discussed about their various activities and achievements. They uphold the challenges they were facing during their projects as well as the methods of overcoming these challenges. The major role of these organizations is to eliminate poverty. Along with this, they work to promote gender justice, good governance, access to services and economic empowerment. They use integrated approaches to disaster risk management, climate change, resilient livelihoods, emergency preparedness and response, inclusive market development, gender and social equity.

The Main highlights from each of the project are presented below:

❖ Organization: **Oxfam** presented their project named **REE-CALL**
Project duration: **launched in October 2010 and ran until March 2017**

> *The REE-CALL (Resilience through Economic Empowerment, Climate Adaptation, Leadership and Learning) project, has focused on supporting women to emerge as economic leaders and on strengthening farmers' associations in order to improve smallholder market power. It recognized the complex, interrelated issues of poverty and lack of agency that make women and men more vulnerable to climate change and prevents them being resilient to its impacts.*

## Key Points

- Oxfam tries to bring expertise and experience from their last project, so that, the learning and the mistakes from the previous implementations can make the new project more successful.
- An ideal project design needs to start with the previous learning of other projects. The project managers and the partner organizations, mainly who were at the very front line need to be engaged in the implementation process and they have to look at the critical new issues like climate change as well.
- When they designed that project they had to look into the future and look into the variables and assessments of climate change in Bangladesh
- REE-CALL was designed to create resilience through economic empowerment, climate change adaptation, leadership and learning. This project tried to promote gender justice, good governance, access to services and economic empowerment as foundations for building improved disaster preparedness and resilience
- This project recognized the complex, interrelated issues of poverty and lack of agency that make women and men more vulnerable to climate change and prevent them being resilient to its impacts
- At the end of the project in 2017, Oxfam checked whether they have achieved all the points that they wished to be done and found that their goals were successfully achieved at the end of the project
- The individual stories and the community based organizational approach helped them to attain and see that what significant changes they were able to make during the project time
- Oxfam has seen that the local people want more involvement of the government rather than seeing the NGOs to do any projects or work with them. Nowadays the citizens are more aware of their rights and their surroundings. So they demand more of the government's involvement which is a new aspect for the country

❖ Organization: **Concern Worldwide Bangladesh** (presented their various activities and programmes)

*Concern worldwide is identifying extreme poverty for a long time. This organization is enabling those in extreme poverty to forge a way out through secure livelihoods.*

## Key Points

- In 2017, they reached over one million people directly through their livelihood programmes and 3.2 million indirectly, over two million of which were female.
- Two key ways, they help to improve the livelihoods of vulnerable communities, are through adopting a 'graduation' approach, and by promoting climate smart agriculture (CSA).
- Concern's graduation programmes are designed to enable pathways out of poverty for the extreme poor by providing them with a comprehensive package of support (social assistance, livelihood development, access to financial services)
- Concern Worldwide, Bangladesh has a pilot project in Sunamganj that has over 1200 household participating in their graduation programme
- Their CSA programmes help farmers at the frontline of climate change adapt to its effects. Although in the recent years concern has brought some changes in their approach in urban, char, haor and hostile areas
- Concern works in several stages of processing; The first stage is to actually focus on comprehensive approach towards ultra-poor. In the second stage, by creating income support, they help the programme participants meet their basic needs as they invest in livelihood development activities
- With the technical and business skills training, Concern is enhancing human capital and facilitating income generation through small businesses or by aiding access to employment
- Concern facilitates access to financial services and promote saving in order to help extremely poor people manage risk, build resilience to lifecycle shocks and stresses, and reduce the likelihood of having to resort to negative coping strategies
- Concern trains both men and women on an equal basis and is expanding their project even further by helping the local people to create new bank accounts or to get NID cards as easily as possible

❖ Organization: **Christian Aid** (shared their various developmental initiatives)

*Christian Aid work in the most vulnerable districts, using integrated approaches to disaster risk management, climate change, resilient livelihoods, emergency preparedness and response, inclusive market development, gender and social equity.*

*Their work on resilient livelihoods includes climate change adaptation, disaster risk management, emergency response and inclusive market development projects.*

## Key Points

- Christian Aid's most important achievement might be their involvement in humanitarian responses. Christian Aid supports 600 vulnerable waterlogged-affected families in the south west by strengthening their livelihoods, enhancing knowledge and capacity. With UNDP funding, they also implemented a flood recovery and resilience project supporting 80 households in the south east. Through the "Shifting the Power" project, they have built the humanitarian response capacity of 11 local/national organisations, promoting women-led responses and encouraging other organizations and government to get involved.
- Their key achievements are creating resilient livelihood by market assessment, Gender gap analysis by including the marginal community of women in rural areas of Bangladesh, giving governance by working to strengthen the capacity of non-state actors, NGOs, government coalitions and the poorest community members by forming and strengthening CBOs through platforms at greater ward level, as well as guiding people for access to justice by ensuring access to justice for all enables communities to realize their rights which includes individual legal aid (advice, referral, mediation and litigation), advocacy and investigations, as well as rights awareness, capacity building, and collaboration with various government agencies.

❖ Organization: **Friends in Village Development Bangladesh (FIVDB)**

*This organization also works to graduate the extreme-poor*

*The basic objectives of the organisation are to empower the disadvantaged women, men and children, contribute in the reduction of poverty, protection and regeneration of eco system and environment*

## Key Points

- FIVDB's development initiatives include education, social organization building, financial service, health, and livelihood and food security.
- They had a project for 3 years that had 700 beneficiaries all of them were women. The main objective was to implement micro finance in 39 groups of women aged from 18-25.
- Their first achievement was when the school going children became the beneficiaries and the already members brought more members from their communities. Implementation of mobile banking to the beneficiaries is another important achievement for FIVDB.

❖ Organization: **Shushilon**

*Shushilon has been working on socio-economic development, disaster, climate change & environmental resource management, education & ICT, health & nutrition, human rights, good governance and people's organizations to achieve its goal "A society congenial to economic and socio-cultural development for the socially underprivileged community*

## Key Points

- Shushilon introduced vegetable cultivation in sacks and fish rearing in boxes in the water logged areas.
- Shushilon faced obstacles in the form of climate change problems as well as the lower yield than what was expected. However, they are trying to overcome their shortcomings.
- Shushilon hopes that their way of shrimp cultivation will become a regular process in future.

❖ Organization: **Pollisree**

*Pollisree is a local Non-Governmental organization with a clear vision to empower oppressed and destitute women who living in the society but at the beginning stage the approach was to provide services but gradually it has shifted to right base approach*

## Key Points

- Pollisree mostly works in North Bengal, mainly with the rural women and their empowerment.
- They try to incorporate the local people with the government's ideas and connect them to get a better outcome for the empowerment and building a resilient community.
- Recently, this organization has distributed 100 smart phones to the rural local people on order to empower the marginal people technologically as well as economically. Moreover, Pollisree tries to change the attitude of the rural people with regard to relief oriented mentality during disasters and the skepticism of them towards the government.

# *Parallel Session: Poster Presentation (Day 2)*

## Synopsis:

There were representations of eight posters which shared information on Climate Change and Migration, Urban Sustainability, Green Economy, Natural Resource Management. It was a very interactive session. The guests and the students were enamored by the simple and colorful presentations of quite complex materials. The information on the posters was well outlined, legible and attractively presented. Each poster presenter group was given 5 minutes to describe their research to the judges; besides, they addressed the question and answer of the guests. Among the eight poster presentations, the paper titled "Insect Infested Agarwood: A newly prized product of agarwood market in Bangladesh" got selected as the best paper. This poster presentation was developed on a research conducted by a research team consist of students and faculty from the Sylhet Agricultural University, Bangladesh. Professor Carolyn Roberts, Dr. Haseeb irfanullah and Mrs. Nicola Mary Ann Prestano were the judges for this session.

## Key Points:

- Soil salinization a major problem for coastal ecosystem.
- Based on a pot experiment to establish the morphological and physiological responses of mango (Mangiferaindica) and neem (Azadirachtaindica) seedlings to sea water-induced stress; It was found that although mango and neem seedlings were affected significantly at the highest (12 dS m-1), both the species can survive up to moderate salinity (8 dS m-1) at the early stage.
- Bangladeshi farmers have faced severe infestations of a pest called Litchi sting bug.
- Climate change has resulted in litchi sting bug becoming an emerging pest in the Sylhet Region of Bangladesh.
- Industrial effluent is a significant problem in Bangladesh's rivers and groundwater's.
- An experiment conducted by Sylhet Agricultural University found that Khadimnagar and Hazaribagh industrial effluents contaminated with heavy metals such as Pb, Cd, Ni, Cr and Fe were toxic for radish growth.
- A study found that over two thirds of the farmers were already aware of organic production methods and the claimed health and environmental benefits, but they nevertheless viewed non-organic methods as more profitable.
- Lack of proper market management in Bangladesh is a more significant constraint than lack of awareness for organic farming.
- To encourage change in farming practice, government certification systems should be authorized which will ensure a price premium for organic products, and raise consumer awareness.
- A study on the Waterscape of Three Major Cities (Dhaka, Chittagong and Sylhet) in Bangladesh locates, depicts and overviews the transformation of the water bodies of three cities using historical mapping. The study found that river flow has been obstructed by development encroachment, and navigability reduced, ending with a position where rivers are narrow, clogged, polluted and seen as

unimportant. Besides, the natural waterbodies (called Haor and Jalla) have also been encroached upon by both the authorities and others, illegally.

- Sunamganj district in Bangladesh is subjected to frequent flooding due to intense rainfall and neighboring hilly topography.
- Identification of vulnerable areas in Sunamganj district is essential to provide early warning, facilitate quick response and decrease the impact of possible floods. Further, flood vulnerability assessment is required for land use planning and management, watershed management and emergency planning in this area.
- A significant amount of mineral nutrients remain unused in the left over materials, known as waste and in the metabolic residues i.e., urine and faces which causes significant damage to our ecosystem services such as deterioration of water, and soil quality affecting environmental health when released to the environment, drained ultimately to the river through sewerage systems. And, these nutrients can be potential resource for agriculture and still remained a missed opportunity in Bangladesh.
- Among the recycling options of mineral nutrients, nutrient harvesting through composting/ pyrolysis from organic waste and adsorption onto different adsorbents in the sewerage treatment plants can considered be viable techniques.
- Insect infested wood demand highest price than the other exported agarwood.
- A comparative analysis on three categories of agarwood like white wood, screw injected and insect infested agarwood found that the ether extract oil of white wood 1.80%, Screw injected wood 20.49% and insect infested wood 11.078% and total phenolic contents were 2.55mg per g, 3.6mg per g and 2.97mg per g from white wood, screw injected wood and insect infested wood respectively.

# *Conference Closing Ceremony*

| | |
|---|---|
| Closing Speaker: | Professor Carolyn Roberts, Professor of Environment, Gresham College, London. |
| Chief Guest: | Mr. Abdullah Al Mohsin Chowdhury, Secretary, Department of Environment, Ministry of Forest, Environment and Climate Change. |
| Special Guest: | Dr. Sultan Ahmed, Director General, Department of Environment, Ministry of Forest, Environment and Climate Change. |
| Special Guest: | Mr. Md. Khurshid Alam, Assistant Country Director, United Nations Development Programme. |
| Chairperson: | Professor H. M. Jahirul Haque, Vice Chancellor, ULAB and<br>Dr. Samiya Selim, Associate Professor & Director, CSD, ULAB. |
| Vote of Thanks: | Mr. Kazi Inam Ahmed, Member, ULAB Board of Trustees. |

## Synopsis

Prof. Cartalyn Roberts on her closing remarks highlighted the fact that current and future generations of Bangladeshis are better prepared to address climate change risks and reverse the impacts of environmental degradation. She quoted UNEP Director Achim Steiner to praise Bangladesh for its progress in combating climate change. But in global context she still believes that the world could not make such progress which was envisaged. Though we made progress in technological advancement but resource depletion seems likely to continue. On the other hand, she asserted that truly sustainable development seems challenging our life styles not just technology. She summarized the messages she got from the 3rd CSD Annual Conference as follows –

- Some people's choices take other people's choice away
- This is a messy world – take care not to be too simplistic
- Complexity of responses to stresses on people – migration, urban and peri-urban development
- We need vision to see what might be possible
- We need research to ensure that policy is based on evidence (but not forever...)

Prof. Carolyn concluded her speech mentioning that "Change is Difficult"; Solutions to any environmental or climate change problem are usually 'better' or 'worse' rather than absolute, but decisions must nevertheless be made in the light of these uncertainties; She reminded the audiences to understand that those who cause the problem also seek to provide a solution but some of the stakeholders manipulate the facts for their personal or professional gains.

Mr. Abdullah Al Mohsin Chowdhury spoke about the support and contributions of Bangladesh Government for achieving the Environmental Sustainable Development Goals. Dr. Sultan Ahmed discussed about various projects conducted by Government of Bangladesh to help introduce the climate change and environmental issues. Mr. Md. Khurshid Alam informed us about couple of sustainability development project of UNDP and guided the audience to play their role for developing a sustainable world. Prof. Dr. H. M. Jahirul Haque, Vice Chancellor, ULAB enlightened the audience about the research centers of ULAB and their contributions towards knowledge generation as well as for achieving Sustainable Development Goals in Bangladesh. He handed over the crests to the advisory board members, distinguished guests of the conference as a token of appreciation for their enormous contribution for making this event successful. On behalf of the ULAB board of trustees, Mr. Kazi Inam Ahmed expressed appreciation to sponsors, partners, advisory board members, distinguished guests, participants, as well as the organizers. Dr. Samiya Selim wrapped up the conference giving thanks to all the participants, partners, university authorities and the ULAB board of trustees.

# Abstracts

## Parallel Session: Climate Change and Migration (Day 1)

### 1. **Rethinking Crisis Communication at a time of Climate Change: Lessons from the Philippines**

Author**:** Jude William Genilo
Professor and Head, Media Studies and Journalism Department, University of Liberal Arts Bangladesh

### Abstract

The Philippines is visited by an average of 20 typhoons a year. Hence, whenever one such disaster occurs, crisis communication should be more or less a standard procedure. The weather bureau, Philippine Atmospheric, Geophysical and Astronomical Service Administration (PAGASA), initiates information dissemination. It gives up-to-date information to the National Disaster Risk Reduction and Management Council (NDRRMC), Office of the President and national media. These offices then relay the information to the general public. Aside from this, the weather bureau contacts their local stations who then coordinate with the local media, local government units and other local entities. So, when typhoon Haiyan entered the Philippine area of responsibility in November 2013, the weather bureau provided all the necessary warnings and connected with the necessary agencies.

However, the typhoon caught the country by surprise. There was no forced evacuation of residents - many deciding to stay in their homes. The first responders in the locality also became victims. There was a communication black out between the capital and the locality. Due to these and more, more than 6,300 persons perished in the typhoon while 1,031 were declared missing. Damage to property was estimated at USD 2.86 billion. Around 13 million people across the Visayas region were affected. Statistics showing the devastation clearly indicated that the country was not prepared for the super typhoon. Typhoon Haiyan was classified as Category 5 with peak winds of 230 kilometers per hour. Low-lying areas and coastal communities were hardest hit, with some areas completely washed away. Flooding extended for one kilometer inland on the east coast of the Leyte province. It was the storm of the century.

The paper, in light of this, aims to rethink crisis communication at a time of climate change. It is expected that greater numbers of super typhoons will hit the country and that the usual information dissemination flow process is no longer enough to lessen their impacts. The paper argues that crisis communication needs to be re-thought in the context of climate change and learning from the Philippine experience. In particular, crisis communication should focus more on: creating messages attuned towards the social construction of disasters; promoting dialogues rather than simply disseminating information; incorporating new media as part of the media mix; and utilizing a community-based information flow parallel to the traditional top-to-bottom approach.

## 2. **Factors Influencing Rural Household's Migration decisions in the context of climate change: An analysis of the evidence from southeast coastal Bangladesh**

Authors**:** Nur Mohammad Ha-Mima[1], Dr. Md. ZakirHossain[1], Sheikh MD Moniruzzaman[1]
[1,] Urban and Rural Planning Discipline, School of Science, Engineering and Technology, Khulna University

## Abstract

This research explores the factors influencing the rural households' migration decision for different level such as local, national, international in the context of climate change, which is analysed from the evidences from two unions of southwest coastal Bangladesh. Previous research on migration had been dominated by either an individual or a community analysis, and failed to identify the differentiated factors that influence to local, national and international level migration, which worth to be considered in migration studies and needed to frame subsequent policy discussions and rural development planning. The empirical data, face-to-face in-depth interviews, showed that local, national and international level migration in the context of climate change is dominated by factors which in most of the cases are unique for each level, with also having existence of overlapping factors which facilitate more than one levels and are far different than the traditional concepts of pull and push factors of migration. This research identified these differential factors that influence migration at different levels.The Computer Assisted Qualitative Data Analysis Software (CAQDAS) NVivo Version 12 is used to manage the data and to assist in the thematic and content analysis. The results indicate that households' international migration is influenced by the factors such as having dual citizenship, kinship relationship, amount of assets and savings, exclusion due to religious identity etc., whereas households' migration from one district to another district or migration from rural to capital city mostly consider the factors like education, skill, household size, social network etc. and the local level migration is shaped by the factors such as transportation cost, restricted livelihoods and other social and political issues with having some overlapping factors -- for example, tenure insecurity, lack of employment in lean season. Additionally, climatic hazards also facilitate both local and national level migration as migration is already using as a coping strategy and way that some households adapt to climate change impacts.

Keywords: Coastal Bangladesh, migration decision, rural households and qualitative method.

## 3. Immobility and environmental change: gender dimensions of poverty in coastal Bangladesh

Author: BasundharaTripathy Furlong[1], Jeroen Warner
[1]PhD fellow, Wageningen University and Research (WUR)

## Abstract

Global environmental change has led to movements of people within and between various world regions. Bangladesh has been recognized as one of the most vulnerable countries in the world to the impacts of climate change. The issue of environmental induced migration and immobility of the 'trapped population' are the key issues investigated in this paper. Gender complexities, the confinement of women to certain spaces and its relationship with poverty have been explored within the environmentally fragile region of south west Bangladesh. The focus on immobility is a consequence of the paradigm shift towards seeing migration as adaptation. It implies that in focusing on the migrants, researchers could be missing the most vulnerable populations—those who cannot, afford to adapt and/or move, are coerced, see it as an elective decision or otherwise. Keeping track of both those who stay and those who migrate will offer a better understanding of the effects of mobility on vulnerability and resilience as well as serve as a yardstick for the policies being devised. In depth interviews, focus group discussions and surveys were conducted over a period of 4 months to analyze the reasons for immobility, its connection with the changing environment and its impact on poverty. Women who fall within the 'vulnerable' category, are not a homogenous group. Their experiences vary according to inequalities such as age, class, religion, etc. Using intersectionality as an analytical framework, the experiences of women and their lack of capability of movement from the place of origin have been analyzed in this research. Immobility can provide opportunities for women and alter oppressive gender roles while it can also entrench traditional roles, exposing women to new vulnerabilities as a result of exclusion, lack of access to resources and continuing to live in the climate vulnerable region. A holistic view beyond the stereotypes allows to see how women can occupy both positions at once; which means being agents of change and being immersed in a situation of disadvantage that determine their greater vulnerability compared to men. The study contributes to the larger debate of migration, environmental change and immobility which is under researched, highlighting gender dimensions in coastal Bangladesh.

Keywords: Trapped population, gender, environmental change, poverty

# 4. Understanding Resilience and Growth: a synopsis of Kutubdia Island, Cox's Bazar, Bangladesh

Authors: Remeen Firoz[1], Dr. Syed Mortuza Asif Ehsan[2], Salma Islam[3], Tahmid Haq Easher[4]
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[2]Assistant Professor, Dept. of Economics, North South University
[3]Senior Research Advisor, Economic Dialouge on Green Growth
[4]Senior Lecturer, Dept. of Environmental Scince and Management, North South University

## Abstract

Bangladesh is considered to be one of the most vulnerable countries in the world to climate change manifestations, especially off-shore islands like Kutubdia which are exposed to recurrent natural disasters. Local accounts and literature review have revealed that the inhabitants experience multiple hazards such as cyclones, tidal surges, erosion and coastal flooding and these have serious implications on their lives and livelihoods. According to a key national planning document, 'reinforcing infrastructure, ecological protection, disaster insurance, and technological advancement are all a part of enhancing resilience against disasters and decreasing the vulnerability of the population'. Decentralized power generation methods ensure a reliable power distribution network, especially in off-grid and off-shore areas like islands. Using renewable energy hybrid (wind and solar) power plants as study sites, this research aimed to understand the inter-linkages between disaster resilience and green growth. The rationale behind this study was to validate the assumption that access to clean energy can foster resilience amongst disaster-stricken communities, as they have secure, alternative sources of livelihoods powered by energy and access to crucial information through the internet and electronic devices. Kutubdia has 2 wind power plants, each having 1MW power generation capacity, although this cannot be fully harnessed because of unfavorable natural conditions and technological limitations. Based on the experiences of major cyclones like Aila and Nargis which damaged the structures of the power plants, innovative technologies have been adopted with locally manufactured turbines for instance. The study simulated the potential impact of natural disasters, in order to also estimate the cost of making more robust infrastructures that can withstand a certain degree of stress resulting from disasters. In the absence of data and archived information, proxies have been used from similar socio-economic and geographic conditions in coastal regions of India. Through questionnaire surveys and Focus Group Discussions, the household level property damage and recovery costs have also been calculated for understanding levels of vulnerability in Kutubdia. The Willingness to Pay for enhanced power supply has also been assessed, through assessment of the potential livelihood diversification options and calculation of market and non-market values. Information gathered from field surveys indicate that access to sufficient energy supply can create several potential livelihood options, such as ice factory and cold storage, salt crushing, fish processing, small and medium scale industries and ecotourism. For triangulating the information collected from the field, key informant interviews have also been conducted with stakeholders from related agencies. For any development project, the return is not immediate, but rather accrued over time. Although the direct benefit of the wind power plants are not seemingly obvious at the moment, it is expected to fetch welfare benefits to the society, especially the women and children of Kutubdia. The key recommendations from the research are thus to: Improve the structures of the power plants and technology for more efficiency; transitioning to solar backup systems instead of reliance on diesel generators and eventually connecting to the national grid through submarine cables in the future.

## 5. Climate Change, Resilience and Population Dynamics in South Asia: Why Some People Move and Others Stay?

Author: Robert Stojanov
Migration Policy Centre, Robert Schuman Centre for Advanced Studies, European University Institute, Italy

## Abstract

People have long migrated for many reasons, often with a combination of forced and voluntary reasons combining to push them away from current situations and to pull them towards new situations. Human migration and the environment are two very frequently mentioned issues of our times. And there is widespread agreement that environmental migration is a matter of global justice and responsibility as evidenced. For the last few decades, several regions such as coastal areas, low- laying islands in South Asia and others has been seen as being at the forefront of addressing climate change impacts. And Bangladesh is one example where environmental changes have long been amongst the multitude of reasons for migrating, with contemporary climate change suggested as a major impetus towards more migration. The low elevation of the coastal regions in Bangladesh and some islands in Indian Ocean makes them vulnerable to slow-onset hazards, such as coastal erosion, sea-level rise, salinity intrusion, and change in monsoon patterns and hence rainfall. Consequently, migration has long been discussed as an adaptation strategy for the population. This presentation covers outcomes from field research conducted among local experts, ordinary people and main stakeholders in Bangladesh, India and Maldives. It contributes empirical evidence toward understanding complex relations among environmental challenges, climate change, migration and resilience strategies. Our results suggest that, besides a set of actually experienced environmental and climate challenges, including rapid- and slow-onset climate change impacts such as hurricanes, floods, sea-level rise which are perceived by our respondents as being one of the key factors affecting their society and livelihoods. However some respondents perceive future climate change impacts to be a serious challenge and they accept that out-migration from the affected areas within or to other countries might be a potential option, for others, conversely, out-migration it is not perceived as being one of the possible adaptation strategy. They prefer to be more resilient, stay and adapt. The reason is that many other factors – cultural, religious, economic and social – play an important role in decision making about migrating or not. These results show the complexity of the population dynamics phenomenon in the context of climate-change impacts and show the challenges of future research.

# Parallel Session: Urban Sustainability (Day 1)

## 1. Urbanization and Agricultural Land Conversion in Southeast Asia: Case Studies in Industrial areas in the Extended Metropolitan Regions of Jakarta, Indonesia

Author: Miya Irawati
PhD candidate in the Geography Department at NUS;
PhD researcher at Urban-Rural System of Future Cities Laboratory, Singapore-ETH Centre

## Abstract

The explosive growth of urban population since the late twentieth century in Southeast Asia has seen a demographic transition from predominantly rural to predominantly urban populations. This phenomenon has seen a related economic shift, from one dominated by agriculture, to increasing industrial and services sectors. Consequently, agricultural land conversion practices, which involves the interaction of spatial planning, industrialisation policy, real estate, foreign direct investment, housing demand and interests and aspirations of various actors, could not be avoided. It has resulted in complex land-use and settlement patterns with both characteristics, urban and rural characteristics that famously called '*desakota*' (village-city). The impacts of agricultural land conversion have diverse effects, intensities and implications, which effect permanent, cumulative and progressive change in the *desakota* landscapes of Southeast Asia.

This paper identified agricultural land conversion and its dynamics as the point of departure to understand urbanisation in the Extended Metropolitan Regions of Jakarta. Agricultural land conversion as the hinge of the morphological transformation and its process on the ground from perspectives of land-users, especially villagers, internal migrants and developers, through multi-dimensional aspects.

The research for this paper carried out through policy papers study, observation, satellite image mappings, semi-structured interviews which distributed through random sampling, and in-depth interviews. This paper concluded that for understanding urbanization from the empirical evidence of agricultural land conversion in such *desakota* regions, we need to understand its dynamics, the driving factors, as well as the actors involved on the ground through everyday life.

Keywords: urbanisation, agricultural land conversion, the Extended Metropolitan Regions of Jakarta

## 2. City-Nature Dynamics: Alternative Urbanization Pathways in Bangladesh

Author: Jennifer Lee
PhD candidate in the Architecture Department at ETH Zurich;
PhD Researcher in Urban-Rural Systems of Future Cities Laboratory, Singapore-ETH Centre

## Abstract

This thesis takes the case of urbanization in Bangladesh to explore the unstable category of 'nature' in its current and possible role in the process of urbanization. It does so, as the rapid urbanization in Bangladesh exhibits a kind of settlement pattern that does not sharply differentiate between urban and rural, city and nature, and where nature appears to be deeply implicated in the process of urbanization. It is a condition that local scholars have sought to describe in alternative terms, such as desakota, rurbanism or ruralopolis.

The research examines the legacy of the urban-rural binary in conceptualizing urbanization in Bangladesh and alternative approaches to considering city-nature hybridity. It aims to contribute to the development of sustainable pathways to urbanization in Bangladesh, and wider debates on urbanization and urban ecology. The thesis focuses on regions that are located between densely populated cities, such as Dhaka, and rural areas where population densities are lower. It looks at three case study sites that allow analysis of different kinds of city-nature dynamic around the management of water, and the production of clay and fiber.

In this presentation, I will focus on one of my case study: water. Around 80% of Bangladesh consists of floodplains, while one-fifth of the country remains underwater from June to October as a result of the monsoon season. This case investigates a unique phenomenon where the floodplains, which are usually dominated by private rice cultivation during the dry season, become de facto public-access when heavily inundated during the wet season. Serving as a temporary commons, these water-bodies create new opportunities for the landless to harvest fish, snails, crabs, and aquatic plants until the water recedes and private rice cultivation returns. This case will document how humans adapt to the flood-prone regions of Bangladesh by focusing on how they access and use the fluctuating resources available to them throughout the year. Insight from this research will be used to better understand how the resources on the floodplain commons are locally managed and utilized by different social actors. Ultimately, the project aims to identify better strategies to inform and enhance policies on the human-environment linkages on the floodplains of Bangladesh.

Keywords: urban-rural, nature, floodplains, Bangladesh

## 3. **Bengal Delta: Critical, lived ecologies**

Author: Victoria Marshall
PhD candidate at the Department of Geography, NUS;
PhD researcher at Urban-Rural System of Future Cities Laboratory, Singapore-ETH Centre

## Abstract

The focus of the case study is the process of wooded-settled area transformation in peri-urban Kolkata, and how this is lived with on the ground. Peri-urban Kolkata exhibits a unique land-cover pattern and built environment. Notably, it features cultivated wooded areas, which also include settlements (villages or clusters of houses, ponds, and small-scale enterprises). Such thickly wooded and densely settled areas exist in relation with, and in the midst of arable land, predominantly rice agriculture paddies. When faced with ad-hoc urbanization typical of peri-urban conditions, land that contains rice agriculture is readily replaced by buildings (be that, extended-family houses, medium scale enterprises, and high rise, high-density residential clusters). However, the wooded-settled areas appear to be less readily altered by this transformation. That is, urbanization proceeds *across* them, and this then figures wooded-settled areas as distinct - and as a condition that somehow persists amidst newly transforming peri-urban areas.

The study seeks to understand the lived characteristics of this land transformation process as a special mix of society and environment, culture and nature well as, belief practices and institutions. Furthermore, the study aims to contribute to practices of theorizing about urban-rural systems *from* Monsoon Asia by bringing forward such lived ecologies in an understudied condition, peri-urban Kolkata in the Bengal Delta. To do this I uniquely brings together three fields of scholarship that are landscape studies, urban political ecology, and urban ecology. While each field has rich work that I build upon, it is the combination of key elements of each that allow this research to say something more about peri-urban change that is, how it is lived. By this I refer not only to the lived experience of peri-urban change, but the intricate ways that peri-urban landscapes change, and are made in practice and society.

The study is in-progress and is being conducted through a range of qualitative (archival and field based) methods as well as, spatial, urban ecology analysis methods.

# 4. The Concentration Dilemma: Urban-Rural Transition in Metropolitan Area of Chengdu Since Early 2000s

Author: Chen Ting
PhD candidate in the Architecture Department at ETH Zurich;
PhD Researcher in Urban-Rural Systems of Future Cities Laboratory, Singapore-ETH Centre

## Abstract

In China today, a policy of spatial concentration of rural settlements is widely favoured to manage urbanization and promote economic growth in the countryside. And yet, many of the projects developed under this policy have triggered radical and disruptive changes in the social structure and morphology of the countryside, without necessarily delivering the economic benefits originally envisioned. This misalignment of policy goals and effects, which we call the "concentration dilemma", is the focus on the paper. The paper explores China's concentration dilemma through contemporary cases drawn from the metropolitan area of Chengdu, an official pilot area for urban-rural integration in China's inner hinterland. Drawing on first-hand interviews, innovative mapping techniques and archival documents, the paper considers the current status of the state-led policy, which emerged out efforts to mechanize agriculture, and introduce large-scale manufacturing plants and tourist attractions into rural areas. This resulted in the relocation of many thousands of rural residents and the restructuring of many millions of hectares of land. Local residents were seldom involved in shaping or implementing resulting concentration initiatives, and they often failed to deliver promised economic goals.

The paper complements and contrasts this account of state-led policy and its consequences with a number of alternatives that have been recently developed by NGOs, academics, and design and planning consultants. These alternatives, typically focus on lower-impact environmental strategies with strong encouragement for local resident participation and relatively limited involvement from government.

The paper assesses both state-led policy and recent alternatives in terms of short- and long- term socio-economic, community and environmental criteria. In doing so, it considers the potential benefits of locally-oriented policy and site-specific interventions, and their possible relevance for dominant policy norms and wider application in China, as well as other densely populated and rapidly urbanizing regions in Asia.

Keywords: spatial concentration of rural settlements, Chengdu, state-led policy, site-specific interventions.

## 5. **Urban-Rural Systems in Monsoon Asia**

Author: Prof. Dr. Stephen Cairns
Programme Director of Future Cities Laboratory, Singapore-ETH Centre; Principal Investigator of Urban-Rural Systems

## Abstract

This research is focused on the hybrid urban-rural regions emerging around many cities and towns in Monsoon Asia. Monsoon Asia supports close to 50 percent of the world's population, and much of it is accommodated in urban-rural regions. As such they already represent one of the world's dominant forms of settlement. Scholars have also suggested that they represent a distinctly Asian settlement type that is anomalous compared to cities elsewhere. How such settlements change in the future will have significant impact on the wider patterns of urbanisation at a regional and global scale. Despite this, we have little up-to-date information on the extent or characteristics of such settlements. Furthermore, it is unclear what planning approaches, urban design strategies, and material and technological interventions might effectively ameliorate the most damaging, and enhance the positive characteristics of urban-rural settlement types. Could it be that contemporary urban-rural regions of Asia contain the seeds for a distinctive urban-rural 'urbanisation'? Could such hybrid regions offer insights into ameliorating the interconnected threats of urban population growth, deteriorating quality of urban environments, and declining productivity of agricultural regions? Furthermore, what might such insights offer to alter- native approaches to urban design and planning elsewhere, and what might they have to offer to the emerging consensus around a global framework for sustainable urbanisation?

Keywords: Monsoon Asia, urban-rural systems

# Parallel Session: Green Economy (Day 1)

## 1. Market assessment of alternative cooking options for Rohingya cam settings in Cox's Bazar

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[1]Assistant Professor and Director-MBA Program, University of Liberal Arts Bangladesh

### Abstract

The humanitarian crisis through escalating violence on Rohingya people of Rakhine State, Myanmar caused 688,000 individuals' dislocation in the neighboring over-populated country Bangladesh within 27 January to 25 August of 2017. The displaced population concentration in Cox's Bazar poses threat to forest and environment due to the excessive use of firewood in order to fulfill their energy need resulting rising tension with host community and local government. This study hence an attempt to analyze the alternative fuel and cook stove options for refugee camps in Bangladesh particularly from protection, economic, environmental and health perspectives. This paper not only identifies the energy gap affecting Rohingya and host communities and constraints related to the cooking in camps and surrounding areas but also identifies existing enterprises promoting eco-friendly cooking system. Followed by a desk study, KII with government and non-government representatives concerned with cooking issues, field visits to Jamtoli, Thangkhali and Balukhali camps and adjacent host communities to conduct individual, focus group and expert interviews in order to analyze and validate the findings with energy experts and finally to the value chain of various cooking options were the activities the methodology is made up of. Apart from traditional method of firewood and mud stove; fuel briquettes, LPG, biogas, solar cooker were explored to identify the best possible option to solve the energy crisis of Rohingya populace.

## 2. Bio-fertilizer, the building blocks of a sustainable business model

Authors: Dr. Shahana Afrose Chowdhury[1], Jay Ohlamcher[2]
[1]Manager, Research and Development, Kazi Shahid Foundation
[2]Advisor, Biogas and Biofertilizer Program, Kazi Shahid Foundation

### Abstract

Bio-fertilizer, the building blocks of a sustainable business model In the South Asian Region, Corporate Social Responsibility (CSR) is mostly just a buzzword on webpages. Little if any real money is put into actual causes and few companies have their own business entities dictated for it. Through our in-house nonprofit, KaziShahid Foundation, Gemcon Group is developing sustainable business models and dedicated funding for it's innovative programs. Developing unique sustainable business models show both the merits of Corporate Social Responsibility and Investment (CSRI) and to provide a path to follow by others. With most of the population of Bangladesh located in rural areas, the ability to provide economic and sustainable energy alternatives has been very limited. Most fossil fuels are imported and the local resources are being depleted at an accelerated pace every year. Kazi Shahid Foundation (KSF) has developed a Biogas alternative

to traditional biomass cooking fuels. This program, utilizing our exclusive cashless micro-finance payment system, allows the villager to make payments through alternative means such as bioslurry and dung. KSF then can sell those on the open market to recoup the payment amount. This solves the immediate problem of sustainable cooking fuel while not imposing a financial burden on the villager. However, on a large scale, selling raw products to the local market is not feasible due to market saturation. This same saturation gives way to opportunities for new and innovative products. Separating the liquid from the solids is not enough to provide a economically stable business model. At KSF we have been investigating ways to use these products to target specific markets and rethink traditional farming for a changing world. We are developing a process to produce a transportable stable liquid organic fertilizer. Combined with the current technique of growing plants in sacks, allows farmers to grow crops in areas with saline soil. Supplying both water and fertilizer in one, reduces the ground water consumption and dependence on chemical fertilizers. Development of nutrient briquettes consisting of slurry solids, vermicompost, and plant silage allow for targeted plant fertilization. Reducing the need for soil preparation while increasing nutrient uptake.

## 3. **The Fruits of Our Labour: Producing Export Compliant Mangoes in Bangladesh**

Author: M M Huda
Chairman, Naafco Group

### Abstract

As the old adage goes, Bengal has the best poetry, the most beautiful of women, and the tastiest mangoes. Open any book of Bangla poetry, see Bangladesh's population density, and the first two are self-evident. Despite increasing mango acreage and waste during season time, we have not been able to make any exports beyond the token, and certainly not at premium. The qualitative barriers to export of mangos were identified as pesticide residue levels beyond international market tolerances, fruit containing fruit fly and anthracnose fungus, and short shelf live of fruit. Technical barriers were export bottlenecks such as quarantine issues, lack of cold storage at airport and lack of recognised GAP (Good Agricultural Practice) certification. We concentrated on producing an export compliant mango first, and then will approach the technical issues.

After two years, multiple visits by Thai consultants funded by USAID's AVC, constant monitoring of trees, we ended up with premium grade mangos which had a bigger harvest per tree, bigger size of fruit, sweeter, blemish-free, insect-free, fungus-free, residues well within tolerance levels, and shelf- life of 5-7 days more than comparable mangos. The mango growers benefited from higher yields and higher selling price per kg. We sold their produce, 7mt in 7 days, at around TK170/kg ($2), double the normal selling price for mangoes at the time.

This presentation explains the extension work we did with the mango growers, the tweaks and the techniques.

# Parallel Session: Natural Resource Management (Day 1)

## 1. Survey on edible insects among some ethnic groups of Bangladesh

Authors: Md. Fuad Mondal[1], Saumik Dev[1], Kamrul Hassan[1], Md Abu Saleh Abir[1], Md Kamrujjaman[1]
[1]Professor, Dept of entomology, Sylhet Agricultural University

## Abstract

Insects as food or entomophagy characteristic strategies have been proposed by FAO to improve the food security and to reduce the environmental effect for the future global community. It has been found by the researchers that almost 2000 species of insects are being used as edible insects around the world. The edible insects have higher nutritional value as they contain comparatively higher amount of protein, lipid, vitamin, fiber etc. Bangladesh is a subtropical country with plenty of insect species in different agro-ecosystem in all the year round. Our weather and climate is good for breeding of insects. Insects still considered being a harmful animal in Bangladesh. In this circumstance, insect as a food item is beyond the thinking of Bangladeshi people. Surprisingly, many of our ethnic peoples consume insects by collecting these from the wild environment. Therefore, this research work was aimed to investigate the first comprehensive survey on feasibility study of edible insects in different ethnic groups of Bangladesh. A cross-sectional survey was conducted in Garo Tribe of Sherpur district of Mymensingh division, Marma tribe of Bandarban district of Chittagong division, Khasia tribe of Moulvibazar and Sylhet districts of Sylhet division and finally Saontal tribe of Gaibandha district from Rangpur division of Bangladesh. This survey helped to make a list of the insects consumed by some Bangladeshi tribes along with their consumption pattern, systems and marketing demand. Entomophagy and entomotherapeutic uses were the major concern of the above cross-sectional research survey. The study revealed that a total of 14 insect species consisting of 11 families and 5 orders were found to be accepted as food and as medicine by the Garo tribe and 17 insects species from 9 families and 4 orders were consumed by the Marma tribe. The list of the edible insects is thought to be completed as they mentioned that without these insects they do not consume or use any other insect. Out of these total insect species, three (03) species were reported to have major uses in therapeutic/medicinal purposes. Normally all stages of insects are consumed. For majority, adult insects are preferred most. The mode of insect consumption varies according to insects species. Wings are discarded in every case and the insects are generally roasted or boiled with water. However, In case of Khasia tribe, it was found that they do not consume any type of insects. Due to local problem of Saontal community, they did not allow to conduct the survey. These surveys will further help to introduce insect based food industry in Bangladesh along with letting the tribal as well as local people aware of the advantages of consuming insects for their high nutrition contents.

## 2. Sustainable Agro-water management practices in south-west coastal Bangladesh

Authors**:** Nazia Hassan[1], Sharmishtha Roy[1], Jafrin Sultana[1], Mumtahina Islam[1], M.Shahjahan Mondal[2]
[1]Environmental Science Discipline, Life Science School, Khulna University
[2] Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology( BUET)

## Abstract

The agricultural system of coastal Bangladesh is dynamic and challenged due to water and soil salinity level and fresh water availability for irrigation. For sustaining agriculture, the geophysical attributes and socio-economic status have driven the farmers to adapt different agro-water management practices (AWMPs) in the study area. Sequencing of multiple crop cultivation with different water management practices define different types of AWMPs which is locally known as "gher" in Bangladesh. The study area covers four villages from Dumuriaupazila in Khulna districts, Bangladesh. Four types of crop cultivation practices were found in the study area in which three types contain improved farming of mixed rice-shrimp-white fish (i.e., AWMPs) and the rest one was traditional rice farming. Environmental, social and economic criteria of AWMPs were assessed and summed up in the highest score in Multi-Criteria Analyses (MCA). In addition, secondary data for environmental quality and economic return from the AWMPs were added for better decision making in MCA. The research has shown that Type-2 (i.e., mixed golda-bagda-white fish in gher and vegetable on dyke in Kharif season and, Boro rice in Robi season) is the sustainable AWMP among three types of AWMPs (Type-1, Type-2, and Type-3). Present status of land use (cropping pattern and associated AWMPs, crop yield), management inputs in different AWMPs (water management, water exchange, irrigation source and frequency, fertilizer and pesticide management), years of Boro cultivation, status of fish feed application, vegetation on dyke, standing water depth etc. were investigated. Farmer's perception about the effects on environment and livelihood regarding the AWMPs were scored through Likert Scale for Social Multi-Criteria Evaluation (SMCE). Finally, the result is compared with traditional rice cultivation practice prevailing on the focused area. The study draws that farmer's collective choice of AWMP led sustainable agricultural practices in terms of livelihood change and economic return in south-west coastal Bangladesh. Key words: Agro-water Management Practices, Multi Criteria Analysis, Social Multi-Criteria Evaluation, Community water management, Sustainable agricultural practice.

# 3. Fish for Future – Playing by the Rules: Changing Fishery Practices in the World's Largest Mangrove Forest

Author**:** Nadim Parves
Program Assistant, Education and Livelihood Wildlife Conservation Society - Bangladesh Program

## Abstract

Fisheries mesh size, seasonal and area closures and species catch restrictions in the Sundarbans of Bangladesh are complicated and fishers are only vaguely aware of the laws and rules they need to follow. Artisanal fishers account for 100% of the 177 arrests made in Sundarbans during June to December 2016 by the SMART patrolling teams of the Bangladesh Forest Department. Almost two-third (65%) of these infractions were for illegal fishing by permitted fishermen. Even among enforcement officers the understanding of applicable laws and rules is limited. To reduce the arrests and increase compliance with fisheries regulations, the Wildlife Conservation Society developed a communication strategy and outreach tools targeting frontline enforcement officers and permitted fisherfolk. In a first step, all applicable fisheries regulations were grouped into four categories that represented fishing gear or mesh size regulations, size restrictions for fish and crab species, area closures, and seasonal closures. Legal language was summarized into concise key messages and easy-to-remember rhymes. A pictogram was developed for each key message, which was then used consistently throughout the outreach activities and tools to address the generally low literacy levels. Three durable tools for fishers were developed to disseminate the key messages and support compliance: A fish ruler indicates the legal mesh size for commonly used fishing while the backside depicts all fish species regulated by size and season. Time closures for regulated fish and crustaceans are shown in a pocket-size fish calendar. Frontline officers from the 16 permit-issuing Forest Department stations were trained to communicate these key messages and provided with tool-sets to disseminate among fishers when they apply for their fishing permit. Additional visual aids were developed and provided to these stations including samples of illegal fishing gear, a detailed map with banned fishing creeks and channels illustrated and an animated film called "NiomMene Mach Dhori _ SundarVobishyatGori (Fish For Future - Playing by the Rules)" showing relevant fisheries laws and rules, and permit procedure. Community events were also held in eight villages across all four ranges on Sundarbans to improved knowledge about and increase compliance with fisheries regulations. Trained interpreters engaged a total of 3,564 visitors in interactive, entertaining and educational games developed around the key messages. These included a football competition aiming at goals made from legal and illegal fishing nets, an angling game to differentiate undersized from legal size fish, and a popular tabletop game carom modified with endangered and protected fish species. A formal impact evaluation indicated that our approach largely achieved the anticipated changes in knowledge. However, changes in fishing practices and behavior require a longer assessment period. Overall we found a consensus among fishers and resource managers that playing by the rules would have a positive impact on ensuring sustainable fish for the future.

# 4. **Identifying marine protected areas to sustain fisheries and protect threatened marine biodiversity**

Authors**:** Shamsunnahar Shanta[1], Ashik Jahan Galib[1], Manzura Khan[1], Rubaiyat Mansur Mowgli[1], Elisabeth Fahrni Mansur[1], Hasan A. Rahman[1], Brian D. Smith[1]
[1]WCS Bangladesh Program, Dhaka

## Abstract

Bangladesh supports an astonishing diversity of marine megafauna including cetacean (dolphins, porpoises, whales), sharks, rays and marine turtles. The potential disappearance of these top predators from the Bay of Bengal would have dramatic impacts on marine ecosystems which support millions of people already living a tenuous existence. Protecting priority marine habitat within an effectively managed network of marine protected areas can provide a global safety net for marine biodiversity at risk of extinction and sustain fisheries vital to food security, local livelihoods and the national economy. The Wildlife Conservation Society (WCS) Bangladesh Program is supporting the Government of Bangladesh to comply with the United Nations Convention on Biodiversity (CBD) commitment to protect 10% of the country's Exclusive Economic Zone.

WCS conducted a survey covering the entire coast of Bangladesh during the winter of 2017-18 to identify potential new sites for marine protected areas (MPAs). A strong emphasis was placed on understanding the fine-scale distribution of marine megafauna, including cetaceans, sharks, rays and marine turtles, and the interaction of these species with fishing practices to inform marine spatial planning which aims to protect threatened marine biodiversity and sustainable fisheries. The survey identified the waters around NijhumDwip and Saint Martin's Island as high priority areas for protecting marine biodiversity and enhancing fisheries.

Earlier investigations by WCS conducted between 2004-2012 in the Swatch-of-No-Ground (SoNG) submarine canyon and estuarine waters offshore the Sundarbans mangrove forest identified this area as priority habitat for seven cetacean species. However, significant threats were also documented from entanglement in fishing gears. Based on these studies the Government of Bangladesh declared an area ecompassing 1,738 km$^2$ as the country's first marine protected area (MPA).

The 2017-18 survey conducted by WCS covered 1,895 km of coastline. A total of 1,574 fishing vessels, 142 sightings of five cetacean species, 10 catch records of 11 elasmobranch species, seven sightings of seven sea snakes kes, and 709 sightings of 20 sea birds were documented, along with at-sea interviews with 47 fishers. Two areas covering 1,743 km$^2$ around Saint Martin's Island and 5,719 km$^2$ around NijhumDwip were identified as the priority sites for the new MPAs. In addition to their potential for protecting at least 46 globally threatened and near threatened marine megafaunas and seabirds, these two new MPAs, together with the SoNGMPA, would bring about 7.8% of Bangladesh's Exclusive Economic Zone (EEZ) under protection. This MPA network would make a significant contribution to conserve our country's marine biodiversity, enhance fisheries vital for food security and local livelihoods and bring Bangladesh closer to the 10% marine protection goal of the CBD. Equitable and collaborative management of these proposed MPAs with local coastal communities will not only fulfill Bangladesh's international obligations but also enhance our nation's food security and pave the way for a sustainable blue economy.

Key word: marine protected area, Bay of Bengal, marine megafauna, marine spatial planning, blue economy.

# Parallel Session: Urban Sustainability (Day 2)

## 1. Scenario Analysis of the Primary Socio-economic Issues of Dhaka's Established Slums, Korail and Satto

Authors: Raisa Bashar[1], Sirajus Salekin Tonmoy[1], Alvira Farheen Ria[1], Nazmul Ahsan Khan[1]
[1]Graduated from the Environmental Science and Management (ESM) Department of North South University (NSU)

## Abstract

The research was adopted, primarily, to identify and then assess the current status of the three primary socio-economic issues faced by the two most famous, established slums of the North Dhaka - Sattola and Korail. Additionally, the authors aimed to recommend ways so as to better the management of the slum dwellers that would consequently and gradually lower the incidences of 'slum-settling.' The validation of and reasons behind these gaps also justifies the need for this research.

Methodology and Data Collection: The study was based on primary data collection through direct interviews (both structured and unstructured) from 15 households each of the two slums (from around 50 of Korail and 42 of Sattola), selected through a cluster sampling method. Key informant interviews were conducted, both on-site and with a few relevant officials, to perform a comparative analysis with secondary data. Respondents' insights, assistance from local guides and qualitative research methods were used to understand the research problem better.

Recommendations: Government intervention is required to lower water prices and improve primary educational status. Further data collection from these areas is necessary to identify important social dynamics for a resultant improvement in the dwellers' financial/economic conditions. However, the most important suggestion is for the government to monitor these areas very closely to find out why they claim their situation is worse than it really is and why the dwellers keep on living in these areas even with sufficient income to be able to afford better housing.

Keywords: Dhaka, Korail, Sattola, slums, socio-economic issues

## 2. **Urban Sustainability: Citizenry and nonmaterial culture**

Author: Dr. Anis Pervez
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### Abstract

A city is more than its infrastructure; it is the socio-psychological and cultural background and behavior of the city's residents that make a city sustainably healthy and sound. The infrastructure and other amenities provided by the state need to be used in an effective way for which citizens have a role to play. Sate alone cannot bring socio-cultural transformation without assisted by citizens' attitudinal and behavioral change. In the developing countries, where rural citizens in large volume are fast moving to cities with an expectation that the state will be solely responsible for city development and its maintenance, seems to have expeditiously forgotten that they have an operative role in city development and its sustainable upkeep. The collective norms and values practiced in the rural domain abruptly change to individualistic gratification as one enters city life. Following Ferdinand Tönnies it is a transformation from Gemeinschaft to Gesellschaft mode of social interaction or from an organic to mechanical social relations affecting norms, values and the sense of responsibility as Émile Durkheim would say. In the Europe of the nineteenth century, cities developed gradually with space for the citizens to appropriate their behavior, which does not seem to be the case in the developing countries, where things are changing fast causing a cultural lag—material culture is evolving and changing rapidly and voluminously while non-material culture remains fixed for quite a long period of time. Material development of the city in the developing countries seems faster than non-material change, i.e. the operation and use of material development and services. For a sustainable sound city development, it is vital that material and non-material changes correspond to each other. One cannot stop the pace of city development which is an organic part of economic growth and the spread of modernity, but what is important is to find a way to engage civil society in appropriating citizen's behavior with urbanization. It is primarily a communication work to make citizens aware of their duty for which a communication strategy is an essential need. With the support of state and non-state organizations, an organized civil society needs to conduct a campaign in reconfiguring city dwellers' cognitive domain—attitude and sense of responsibility—towards a deep-felt sense of responsibility to operate and use the city in the most healthy way. As Morse says that citizenship today requires individuals be knowledgeable of public problems while having the capacity to act together toward their solutions, the sustainable urbanization or city development largely rely on citizens' discharging their duties in using the material growth of a city with the appropriate use of their non-material culture.

## 3. Perception of public space in Urban Bangladesh

Author: Masud Shammo
Research Coordinator, Bengal Institute for Architecture, Landscape and Settlements

## Abstract

People are innately social beings, incapable to thrive without human communications, and these communications require a certain spatial organization. Public spaces serve as such spaces that help the social integrity of a community. In design theory public space is commonly defined as a place that is generally open to all regardless of age, gender, economic status, religion etc. Historically, public spaces have been developed around town centres, churches and market places in western cities. Most of the theoretical decision around defining public space, what role it plays, and how design should approach has been done based on western experiences. Limited of study on public spaces in the south Asian context has led to lack of understanding impacting policy planning and design. With rapid urbanization and increase in population, public spaces of Dhaka are diminishing at an alarming rate. The social perception of public space is vague which reflects in policy, planning and creation of public spaces. Through questionnaire survey among young population of Dhaka the study aims to understand the perception, use and preferences about public spaces. Secondary study includes literature on public space perception, Local policy and planning documents. The outcome of the study will improve the body of literature in context of Bangladesh and also inform policy planning.

Key words: Public space, Social perception, Design theory, Urban Policies.

## 4. Indicators of Sustainable Transportation: Role in planning, Current Status in Bangladesh and Suggestions to Improve

Authors**:** Mehedi Mudasser[1], Al-Ferdous Ahmed[1], Md. Shojib Ali[1], Muhammad Waresul Hassan Nipun[2]
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[2]Department of Urban and Regional Planning, Jahangirnagar University

## Abstract

Transport sector has been considered as the priority action area for sustainable development because it has been provoked immense impact in economy, environment and society. This study attempts to focus on indicators of sustainable transportation to measure the economic, environmental and social impacts of transport systems in Bangladesh. At the beginning, this study conceptualizes the role of sustainable indicators to measure and understand the directions of change or progress. A quantitative measurement has been adopted throughout the research based on secondary data collected for different time period. Using the aforementioned method this study emphasizes on five indicators: per capita fuel consumption, per capita emissions of greenhouse gases, portion of walking and bicycling, traffic noise levels and per capita transport energy consumption selected from three pillars of sustainable development to measure the sustainability of transport systems. In addition an attempt has been taken to make a comparison between Bangladesh and the world based on the five indicators of sustainability. The measurement of per capita fuel consumption has been shown a drastic change in diesel and gasoline consumptions in Bangladesh. This

country has been experienced the largest rate of growth (6.9 percent) in transport CO2 emissions between 2000 and 2005. It has been found that, in 2009, almost 20% of the people of Dhaka city use walking as their mode of transportation but bicycling in spite of being useful and environment friendly transport mode only 2% trips has been found using this mode. The average noise level in the road side in Dhaka city is about 78 dB (A) which far exceeds the acceptable limit of 60 dB (A) set by the Department of Environment (DOE), Bangladesh. Finally, some recommendations have been forwarded for improvement of these indicators with a view to attaining the sustainability in transport systems.

## 5. **Heterogenous Sociodemographic Groups Perceptions on Cultural Ecosystem Services provided by Urban Green Infrastructures**

Authors: Rumana Sultana[1], Samiya A. Selim[1], Md. Masudul Islam Shammo[2], Tazrin Ahmed[2], Md. Shafiul Alam[3] and Sam Folmenhoft[4]

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[2]Bengal Institute of Architecture, Landscapes and Settlements, Bangladesh

[3] Department of Geography and Environmental Studies, Rajshahi University, Bangladesh,

[4] Brown University, USA

## Abstract

Urbans areas are the places of heterogenous and diverse sociodemographic groups. Perceived green space availability, activities and limitation connected to utilize green spaces and perception of their importance are considered to reflect such heterogeneity and diversity. Importance of cultural ecosystem services (CES) by urban green infrastructure (UGI) are increasing and their contribution to well-being is well recognized. Still significant gap exists in the understanding of socially and demographically divergent perception of CES by UGI for making socially adjustable and sustainable urban development strategies. This paper aimed to analyze local peoples' perception on CES provided by UGI based on socio demographic factors in the North Dhaka City using questionnaire interviews (n = 401). Questions in the survey concerned the existence and availability of UGI, types of activity, limitation to use and the importance of the CES from UGI perceived by socially heterogenous groups. Respondents opined that, availability of green park, streetside greenery, greenery associated with housing, rooftop gardens are limited, and the amount of garden is slightly lower. Main activities connected to UGI are walking and nature observation; young respondents utilize it more frequently than middle age and old respondents. Limitations that influence the CES provided by UGI concern not only green space related issues (i.e. too many people, insufficient infrastructure, lack of security and organized events) but also respondents' issue (i.e. lack of leisure). Respondents who were neither married nor unmarried (i.e. divorced, separated) emphasized more on respondent related issue than green space related issue. Respondents consider CES provided by UGI is more important for individual purpose (i.e. mental satisfaction, recreational activities) than community purpose (i.e.environmental purpose, societal development, economic development). These heterogenous perceptions are necessary to reliably apprise city planners for developing sustainable urban development solutions.

Keywords: Cultural Ecosystem Service, Urban Green Infrastructure, Sociodemographic groups, Dhaka City

# Parallel Session: Climate Change-Migration, Adaptation and Resilience (Day 2)

## 1. Influence of contextual and governance factors on vertical integration of urban adaptations in NDCs

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[2]Professor in Urban Resilience, Civil and Architectural Engineering, Dept. of Technology and Innovation, University of Southern Denmark
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### Abstract

As a part of growing concern on climate change, Paris Agreement is one of the significant decisions accepted by world leaders beneath United Nations Framework Convention on Climate Change (UNFCCC) in France December 2015. The agreement with 'common global target' determined mitigation attributes to confine global temperature increase to 1.5 degree Celsius and develop the capacity to adapt climate change effects as well as become more resilient. Countries have devoted to support this global agenda through Nationally Determined Contributions (NDCs) and review it in every five years. Along with mitigation measures, parties are intended to introduce adaptation strategies, plans, actions in response to climate change effects. Within this global platform of opportunities, member states are promised to exchange knowledge, information, technology, skill and financial resources to implement NDC actions. However, inclusion of urban adaptation strategies and prioritize actions are very perplexing because they are localized and contextual. Therefore, more researches are required on the evidences around the world to understand influential factors of integrating adaptations in climate policy. Since NDCs are newly emerged, both in academic field and policy implication, it is important to explore the context that are instigating countries to adopt adaptation actions as well as assess the opportunities and challenges of integrating local actions vertically at national level. To reduce the gap present research contributed by analysing 52 NDCs including Bangladesh which have focused mainly in urban adaptation measures. By following both qualitative and quantitative method, the study identified the level of vertical integration of urban adaptations of the NDCs, evaluated the influence of contextual factors in integrating adaptation actions as well as assessed governance factors as the drivers and constraints of vertical integrations. The research reveals that income level, urbanization rate and vulnerability level as contextual factors have significant influence in determining vertical integration level of urban adaptations strategies in NDCs. The factors are also correlated to each other as both income level and urbanization rate intensify the climate change vulnerabilities. However, governance factors also play essential role in integrating urban adaptions vertically. Countries with high level of vertical integration have better performance in governing issues such as information sharing between national and local level, participation of actors, collaboration between national and sub-national level, national and local adaptation plan, explicit in mentioning existing policy, law and regulations to support adaptation actions as well as clear indication about funding source and financial capacity. It is also mentionable that income level as a context shapes governance system and vertical integration of urban adaptations of a country. As the first submitted NDCs, there are information gaps regarding information availability, institutional and

human capacity as well as financial ability which may hinder global support on needs and implementation potentialities of the actions. Finally, based on the findings, the research offered few guidelines to make NDCs more robust, effective and understandable for next review. It is expected that the goal of Paris Agreement in exchanging experience, knowledge, technology and resources within NDCs will be smoother and effective by following these guidelines. Keywords: Climate change. NDC, Adaptation actions, Income level, Vulnerability, Urbanization rate, governance factors

## 2. **Climate change and risk preference: Linking migration and household behavior in coastal Bangladesh**

Author**:** Md. Hafiz Iqbal
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## Abstract

Bangladeshi coast is prone to climate change. One fourth of the population live in this area and they frequently fight against this unexpected nature induced hazards. Due to the increase life expectance, diversified livelihoods and improve adaptive capacity, the death toll and economic losses were decreased significantly. Thus, it is very imperative to study household behavior under the climate change induced natural hazards in terms of income and migration. For proper empirical investigation, the study set its research questions: What are the determinants of coastal households' income variation under the climatic hazards condition? Which factors influence coastal people for migration? How the wealth indicators and risk preference parameters influence their ex-post income recovery? To answer these questions, the first research objective is like to identify the income variation of the coastal households. The second objective is to detect the influential factors of migration in the coastal area of Bangladesh. The third objective is to explain income variation with economic information and risk preferences to evaluate ex-ante and ex-post response in climatic shocks. In order to fulfill the research objectives, southwest costal region is considered as a study area. This study carried out the questionnaires survey (n=413) from July to August, 2017 through cluster sampling technique for data collection. Annual aggregate income, amount of assets in monetary value, amount of damages in monetary value, prompt government aid, job security through food for work program, vulnerable group feeding, amount of loan and domestic remittance are the variables in the regression model followed by ordinary least square method. The estimated results show that households with higher ex-ante resources have experienced more damage and more recovery than those of households with fewer resources. Access to credit, prompt government aid from government and domestic remittance from son or relatives, prompt government aid and job security through food for work are statistically significant for ex-post recovery. But vulnerable group feeding is found to have no interference in reaching income recovery and migration. In ex-post recovery and un-recovery households are found to be risk seekers and they prefer migration. It is suggested that wise use of resources and improving the resource base can enhance the ex-post income recovery from the climate induced natural disasters in the coastal region of Bangladesh. Keywords: Climate Change, Migration, Resource Economics, Coastal Bangladesh

## 3. An investigation of the effects Urbanization on climate change: Evidence from Bangladesh

Author: Muntasir Murshed
North South University

## Abstract

Urbanization is believed to be a driving force of an economy which facilitates the transfer of surplus labor in the rural agricultural sector to the urban manufacturing sector with the ultimate goal of attaining socioeconomic development. However, such unplanned urbanization can at times boomerang exerting negative impacts that are not confined to only adversely affecting the economy but also stimulate environmental degradation as well. Thus, the nexus between urbanization and climate change has become an interesting genre of research whereby researchers and policymakers have endeavored their time in understanding the interlinkage between these two crucial macroeconomic indicators. Rapid urbanization through large rural to urban migration has been a menacing problem for the Least Developed Countries (LDCs) to which Bangladesh is no exception. Apart from raising the unemployment rates, increasing the density of urban slum-dwellers, and deteriorating the overall state of sanitation, urbanization is perceived to be one of the prime factors contributing to the global climate change. Thus, the aim of this paper is to analyze the effects of urbanization on climate change in Bangladesh, a country that has the history of being vulnerable to natural calamities. The novelty of this paper lies in its approach by probing into both the cause and effect of climate change in Bangladesh using relevant time series data stemming across 1988 to 2016. This paper specifically addresses the effects of urbanization, and other control variables, on emission of selected greenhouse gases and on the average temperature change in Bangladesh. Augmented Dickey-Fuller and Johansen Cointegration tests are employed in this paper while the Dynamic Ordinary Least Squares (DOLS) and the Fully-Modified Ordinary Least Squares (FMOLS) are used to estimate the associated relationships between the variables considered in the paper. Finally, the Vector Error-Correction Model (VECM) and the Granger Causality test are hired to investigate the causal relationships. In light of our estimated results we find that initially although urbanization leads to a fall in greenhouse gaseous emissions and reduces the temperature change, the relationship eventually gets reversed with time whereby urbanization is found to trigger climate change in Bangladesh. The causality test results provide further robustness to the regression findings since urbanization is found to have a causal effect on the greenhouse gaseous emissions and temperature change in the long run. In contrast, a unidirectional causality is also found to be running from urbanization to carbon dioxide emission in the short run as well. JEL Classifications: Q5, Q53, Q54, Q56, R11 Keywords: climate change, urbanization, Bangladesh, causality, greenhouse

# 4. Climate change and internal displacement in countries of Latin-America and the Caribbean

Authors: Daniel Esteban Quiroga[1], Javiera Fanta Garrido[2], Oscar Augusto Castellanos Ospina[3], Fabiola Barrenechea Riveros[4], Ana María González Villoria[5], Roberto Ariel Abeldaño Zuñiga,
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## Abstract

Objectives: This study aims to: 1) Analyze the accuracy of the Global Internal Displacement Database, and 2) Describe the magnitude and duration of internal displacements due to climate change related disasters in countries of Latin America and the Caribbean (LAC) between 2013 and 2015. Methods: We analyzed the data from the Global Internal Displacement Database, including all records for LAC countries between 2013-2015.Disasters were categorized into meteorological, hydrological and climatological (climate change related), and geophysical (non climate change related). For quantifying the volume of internal displacement, the database was harmonized by using the average number of persons per household in each country. For this purpose, the latter information was derived from National Population Censuses, Demographic and Health Surveys and Demographic Yearbooks from the United Nations. For assessing the accuracy of data in the Global Internal Displacement Database, the following points were analyzed in the database: 1. Start date accuracy of each record, 2. End date accuracy of each record, 3. Aggregate accuracy (Start date + End date) of each record, 4. The measurement unit reported for each record. Results: Data registered by the Internal Displacement Database, accurately identifies the beginning date of displacements due to disasters in the countries of LAC during the period 2013-2015 (96%). However, the accuracy decreases to 48.1% when analyzing the reported end dates of internal displacements. Globally, when combining the beginning and the end dates of these displacements, it was found that only 48.1% of the events were correctly reported. With regards to the unit of measurement, 77.2% of the registers included in the database referred to households, which led to estimate the average household size by using complementary sources of information. Overall, 505 disaster events were identified. The mean of internally displaced persons per event was 8,351 (SD=69,755). Based on the criteria of availability, the average duration of the displacements was calculated over 191 events, showing a mean duration of 11.9 days (SD=40.5). Between 2013 and 2015 there were a total of 4'217,737 persons internally displaced due to disasters, 51% of them were related to climate change events.

Conclusions: Despite the fact that the indicators used for assessing the quality of the Internal Displacement Database did not show satisfactory results, it is acknowledged that this is the only available data source that allows monitoring this phenomenon at the global level. In LAC, half of the internally displaced people due to disasters are climate change related. The international community recognizes that climate change can cause population displacement on a scale that actually we cannot prevent or deal with effectively. Against this, the current policy responses in some LAC countries tend to focus more on the impact of sudden disasters, than on the long-term consequences of environmental degradation. In addition, the increase in population displacement can lead to further environmental degradation and lack of protection, even if displacement represents a survival strategy. These issues have important political implications, as well as humanitarian and development implications for LAC countries; are, therefore, an authentic cross-cutting issue that requires active intervention.

# Parallel Session: Poster Presentation (Day 2)

## 1. Morpho-physiological changes in Mango and Neem seedlings, in response to saline incursion

Authors: Rashida Rocksana Mou[1], Md. Abiar Rahman[1], Md. Giashuddin Miah[1],
Mohammed Mohi-Ud-Din[2]
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[2]Department of Crop Botany, Bangabandhu Sheikh Mujibur Rahman Agricultural University

## Abstract

Soil salinisation is one of the major problems for coastal ecosystems in the southern part of Bangladesh. A pot experiment was conducted between January and May 2017 to establish the morphological and physiological responses of mango (Mangiferaindica) and neem (Azadirachtaindica) seedlings to sea water-induced stress. The experiment was conducted at the Agroforestry and Environment research station of Bangabandhu Sheikh MujiburRahman Agricultural University (BSMRAU). Plots were laid out in a Randomized Complete Block Design with five replications, where four treatments, namely 4, 8, 12 dS m-1 salinity levels (prepared from sea water) and a tap water (control) were imposed. The height of both mango and neem plants was found to be decreased by up to 28% at the highest level of salinity over control. The number of leaves per plant was also reduced by 28% in both species at 12 dS m-1 salinity level compared to that of fresh water, with the leaf areas of mango and neem decreased by 42% and 26%, respectively. Shoot biomass and root biomass of both species were also significantly reduced in sea water-treated plants. Salt tolerance index in mango and neem were 56.8 and 56.5 at 12 dS m-1, respectively. In case of physiological parameters, the lowest relative water content (RWC) was found in 12 dS m-1, while water saturation deficit (WSD) and water uptake capacity (WUC) were found to be the lowest in control for both species. Water saturation deficit and water uptake capacity were found to be increased with the increment of salinity level in both species. Total chlorophyll contents of mango and neem were decreased by 66 and 59%, respectively, while carotenoid contents in both species were decreased by 61 and 57%, respectively, at the highest salinity level. Proline content of mango and neem increased by 73 and 41%, respectively, at 12 dS m-1 salt level in comparison to that of seawater devoid control plants. Considering the overall results, it can be concluded that although mango and neem seedlings were affected significantly at the highest (12 dS m-1), both the species can survive up to moderate salinity (8 dS m-1) at the early stage.

## 2. **Litchi sting bug (Tessaratoma*sp.*): A new emerging litchi pest in Bangladesh**

Authors: Md. Fuad Mondal[1], Jaher Ahmed[1], Kamrul Hassan[2], Md. Abu Saleh Abir[1], Moyzul Islam Rahat[1], and Md. Mehedi Hasan[1]

[1]Department of Entomology, Sylhet Agricultural University

[2]Hawkesbury Institute for the Environment, Western Sydney University, Australia

## Abstract

Litchi (Litchi chinensisSonn.) is a common seasonal fruit which is grown all over Bangladesh, contributing to the country's economic development. For the first time recently, Bangladeshi farmers have faced severe infestations of a pest called Litchi sting bug (Tessaratoma*sp*) and have requested assistance to identify the causes and remedies. This research was conducted through a survey questionnaire with tree owners in three highly infested but contrasting locations in Sylhet, northeast Bangladesh (Baluchor, Khadimnagor and South Surma). Its objective was to establish the occurrence and damage severity from Tessaratoma*sp* across the three locations.

Highest levels of infestation were recorded in Baluchor areas with lower levels in Khadimnagor and South Surma. Among the three locations, 100% infested inflorescence was observed in the Baluchor areas of Sylhet, with only 6% in Khadimnagar and South Surma. The mean number of adult litchi sting bugs per inflorescence was 3.6, 1.1 and 0.8 in Baluchor, Khadimnagor and South Surma, respectively, with the mean number of litchi fruits per infested inflorescence being 0.9, 7.4 and 10.2 in the three locations. Fruit abundance is reduced by the infestations. To understand the reproduction biology of this insect, alongside field survey, laboratory experiments on Tessaratoma*sp* rearing were conducted in the Department of Entomology, Sylhet Agricultural University. Eggs were laid in clusters with 3.3±0.33 rows. In one cluster, average numbers of eggs were 13.0± 0.65. Eggs were hatched after 8.33 ± 0.89 days inside the petri dishes, with hatching percentages of 97%. The research concluded that climate change has resulted in litchi sting bug becoming an emerging pest in the Sylhet Region of Bangladesh. The migration of this pest towards the major producing areas in northern Bangladesh in the near future presents a severe risk to litchi production. A proper solution is needed.

## 3. **Effects of toxic heavy metals in Bangladesh industrial effluents on seedling mortality and growth of Radish**

Authors: Abu Rashed Md. Maukeeb[1], Md. Kamrul Hasan[1], Md. Fuad Mondal[2], Munmun Saha[1]
[1]Department of Agricultural Chemistry, Sylhet Agricultural University
[2] Department of Entomology, Sylhet Agricultural University

## Abstract

Industrial effluent is a significant problem in Bangladesh's rivers and groundwaters. Samples of discharges containing heavy metals were collected from a number of areas in Dhaka, Sylhet and Chittagong. Two experiments were conducted on the rooftop of the Agriculture Faculty Building of Sylhet Agricultural University, Sylhet to assess the toxicity of these industrial effluents on radish seedling growth and mortality. Both experiments were laid out in a RCBD with three replications. The maximum concentration of Pb (2.04 mgL-1), Cd (0.08 mgL-1), Ni (0.24 mgL-1) and Cr (0.17 mgL-1) were found in samples taken in Hazaribagh; Fe (7.17 mgL-1) and Cu (0.05 mgL-1) concentrations were highest in Khadimnagar and BayazidBostami effluents.

All the effluents were used for irrigation, and in the first experiment, radish seedlings were significantly affected by their application. The maximum mortality (22.8 %) at 15 DAS was observed in Khadimnagar effluents, whereas zero seedling mortality was observed in the control. Shoot and root lengths were also reduced, particularly in seedlings irrigated with Khadimnagar effluents.

In the second experiment, radish growth characters such as the maximum number of leaves per plant, leaf length, leaf width, fresh weight and dry weight were seen to be significantly affected by industrial effluents, again particularly by those from Khadimnagar. Typical foliar symptoms (yellowing of leaves) were shown in vegetative growth stages following application of both Khadimnagar and Hazaribagh industrial effluents. For post-harvest plant nutrient analysis, bio-accumulation of Pb (0.72 mgL-1), Cd (0.01 mgL-1), Ni (0.07 mgL-1) and Cr (0.08 mgL-1) were greatest in radishes irrigated with Hazaribagh industrial effluents, and Fe (2.65 mgL-1) uptake was highest for samples watered with Khadimnagar effluents. The overall results indicated that Khadimnagar and Hazaribagh industrial effluents contaminated with heavy metals such as Pb, Cd, Ni, Cr and Fe were toxic for radish growth, a finding that has wide implications for polluting industries in Bangladesh.

## 4. **Organic *versus* non-organic Farming: Poverty Reduction Scenario Analysis in areas close to Dhaka**

Authors: Md. Arafat Islam, Raisa Bashar, Abdun Naqib Jimmy, Nazmul Ahsan Khan.
Masters Student, Department of Environmental Science and Management, North South University

## Abstract

Inorganic farming systems and non-organic food are frequently alleged to have damaging environmental and health effects. Most Bangladeshi farmers nevertheless practice this form of agriculture, primarily because they believe it maximizes their profit. However, Bangladesh has now become a lower-middle income country with a secure food supply, and is beginning to consider food quality and organic production more seriously. This research explored whether non-organic farming actually generates more profit than its organic counterpart in terms of the cost of production, market price, and environment/health costs, and whether organic food production has a role in alleviating farmers' poverty.

Structured questionnaires and unstructured interviews with local people in Savar, Srinagar and Rupganj (mostly farmers and consumers involved with both types of farming) and quantitative analysis were used to understand the current status of organic and non-organic farming, and their role in poverty reduction in the true sense. Over two thirds of the farmers were already aware of organic production methods and the claimed health and environmental benefits, but they nevertheless viewed non-organic methods as more profitable. The lack of proper market management in Bangladesh is a more significant constraint than lack of awareness. Moreover, there is evidence from literature and from respondents that organic farming can successfully reduce poverty. For example, from the survey the production cost of non-organic corn was found to be 10,100BDT/bigha (119.53USD/bigha), as opposed to 5,900BDT/bigha (69.82USD/bigha) for organic produce. Moreover, the pollution cost from organic farming is almost zero, whereas for non-organic produce it can be high. Hence, organic food production is both economically and environmentally a good decision. To encourage change, government certification systems should be authorized which will ensure a price premium for organic products, and raise consumer awareness.

Keywords: non-organic farming, market management, organic farming, poverty reduction, market management.

# 5. The Waterscape of Three Major Cities in Bangladesh: Dhaka, Chittagong and Sylhet

Author: Dhrubo Alam
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## Abstract

Bangladesh is a riverine country, famous for the largest delta of the world, and hundreds of rivers that act as lifelines for rural and urban settlements. Along with the economic development following independence in 1971, has come unplanned rapid urbanization and infrastructural construction projects that ignore the environmental and landscape consequences. River flow has been obstructed by development encroachment, and navigability reduced, ending with a position where rivers are narrow, clogged, polluted and seen as unimportant.

Dhaka, the capital of Bangladesh is no exception to this case. Bounded by the rivers Buriganga, Turag and Balu, and scores of interconnected canals, it used to be an aquatic city with unique hydrological conditions. The Dhaka Water and Sewerage Authority had 43 canals in their jurisdiction area in the 1980s, but after culverting and infilling, eleven were lost; illegal encroachment by informal settlements, waste dumping and lack of maintenance has clogged the rest. The scenario is similar in other rapidly expanding cities such as Chittagong and Sylhet. Before the establishment of Chittagong WASA in 1963, 23 waterfalls including Bador, Donali, and Mochua were the main sources of water in the city. Following building of reservoirs for storage and distribution of the water, these and hundreds of ponds and canals have been lost. Similarly in Sylhet, eleven attractive natural creeks were the primary sources of potable water and transport, but they are now lost to history. Moreover, the natural waterbodies (called Haor and Jalla) in the city have been encroached upon by both the authorities and others, illegally; the Laldighi was filled up and the ShahjalalUposhahar was created by filling up the DhubrirHaor. This paper locates, depicts and overviews the transformation of the water bodies of three cities using historical mapping.

# 6. Flood Vulnerability Mapping and Associated Applications in Resource Management and Disaster Risk Reduction: a case study on Sunamganj District in Bangladesh

Authors: Samrin Sumaiya Sauda[1], Monojit Saha[1], Md. Hasibul Hasan[1]
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## Abstract

Flood is an inevitable natural phenomenon of Bangladesh. Sunamganj district in Bangladesh is subjected to frequent flooding due to intense rainfall and neighboring hilly topography. The study aims at mapping the flood vulnerability of Sunamganj through identification of vulnerable areas and providing planning strategy Assessment of flood vulnerability is a part of resource management and indicates livelihood of flooding in a particular area so that development needs and mitigation measures can be carefully considered and can support decision-makers and governments for planning strategy and urban development. Haor famers of Sunamganj have incurred Tk 1500 crore losses as the flash flood damaged the Boro paddy of 1,50,000 hectares last year. This huge loss can be attributed to the unplanned in which agriculture is carried out in the region.

This study integrated Geospatial techniques (Remote Sensing and Geography Information System) along with secondary literature review to identify and then relate particular parameters and their relative influence. This method selects the required criteria by ranking the parameters and combines qualitative and quantitative factors. Six physical parameters have been considered to evaluate the flood vulnerability including (1) Rainfall; (2) Drainage Density; (3) Slope; (4) Soil Infiltration; (5) Flood Extent and (6) Land Cover.

The Flood Vulnerability Map was categorized into five vulnerable classes, i.e. very low, low, moderate, high and very high. The study indicates that 50.9% of the Sunamganj district is highly vulnerable to flooding with maximum susceptibility and destruction. This zone occupies mainly Central and Eastern parts of Sunamganj. The findings correspond to low slope, low soil infiltration, rainfall intensity and high drainage density in the identified most vulnerable areas. A hotspot analysis was conducted to identify the unions with the greatest risks i.e. most vulnerable to flooding. With 95% and 99% confidence level, 8 and 6 unions were identified respectively. Based upon the level of vulnerability and other associated factors, zones which have high agricultural sustainability potentials are identified.

Since Sunamganj had the most detrimental impact due to flood, generating a Flood Vulnerability Map is highly essential. Identification of vulnerable areas is essential to provide early warning, facilitate quick response and decrease the impact of possible floods. Flood vulnerability assessment is required for land use planning and management, watershed management and emergency planning. Therefore, the study shall act as a catalyst in terms of spatial planning associate with disaster risk management and resource allocation in Sunamganj.

Keywords: Flood Vulnerability, Sunamganj, Geospatial techniques

## 7. **Nutrient loading in the river systems around major cities in Bangladesh: A quantitative estimate with consequences and potential recycling options**

Authors: Shamim Mia[1], Md. Rushna Alam[2], Md. Abdus Sattar[3]
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[2]Department of Aquaculture, Patuakhali Science and Technology University
[3]Department of Disaster Risk Management, Patuakhali Science and Technology University

### Abstract

Biological organisms including human being acquire mineral nutrients for their growth and development. A significant amount of these nutrients remain unused in the left over materials, known as waste and in the metabolic residues i.e., urine and faces, while the acquired nutrients are released to the environment when they die. The nutrients, when released to the environment, drained ultimately to the river through sewerage systems often across the carrying capacity of the aquatic ecosystems resulting significant damage to our ecosystem services such as deterioration of water, and soil quality affecting environmental health. These nutrients can be potential resource for agriculture and still remained a missed opportunity in Bangladesh. Therefore, it requires the critical examination of nutrient loading and find out possible recycling strategies. In the current study, we estimated the nutrient loading from municipal organic waste and human excreta. The carbon, nitrogen, phosphorus and potassium loading from open-dumped municipal organic waste in Bangladesh was estimated respectively at 802, 31, 12, 32 t day-1. Among the recycling options, nutrient harvesting through composting/pyrolysis from organic waste and adsorption onto different adsorbents in the sewerage treatment plants can considered be viable techniques. Therefore, our study could contribute to attain environmental sustainability.

## 8. **Insect Infested Agarwood: A newly prized product of agarwood market in Bangladesh**

Authors: Md. Najmol Hoque[1], Md. Fuad Mondal[2], Mohammad Mehedi Hasan Khan[1]
[1]Department of Biochemistry and Chemistry, Sylhet Agricultural University, Bangladesh
[2]Department of Entomology, Sylhet Agricultural University, Bangladesh

### Abstract

Agarwood is highly prized products in perfumery world. Insect infested wood demand highest price than the other exported agarwood. A comparative analysis was made among the three categories of agarwood like white wood, screw injected and insect infested agarwood to evaluate the ether extract and total phenolic contents at Sylhet region in Bangladesh. We found the ether extract oil of white wood 1.80%, Screw injected wood 20.49% and insect infested wood 11.078% and total phenolic contents were 2.55mg per g, 3.6mg per g and 2.97mg per g from white wood, screw injected wood and insect infested wood respectively.

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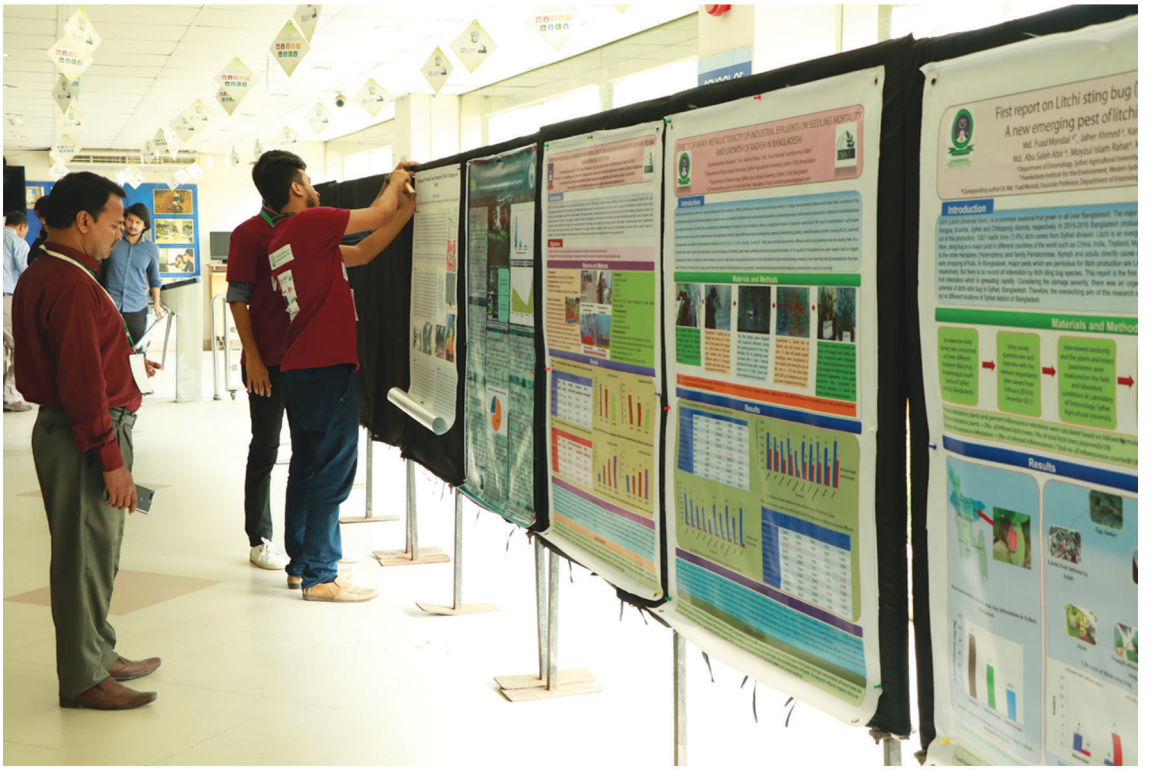
First report on Litchi sting bug
A new emerging pest of litchi
Introduction
Materials and Methods
Results


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# Media Coverage

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## সবুজ প্রবৃদ্ধির জন্য উদ্যোক্তাদের মন সবুজ হতে হবে : ড. আতিউর রহমান


ছবি: সংগৃহীত।

'টেকসই উন্নয়নের জন্য দরকার সবুজ অর্থনীতি। আর এ জন্য ব্যক্তি খাতের ভূমিকা অত্যন্ত গুরুত্বপূর্ণ। তাই সবুজ প্রবৃদ্ধি নিশ্চিত করতে ব্যক্তি খাতের ছোট বড় সব উদ্যোক্তাদের মনও সবুজ হতে হবে।' বলেছেন বাংলাদেশ ব্যাংকের সাবেক গভর্নর অধ্যাপক ড. আতিউর রহমান।

গতকাল (২০ অক্টোবর ২০১৮) ঢাকায় ইউনিভার্সিটি অফ লিবারেল আর্টস বাংলাদেশ (ইউল্যাব)-এ আয়োজিত তৃতীয় সিএসডি অ্যানুয়াল কনফারেন্স অন সাসটেইনেবল ডেভেলপমেন্ট-এ একটি অধিবেশনে সভাপতির বক্তব্যে তিনি এ কথা বলেন। আন্তর্জাতিক এ কনফারেন্সটি যৌথভাবে আয়োজন করেছিল অ্যাডাম স্মিথ ইন্টারন্যাশনাল এবং অ্যাকশন এইড বাংলাদেশ। দেশ ও বিদেশের গবেষক, শিক্ষার্থী, এবং গবেষণা সংস্থার প্রতিনিধিরা এই কনফারেন্সে অংশ নেন।

ড. আতিউর বলেন, গত দুই থেকে তিন দশকে বিশেষ করে এসডিজি এবং প্যারিস জলবায়ু চুক্তির পর থেকে বিশ্বব্যাপি উন্নয়ন ভাবনায় ব্যাপক পরিবর্তন এসেছে। একদিকে আগের মতো কেবল 'বেশি প্রবৃদ্ধি'র দিকে মনোযোগ না দিয়ে প্রবৃদ্ধির সুফল সামাজিক পিরামিডের পাটাতনে বসবাসকারী প্রান্তিক মানুষের কাছে পৌঁছে দেওয়ার ওপর জোর দেওয়া হচ্ছে। অন্যদিকে কেবল স্বল্পমেয়াদী বাণিজ্যিক লাভালাভের পরিবর্তে দীর্ঘমেয়াদী পরিবেশগত ক্ষয়ক্ষতির দিকগুলোও বিবেচনায় রাখা হচ্ছে।

তিনি আরও বলেন, বাংলাদেশ সরকারও এই ইতিবাচক ধারার সঙ্গে তাল মিলিয়ে প্রয়োজনীয় নীতি-কৌশল প্রণয়ন ও বাস্তবায়ন করে চলেছে। যেমন: পারসপেক্টিভ প্ল্যান ২০২০-২১, ৭ম পঞ্চবার্ষিকী পরিকল্পনা, ডেল্টা প্ল্যান ২১০০ ইত্যাদি।

'সবুজ প্রবৃদ্ধি অর্জনে আর্থিক সেবা খাতের ভূমিকা অত্যন্ত তাৎপর্যপূর্ণ এবং এটি অনুধাবন করেই গত এক দশকে বাংলাদেশে আর্থিক অন্তর্ভুক্তির মহা উদ্যোগে সবুজ অর্থায়ন বা গ্রিন ফাইনান্সকে বিশেষ গুরুত্ব দেওয়া হয়েছে।' বলেন ড. আতিউর।

তিনি বলেন, বাংলাদেশে পরিবেশবান্ধব প্রবৃদ্ধি নিশ্চিত করতে সবুজ উদ্যোগ অর্থায়নের জন্য ২০০ কোটি টাকার (২৩ মিলিয়ন ডলার) পুনঃঅর্থায়ন স্কিম চালু, এবং রপ্তানিমুখী শিল্পের সবুজায়নের জন্য 'গ্রিন ট্রান্সফরমেশন ফান্ড' গঠনের মতো বেশ কিছু উদ্যোগ নেয়া হয়েছে। এছাড়াও তিনি বাংলাদেশ ব্যাংকের মাধ্যমে গ্রিন টেকনোলজি ফাইনান্সিং ফান্ড গঠন, কার্বন ট্যাক্স থেকে যে রাজস্ব পাওয়া যাবে তা সবুজ জ্বালানি ও সবুজ প্রযুক্তিতে বিনিয়োগ, এবং পরিবেশবান্ধব প্রকল্পে দীর্ঘমেয়াদী অর্থায়নের জন্য গ্রিন বন্ড চালু করাসহ বেশকিছু নীত প্রস্তাবনা তুলে ধরেন।

ইত্তেফাক/নহু

The Daily Star
22 Oct, 2018, Page: 05
Col 7-8, CI

## Development conference at ULAB

CITY DESK

To highlight the importance of project design and implementation in addressing sustainable challenges, a session was held on the closing day of the 3rd Annual Conference for Sustainable Development at University of Liberal Arts Bangladesh.

Dr Saleemul Huq, director, International Center for Climate Change and Development, presided over the session, in which country's leading development experts participated, said a press release.

Chief guest Abdullah Al Mohsin Chowdhury, secretary to the Ministry of Forest, Environment and Climate Change, stressed collaborative sustainable development strategies in all the sectors.

Carolyn Roberts, a professor of environment at Gresham College, London; Dr Sultan Ahmed, director general of Department of Environment; Md Khurshid Alam, assistant country director, United Nations Development Programme; Prof HM Jahirul Haque, vice chancellor, ULAB; and Kazi Inam Ahmed, member, ULAB Board of Trustees, also spoke.

কালের কণ্ঠ
21 Oct, 2018, Page: 08
Col 6-8, CI


ইউনিভার্সিটি অব লিবারেল আর্টস বাংলাদেশে (ইউল্যাব) 'থার্ড অ্যানুয়াল কনফারেন্স অন সাস্টেইন্যাবল ডেভেলপমেন্ট ২০১৮' শীর্ষক দুই দিনব্যাপী সম্মেলন গতকাল শুরু হয়েছে। এতে মূল প্রবন্ধ উপস্থাপন করেন আইপিসিসির প্রধান লেখক এবং ইটিএইচ জুরিখের প্রফেসর ড. ভ্যালি কোবি। সংবাদ বিজ্ঞপ্তি।

News Today
21 Oct, 2018, Page: 07
Col 2-3, CI

THE News Today

METROPOLIS >>

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The first day session of the third annual conference on sustainable development organised by the Centre for Sustainable Development and University of Liberal Arts Bangladesh recently

বণিক বার্তা
21 Oct, 2018, Page: 12
Col 1-6, CI


### ইউল্যাবে সাসটেইনেবল ডেভেলপমেন্ট-বিষয়ক আন্তর্জাতিক সম্মেলন ২০১৮

ইউনিভার্সিটি অব লিবারেল আর্টস বাংলাদেশের (ইউল্যাব) সেন্টার ফর সাসটেইনেবল ডেভেলপমেন্ট (সিএসডি) আয়োজিত 'থার্ড অ্যানুয়াল কনফারেন্স অন সাসটেইনেবল ডেভেলপমেন্ট ২০১৮' শীর্ষক দুই দিনব্যাপী সম্মেলন শুরু হয়েছে গতকাল। শনিবারের ইউল্যাব অডিটোরিয়ামে অনুষ্ঠিত সম্মেলনের প্রথম দিনে জলবায়ু ও টেকসই উন্নয়নে নিত্যান্তিক নীতিনির্ধারক এবং বণ্টনিক সমাজের প্রতিনিধিরা উপস্থিত ছিলেন। উদ্বোধনী দিনে বিশেষ অতিথি ছিলেন ইউল্যাব বোর্ড অব ট্রাস্টিজের সদস্য কাজী নবিল আহমেদ এমপি, পল্লী কর্মসহায়ক ফাউন্ডেশনের পরিচালক (অপারেশনস অ্যান্ড কমপ্লায়েন্স) ড. ফজলে রাব্বি সাদেক আহমেদ প্রমুখ।

The New Nation
19 Oct, 2018, Page: 15
Col 6-8, CI

# Annual Sustainable Development Confce from 20 October

**Campus Report**

Delegates from ten different countries and national academics and researchers, will be aiming to make a splash when they present cutting-edge research to policy makers and civil society leaders at the 3rd Annual Conference on Sustainable Development on the 20th and 21st October. Organised by the Center for Sustainable Development (CSD), University of Liberal Arts Bangladesh (ULAB), and taking place days after the IPCC's special report emphasised the urgent need to limit global warming to 1.5°, the Conference will showcase the latest findings on the most pressing sustainable development topics.

The relationship between climate change and migration, possible visions of future sustainable cities and the necessity for a new green economy will all be covered in unprecedented depth over the course of the two days.

The keynote speaker will be IPCC lead author, Prof VassilikiKoubi of ETH Zurich. She will also be chairing the sessions on climate change and migration, where Dr Shouro Dasgupta of the University of Florence and Dr Robert Stojanov of the European University will be unveiling their findings.

Professor Stephen Cairns of ETH Zurich and Singapore's ETH Center will be leading a panel of leading researchers, discussing the problems and opportunities emerging from new visions of future sustainable cities.

Former Governor of the Bank of Bangladesh, Dr Atiur Rahman, will chair an extensive session on the new green economy, which must be established if the Paris targets are to be achieved.

সমকাল
22 Oct, 2018, Page: 04
Col 3-6, CI

ইউল্যাবে আন্তর্জাতিক সম্মেলনে বক্তারা

# টেকসই উন্নয়ন লক্ষ্য অর্জনে পথ নকশা তৈরি করতে হবে

■ সমকাল প্রতিবেদক

জলবায়ু পরিবর্তন মোকাবেলায় টেকসই উন্নয়নের লক্ষ্য অর্জন, বাস্তবায়ন এবং প্রকল্পের পথ নকশা তৈরির চ্যালেঞ্জ মোকাবেলায় সবাইকে একসঙ্গে সমন্বিতভাবে কাজ করতে হবে। টেকসই উন্নয়নের জন্য জলবায়ু পরিবর্তন মোকাবেলা ও স্বল্প কার্বন উদ্‌গিরণ ব্যবস্থাপনা গড়ে তুলতে হবে। গতকাল ইউনিভার্সিটি অব লিবারেল আর্টস বাংলাদেশ (ইউল্যাব) আয়োজিত 'থার্ড অ্যানুয়াল কনফারেন্স অন সাসটেইনেবল ডেভেলপমেন্ট ২০১৮' শীর্ষক কনফারেন্সের দ্বিতীয় ও সমাপনী দিনে বক্তারা এসব কথা বলেন।

ইন্টারন্যাশনাল সেন্টার ফর ক্লাইমেট চেঞ্জ অ্যান্ড ডেভেলপমেন্ট (আইসিসিএডি) পরিচালক ড. সালিমুল হক একটি সেশনে জলবায়ু পরিবর্তনের ফলে টেকসই উন্নয়ন নিয়ে বিশেষজ্ঞ মতামত দেন। এ অধিবেশনে উপস্থিত ছিলেন প্র্যাকটিকেল অ্যাকশনের দেশীয় পরিচালক হাসিন জাহান, অক্সফাম ইন্টারন্যাশনালের ড. খালিদ হোসেইন, ক্রিশ্চিয়ান এইডের ইকরামুল এইচ সোহেল, কনসার্ন ওয়ার্ল্ডওয়াইডের শাহ সুফি মোহাম্মদ মতোয়াল্লেল বিল্লাহ প্রমুখ। আলোচনা করেন ইকোনমিক রিলেশনস ডিভিশন (ইআরডি) যুগ্ম সচিব আনোয়ার হোসেইন, বাংলাদেশ ইনস্টিটিউট অব ডেভেলপমেন্ট স্টাডিজের অধ্যাপক ড. মোহাম্মদ আসাদুজ্জামান।

ইউল্যাবের উপাচার্য অধ্যাপক এইচএম জহিরুল হকের সভাপতিত্বে সম্মেলনের সমাপনী অনুষ্ঠানে প্রধান অতিথি হিসেবে বক্তব্য দেন পরিবেশ ও বন মন্ত্রণালয়ের সচিব আব্দুল্লাহ আল মহসীন চৌধুরী। বিশেষ অতিথি হিসেবে বক্তৃতা করেন পরিবেশ অধিদপ্তরের মহাপরিচালক ড. সুলতান আহমেদ, ইউএনডিপির সহকারী কান্ট্রি ডিরেক্টর খুরশীদ আলম, লন্ডনের গ্রেসহ্যাম কলেজের পরিবেশ বিষয়ক অধ্যাপক ক্যারোলিন রবার্টস, সেন্টার ফর সাসটেইনেবল ডেভেলপমেন্ট (সিএসডি) পরিচালক ড. সামিয়া সেলিম ও ইউল্যাব বোর্ড অব ট্রাস্টিজ সদস্য কাজী ইনাম আহমেদ।

FE The Financial Express
21 Oct, 2018, Page: 16
Col 6-8, CI

# 3rd annual confce of ULAB begins

On the first day of the 3rd Annual Conference for Sustainable Development, organised by the Centre for Sustainable Development, University of Liberal Arts Bangladesh, academics from Bangladesh and across the world gathered to discuss cutting edge research on climate change, migration, future sustainable cities and innovation.

Over the course of the inaugural and plenary session, critical analysis of "common sense" positions were the order of the day, as well as exciting and innovative approaches in city planning approaches and product and systems design that tackle the sustainability challenges of the future. The keynote speaker, Professor VallyKoubi of ETH Zurich, questioned the statistics on climate change-induced migration may well be overstated.

সংবাদ
21 Oct, 2018, Page: 02
Col 1-3, CI

# ইউল্যাবে সাসটেইনেবল ডেভেলপমেন্ট বিষয়ক আন্তর্জাতিক সম্মেলন

ইউনিভার্সিটি অব লিবারেল আর্টস বাংলাদেশের (ইউল্যাব) সেন্টার ফর সাসটেইনেবল ডেভেলপমেন্ট (সিএসডি) আয়োজিত 'থার্ড এনুয়াল কনফারেন্স অন সাসটেইনেবল ডিভেলপমেন্ট ২০১৮' শীর্ষক কনফারেন্সে অংশ নিতে বিশ্বের প্রায় ১৩টি দেশ থেকে শিক্ষাবিদ, গবেষক এবং প্রতিনিধিরা এসেছেন। তারা জলবায়ু পরিবর্তন ও টেকসই উন্নয়ন লক্ষ্য (এসডিজি) নিয়ে গবেষণা তুলে ধরেছেন। দ্বিতীয়বার উন্নয়ন সম্পর্কিত দু'দিনব্যাপী (২০-২১ অক্টোবর) এই সম্মেলনের প্রথম দিন ইউল্যাব অডিটোরিয়াম, ধানমন্ডিতে অনুষ্ঠিত হয়েছে। সম্মেলনের উদ্বোধনী দিনে বিশেষ অতিথি ছিলেন ইউল্যাব বোর্ড অব ট্রাস্টিজের সদস্য কাজী নাবিল আহমেদ এমপি, ড. ফজলে রাব্বি, সাদেক আহমেদ (পরিচালক এনভায়রনমেন্ট অ্যান্ড ক্লাইমেট চেঞ্জ, পল্লিকর্ম সহায়ক ফাউন্ডেশন)।

টেকসই উন্নয়ন লক্ষ্য (এসডিজি) সম্পর্কিত এই সম্মেলনের মূল প্রবন্ধ উপস্থাপন করেন আইপিসিসি'র প্রধান লেখক এবং ইটিএইচ জুরিখের প্রফেসর ড. ভ্যালি কোবি। যিনি জলবায়ু এবং অভিবাসন সম্পর্কিত সেশনে সভাপতি হিসেবে দায়িত্ব পালন করেন। বাংলাদেশ ব্যাংকের সাবেক গভর্নর ড. আতিউর রহমান নিউ গ্রিন ইকোনমি নিয়ে একটি বিস্তীর্ণ প্যানেল আলোচনার সভাপতিত্ব করেন। উদ্বোধনী অনুষ্ঠানে স্বাগত বক্তব্য রাখেন ইউল্যাব বোর্ড অব ট্রাস্টিজের বিশেষ উপদেষ্টা অধ্যাপক ইমরান রহমান। শুভেচ্ছা বক্তব্য দেন ইউল্যাব সেন্টার ফর সাসটেইনেবল ডেভেলপমেন্টের পরিচালক ড. সামিয়া সেলিম। অতিথিদের সম্মাননা স্মারক তুলে দেন ইউল্যাবের ভিসি অধ্যাপক ড. এইচএম জহিরুল হক। সংবাদ বিজ্ঞপ্তি


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