SOUVENIR

3rd UIU-ICSD 2019

3rd International Conference on
SUSTAINABLE DEVELOPMENT
19 - 20 February 2019
Dhaka, Bangladesh

Venue: UIU, Dhaka, Bangladesh

Organized by

Institute of Development Studies and Sustainability

Institute of Development Studies and Sustainability (IDSS)
United International University (UIU)
United City, Madani Avenue
Baridhara, Dhaka 1212
Bangladesh

3rd UIU-ICSD 2019

3rd International Conference on Sustainable Development 2019

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CONTENTS

United International University: An Overview 7
About IDSS 10
..... 17
ABSTRACTS 26
Theme 1: Sustainable Livelihoods 26
Theme 2: Climate Change Adaptation 33
Theme 3: Poverty Alleviation 41
Theme 4: Disaster Risk Management 44
Theme 5: Ecology and Biodiversity 48
Theme 6: Gender and Development 53
Theme 7: Sustainable Agriculture and Food Security 61
Theme 8: Green Cities and Human Settlements 69
Theme 9: Green Economy 74
Theme 10: Coastal Zone Management 81
Theme 11: Integrated Water Resources Management 84
[1] Junior Specialist, Center for Environmental and Geographic Information Services (CEGIS) 38
[2] Associate Specialist, Center for Environmental and Geographic Information Services (CEGIS) 38
Abstract 38
Theme 12: Health and well-being 87
THEME 13: GOVERNANCE AND SUSTAINABLE DEVELOPMENT 93
THEME 14: DISABILITY AND SDGS 97
"Responsibilities of Manufacturing Companies for Sustainable Development in Bangladesh" 96
Theme 14: Governance and Sustainable Development
.....

MESSAGE FROM THE VICE CHANCELLOR



It is a great pleasure that the Institute of Development Studies and Sustainability (IDSS) at United International University (UIU) is hosting its 3rd International Conference on Sustainable Development (ICSD), 2019. The focus of this conference is creating scope and opportunity, of getting together of the scientists, academics, policy makers, development practitioners, and other stakeholders from home and abroad to share knowledge, ideas, information and critical concerns surrounding sustainable development. This conference facilitates the generation of options for addressing the issues of sustainability. This conference is a part of the series of conference followed by the first 1st and 2nd international conference on sustainable development held in February 2017 and 2018. I hope, IDSS of UIU will be organizing this conference until 2030 to observe and track the progress of the 2030 Agenda for Sustainable Development

This kind of platform is very important to build a bridge between people from different sectors who are individually working for sustainable development. In this conference, all the themes are related to 17 UN SDGs and we ourselves must work collaboratively to support the implementation of Agenda 2030. Recognizing that IDSS at UIU has agreed on a set of core principles to guide the support to achieve the SDGs. A strategic and sustainable approach to poverty reduction and the stratification of SDG priorities, along with sustainable, robust and quality growth must be UIU's prior target with research outputs. Solution-oriented research for sustainability, addressing environmental change and development challenges to satisfy human needs for food, water, energy, health is crucially important. Sharing this research knowledge timely with the policy-makers is highly important to bridge up the gaps of science and policy. Our University – United International University (UIU) - is dedicated to generate empirical knowledge through interdisciplinary research and disseminate this knowledge to different levels of stakeholders in several paths like teaching, publications, seminars and training. The Institute of Development Studies and Sustainability (IDSS) at United International University (UIU) is dedicated to interdisciplinary hub for research, teaching, and collaborations for narrowing down the science-policy gap towards sustainable development. The IDSS is committed to managing and expanding the interdisciplinary major in Development Studies and Sustainability by providing students with fellowships, scholarships, and study opportunities through collaborations with universities in Europe and Asian countries.

My sincere appreciation and gratefulness to the 3rd international advisors of UIU-ICSD 2019, the co-organizers, and the Embassy of the Kingdom of The Netherlands for their great supports to organize the conference successfully. I congratulate the authors for their brilliant contributions and the session chairs for their kind cooperation and sincere contributions. UIU is grateful to Chief Guest of Inaugural Session, Prof. Dr. Shamsul Alam, Member (Sr. Secretary), General Economics Division, Bangladesh Planning Commission, Chief Guest of Closing Session His Excellency, Ambassador, Embassy of Kingdom of The Netherlands, Keynote Speaker of Inaugural Session Dr. Kim van Nieuwaal, Director Delta Alliance, The Netherlands, Special Guests of Inaugural session- Mr. Peter De Vries, First Secretary, Embassy of the Kingdom of the Netherlands, Dr. Sultan Ahmed, Director General (Additional Secretary), Department of Environment, Ministry of Environment, Forest and Climate Change, Guest of Honor Prof. Dr. Mahbuba Sultana, Director IVSDM, Dhaka University.
I, on behalf of UIU family, would express gratefulness to H. E. Harry Verweij, Ambassador, Embassy of the Kingdom of the Netherland in Dhaka, Bangladesh for his kind presence as the Chief Guest in the closing session. Our sincere gratitude for the Conference Closing Speaker Dr. Saleemul Huq, Director, ICCCAD at IUB,
Prof. Dr. Jaap M. de Heer, Team Leader, SIBDP 2100 and Ms. Catharien Terwisscha Van Scheltinga, Wageningen Environmental Research Center, The Netherlands for their kind presence as special guest in the conference closing session.

We owe sincere thanks and gratitude to all moderators, keynote speakers, panelists, and discussants and guests of two plenary sessions, which has purely designed to focus on Delta Plan and Sustainable Development. I express my gratitude and thankfulness to the esteemed foreign guests and guests from the government, universities, international and national NGOs, and civil society representatives for their kind participation and contributions in the conference.

I truly congratulate the Conference Convener Prof. Dr. Hamidul Huq and his organizing team to carry out such a big responsibility of organizing the 3rd UIU-ICSD 2019.

I wish a great success of the UIU's 3rd International Conference on Sustainable Development 2019.

Professor Dr. Chowdhury Mofizur Rahman
Vice Chancellor
United International University

19 February 2019

NOTE FROM THE 3rd UIU-ICSD 2019 CONVENER



On the rise of awareness of the world concern about 'Our Threatened Future', Sustainable Development is conceived as the new Form of Development. Sustainable development aims to be anchored on three pillars, which are to evolve concomitantly on sustainable factors, namely, economic, social and environmental and to be centered on the human being, implying that the process of sustainable development is necessarily inclusive and should promote unity in cultural and other forms of diversity. But it is essential, in the context of establishing this unity, that diverse cultures, interests, and wishes, particularly of the downtrodden and disadvantaged groups, are facilitated to flourish and find proper expressions in appropriate forms. Such a process conducted within a broad framework under the provision of the Constitution of the country should help all groups, the majority and the minorities, to understand each other's points of view and needs and find common grounds to work together for an all-inclusive, equitable social progress.

In the field of sustainable development, it is globally understandable that there are many major challenges must be mentioned. They require all of us to re-think our economy and our growth in favor of a society that is more economical in its use of raw materials and energy. To me, the major challenge is to ensure the sincere practice of good governance. Many argue some of the major challenges are climate change, energy consumption, waste production, threats to public health, poverty, social exclusion, management of natural resources, loss of biodiversity, and land use. In this context, sustainable development approaches are now essential obligations.

Sustainable Development Goals (SDGs) is especially relevant for South Asia countries which, despite their economic dynamism and remarkable Millennium Development Goal (MDG) achievements, account for 37% of the world's poor, nearly half of the world's malnourished children, and suffer from a number of development and infrastructure gaps. Sustainable development needs to be able to respond to the various problems generated by dominant development interventions such as agricultural modernization through heavy chemical inputs, industrialization through deforestation and water pollution, over consumptions in all respects, ugly urbanization, and generation of non-renewable energy. Other problems rose by demographic growth, the planet's limited capacity, war, and social inequality are crucially needed to address. Accelerate global warming carries risks of shortages and the disruption of certain natural cycles such as fresh water, impoverishment of agricultural soil, deforestation, and reduced biodiversity. A great concern and tension of the day is that the North/South economic divide and the unequal distribution of the consumption of the planet's natural resources between the world's populations; will the 10 billion people of our planet in 2100 be able to live as well as the 750 million people in industrialized nations do today?

Hence an interdisciplinary knowledge base is important to bridge up the gaps. International Conferences on Sustainable Development like 3rd UIU-ICSD 2019 and beyond may contribute to filling up the knowledge gaps and give a new shape of next moves towards sustainable development. I strongly think that collaboration is one of the keys to unlocking sustainability. No single organization or sector has the knowledge or resources to 'go it alone'. Leaders from all sectors of society agree that solving sustainability challenges will require unparalleled cooperation. Multi-sector partnerships must be strengthened where public-interest entities, private sector companies, and civil society organizations enter into an alliance to achieve a common practical purpose, pool core competencies and share risks, responsibilities, resources, costs, and benefits.

In this perspective, I must mention the cooperation between Bangladesh and the Netherlands goes back over half a century, have worked together on flood management, drainage, river basin management, and coastal zone management – creating safe polders and making land available for the landless. The **Bangladesh Delta Plan 2100,** the latest long term visionary plan, is an important step towards fulfilling our commitment of achieving a safe, resilient and prosperous Bangladesh. In order to face challenges and realize the potentials of the Bangladesh Delta, Bangladesh have adopted the long term visionary techno-economic plan- "Bangladesh Delta Plan 2100 (BDP 2100)" with the cooperation of the Kingdom of the Netherlands.

I would like to take advantage to note that the South Asia countries are quite distinct in population, social & economic structures, and development challenges. This region is full of opportunities along with vulnerabilities.

Sustainable Development offers a unique transformative opportunity to narrow down the development gaps and provide a life of dignity and sustainable prosperity to nearly a quarter of the global population that lives in South Asia. In this context, the South Asian Association for Regional Cooperation (SAARC), founded in Dhaka on 8 December 1985, can be useful for designing a strategy to implement the 2030 Agenda for Sustainable Development in South Asia. Looking at regional cooperation as a complement to the bilateral and multilateral relations, SAARC aimed at providing a platform for the people of South Asia to work together in a spirit of friendship, trust and understanding, at promoting the welfare, and at improving the quality of life of the people of the region through accelerated economic development, environment development, and social progress, SAARC needs to consistently promote interaction on sustainable development issues of common concerns to its members, and identify areas in which collective position could be projected at international forums. I strongly hope, SAARC will shine an intense light of the great challenge of sustainable development the South Asia Region faces, how to use the political systems to manage the difficult and complex relationship between the countries in order to achieve a sound solution for positive cooperation in achieving sustainable development. For that, the respective country needs close partnerships of government and knowledge institutions towards solid coupling of science and policy.

It is also important that an integrated framework of effective institutions is essential for sustainable development. Building this framework requires coherent integration of policies across the economic, social, and environmental spheres; significant participation of civil society in policy making and implementation; coordination between national governments and international organizations; and strong political commitment to a long-term perspective. In this respect, Bangladesh is well advanced. Bangladesh government has developed a Sustainable Development Strategy for the period of 2010-2021. The strategy is guiding the annual plan and Five Years Plan. The Bangladesh Delta Plan 2100 will guide us making the development plans, programs, and projects towards building a Sustainable Bangladesh.

The 3rd UIU-ICSD 2019 is one of the initiatives of partnering with the government towards attaining the challenges of Sustainable Development and facilitating forums, e.g., ***Delta Forum*** (initiated by IDDS at UIU from its ICSD process) of collective actions in national, regional and international levels.



Hamidul Huq, PhD, WUR
Convener, 3rd UIU-ICSD 2019
and
Professor and Director
Institute of Development Studies and Sustainability (IDSS)
United International University
19 February 2019

United International University: An Overview

United International University or UIU is a private university located in Dhaka, Bangladesh, The government of Bangladesh approved the establishment of United International University in 2003 under the Private University Act (PUA) 1992 (now replaced by PUA 2010). Financial support came from the United Group, a Bangladeshi business conglomerate.

Vision: To become a center of **excellence** in teaching and research in the South Asian region.

Mission: To produce graduates with excellent intellectual, creative, technical, moral and practical skills of the highest possible degree with undiminished human values.

Strategy: To develop a united, interactive, involving and caring relationship among teachers, students, guardians and staff.

Policies:

- To develop and implement the state-of-the-art curricula
- To recruit committed, accessible and inspiring teachers
- To select meritorious and promising students
- To provide the most attractive infrastructure and logistic support
- To maintain an environment free from smoking, drug, politics and session jam
- To pursue a never-ending quest for excellence in knowledge, learning, skill development, teaching and research.

Schools and Institutes of UIU

School of Business & Economics
School of Business & Economics offers the following programs;

- Bachelor of Business Administration (BBA)
- BBA in Accounting and Information Systems (AIS)
- Master of Business Administration (Executive)
- Master of Business Administration (Regular)
- BSS in Economics;
- Master in Economics;
- Master in Development Studies*

School of Science and Engineering
School of science and Engineering offers the following programs;

- Department of Electrical and Electronic Engineering (EEE)
- Department of Computer Science and Engineering (CSE)

Center and Institutes of UIU

- Center for Energy Research
- English Language Institute

- Institute of Natural Sciences
- Institute of Business & Economic Research (IBER)
- Institute of Quality Assurance Cell (IQAC)
- Institute of Development Studies and Sustainability (IDSS)
- Centre for Information Technology Service (CITS)
- Center for Engineering & Scientific Research (CESR)
- Institute of Advance Research (IAR)
- Power and Training Academy (PETA)
- Cisco Network Academy

To know more about UIU, please visit **www.uiu.ac.bd**

Institute of Development Studies and Sustainability

About IDSS

Institute of Development Studies and Sustainability (IDSS) at United International University (UIU) is committed to interdisciplinary hub for research, teaching, and collaborations for narrowing down the science-policy gap towards sustainable development. The IDSS promises to advance knowledge of Sustainable Development through its graduate and diploma programs, outreach programs for the broader community, and faculty research. The IDSS is committed to managing and expanding the interdisciplinary major in Development Studies and Sustainability by providing students with fellowships, scholarships, and study opportunities through collaborations with universities in Asian countries. Finally, the institute promises to contribute to UIU's vision of becoming the center of excellence in teaching, learning and research in the South Asian region.

Vision of IDSS

Knowledge based peaceful, Green and Sustainable Society.

Mission of IDSS

Interdisciplinary Education and Research towards building strengthened human capital to lead sustainable development missions through collaboration and collective actions.

Objectives of IDSS

- To study political, social, economic, humanitarian and other challenges of Sustainable Development in Bangladesh and Asia.
- To promote and undertake research on current development issues, ethnic diversities, gender, migration, sociolinguistic and cultural studies of Bangladesh and other Asian countries.
- To run collaborative empirical research to generate and share knowledge of sustainability and contribute in reducing science-policy gaps.
- To initiate and maintain international academic exchange, affiliation and coordination of research activities of Bangladeshi and Asian scholars.
- To organize national and international seminars, conferences and disseminate its research works in various publications.

Graduate Program

UIU-IDSS offers Master in Development Studies (MDS) program, which is designed in interdisciplinary. The MDS program focuses on issues of sustainable development, climate change adaptation, renewable energy, disaster management, poverty, water resources management, sustainable livelihoods, and environment. The IDSS has a plan to offer PhD program in collaboration with universities in Asia.

Diploma program

In moving China-Bangladesh relations forward, the key challenge is to increase 'understanding' China –Economy, History, Administration and Government, Business Policies and Practices, Higher Education System, Chinese People and their Culture and so on. Given Bangladesh's steady economic growth and urbanization, business partnership with China, the country, especially the business and knowledge sectors need to develop knowledge, skills, understanding and research capacity on China. Globally, China is now the second largest source of outward investment and is projected to become the biggest source by 2020. The challenge is to avail these opportunities for the interests of Bangladesh.

Grounding on this background the center offers short course of Diploma in Development Studies on China: Government, Policies, Business, Culture and Language. Center also plans to offer full range of instruction in the two major East Asian languages: Chinese and Japanese.

Research Priority of IDSS

Like others the UIU-IDSS believes that the 'world needs to do far more and do it faster'. National policymakers face the challenges of implementing the indivisible agenda for 17 SDGs and achieving progress across the economic, social and environmental dimensions of sustainable development. Therefore, there is a need to address the scope and systemic nature of the 2030 Agenda and the urgency of the challenges. This requires a wide range of tools and science-based analysis to navigate the complexities and to realize the ambitions. IDSS's research priority on SDGs 1, 6, 7 & 11:



Other than the above mentioned top priority of research, the following are the priority areas of the UIU-IDSS's research:

- Study and assess the social response to development programs and its implications in terms of various policy options for sustainability;
- Examine complexities of development interventions vs local initiatives of sustainable livelihoods;
- Study climate change adaptation options and policy research and advocacy for scaling up of good practices;
- Study Gender and Development;
- Study DRR and Sustainable Livelihoods;
- Study cultural diversities.
- Bangladesh Delta Plan 2100

Approach of IDSS

Interdisciplinary Research and Education is the main approach of UIU-IDSS. IDSS understand that the challenges of policymakers are implementing the indivisible agenda for 17 SDGs and achieving progress across the economic, social and environmental dimensions of sustainable development. This requires a wide range of tools and science-based analysis to navigate the complexities and to realize the ambitions. The UIU-IDSS is committed to delivering

high quality results and workable solutions to the policymakers and practitioners. IDSS would apply research-oriented, robust approaches, responding to on-the-ground realities. It would seek to enhance and foster knowledge sharing and exchange with other national and international institutions around home and the globe.
UIU-IDSS would generate knowledge through empirical research of its faculty and post graduate students as well as engaging in collaborative research projects in partnership with foreign and local universities. Teaching, publications and national and international seminars would be the main means of sharing knowledge.

Strategy:

A. Strategies for Research Work

i. Research work shall be interdisciplinary in nature and mostly empirical;
ii. Students of MDS shall be providing with scope and opportunities of getting engaged in research projects;
iii. Research projects to be carried out on regular basis with UIU Research Grant;
iv. Research projects will be carried out mobilizing external fund;
v. IDSS will join collaborative Research Projects with other universities abroad;
vi. Respective Researchers shall publish Articles in International Peer Reviewed Journals;
vii. Contributions in book chapters of quality publishers would be regular outputs;
viii. Books to be published from quality (publishing) houses;
ix. Regular activities to be organized on "Science-Policy" interface;

- Seminar
- Symposium
- Dialogue
- Public Lecture.

x. Collective initiatives for sharing knowledge, policy advocacy, and "Research with Impacts" to be mobilized through strengthened networks with knowledge institutions and development practitioners;

B. Strategy for Graduate and Post graduate programs:

i. The Institute will continue offering the Master in Development Studies (MDS) program;
ii. Staff training in home and abroad to be organized to maintain quality teaching;
iii. Making the Teaching Applied;
iv. Participatory Teaching;
v. Field Study/Study Tour;
vi. Collaborative Programs with Foreign Universities;
vii. Students exchange program with Foreign Universities;
viii. Hosting and guiding Masters and PhD foreign students for their field Research;
ix. Periodical review of course syllabus by engaging internal and external experts;
x. Innovation in Teaching Aids;
xi. Offering PhD Program in collaboration with Foreign Universities.
xii. IDSS offers all GED Social Science Courses of all disciplinary programs of UIU.

Master in Development Studies (MDS) program

The landscape of development world is changing. Development paradigm is continuously under pressure of shifting. Education for Sustainable Development has emerged as a paradigm for revising and reorienting today's education. Development world demands new knowledge and leadership with adequate capacities. Challenges of universities are to ensure offering quality higher education along with interdisciplinary research.

The United International University (UIU), established in 203, one of the leading private universities of Bangladesh, shouldering a challenge of offering quality post graduate program on Master in Development Studies (MDS). With a commitment to contribute in producing young professionals with capacity of interdisciplinary knowledge and skills to response to the growing demand of professionals in government, NGO and private sectors in Bangladesh. Going abroad for higher studies is always not possible because of time constraints, lack of scholarships, and family affairs. UIU designed its MDS program in such a way that ensures international standard and within affordability.

UIU has been offering a 39 credit hours MDS program since Spring 2009 Trimester. MDS program includes unique courses that enrich students' knowledge, skills, and abilities to analyze development and society. The courses help students in assessing needs of the society, and develop, design, monitor and evaluate development programs and projects. Emphasis is given on knowledge generation in sustainable development. Special focus is given on Interdisciplinary Education and Research.

Special features of UIU MDS program: Students have scope of engaging in collaborative research projects; present papers in International Conference on Sustainable Development held in every February at UIU; produce and publish articles jointly with UIU Faculty; build networks with development actors through participation in forums of MDS program of UIU.

Eligibility for Admission

- A Bachelor degree (Hons) in Economics with CGPA of not less than 2 or equivalent or at least a Second Class Master degree from a recognized university with basic courses in economics and business studies.
- Two/three- years Bachelor degree (pass) holders are also eligible for admission without the benefit of course waivers.
- Must pass the university admission test.
- Applicants with at least two years' experience in a public, private or NGO sector program/project shall get priority in admission.

Tuition Fees, waiver and scholarship policy

UIU charges Tuition Fees for MDS program @Tk.3700 per Credit. But UIU offers 25% Tuition Fee Waiver for the students having GPA 3.50 on Scale of 4.00 & GPA 4.37 on Scale of 5.00 in HSC & above or equivalent level of public examinations.

The MDS students who have been working in government, semi government and NGO sector having a minimum of 5 (five) years' experience will be entitled to 40% tuition fee waiver.

Top 20% of UIU students get 25% to 100% tuition fee waiver on the basis of trimester examination results.

MDS Program Structure:

Title	Number of Courses	Number of Credits
Foundation Courses	3	9 Credits

Core Courses	6	18 Credits
Elective Courses	2	6 Credits
Thesis/Two selective courses	1/2	6 Credits
Total	12/13	39 Credits



For further information kindly contact: Prof. Dr. Hamidul Huq, Director, IDSS. Email: hamidulhuq@eco.uiu.ac.bd Cell: 01819259969.



International Advisory Board of 3rd UIU-ICSD 2019

Prof. Dr. Chowdhury Mofizur Rahman

Vice Chancellor (Designate) since November 2017
and Pro-Vice Chancellor since April 2006
United International University

Prof. Dr. Chowdhury Mofizur Rahman is the Vice Chancellor (Designate) since November 2017 and Pro-Vice Chancellor United International University from April 2006. Prof. Chowdhury is a Professor of the Department of Computer Science & Engineering of UIU. He has been teaching in CSE Department of UIU since 2003. Prior to that he was a Professor, Head of Department of Computer Science & Engineering at Bangladesh University of Engineering & Technology (BUET). He was awarded Monbusho Scholarship by Japanese Ministry of Education and Culture and pursued his PhD from Tokyo Institute of Technology, Japan in 1996. He obtained his M.Sc. Engg. from Department of Computer Science & Engineering, Bangladesh University of Engineering & Technology in 1992 with a CGPA of 3.75 in a scale of 4.0 and B.Sc. Engg. from Department of Electrical & Electronic Engineering, Bangladesh University of Engineering & Technology in 1989 with 1st class Honors marks.

Prof. Chowdhury obtained IEEE AI'95 best paper award at 8th Australian Joint Conference on Artificial Intelligence, Canberra, 1995. He got JSPS Short Term fellowship as a Visiting Researcher at Tokyo Institute of Technology in 2000-2001. He went to University of Bradford, UK from 17.10.2009 to 12.12.2009 under the EU sponsored eLINK project as Visiting Professor. He worked as coordinator from Bangladesh in the EU sponsored (EM ECW Ref: 149674-EM-1-2008-1-UK-ERAMUNDUS) eLINK (*e*ast west *L*ink for *I*nnovation, *N*etworking and *K*nowledge exchange) project. Prof. Chowdhury has as many as 119 articles published in international journals.

Professor Dr. M. Rezwan Khan
Professor, Department of Electrical & Electronic Engineering
United International University (UIU)



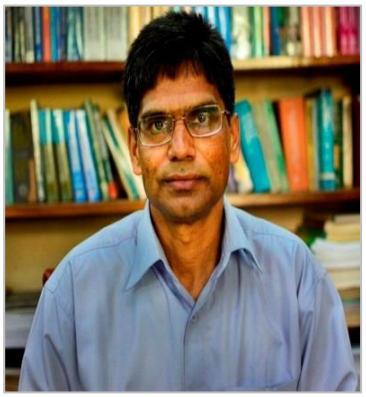
Professor Dr. M. Rezwan Khan is the Professor of Department of Electrical & Electronic Engineering and the immediate past Vice Chancellor of United International University (March 2005 – November 2017). Prior to taking charge of Vice Chancellor, Prof. Rezwan Khan served UIU as the Professor and Dean of School of Science and Engineering at United International University [February 2004 – March 2005 (On leave from BUET)]. He started his professional journey as Lecturer of the Department of Electrical Engineering at Bangladesh University of Engineering & Technology (BUET) in April 1980 and ended up with BUET as Professor in 2005. Prof. Khan visited Clarkson University, Potsdam, New York, USA, as a visiting faculty member for the Summer Session II, July 3 – Aug. 5, 2000, and taught the summer course on Microelectronics (EE341).
Professor Rezwan Khan has been selected as Distinguished Lecturer of IEEE for his outstanding research work on DC Power system for the year of 2017-2018. IEEE is the World Largest Professional association for the Electrical and Electronic Engineers. Prof. Khan is a veteran researcher in electrical engineering and he has been contributing in the renewable energy sector of Bangladesh significantly. He has a large number of publications in international journals.



Professor Dr. Hajime Nakagawa
Professor, Disaster Prevention Research Institute, Kyoto University

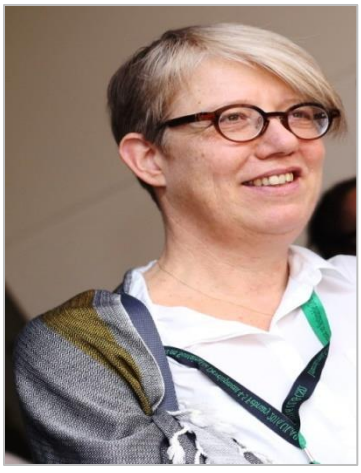
Hajime Nakagawa is working as a Professor of Prevention Research Institute at Kyoto University since 1981 onwards. He obtained Bachelor, Master and Doctor

Degree from Department of Civil Engineering in Kyoto University (Dissertation Title: Risk assessment of flood and debris flow). He is currently He was an Associate Professor in Sabo Section (1990), Anti-Flood Hazard Systems (1992) and Urban Flood Hazard in Bay Area (1995),under Disaster Prevention Research Institute and then Professor in Research Center for Fluvial and Coastal Disasters, DPRI, in 2001 Kyoto University. His main research topics are (1) mechanisms and prevention/mitigation schemes of flood and sediment disasters, (2) strength evaluation of river-disaster prevention facilities such as river dykes, (3) research on interdisciplinary hydraulics, and (4) echo-hydraulics, hydro science and hydraulic engineering.



Professor Dr. Md. Munsur Rahman
Professor, Institute of Water and Flood Management, BUET

Md. Munsur Rahman did his BSc in Civil Engineering from BUET. He obtained MSc and PhD from Kyoto University and joined Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET) in 1999. He was a Post-Doctoral Research Fellow during 2002-2004 in Disaster Prevention Research Institute (DPRI), Kyoto University funded by Japan Society of Promotion of Science (JSPS).He became a professor at IWFM, BUET in 2008 and has been involved in a number of national and international research projects. During his 24years professional career, Prof. Munsur focuses his research on the formation processes of large-scale sand bars in tidal and non-tidal rivers, together with the growth of char land resources and livelihoods strategy of the people living there. During 2007-2009, he executed a collaborative research with Vietnam, Cambodia and UK funded by DelPHE on the issue of river erosion bank protection and social response. Since 2012, he has started (as PI) a 4-year-long consortium grant project with UK, Indian, and Chinese partners on the theme of health, livelihood, ecosystem services and poverty alleviation in populous deltas funded by ESPA (www.espadelta.net). The results will be useful in managing the populous deltas in a sustainable manner. He is working as Bangladesh PI of the consortium project Deltas Vulnerability in Climate Change: Migration and Adaptation (DECCMA) under CARIAA program jointly funded by IDRC and DFID. Prof Munsur is working as Bangladesh PI of the 5 year long project Disaster Prevention/mitigation against Storm Surges and floods in Bangladesh under the SATREPS program jointly funded by JICA and JSTA since 2014.General research interests are grouped into River and coastal processes, morph dynamics and river and coastal management; Ecosystem services of river, coasts and floodplain system, Indigenous approach on river, coasts and floodplain management; Bridge hydraulics and related problems.



Professor Dr. Margreet Zwarteveen
Professor, Water Governance at UNESCO-IHE, Delft, The Netherlands.

Margreet Zwarteveen is Professor of Water Governance at UNESCO-IHE, Delft, the Netherlands since June 2014. Prior to that Margreet was an irrigation engineer and social scientist, working since 1998 at the Centre for Water and Climate at Wageningen University. From 2012 onwards she was an Associate Professor, and also assumed responsibilities for coordinating gender studies education at the Wageningen University. Margreet studies water allocation policies and practices, focusing on questions of equity and justice. Her research includes the study of different modalities of regulating water flows (technologies, institutions) and of ways to understand (knowledge) or legitimize these. She uses an interdisciplinary approach, seeing water allocation as the outcome of interactions between nature, technologies and society. In a project financed by the Netherlands Organization for Scientific Research, she works with a number of colleagues from Benin, France and Morocco to study how the introduction of supposedly water efficient technologies (drip irrigation) is accompanied with, and causes, changes in water tenure

relations and water distributions that favor some people more than others. An interesting new project that she is coordinating similarly sets out to explore how new investments in irrigation systems along the Nile in Ethiopia, Sudan and Egypt re-allocate water and water-related benefits, tracing what this means for different groups of people and for ecosystems. This project is part of the CGIAR Water, Land and Ecosystems Program. In her work, Margreet favors an interdisciplinary approach, seeing water allocation as the outcome of interactions between nature, technologies and society. She is also involved in several research projects funded by NWO-WOTRO, such as The Globalization of Water Struggles and Hydropower development in the context of climate change.



Professor Rajib Shaw
Professor Graduate School of Media and Governance
Keio University
Shonan Fujisawa Campus (SFC), Japan

Professor Dr. Rajib Shaw is the Executive Director of the International Program Office of the Integrated Research on Disaster Risk (IRDR) program hosted at the Institute of Remote Sensing and Digital Earth in Beijing. He is Professor, Graduate School of Media and Governance Keio University Shonan Fujisawa Campus (SFC), Japan. Shaw was a Professor in the Graduate School of Global Environmental Studies of Kyoto University, Japan. He has extensive experience in disaster risk reduction (DRR) research and has worked closely with local communities, NGOs, governments and international organizations in Asia. His research expertise includes community-based disaster risk management, climate change adaptation, urban risk management, and disaster and environmental education. He is the editor of a book series on disaster risk reduction, published by Springer, and is Co-chair of UN ISDR's Asia Science Technology Academic Advisory Group (ASTAAG). Shaw has published extensively in scientific journals and books. He is currently the President of Asian University Network of Environment and Disaster Management [AUEDM], and the Co-chair of UN ISDR Science Technology Academia Stakeholder Group. Professor Shaw has extensive publications in different journals, books and edited volumes.



Professor Mahbuba Nasreen
Director and Professor, Institute of Disaster Management and Vulnerability Studies, University of Dhaka

Mahbuba Nasreen is the founding Director of Institute of Disaster Management and Vulnerability Studies at University of Dhaka. Dr. Mahbuba Nasreen has been involved in research in the areas of theory, gender, disasters, environment, climate change, education, social inclusion, indigenous community and other areas of social development since late eighties. She has joined as a Lecturer in the Department of Sociology in 1988 and became Professor at the same department in 2005, University of Dhaka. After obtaining MSS in Sociology from the University of Dhaka, Dr. Nasreen received Commonwealth Scholarship for pursuing her PhD Degree in New Zealand. Her dissertation topic was "Coping with Floods: the Experiences of Rural Women in Bangladesh". She obtained PhD in1995. Prof. Nasreen is the first woman attaining the PhD research who, since the mid-90s, forcefully arguing that women are contributors to resilient rather than conventional viewing of them as mere victims of disasters. As a member of the National Disaster Management Advisory Committee, Ministry of Disaster Management and Relief (MoDMR), Government of the People's Republic of Bangladesh (GoB) Prof. Nasreen contributed to policy making in reducing disaster risks and other relevant areas of national and international drivers.



Professor Boris Braun
Professor, Human and Economic Geography, Department of Geography, University of Cologne, Germany

Dr. Boris Braun is a professor for Human and Economic Geography, Department of Geography, at University of Cologne. He completed his Diploma (1992), PhD (1994) and Habilitation (2001) at University of Bonn. Professor Boris has over 23 years of teaching and research experience in various reputed universities in Germany. He started his journey, as a Research associate in the Department of Geography at University of Bonn since February 1992 and then became the Assistant professor of Department of Geography at University of Bonn in 1995. He joined as professor (fixed-term contract) for Economic Geography, Faculty of Economics at University of Mannheim in 2002. Then he also worked as a professor in Department of Geography in University of Bamberg.Prof. Braun started his journey as a University professor for Human and Economic Geography, Department of Geography, University of Cologne in January 2008. His research interests are environmental economic geography, environmental management, industrial and urban change; environmental and social impacts of globalization, economic and social aspects of natural hazards in South Asia (mainly India and Bangladesh), Australia, Germany and Western Europe. Prof. Braun has worked as a Scientific Adviser in "GeographischeRundschauâ for the German Research Foundation (DFG), the German Academic Exchange Service (DAAD) and several national and international journals. He was the board member of the Association for Australian Studies (1998-2007).



Professor Mukta S. Lama (Tamang)
Professor, Central Department of Sociology/Anthropology,
Tribhuvan University

Professor Mukta S. Lama (Tamang) completed his PhD from Cornell University with the dissertation entitled "Himalayan Indigeneity: Histories, Memory, and Identity among Tamang in Nepal". Dr. Lama, an indigenous rights activist is a Professor of Sociology/Anthropology in Tribhuvan University, Nepal. He holds a PhD in anthropology from Cornel University entitled, 'Himalayan Indigeneity: Histories, Memory and Identity among Tamang in Nepal'. He has conducted several research studies in the areas of social inclusion, indigenous peoples and other excluded and minority groups. He has published several articles, books and contributed to journals and presented several papers in the national and international arena. His publications include Cultural Diversity and Democracy in Nepal, Himalayan Research Bulletin, (21)2, 2002, The Working of Democracy in Nepal, Seminar, April 2005, Emotional Aspects of Peer Relations among Children in Rural Nepal (with Pamela Cole and Alice Walker), in X. Chen, D.C. French, and B.H. Schneider (eds.) Peer Relationships in Cultural Context (2006), and Culture, Caste and Ethnicity in the Maoist Movement, Studies in Nepali History and Society, (11)2, 2006. He was Senior Research Fellow at Nepal School of Social Sciences and Humanities from 1March 2012 to 28 February 2013.



Professor Dr. Abdul Shaban
Professor, School of Development Studies,
Tata Institute of Social Sciences, Mumbai, India

Abdul Shaban is a professor at the School of Development Studies, in Tata Institute of Social Sciences. He has done his Masters on Geography from Jawaharlal Nehru University (JNU), New Delhi, and M.Phil. and PhD from Indian Institute of Technology (IIT), Mumbai. He has published 3 books and over 40 papers in various refereed journals and edited books. Dr. Shaban has been Visiting Professor at the Erasmus School of History, Culture and Communication, Erasmus University, The Netherlands; Department of Geography, University of Paris- 7, Paris, France, and at University of Masaryk (Brno) and Palacky University, Olomouc, Czech Republic. He has also been Fellow at the Department of Geography and Environment, LSE, London. He was Commonwealth Academic Staff Fellow at Cities Programme, London School of Economics and Political Science (LSE), London during 2011-12. He was member of Mahmoodur Rahman Committee, set up by Government of State of Maharashtra, and Post-Sachar Evaluation Committee, Ministry of Minority Affairs, Government of India. Currently he is, a Deputy Director TISS Tuljapur Campus, Osmanabad, Maharashtra, and Professor at School of Development Studies, TISS, Mumbai, a Chairperson of International Relations Office (IRO), TISS, Mumbai and aÂ member of the Commission of Inquiry to Study Socio-Economic Status of Muslims in the State of Telangana under chairmanship of Shri G. SudhirÂ (IAS).



Professor E.R.Nimal Gunawardena
Professor, Agricultural Engineering, University of Peradeniya, Sri Lanka

E.R.N.Gunawardena is a Professor of Agricultural Engineering at the University of Peradeniya, Sri Lanka. He completed his BSc in Agriculture from the same university. He obtained his MSc and PhD in Soil and Water Engineering from Cranfield University in UK. During his 30 years of career he served as Head of the Department of Agricultural Engineering, Dean of the Faculty of Agriculture, and Deputy Vice Chancellor of the University of Peradeniya. He was a Fulbright scholar at the University of Athens, Georgia, USA and worked with the Institute of Hydrology and Oxford Forestry Institute of UK on collaborative research projects.He has published extensively in the areas of hydrological simulation, irrigation, drainage, and watershed management and was involved in formulating the protected area network of Sri Lanka and drafting the forestry sector master plan. His current research interests lies in the area of Integrated Water Resources Management. He was the first country coordinator of the CapNet, a UNDP project on capacity building in Integrated Water Resources Management (IWRM) and later became the Executive Director of SaciWATERs in Hyderabad India and the Project Director of the Crossing Boundaries Project, a regional capacity building project on IWRM, Gender and Water. As a consultant, he has undertaken various assignments in Sri Lanka for the IUCN, USAID, ADB, and FAO to translate research into practice. He also served as an international consultant to the UN/ESCAP and UNOPS.

Dr. Jeroen Warner
Associate Professor, Sociology of Development and Change Group, Wageningen University and Research Centre (WUR)



Dr. Jeroen Warner is the Associate Professor, Sociology of Development and Change Group at Wageningen University and research Centre (WUR). He did his MSc in International Relations from University of Amsterdam; PhD in Disaster Studies from Wageningen University. Dr. Warner teaches, trains and publishes on domestic and transboundary water conflict, participatory resource management, and governance issues. His main research interests are in social resilience and the disaster studies domain. He has long experience of working in Bangladesh. Dr. Warner's expertise is in Disaster Studies, Politics, Water Management, and Risk Analysis.



Professor Umme Kulsum Navera
Professor, Department of Water Resources Engineering,
Bangladesh University of Business & Technology (BUET)

Professor Navera completed BSc in Civil Engineering from BUET. She holds a Master degree in Riverine and Coastal Engineering from Asian Institute of Technology, Bangkok, Thailand and a PhD in civil Engineering from Cardiff University, United Kingdom. She is currently working as a Professor in the Department of Water Resources Engineering, BUET. Her areas of expertise and research include model development for predicting wave-current interactions, sediment transport process analysis in near-shore coastal waters, wave hydrodynamics and beach erosion problems in Bangladesh. Her fields of interest are Estuarine & Coastal Hydraulics, Mathematical Modeling, Open Channel Hydraulics and Fluid Mechanics.



Professor William H. Derrenger
Dean, School of Business
Canadian University of Bangladesh (CUB)

Professor William H. Derrenger (Bill Derrenger) was the Founding Vice Chancellor of Canadian University of Bangladesh (CUB) and currently he is the Dean, School of Business of CUB where he is introducing practice based, education models to Bangladesh's higher education scenario and attempting to shift the higher education paradigm away from traditional academic, class based approaches to ones that give students opportunities to learn and apply fundamental concepts in the conduct of real work. Bill served ULAB as a Dean of School of Business during January, 2015 – February, 2016 where he introduced "The Business Process" across all course areas in The Business School as a paradigm shift in the delivery of UGC's mandated, University level Business School curriculum in the context of practice based business processes. Professor Derrenger's innovative teaching and learning strategies gave USB's BBA graduates a competitive advantage in finding suitable, entry level employment due to their practical grasp of the needs of local employers. Professor Derrenger also worked as Associate Dean, Faculty of Business at Northern University, Dhaka during January, 2012 to January, 2015 where he used case studies to impart Strategic Planning, Organizational Development, Entrepreneurship and Business Communication skills to BBA/MBA candidates with academic, social and economic deficits. Bill served the American International School, Dhaka as Academic Advisor during September, 2001 to June, 2011. He is the Director, Agricultural Advisory Services (AAS), Dhaka since1991 – Present. AAS provides ongoing agricultural consulting services to a wide range of international funding agencies for purposes of promoting crop intensification and diversification projects among small and landless farmers. William H. Darrenger served different business, finance and development organizations in USA and Bangladesh for a quite long time. He has studied BA in Economics at Baylor University, Waco, Texas and MA, Educational Psychology, Strategic Planning & Human Capital Development at American International College, Springfield, Massachusetts, USA.



Dr. Megan Farrelly
Senior Lecturer in Human Geography, located within the School of Social Sciences at Monash University

Over the last decade Dr Farrelly has investigated various governance and institutional mechanism within the Australian urban water sector to advance a transformation in

the functionality and liveability of urban and rural environments. Her research interests span environmental governance, sustainability transitions, experimentation, learning and evaluation. Her current research focuses on the intersection of multiple infrastructure sectors (i.e. water, energy, green infrastructure), in order to understand what role this nexus plays in bringing about policy and practice change. In addition, and supported by PhD researchers, DrFarrelly has begun to explore the urban water governance challenges within Bangladesh and Indonesia. Dr. Farrelly has been heavily involved in the Cooperative Research Centre for Water Sensitive Cities, which seeks to inform the development of sustainable, resilient and productive cities and towns. She has led various social science research projects (i) examining how to transform storm water management practices; (ii) bridging evaluation studies, impact assessment and research adoption to inform the development of an evaluation and learning framework to support large-scale, complex research projects achieve maximum impact. Resulting from this body of research Dr Farrelly has been engaged in a number of external consultancies for Government Agencies and local governments.



Professor Dr. Hamidul Huq
Convener, 2nd UIU-ICSD 2018 and
Professor and Director
Institute of Development Studies and Sustainability (IDSS)
United International University (UIU), Dhaka, Bangladesh

Dr. Hamidul Huq has specialization is in the areas of sustainable livelihoods, integrated coastal zone management, integrated water resources management, disaster management, ecosystem services, poverty alleviation, Sustainable Development, and Interdisciplinary Research and Education. Prof. Huq has a Masters with Honours in Social Welfare from University of Dhaka, and a PhD in Rural Development Sociology from Wageningen University, the Netherlands. His PhD dissertation was titled "People's Practices: Exploring contestation, counter-development, and rural livelihoods". Prof. Huq has been engaged in collaborative interdisciplinary education and research projects on ecosystem services, disaster management, and Integrated Water Resources Management, Solar Home Systems. Prof. Huq has 25 years of working experience in leading NGOs.

CHIEF GUEST AND CONFERENCE INAUGURAL SPEAKER



Prof. Dr. Shamsul Alam
Member (Senior Secretary)
General Economics Division
Bangladesh Planning Commission
Ministry of Planning
Government of the People's Republic of Bangladesh

Dr. Shamsul Alam, Member (Senior Secretary), General Economics Division (GED), Bangladesh Planning Commission has been serving the Government of Bangladesh over the last 8 years and a half. Prior to joining GED, Bangladesh Planning Commission, he was a faculty of Bangladesh Agricultural University since 1974 to 2009. Dr. Alam also worked for UNDP/FAO as a National Consultant for 4 years and 3 months. He served as visiting Professor at Humbolt University, Germany, University of Ghent, Belgium and at the school of Development Economics, Wageningen University, the Netherlands as an Erasmus Mundus Scholar.
Dr. Alam coordinated the preparation of the first Perspective Plan of Bangladesh 2010-21 and Sixth & Seventh Five Year Plans of Bangladesh. He is currently coordinating the preparation of the Bangladesh Delta Plan 2100 and the Bangladesh Perspective Plan 2021-41. He has in his credit published 48 scientific articles in peer reviewed national and international journals and authored ten Books. Dr. Alam travelled 45 countries of the World in connection with academic Seminars/Symposia as a government delegate.

KEYNOTE SPEAKER OF CONFERENCE INAUGURAL SESSION



Dr. Kim van Nieuwaal
Director Delta Alliance, The Netherlands

Dr. Kim van Nieuwaal is director of Delta Alliance since November 2017. As a seasoned knowledge, broker he has been advisor to ministries, provinces, municipalities, universities, knowledge institutes, ngo's and businesses, particularly in the fields of climate change adaptation and water management. He has an extensive network in academia, policy and practice. Besides his work for

the Delta Alliance, Kim is strategic advisor at Climate Adaptation Services and chairman of the board of the Dutch Wadden Sea Society. Kim got his PhD from Free University of Amsterdam.

CHIEF GUEST OF CONFERENCE CLOSING SESSION



H.E. Hendrikus Gerardus Johannes Verweij,
(Harry Verweij)
Ambassador
Embassy of the Kingdom of the Netherlands, Dhaka, Bangladesh

Mr. Harry Verweij joined the Ministry of Foreign Affairs in 1984 and worked in New York (PVUN) and Paramaribo and in the department (in the Directorate General Affairs, the Directorate of the Cabinet and Protocol, the Directorate of Foreign Affairs, the Task Force International Criminal Court and the Department of Personnel and Organization). In 2008 –2009, he worked as a Policy Adviser at the Consulate General in New York. Later on in 2009 – 2013 joined as a Director of the Safety, Crisis Management and Integrity Directorate. Also in 2013 – 2016, he appointed as Inspector at the Inspection and Evaluation Operational Management. In 2016 – 2018 he became the Ambassador of Extraordinary and Plenipotentiary at Bujumbura, Burundi. He is currently working from 2018 as an Ambassador in Embassy of the Kingdom of the Netherlands in Dhaka, Bangladesh

CONFERENCE CLOSING SPEAKER



Dr. Saleemul Huq
Director
International Centre for Climate Change & Development (ICCCAD)
Senior Fellow at the International Institute for Environment & Development (IIED)

Dr. Saleemul Huq is the Director of the International Centre for Climate Change & Development (ICCCAD) since 2009. Dr. Huq is also a Senior Fellow at the International Institute for Environment & Development (IIED), where he is involved in building negotiating capacity and supporting the engagement of the Least Developed Countries (LDCs) in UNFCCC including negotiator

training workshops for LDCs, policy briefings and support for the Adaptation Fund Board, as well as research into vulnerability and adaptation to climate change in the least developed countries. Prior to this, he was at Bangladesh Centre for Advanced Studies (BCAS) where he was in charge of management and strategy of the organization. In 2000 he became an Academic Visitor at the Huxley School of Environment at Imperial College in London.

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ABSTRACTS

THEME 1: SUSTAINABLE LIVELIHOODS

'MAKE-IN-INDIA REVOLUTION' AND 'PATANJALI HERBAL'- A CASE REVIEW OF A SUSTAINABLE INDIGENOUS ENTREPRENEURSHIP

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Abstract

'Make-in-India Revolution'–an indigenous movement launched on September 25th, 2014, is introduced to be a promising initiative taken up by the Government of India. The primary goal of this drive is to portray India as a global manufacturing-cum-investment hub through encouraging both multinational and domestic firms to make their products within geographic boundary of the country. The present Make-in-India campaign permits 100% Foreign Direct Investment (FDI) in more than 20 sectors of the economy. As a result, India received US $60 billion foreign investment in the fiscal 2016-17 and is being emerged as one of the top destinations in global investment map in terms of FDI, surpassing China and the United States of America. Experts perceive 'Make-in-India' to be a vibrant launch, and if accurately navigated, would play a pivotal role in growth dynamics of the country.

In view of this revolutionary trend, there appears a phenomenal growth of an Ayurvedic and Herbal giant named 'Patanjali Ayurved Ltd' (known as PAL) with a reported revenue of US$ 1.57 billion in the financial year 2017. Couple of years ahead, the PAL plans a transnational presence with a proposed investment of around US$ 800 million with the sole aim of synchronising the art of 'Veda' (Ayurveda) with modern 'Vigyan' (Science). 'Patanjali' as a 'Swadeshi' (Indigenous) brand becomes a buzzword now. Indian households have recognized it to a reasonable extent. The blend of Yoga, Pranayam (Meditation) and Ayurveda backed up with a charity thrust by its brand ambassador Baba Ramdev is proved out as a driving force towards its strong positioning amongst the common minds. Currently, PAL has a diversified assortment of near about 400 products being dealt in the market. Herbal Medicines along with Hair Oil, Toothpaste, Soaps, Floor Cleaners, Ghee, Mixtures, and Biscuits are to name a few. Baba Ramdev, as an indigenous entrepreneur, has a transformed business model and opened a sustainable herbal era for the public at large. The organic ingredients of the offered products with a 'Swadeshi Feeling' are a budding challenge for the multinational firms in the country. Coming to a glance over its early stage reflects that Patanjali Ayurved Ltd. just began with a bare hand. Baba Ramdev was a little known yoga practitioner in a sacred town called Haridwar in Northern India. He, in close association with Acharya Balkrishna ventured into manufacturing herbal medicines in 1990s and set up a pharmaceutical unit called 'Divya Pharmacy'. Now, more than 98% of PAL'S shares belong to Balkrishna who has a net worth of US$6.1 billion as of March, 2018. Patanjali today, is unquestionably a fastest growing indigenous brand in India with 'Patanjali Food and Herbal Park' at Haridwar being the primary production facility. Patanjali dreams to make India selfsustainable and attain a complete cultural and economic freedom in years to come. From Natural Heath Care to Herbal Home Care–no other indigenous entrepreneurs have been able to create such a huge portfolio in a noticeably short span of time. According to 'The Brand Trust Report Study India-2018', Patanjali has been acknowledged as 'Most Trusted FMCG Brand' amongst 11,000 brands in the country. With incremental revenue in past few
years, the PAL presently has a widespread channel of over 5,000 distributors, 100 megamarts and 15,000 flagship stores spread over entire India. Meanwhile, the company has made strategic alliances with prominent chains like Reliance Retail, Future Group, Spencer, Star Bazaar in addition with a few e-com portals in India. The newest proposal of 1,200 crore production unit in one of the provinces and a plan towards going publicly

listed in near future provides with a clue of PAL's rigorous expansion programme. Patanjali's positioning as Health Conscious, Pure and Herbal aided by the 'Make-in-India Perception', is probably the key driver in the direction of becoming an extraordinary indigenous brand amongst its peers in the country.

Considering this backdrop, the present study aims to weigh up 'Patanjali' as a game changing Swadeshi Brand and bring to light a few ground realities that have positioned it as a sustainable entrepreneur. The methodology adopted here is based on the secondary information with a semi-structured primary observation carried out for the purpose. The source of data consists of selected empirical literatures, published periodicals, and more distinctively, the web database. The primary information seems to be restricted and geographic extent of the study is confined to Indian economy as a whole. The research, in a sense, is not carried out on the basis of any pre-determined hypothesis. Rather, an open mind to the possibilities of derived information and outlook of the subject is ensured for conceptualization and onward re-presentation. Again, as close participants-in-practice, the researchers underwent an on-site interaction with a group of selected consumers. The same made them sense about a changing trend and preferences towards herbal products in the country. Besides, the entire approach under consideration is a case review and a structured SWOT analysis (acronym for Strength, Weakness, Opportunity and Threat) is carried out for the purpose to validate the same. Findings infer that the encouragement of Ayurveda blended with a Herbal Era holds out an assured prosperity of healthiness and spiritual well-being of the masses. Further, it is being argued with a firm belief that the instantaneous rise of Patanjali in terms of its Swadeshi Hymn has significantly revolutionized Indian Ayurveda to an observable extent. Branding through Spirituality with a Purity Feel, unique combination of 'Ved' and 'Vigyan', as if, are the Unique Selling Propositions behind Patanjali's dramatic victory. It is hoped that an enhanced Herbal Era too, is not far away. Nevertheless, a few significant queries do come out of these reflections; like- will Patanjali be able to sustain its state of affairs in days to come? Or shall it be a momentary occurrence as the case with few others? There may still have a way to go in order to ensure a long term sustainability. For, leading players persistently do keep an eye on Patanjali's success story and sooner or later coming up with similar business tactics in order to re-position themselves in the market. Hence, while there is a little ambiguity on how long Patanjali Empire sustains as a game changer, time will prove. Till then, the authors are in a position to conclude that PAL has to be genuinely vigilant in terms of its commitment and momentous fulfilment of the same. Embellishment, at times, might result in lost market share and fail to ensure an unchanged brand loyalty amongst its consumers. For this reason, it is perceived that if Patanjali's promise towards building a Holy, Healthy and Herbal Lifestyle is not just a mere lip service, it would unquestionably heighten itself in a significant manner. A continual research and innovative endeavour in this regard, would also be a plus in order to proceed an extra mile. As such, this indigenous entrepreneurial spirit to be sustainable, must be aligned with India's advantage in terms of its highly acclaimed 'Make-in-India Revolution'. The present case, reviews the same at micro level in said direction.

Key Words: Make-in-India, Patanjali, Sustainability Perception and Herbal Era

BEST PRACTICE OF MODAL GRAMA PANCHAYATH FOR SUSTAINABLE DEVELOPMENT IN BELGAUM DISTRICT, KARNATAKA, INDIA

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Abstract

In India, the process of decentralization resulted in creation of people's institutions and local self-governments known as Panchayath. Local governing institutions are granted constitutional legality as Local Government bodies responsible for socio- economic development in the rural areas. The government of India introduced various kinds of committees for working of panchayath raj institution and to suggest measures to strengthen

them but majority of Panchayath are developing in initial stage. At present government has introduced some of measuring policy and scheme for developing in grassroots level. The Gram Panchayath is taking lead in sustainability, community development and people participation through best modal Panchayath in village. The paper sought to explore that i) To study the strategies for successful planning and implementation at the grassroots level. ii) To examine the accountability and transparency in modal GramPanchayath. iii) To know the achievement of modal GramPanchayath in village. The study is reported by used the case study method. The data was collected through in-depth interview conducted to the modal Gram Panchayath in Belgaum district. The paper shows that this modal Gram Panchayath has evolved and used innovative strategies in their development work.

Keywords: Institutions, Decentralization, Accountability, Transparency

Comprehending the Sustainability Status of a Transforming Suburb of Mumbai

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Abstract
Although Mumbai is a city of recent history, it has drastically grown in terms of size as well as population. The fast nature of growth in Mumbai has led to the saturation of the city core or the 'island city' within a short span of time. At present most of the urban growth of Mumbai is taking place in the suburban areas of the metropolis. Thus, suburban Mumbai is undergoing a tremendous urban transformation in recent times. In fact, this suburban growth is not a new feature of Mumbai; rather it has been taking place for a long time now. In the light of the present suburban transformation of Mumbai, one particular suburb that especially stands out is the suburb of Mulund. This suburb has undergone a sea change within less than three decades and has emerged with a new urban character. The transforming character of Mulund in the wake of its changing urban dynamics raises questions on its sustainability status. Therefore, in this paper, an attempt has been made to analyze and understand the sustainability status of Mulund in relation to its ongoing urban transformation. The methodology of the study is based on a mixed method approach where the collected data has been put into both qualitative and quantitative analysis. The main findings of the study bring into light many interesting aspects of the transformation that are undergone by the suburb and its impact on the sustainability status of the suburb. It also throws significant light on the emerging environmental concerns in the suburb as a result of its changing urban dynamics. The paper also takes into account the role of urban policies on the sustainability of the suburb. Challenges that pose a threat to the suburb's sustainability are unrevealed by means of this study and the need for taking proper action to combat the emerging urban crisis are duly acknowledged. Apart from this, the study also forwards viable suggestion to tackle the growing crisis of the suburb and to ensure its proper sustainability status.

Keywords: Suburb, Sustainability, Transformation, Urban

IMPACT OF ECOTOURISM ON SUSTAINABLE LIVELIHOOD AND BIODIVERSITY CONSERVATION-A CASE IN FOREST DWELLERS OF NAMERI NATIONAL PARK IN ASSAM

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Abstract
Community-Based Ecotourism (CBET) has become a popular tool for natural resource management; based on the principle that biodiversity must give for itself by generating economic benefits, particularly for local people. The aim of the present research is to highlight the infrastructural development and livelihood types pursued by the local people in the area after inception of the ecotourism initiatives in the prak for the first time during 1956. An assasement has been made during the field study in the year 2018 to develop the area as an ecotourism destination utilizing its local unique resources.
The Nameri National Park has been selected for the current study. 'Ecotourism' was first coined by Hector Ceballos Lascurain in 1983, and was initially used to describe nature-based travel to relatively undisturbed area with an emphasis on education. Tourism is currently the world largest industry ($ 3.4 trillion annually, WTO report-2011) and ecotourism represents the fastest growing sector of this market. On the other hand rural development refers to the process of improving the quality of life and economic well-being of people living in rural areas. It is also characterized by its emphasis on locally produced economic development strategies such as ecotourism. Rural livelihood is sustainable when it can cope with and recover from stresses and strain and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. Local people residing nearby protected areas have complex livelihood strategies (due to multiple land uses and diversification of risks across several activities), which are affected by ecotourism in many different ways in that areas, positively and negatively and directly and indirectly. Different people have different livelihood priorities and ecotourism ventures have different kinds of impacts. This paper also tries to emphasizes the economic returne that has been generated from incoming tourist which led to sustainable livelihood and biodiversity conservation in the study area.
Key Words: Community based tourism, sustainability, natural resources, biodiversity conservation, revenue generation and rural development.

Investment in Indigeneous cultural art forms for promoting sustainable livelihood: In Indian context

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Abstract
This paper titled Investment in Indigenous cultural art forms for promoting sustainable livelihood: In Indian context tries to reflect the present scenario of an artisan community named Patachitrakars and foretell the prospect which could be revived by investing in the cultural art forms for a sustainable livelihood. India is well known for its rich cultural and traditional vibrancy that is present in its craft forms among diverse geographic regions which have their own folk style of expressing and means of communication. It also represents the

artisan community and gives them their own identity. But over the decades they are facing a situation of poverty and a struggling life in spite of the West fluctuating interest towards handicraft and art forms. Hence the main objective of this paper is to identify the major issues and challenges faced by the marginal artisans group of India who are known for their rich cultural and heritage value and suggest the possible prospect for preserving the handicraft and the cultural heritage of our India. Case study method is used as this paper intends to provide a picture on one of the indigenous paintings which is a dying art at present situation in West Bengal. The nature of the study warrants both exploration of facts and exposition of the factors and variables that help to understand the status of the Patachitra and to provide a solution for their livelihood with a sustainable approach. In the case studies the researcher found how the price of a handicraft material is being sidelined and lowered by cheap machine made goods and hence taking away the bargaining power of the artisans and forcing them to sell their products at much lower price. The artisans are being exploited by middleman and other drawbacks of the rural artisans being illiterate make them more vulnerable. The poor policy support from the government also makes the rural artisans vulnerable and forcing them to lead a life of a struggle and poverty. This paper tries to provide suggestions for promoting those artisans craft work in the globalised economy keeping in view along with the modern consumer sentiments. This paper concludes with the point that investment in the diverse cultural art forms would create a scope of sustainable
livelihood and help in improving the economic standards of the rural artisans. It would also revive the art work which is acquired through generations from their ancestors keeping intact the same old skill and ecofriendly techniques used.
Key Words: Patachitrakars, Sustainable, Livelihood.

LIVELIHOOD OPTIONS AND OPPORTUNITIES AMONG TRIBAL POPULATION IN SOUTH WESTERN PLATEAU AND HIGHLAND REGION IN WEST BENGAL

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Abstract: Access to livelihood security is very basic for sustaining a productive living. But sustainable livelihood is a major challenge for our society. Tribal people of the south western plateau and highland region in West Bengal are also facing many basic livelihood issues and challenges viz., employment, food security, education, healthcare etc. Many tribal people depend on NTFPs and also engaging illegal selling of forest wood. In the last few decades, there has been a large scale deforestation taken place. Which are indirectly declining their livelihood from the forest, Due to the scarcity of rainfall and low water holding a capacity of the soil agriculture activity throughout the year is almost impossible. Therefore, most of the tribal people from low resource region are migrating to rich resource region in search of a job. Due to poor infrastructural development, many areas of this region are cut off from many social services provided by the government. Due to vote bank politics, the political leader uses this region according to their benefit. As a result, long-term deprivation takes place. So it is clearly observed that their livelihood options and opportunities are very limited. Adopting sustainable livelihood approaches is the only solution for a better future.
The main aim of the study is to understand livelihood options and opportunities among tribal population in south western plateau and highland region in West Bengal. The main objective of the study is (1) To investigate the available livelihood options, (2) To find out major constraints of sustainable livelihood, and (3) To examine the relationship between livelihood options and human poverty and (4) To measure the household status of livelihood security.
The database of the study is based on secondary and primary sources. Secondary data collected from districts statistical handbook-2003 and 2013, Govt. of West Bengal, Primary Census Abstract 2001 and 2011, and

District Census Handbook 2011. Primary data is collected through a well- structured questionnaire. Purposive Random sampling technique is used, to meet segment goals and objective of the study. Principle Component Analysis and Correlation coefficient technique have been used.
Distribution of five elements of sustainable livelihood itself indicates inequality within the region from west to east. Such inequality plays a major role towards livelihood insecurity. Major constraints of sustainable livelihood are varying within the region. Human Capital is the major constraint in high livelihood resource region; Financial Capital, Human Capital, and Financial Capital are consecutively the major constraint in medium, low and very low livelihood resource region. There is a high negative relationship between livelihood options and human poverty. On the other hand, it can be said that higher the strength of livelihood options lesser the human poverty. Livelihood security index values are rapidly declining from high livelihood resource region to low livelihood resource region and also within large farmer to small farmer. More study is necessary for tackling the livelihood insecurity problem.

Effects of the Intervention of Development Partner on the Livelihood Assets of a Local Community Overtime: A Field Study on a Local Community of Bangladesh

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Abstract:
As the notion of sustainable development covers a broader perspective ofdevelopment, it is often challenging to narrow down the local implications or localimpacts of such development initiatives. Understanding the local perspectivesregarding sustainable development is pivotal to comprehend the contextual impactson the livelihood assets of the primary stakeholders such as members of remote orunderprivileged communities. Despite the attempts of development partners suchas donor agencies, NGOs and local governments, the question remains whether theoutcomes of the conventional top down development activities can contributetowards sustainable developments of the local communities or not. This studyexplores the changes in livelihood assets under three distinct time frames-before,during and after the intervention of a development partner- 'Unniyan Sohojogiongho' (UST), in a remote community of Bangladesh. In addition toexistingsustainable livelihood pentagon, this study has incorporated the potentialimplications of politicalaspect of the livelihood assets of the community. Basedon a field study on the community of Khutamara, in Nilphamari District ofBangladesh, using a focus group discussion of the leaders of 'mohila samity'(women group), this study collected primary data to assess the changes inlivelihood assets of the villagers. The outcome of the study reflects the positive changes in livelihood assets due to intervention of the development activities-training and capacity development provided by the UST. The finding also reveals that the community has maintained the positive changes in livelihood assets after ten years' time span from the termination of UST project in 2008.

Key words: Sustainable development, livelihood assets, development intervention, community empowerment.

RECOMMENDATION OF AREAS FOR ADVOCACY TO IMPROVE THE LIVES AND LIVELIHOOD ISSUES OF HAOR DWELLERS

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The North-Eastern Haor region of Bangladesh is considered to be highly vulnerable to climate change impacts for its unique physical setting and hydrology. Changing weather patterns along with temperature rise, reduced and erratic rainfall are identified as the negative causes on agricultural production, regarding annual rice harvest, winter crops, and fisheries. The Haor region contributes almost 16.5 percent of the total rice production and 6-8 percent of the national Gross Domestic Product (GDP) on an average (Farid, 2017). Any slowdown in the economy of the Haor region will enormously affect our national growth. The significant problems in the Haor area are the water and agriculture-related problems. The area faces the water-related problems such as flash flood, river bank erosion, drainage congestion, poor navigability, sedimentation. Besides, agriculture-based problems such as monoculture cropping system, single robi season crop and extreme crop losses due to floods are another concern. Moreover, the region experiences the widespread problems of crop losses because of flash floods and erosion along with poor access to markets, especially during the flood season. Pre-monsoon flash floods are among the significant disasters which engulf the primary production sector and thus challenges the lives and livelihoods of the haor inhabitants. Also, **t**he haor region is generally considered to have lagged behind the overall progress of national development in Bangladesh regarding various key indicators of social and economic development. To understand the needs, opportunities, and livelihoods of the local community of the North-east Haor region, a short study was conducted to address the advocacy issues. The objectives of this study were as follows-

- Identify the key issues and recommendations to secure lives and livelihoods of Haor people from repeated flash floods
- Develop a keynote for a national level advocacy agenda

The short study was carried out based on reviewing previous studies and a short field visit from 26 February to 1 March 2018. The study was limited to three Upazilas in the Haor areas- Tahirpur and Derai under Sunamganj district and Itna under Kishoreganj district. To collect the primary data, the study adopted a participatory approach which includes Key Informant Interviews (KII), walking interviews with locals, semi-structured interviews with stakeholders and focus group discussions (FGD) with local communities and government officials. The study showed that the affected people are in need of agriculture and livelihood inputs for livestock and other agro-supplies. The primary three problems are- Livelihood issues, Embankment, and transport problems, and disaster management with early warning system are elaborately discussed. Based on the primary and secondary issues identified, the study has recommended to advocacy for five significant issues- involvement of communities in dike management, sustainable and alternative agriculture, effective dissemination of flood warning, income generation activities during the monsoon and improvement of communication works. The short study pointed out some significant problems in Haor areas and recommended a number of issues for advocacy to fulfill the needs of the haor region inhabitants. Increased awareness, interest and co-operation among local actors and institutions and increased income opportunities during wet season could address the issues present in Haor regions.

A GIS-based Monte Carlo Least Cost Path (MC-LCP) method for assessing the outburst flood risk from Phunri Glacial Lake, Sikkim Himalayas, India

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Abstract

Glacial Lake Outburst Floods (GLOFs) are one of the most potent natural hazards in the Himalayan region, posing significant threat to the millions residing downstream from their occurrence sites along the region's foothills and extensively threatening built infrastructure and livelihoods. This paper examines the efficacy of a GIS-based Monte Carlo Least Cost Path (MC-LCP) method for assessing the GLOF induced risks from the Phunri Lake, which is located in the source region of the tester River, an important right bank tributary of the River Brahmaputra. The Lake is located at 27°59'26.62"N and 88°48'55.90"E, in the eastern Indian state of Sikkim and previous studies have identified it as a potential GLOF site. High resolution multispectral satellite images of spatial resolution 5.8m (Resourcesat-1, LISS-IV) for two different time periods (2018 and 2011) and the ALOS PALSAR Digital Elevation Model (DEM) data of spatial resolution 12.5m, were processed in Erdas Imagine and ArcGIS software environments to derive the required information for modeling. The MC-LCP model was then executed at three different iterations (50, 100 and 500) for simulating the potential GLOF scenarios. The latest lake inventory database (of January 2018) revealed that it covered an area of 1.8 km^2, which had increased by 0.1 km^2 from 2011, probably due to an overall temperature rise across the entire Tester River Basin (as substantiated by climatic datasets for the area), inducing further glacial melt, and held an estimated 76711132.9 m^3 volume of water. The model runs showed that an area of 18.8 km^2 was inundated at 50 iterations, which increased to 22.8 km^2 and 29.3 km^2 at 100 and 500 iterations, respectively. At 100 iterations, the Lake had the potential to generate an 89.1 km long GLOF event downstream, which would inundate an area of 22.8 km^2 and adversely affect 205 buildings (covering 0.07 km^2), 31.8 km length of roads and 1.8 km^2 of vegetation cover, despite it being located 91.7 km upstream of the basin outlet. Based on the cumulative score of all possible risks of a GLOF event in an outburst scenario, this lake was considered to be highly hazardous, requiring urgent action to mitigate its high potential risk. It was also discerned that the newly developed MC-LCP method enabled an improved flow routing scenario and was capable of generating acceptable flood extents, even in a region of complex topography, enhancing its status as a significant first-pass hazard assessment tool for flood inundation mapping in the data poor Himalayan region. The study also highlighted some drawbacks of this model, in that it lacked a physical basis for the performed simulations and showed that at 500 iterations, the flood inundation probability (confidence level) was only 25%, as the model could successfully run only up to 127 times, possibly due to its inability to process a high resolution DEM dataset. Further research is thus required to develop a more stochastic model for generating more robustly modeled scenarios. Such output maps can then be disseminated among local disaster management bodies for risk awareness and mitigation.

A Study of Vulnerability Assessment: Impacts of Climate Change on Potential Tourist Development Areas - A Case of Jiaoxi

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Abstract
In recent years, the framework, index, and assessment methods of resilient city are gradually emphasized due to the environmental changes like changes in climate affects Changes in the frequency and magnitude of natural hazards. Tourism industry is the world's largest commercial sector and contains enormous potential for economic Development. World Tourism Organization (UNWTO) predicts that the international tourism will continue to grow with the number of international tourist arrivals worldwide increasing by an average 3.3% a year. Unfortunately, climate change vulnerability assessment of tourism areas is rarely mentioned in the studies in Taiwan even though the most of the tourism areas in Taiwan are at high risk for serious natural disasters (e.g. Typhoon Morakot, year 2009 produced up to 2,355.5mm of rain in the most popular hot spring area – Baolai in Liouguei District in Kaohsiung which seriously damage the tourism industry). Thus, effective strategy of management should be taken to keep the tourism areas sustainable. N this study, Jiaoxi District, Yilan county, Taiwan was selected. Since the opening of the Hsueh Shan Tunnel brings economic benefits to Jiaoxi District, the development of tourism industry has gone over the carrying capacity (e.g. farmland fragmentation, industrial restructuring, traffic congestion, the increasing of social vulnerability, compound disasters etc.), and the phenomenon of tourism infrastructure vulnerability and policies failure.Therefore, in order to further discuss the relation of the vulnerability, natural environment, and the hazards of the potential tourism areas, fuzzy Delphi method and Analytic Network Process are used to construct the assessment index for making sustainable tourism development strategies.

KEY WORDS:
Climate Change, Tourism Vulnerability Index, Vulnerability assessment, Fuzzy Delphi Method, Analytic Network Process.

A study on resilience assessment and strategy of rural areas under climate change -- A case study of Chiayi County

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Abstract
In recent years, the global environment has changed rapidly, and the climatic conditions have also changed. This has indirectly led to the continuous impact of natural disasters around the world, and the frequency and intensity of disasters are increasing. Therefore, the concept of resilience has been paid more and more attention, such as the formulation of frameworks, indicators and assessment methods. However, this emphasis only focuses on how to enhance the adaptability of the urban level. It is often overlooked that rural areas must be resilient in the face of climate ability.
Until recently, the measurement of resilience in rural areas has gradually received attention. However, it is still a question if the rural area is regarded as a subject for the assessment of resilience. And as the concept of resilience, how to define rural areas and their methods is also blurred. Therefore, this study suggests that rural areas are not just a group of single attributes, but a collection of distinct areas compared to urban areas.

Furthermore, this study uses Chiayi County as a research area because it has relatively more rural areas and diverse terrains, including coastal areas, plains and mountains, which indirectly cause Chiayi County to suffer from different types of disaster risks under climate change. At the same time, unlike the previous research, the township boundary is usually used as the research unit. This study will be analyzed on a smaller spatial scale, that is, the smallest statistical area, and hope that the results will be more in line with the current situation and adapted to local conditions. Finally, in response to climate change, how to reach a resilient village is the focus of this study. Therefore, the study will be divided into two parts. Firstly, the indicators in rural areas will be defined in the integrated literature, and after selecting appropriate indicators, the geographically weighted principal component analysis and cluster analysis methods will be carried out to classify rural areas according to their characteristics. Secondly, by consolidating the indicators and methods of resilience, construct the principle of resilience assessment applicable to this study. At last, through analyzing the above two results, it is estimated that the degree of resilience in rural areas with different characteristics is obtained. In addition, based on this, the reasons for the differences in resilience in rural areas are discussed, and the corresponding adaptation strategies are proposed in line with the disaster potential map to enhance the resilience of rural areas.

Keywords: Climate change, Resilient rural area, Rural classification, Geographically weighted principal component analysis, Cluster analysis.

CARBON DIOXIDE GAS CAPTURE & SEQUESTRATION TECHNOLOGY & IT'S ALTERNATIVE USE AS CARBONACEOUS FUEL

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Abstract

Carbon capture & sequestration technology, briefly known as CCS technology especially in the today's world are exercising so much for reducing the greenhouse gases chiefly from the atmosphere that is emitted continuously from power plants, industrial plants etc. Carbon dioxide gas is mainly produced from burning of fossil fuels that were buried underground at greater depth for many years. When the fossil fuels are burned by oxygen, then the heats produced from the burning of fossil fuels are trapped in the atmosphere. As a result the temperature of the earth & the height of the sea level are increased frequently. For these reasons, the significance of CCS technology is increased at a greater extent. Actually this technology is developed continuously to mitigate the effect of global warming. Before starting of this project, it should be examined that whether the instruments or methods used for the project is matured or not. In CCS technology, the first step is to capture the CO_2 gas from atmosphere or power plants. After that, the second & the third steps are related with the transportation & injection of CO_2 into the storage systems respectively after compressing the gas into liquid. Capturing process of CO_2 gas can be done by some different types of methods such as pre-combustion method, post-combustion method, oxy-coal combustion method etc. those are used in specific area with some definite criteria. After completing the capturing process well, also some sequestration methods such as geological, terrestrial, ocean methods are applied for keeping the captured CO_2 into some specific storage systems separated from surroundings. Then the sequestrated CO_2 can be used as a carbonaceous fuel by reacting with hydrogen that is known as carbon-neutral liquid fuel to make up the cost that spent in capture & sequestration process. But some challenges should be faced before starting this CCS project which are technological issues, economical issues, legal & regulatory issues, social & public acceptance etc. It is also be important to continuously oversee the effect of the CCS process on the environment & ecological system of the wildlife around the project sites. If all these challenges are maintained carefully with using better technology, then this process can contribute to the field of sustainable energy to reduce the energy crisis of the future world. The intension of this report is to provide a overview of the CCS technology to all over the world.

Cities and Towns of a Megacity in Global South: Governance for a Sustainable Development

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Abstract

The context of urbanization being included as separate goal addressing sustainable cities and communities has emerged crucial for urban policy developed by any state. The question lies in deciding issues that would enable or contribute to sustainability. India has undertaken a number of initiatives to improve basic infrastructure, services that could positively contribute to the improvement of urban communities. The urban agglomerations have become the core space where such fund flows. The question is do these funds percolate to the regional state level at equitably and also how do we know that it reaches all the levels of city. There have been a surge of small and medium cities and requirement of service provision is even more crucial.

In this paper I would reflect on those cities and towns located within an agglomeration. An agglomeration is built on the core city and a number of small and medium towns contiguous to it and also named after it, like the Kolkata Urban Agglomeration (KUA). Under the shadow of the core city or the larger cities within the agglomeration the other towns and cities often lag behind, which in long term may prove to be difficult to provide sustainability to the agglomeration. Also in this discussion it remains to be seen what is the perception of sustainability. The other important question is, whether it is at all possible to have sustainable urban development in today's contemporary world without having sustainable development for the rural? All of these questions could be consolidated and addressed under single term of governance. It raises further question regarding how governance can enable inclusive development.

Through study of Kolkata Urban Agglomeration, which is placed within the Kolkata Metropolitan Area, I would like to explore the idea of sustainability of urban. I would critically review different ongoing and recently completed initiatives that have been taken up at central, regional state and local level and their implications in the different towns of Kolkata megacity vis-à-vis the core city. The Indian Census data set pertaining to availability of basic services would also be taken into account for the paper and the larger concept of sustainability within the context of planetary urbanization. The concept of governance has emerged crucial and I would like to discuss how in the last two decades, it has influenced urban trajectory and how there have been a simultaneous contestation as well as need for integration of initiatives taken at global, national, regional and local levels.

GLOBAL CLIMATE CHANGE AND HORROR BLESS ON BIODIVERSITY

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Abstract

In the whole solar system, under situated the Milky Way galaxy, this galaxy's is very small area are occupied by a terrestrial planet: THE EARTH. To construct the earth outer position is made by a most importance elements is climate. Where on we know, that a place or region coverage 30-40 years average weather also called climate. swedenen Novelist Svante august arrhenius (also known father of science of climate change) also proved that global climate is changing gradually and Siberia astrologer Milankocheve (milankocheve theory) said that present climate is changed. We know that "changeability is the nature of environment..." so, one of the most importance elements climate is changing. This is gradually changed (thesis of palco climate). on the durations of less cryptozoic eon to Holocene era (Phanerozoic eon) change this climate, the present condition

this way temperature is increase also caused of non-terrestrial & terrestrial effect .but this world climate are destroy due to their main fauna MAN.98% caused are involved by the man and 2% in nature. but we know that, 'the paradigm of determinism' also say that "world climate is changeable and this way are maintain the man & effected.(E.Huntington, 20th century) this concept are applicable for "man"(ancient man) but "MAN" are not applicable (modern man).this MAN are used to environment is possibilism approach. So,'-ve change' effected on this nature but in this time, G.Taylor gave the concept of NEO DETERMINISM also said that ' man is not a free agent' who work on environment but with permission get in environment not it done '-ve change' is applicable. this statement is also true that, if man not involved to change this environment, even so, this process is continuously contain due to HOMIOSTASIS SYSTEM. Here negative feedback> positive feedback but present time is happen negative feedback < positive feedback. So, very fastly changeable world climate. Cause of this way is [physical causes: Non-terrestrial causes-annular Change of earth axis, change of earth orbit, location of sun, sunspot. Terrestrial causes-continental drifting, plate tectonic etc.}Human activities: increase temperature of atmosphere, O3 hole create, nuclear war, urbanization, deforestation etc.] In the title, used the word "Horror bless" is one type of 'make fun'. Used to understand the negative change of the world.as a caused off to increase greenhouse gas-O3 hole-global warming-Loss of biodiversity.so, main causes of this is global climate change. Mainly problem Is that, changing 'transitional time' are not maintain adaptation most of the flora and fauna. So, extinct this flora & fauna who is more adapted. So, decrease ecosystem, food wed, food chain, energy flow and not actively work homeostasis system. Overall, of all whole world whose maximum are not to defunct the greatest fauna of MAN. On this theme is more destructive & horror full so, complete before wordless of this theme, but i cannot loss this attractive world so, I write environment is changeable, so climate is change is a simple matter but selfish man are used this environment is possibility approach. So, climate change is very fast and loss of biodiversity. Overviews, to maintain of all this way to follow the given bellow---also maintain by constitutional law…

• To abide "neo-determinism concept."
• To construct eco-friendly industry.
• At least public awareness is more applicable of this way.
• To salute this statement "one tree one is men"
• To maintain main contents of environmental convention (ramsar convention 1971,Earth summit 1992, North-south debate of env.,stock home convention 1972,berlin mandate, Geneva convention 1996, Kyoto protocol 1997 etc.)
• At last, pray of all human respect on nature. Nature is respectable on our parents. Where etc. sample said that "man is the child of nature. "(Influence of geographical environment 1911).

Climate Change and Farmers Suicide in the Cauvery Delta of South India

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Abstract

Climate change largely linked to the agriculture sector – crop growth, grain quality, crop yield, biodiversity, water availability and soil condition. Various scientific studies have found that increasing temperatures, drought, hail sudden town power, storms and famine triggered climate change and erratic weather conditions like hailstorm, thick fog etc. severally affecting the agriculture sector and farmers committing suicide in the recent past in India. The Cauvery delta is 2000 years old fertile area in the south India. For year's farmers'

suicides owing to distress it is rare here and now this evil is surfacing an indication of severe distress emanating from the deficit and scanty rainfall owing to drought. In this background, this study has framed the following objectives; to relate climate change and farm distress in India. (ii) to explore factors for farmers suicides in the Cauvery delta. and (iii) to offer appropriate solution for the climate change and farmers suicides. This study has gathered primary sources from 21 victim farmers' households from three Cauvery delta districts of Thanjavur, Thiruvarur and Nagappattinam using snowball sampling. The empirical research found that the scarcity of water and drought are the major causes for agrarian distress and farmers' suicides in the Cauvery delta. Water crisis is due to untimely and erratic rainfall conceivably due to climate change. Quite for long farmers practiced transplanting method of paddy cultivation. Now there is a need to shift this to direct sowing as this technique requires less water. Also diversification of cropping patterns may to some extent reduce the distress. In addition, cultivation practices need fine tuning suiting to the local environment.

Keywords: Climate Change, Farmers Suicides, Cauvery Delta.

Solar Power Plants Integrated with Agro-Fishery Culture

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Abstract

Sustainable development through rapid urbanization, industrialization, mechanized cultivation etc. is the major inputs for socio-economic development in Bangladesh. Uninterrupted and reliable power supply is a pre-condition for achieving the vision of 2041 as developed country. Currently, the power demand growth per annum is 12% where around 60% of the population has the access to power in Bangladesh. Fossil fuel like coal, natural gas and oil are widely used fuel in electric power generating Plants all over the world which also have negative impacts on environment due to emission. On the contrary, renewable energy like solar power, hydropower, wind power helps to minimize global warming causing no pollution while producing electricity. Bangladesh has plan to promote fuel diversification with 10% share of energy generation by renewable energy within 2021. However, scarcity of land is one of the major obstacles for the development activities for solar energy as it requires large amount of land to generate a single MW of power generation. Development of Power Plants through integrated use of land with fisheries or agro-fisheries can be an innovative one and its possibility should be explored and studied in the context of densely populated country like Bangladesh.

The main objectives of this study are to identify probable locations where solar Power Plants could be constructed; identify the best suited fish species which would be cultured in the ponds under the solar panels and identify suitable vegetation that would be planted in the shaded area under the solar panels. The study would generate the new ideas based on literature review of research papers and some renewable energy related case studies those have been done in other countries in the world. The location of the solar power plant has been selected based on several criteria such as accessibility to the site, power evacuation point, land type and land use using satellite imagery with remote sensing and GIS techniques etc. Similarly, vegetation as well as fisheries species would be identified based on the soil condition, water quality of the selected location or nearby wetlands and analyzing the species' composition those requires less sunlight for their growth.

Analyzing the land type and land use solar Power Plant could be constructed in the wet land areas in coastal districts of Bangladesh. The high valued fish species like carp, crab and shrimp could be cultured below the solar panel. In contrast, on the bank of the ponds, mushrooms, lettuce, pepper etc. could be planted. This innovative idea would help to add more power in the national grid by means of multiple utilization of the land. This endeavor would help not only the economic growth but also contribute value for food security of the country.

Key words: Renewable energy, agro-fisheries, remote sensing, GIS.

Climate Change Impacts on Urban Poor: A Study on Slum People in Dhaka City

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Abstract

Bangladesh is extremely vulnerable to climate change impacts because of its geographical location, high population density and high levels of poverty. Dhaka, the capital and only megacity of Bangladesh, is exposed to multiple types of climate- induced hazards including variations in temperature, excessive and erratic rainfall, water logging, heat and cold waves. These hazards negatively affect city life and livelihoods of the poor. . This study is a quantitative study conducted at Dhaka to review Climate Change effects on the slum people. This study uses five slums in Dhaka- Karail slum at Mohakhali, Beltola slum at Banana, Molla Slum at Mirpur, Chairman Bari slum at Abdullahpur and Uttara slum, for climate migrant livelihood and housing problems of the poor. The study conducted on slum of Dhaka with purposive sample survey, face to face interview of selected climate migrant slum people while purposive sample size of 50. The study uses semi-structured interview schedule to store data from local people in select slum and secondary data from published and unpublished sources, and systematically analyzes this material both using qualitative and quantitative data. The result shows that the poor's livelihood are usually vulnerable to extreme temperature as well as waterlogging due to urban institutional inefficiencies. Climate change makes them more vulnerable. The study also shows the trend of gradual and extreme weather change is particularly negative for the livelihood of the urban poor in Dhaka. The major impacts are damaging of shelter and other household assets, unavailability and polluting of water, suffering from diseases like diarrhoea, scabies and fever etc., problem of sanitation and loss of work or income. To cope up with the impacts the poor take shelter on the road or to school, take loan from relatives or neighbours, use saving and sometimes cut off their daily meal. They somehow sustain with the situation as the extreme events are unstoppable and cannot be altered. The livelihood assets of the poor are very limited and distressful. The study suggests a relentless need to address these challenges institutional and policy perspective.

Engaging, Enabling and Empowering Bangladeshi Youth on Climate Change Projects through Facebook Usage: Engineering Sustainable Development Goals.

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Abstract

Climate change is not a world-wide charming issue. Nowadays, it is a global banner headline. There is no doubt that Bangladesh is one of the most climatic susceptible countries. Facebook is the dominant social media in the current decades. It is so powerful, pervasive and known for its influence on youths that shares their day-to-day thinking on contemporary affairs. Youths are the exclusive agent to address Bangladeshi climate change issues and manufacture of sustainable development goals in a broader perspective. The study aims to seek the combined role of Facebook usage and Bangladeshi youths, pioneering to contribute on climate change projects that lead to community responsive activities. Confirming unique sample users (n-250), we used closed ended

survey questionnaire to probe the real youth Facebook users' contributing spirit on Bangladeshi climate change projects. We find that youths are extremely vocal on Bangladeshi climate change issues, projects and sustainable development agendas in Facebook. Surprisingly, we find two special groups as ~~a~~ youth Facebook users. One group is active to disseminate information promptly, second has tendency to comment or clear their opinions on viral issues. Finally, Facebook accelerate youth's contributing spirit on climate change issues that are really needed for the developing countries like Bangladesh.

Key Words: Bangladesh, Youth, Facebook, Climate Change and Sustainable Development.

Evaluation Environment, Health and Safety (EHS) in Non-farm Sectors for Climate Change Adaptation and Sustainable Rural Development

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Abstract

This paper is to assess the environment, health and safety (EHS) of non-farm sectors for sustainable rural livelihood development and climate change adaptation at the climate change induced disasters prone area in Bangladesh. This study also advocates relevant strategies to tenacity the existing problems in non-farm sectors and assure the proper EHS of non-farm workers who were work in agriculture in the past. The study area of the research is Ganges-Padma deltaic floodplain Gopalganj District in Bangladesh. The rationale of the research is to promote proper EHS promulgation, progression and panorama in non-farm sectors for sustainable rural livelihood development. Primary data are the base of this research and those were collected from personal field observation, field documentation, taking photographs, questionnaire survey, in-depth interview, FGD, etc. Secondary data collected from government and non-government organizations, books, articles and journals. GIS and Remote Sensing tools and techniques were used to spatial susceptibility mapping of climatic disasters in the study area. Analysis results reveal that non-farm workers were suffering from various occupational health hazards due to poor EHS systems. Moreover, non-farm respondents particularly women acknowledge that they faces wage discrimination; sexual harassment in work place and felling insecurity in the way after coming back from work place to home.

3rd

Keywords: Environment, Health and Safety (EHS), Non-farm Economic Activities, Climate Change Adaptation, Sustainable Rural Development.

LOCAL CLIMATE CHANGE PERCEPTION OF BARIND PEOPLE IN BANGLADESH

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Abstract

The climate change perception based study has been conducted in the Barind Tract covering six villages from northern part of Bangladesh to elicit farmer's knowledge and perception on local climate and climate change perspectives. Several participatory tools including Focus Group Discussion and Household interviews have been applied for this study. Study sites have been experienced mean annual temperature (25.22°C) during the period of 1976-2014 with the mean annual maximum and minimum temperature of 30.1°C and 16.6°C. The maximum hot days have been recorded in 2010. 113 days have been found as the hot days in 2010 followed by 108 days in 2014, 107 days in 2012, 98 days

in 2009, 97 days in 2013 and 85 days in 1979. Average humidity has been recorded 76.96 percent with the range of maximum (87.5%) and minimum humidity (59.6%). Farmer perceived weather as a day to day status of several parameters including temperature, rainfall and humidity. It has been found that there is no firm definition and clear understanding of climate change as perceived by the respondents. They have been mentioned that climate change is the changes of weather due course of action. Several weather and climate change symptoms and indicators such as temperature, rainfall, groundwater table, soil rupture, drought and flood have been mentioned by the respondents. They have been mentioned that temperature is increasing and rainfall is decreasing due to climate change impacts. Groundwater table is going down rapidly and impacting on livelihoods and society. According to farmers' perception, the top layer of soil becomes dry and cracks are formed on the ground. Respondents have been made several recommendations in reducing climate change impacts. They have been made recommendations for climate change mitigation policy especially for the Barind Tract with the provision of crop insurance, tree plantation, digging pond (*khas* and private), loan provision from NGOs and Banks, use of organic manure for farming, relief and subsidy provision, inputs (seeds and fertilizers) from government in managing climate change impacts. Essentially it is important in creating mass awareness among farmers related to climate change and its impacts.

Key word: Climate change: climate extreme; groundwater; hot days; perception.

Revitalization of Climate Change Debate and Undermining Contemporary Adaptation Policies: A Bangladesh Perspective

Md. Sharoar Hossain Apo[1], Urban Planner and Practitioner

Abstract:

Climate change has been of growing interest area for multidisciplinary people; policy makers to public society and scientist to the academic students. Though an alarming issue for last few decades; climate change still been considered as a debatable issue. Global political concern and socio cultural interaction in some context sided up the issue and focuses to the development. The nexus between development and climate change cannot be negligible for a developing country like Bangladesh. Being a worst sufferer nation Bangladesh still not implicates an utmost concern to mainstreaming the climate change issue. Contemporary adaptation policies may not create a balance effort with mitigation strategies. The objective of this study is to bringing out the climate change debate and to undermine the contemporary adaptation policies. The paper shall be outlined and considered the perspective of Bangladesh to structuralize the argument. This empirical research shall follow the inductive method to shape up the result and observations. The findings shall be drawn at the end of the study to undermining the adaptation policies of Bangladesh considering the climate change and recent development. The study shall conclude with highlighting the argument of balance effort for mitigation and adaptation.

Key Words: Climate Change, Development, Policy, Adaptation, Mitigation

THEME 3: POVERTY ALLEVIATION

A Study on Financial Needs for Old Age Allowance Beneficiaries in Sylhet

nowrush jahan diner

Abstract

With a vision to prevent vulnerability and poverty of the people, the Social Safety Nets Programs (SSNPs) is introduced by the government. Accordingly it could contribute to relieve financial burden and reduce the extent of poverty. If the size of the benefit is too small and therefore, it would be insufficient to meet basic needs. Old Age Allowance (OAA) is a program for country's poor elderly people meeting their basic needs through providing a reliable source of income. More than three million selected elderly receive five hundred BDT per month, though it started only one hundred taka. The amount of allowance is not adequate to meet basic needs. The objective of the study is to evaluate the financial capacity of the OAA beneficiaries. Besides, the study estimated the financial needs and potential financial care provider for beneficiaries in Sylhet district of Bangladesh. This study used a quantitative method. Data were collected using survey approach with structured questionnaire technique. The study carried out a simple random sampling technique to collect data from beneficiaries when they come to receive benefit. To analyze the situation of the respondent's, areas where they live, age, number of children, living arrangement, marital status, previous occupation and others variables are considered. Financial capacity is explained by the ration international and local poverty line. Local poverty line is estimated from the same areas where the respondents have market access by Cost of Basic Need (CBN) method. The financial needs is estimated considering their expected and current spending. Binary logistic regression is used to analyze the potential financial care provider for the beneficiaries besides government. Finding shows that OAA covers only about 10 percent of international poverty line irrespective of the beneficiaries' living areas, in urban or rural. In rural areas, respondents can fulfill about half of the food poverty line with the monthly benefit. On the other hand, it covers less than 50 percent of the food poverty line in urban areas. Hence it is evident that there is mammoth difference between required as basic need and present expenditure per capita. Various mean differences show that their current financial needs might be from 1247 to 1670 BDT. Besides, the logistic model reports that number of the children is most important financial care providers though their support is not sufficient as they required. In addition, about 60 percent of the beneficiary is not satisfied with the current amount of benefit as they receive monthly. So the policy makers need to revise and increase to at least two times more so that the elderly can survive at their last stage of life.

***Keywords*:** Old Age Allowance, financial need, poverty line, financial care providers

Capacity Building, Poverty Alleviation and Empowerment of Rural Women: Study of Udupi District, India

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Abstract
Traditionally the rural women are the central victim of the poverty, social prejudices, patriarchal ideology and lack of economic accessibility in modern society. However self-help group play a significant role in the success of poverty alleviation, improving standard of living and family welfare of rural women through microfinance or micro-credit program to rural women. The present study focuses on the microcredit plus activity of Shri Kshethra Dharmasathala Rural Development Project (SKDRDP) as charitable trust implemented microfinance programme in rural area. It provided access to finance and training program for self-employment or entrepreneurship to rural women for their empowerment and poverty alleviation. The present study explored the impact of microcredit plus activities and employment generation on socio-economic conditions and empowerment of women. This empirical study used both qualitative and quantitative research methods and the multistage stratified sampling technique for selection of villages and SHG, 24 Focus Group Discussions and

120 interviews were conducted with selected SHG members. The study clearly showed that 52.5% women got engaged in entrepreneurial activities who were daily wage workers earlier. Pre SHG 50% women had no income however there was increase of income of Rs. 3001- 6000 in case of 42.5 % women. This study concluded that SHG microcredit plus programme enhance and promote rural women's economic conditions and alleviate their and family's poverty through self-employment or entrepreneurship**.**

Keywords: Self-Help Group, Microcredit, Self-employment, Economic Accessibility, SKDRDP Poverty Alleviation.

Handloom and handicraft industry in India: An eco-friendly industry

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Abstract
India is a country rich in diversity. When it comes to handicrafts and handloom, it may be said that each and every corner has its own speciality and can boast of its uniquely crafted and weaved products. This sector mainly depends on the versatility and magical skills in the hands of the local artisans that has been passed down through generations. Most of these artisans who are located in several small villages from all over India work in eco-friendly and low-energy environments. Just as the traditional methods of creating those weaves and handicrafts have been very close to nature, "there are organisations also using eco-friendly ways to help create value products and also provide employment to many people by providing the right kind of skill based training" (National Skills Network 2017). Crop wastes are commonly used to make various attractive handloom and handicraft products. Moreover "growing consumer awareness regarding social and environmental impacts of fashion products has led to create new market place for sustainable and ethical products" (Dissanayake 2017). The manufacturing approach in the handloom and handicraft sector that aims prevent wastes by recycling of waste products is found to address the three pillars of sustainability i.e. social, economic and environmental.
In this paper an attempt will be made to find out the distribution of the handloom and handicraft industries in India which are mainly low-energy consuming industries and eco-friendly in nature. The study will be based on data obtained from Sixth Economic Census of India and also from other sources.

Value Chain Management of Fattened Bull and Chicken Production to Reduce Poverty of Ethnic Minority Communities

Uzzal Kumar Karmaker[2] and KBD. Sajal Kumar Chowdhury[3]

Abstract
Ethnic minority communities are traditionally dependent on agriculture based income generating, especially agriculture labour, where more than 75% households (both women and men) are engaged in such activities. Despite advanced agriculture technology contributing to poverty reduction, the indigenous people did not get rid of poverty due to different causes. Association for Rural Cooperation (ARCO) has been working with thirty

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(30) different ethnic minority communities of Naogaon district to reduce their poverty through value chain management of their fattened bull and chicken production. The aim of the two sub-sectors' intervention was to increase their regular income through promotion, backward & forward linkages, and inclusive market system development. The study was carried out to find out the impact of value chain management on inclusive market system development for the ethnic people. The secondary and primary data were used to conduct the study. The primary data were collected based on the selected indicators from the secondary data and processed for comparative analysis to reveal the progress purposively. The study indicators were selected reviewing the baseline survey, sub-sector selection report, mid-term evaluation report, and production cycle management previously conducted in the working area of ARCO. The primary data were collected by household survey, focus group discussion, interviewing with market actors, observations, etc. The study findings have revealed that the average net profit of fattened bull and native chicken production has been increased more than previous year. The net profits of fattened bull production and native chicken are BDT. 9526/bull, and BDT. 118/chicken on average in 2018, which were BDT. 6591 and BDT. 68 in 2017 respectively. The profits have increased the income as well as reduced the poverty of 25.51% households. The risk reduction and promotion factors have contributed to increase the profits with increasing the volume of productions. The producers are capacitated to mitigate the risks such as high temperature, maintain regular health checkup & vaccination, add value for cost effective production, face huge market fluctuation, and undertake the due decisions anticipating the market, political and environmental situation, which has increased their production volume and profits reducing mortality and production cost. Access to finance with low interest from Banks to the producers has created the opportunities of getting more profits and setting up regular business of fattened bull and native chicken rearing production. It has been revealed that risk reduction strategy, linkage with government service providers, and inclusive market system development are the combined factor of the significant progress. In spite of such progressive result, there observed a number of challenges, which are related to climatic factors, lack of accessing advance technologies, government's extension services in due time until it is facilitated by NGOs, and barriers of accessing finance from government sectoral departments and banking sectors, which interest is comparatively lower than NGOs. The challenges needs to be addressed importantly by grassroots level strategy development by the government's interfere.

The study was carried out based on local perception of climate change impact and its consequences on food production

Each abstract can only be submitted once and under one theme within 500 words. Your abstract should include title, objectives, methodology, findings and conclusion.

THEME 4: DISASTER RISK MANAGEMENT

"Uncovering the Social Reality of Hazard Management"

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Abstract:

In today's world, we are witnessing an increase in the number, frequency and intensity of hazards. We are all directly or indirectly bearing the brunt and becoming victims of these devastating events. The saddening part is that, as rightly pointed out by Ulrich Beck, one is unable to say where actually the problems are starting, as a result of the interaction between social risks (created by humans) and natural risks. Beck believes the separation between nature and society has come to an end. The terms disaster, hazard and risk are being used interchangeably in the present-day. In a simple language, this can be understood as, an event that threatens society with unwanted consequences. It ultimately causes a heavy loss to life, property and livelihood. Besides, a social scientist considers a hazard as an aggregate of events and consequences. This division strongly indicates three possible strategies for hazard control. In the first place, the hazard can be repressed by preventing the occurrence of hazard events. Secondly, if the hazard events have taken place, then hazard

consequences must be prevented, in order to reduce the impact caused by the hazard events. Lastly, if at all the hazard consequences could not be prevented, and then measures should be taken to mitigate the consequences. In spite of the fact that there are three strategies for controlling hazards, only two are taken into consideration for hazard management, namely prevention of hazard events and mitigation of hazard consequences. In this paper, I would like to lay emphasis on some of the works of social scientists that deal with the issues and challenges in managing hazards, unlike the predominant practice of seeing the hazards from a scientific viewpoint. Broadly, the issues include siting of hazardous facilities, communicating risks, preparedness for emergencies, equity and justice (distribution of risks), and vulnerability to hazards. I would be presenting them in detail by addressing from a range of theoretical perspectives.

"Disaster vulnerabilities of Kalshi slum dwellers and their adaptation strategy". A study on Uttar Kalshi slum"

sharmin ahmed

Abstract

Located beside a pond Kalshi slum has three layered structure of land levels: comparatively high, medium and low. People face different types of risks due to geographical location. This study aims to explore what type of hazards and risks people face and how they cope with a wide range of risks live in different layers in Kalshi slum. Both quantitative and qualitative research methods were employed to generate data of this study.The primary data were collected through House hold surveys (HHs), Focus Group Discussions (FGDs), Large Group Discussions (LGDs), Semi structured questionnaire and direct field observations. Some technology based information was collected by using GPS (Global positioning system) data to prepare the location of slum mapping .The study shows that people of lower layer face severe and different types of risks compared with those who live upper and middle layers. It has been found that people of lower layer face severe water logging, water pollution and sanitation problems. On the other hand, people of upper layer come across to severe air pollution. For surviving in this slum people have been used some adaptation or resilience strategies with the help of NGO or personally. It is also seen that their adaptation strategy sometimes creates some new risks. People live in this slum generally face lots of risks and vulnerabilities and in many cases they are supposed to adjust with their problems. Good initiatives are urgently needed both by the city authority of Dhaka and NGOs to reduce the risks and vulnerabilities of the people living in Kalshi slum.

Key words: Disaster risk, Location of layers, Vulnerabilities, Adaptation strategy, New risk.

DOES OIL PRICE SHOCKS MITIGATE SECTORAL CO_2 EMISSIONS?

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Abstract

This study provides new evidence regarding the effects of oil price shocks on sectoral environmental indicators. We used annual time series data spanning from 1983-2015 and employed the autoregressive distributed lag (ARDL) modeling approach to estimate the long-run impact of oil price shocks on sectoral CO_2 emissions. We found negative impact of oil price shocks on CO_2 emissions in all sectors; namely, manufacturing and construction, agriculture, transportation, and the oil and gas sectors. This suggests that higher oil price can mitigate sectoral CO_2 emissions while lower oil price can increase sectoral CO_2 emissions. Generally, income exerts a positive impact on sectoral CO_2 emissions, implying that an increase in the level of income invokes sectoral CO_2 emissions. However, the level of capital and labor were found to mitigate sectoral CO_2 emissions in Malaysia. Thus, we recommend contractionary fiscal measures on oil related products during lower oil prices.

Keywords: Oil price shocks, CO_2 emissions, Sectoral analysis, ARDL

Practice of Social Work Methods for Community Resilience in Disaster Situations

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Abstract

Social workers are key players in the socio-economic growth of their communities worldwide and this should have knowledge related to disaster risk reduction. Over the past decades the number of disasters and its impacts is being multifold. Disasters are often defined in social work research using a stress framework, with a focus on the stressor and the impacted system. With a growing number of people facing distressing events, it is therefore important to understand the role of social workers in the disaster planning, response, and recovery phases. The objective of the present paper is to analyses the various practice followed in social work for community resilience during disaster situations. Thus, viewing the situation from a development perspective, community resilience becomes an important approach to reduce the level of stress of the disaster survivors by creating an ability in them to utilize the available resources to respond and to recover from any adverse situations. Communities which are resilient are capable enough to minimize the effects of any disaster and return back to their normal life as smoothly as possible. Comprehensive community resilience plan can act as a weapon, especially in cases of disaster, for minimizing the impact of loss and damage. Therefore, a resilient community is one whose members are connected to one another and work together in ways that enable it to function in the face of stress and trauma. In order to increase community resilience it is important to know the basic indicators of resilience and how it can be measured, as well as to have a clear idea about the practice of tools, techniques and methods in the community to increase their resilience and also to motivate them to take responsibility for their own resilience and the social work believes in helping people to help themselves. The present paper made an attempt to elucidate how the practice of social work knowledge be an instrument in making a 'community' resilient at the micro level to intervene any crisis situations.

Key Words: Social Works, Community, Resilience, Disaster situation, Stress

Simplified Vulnerability assessment and earthquake damage scenarios for the building stocks

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Abstract
As it has been observed from many earthquake scenarios the major damage to buildings and man-made structures is mostly found in the area of soft sediments. As a result, even relatively minor events can be the source of huge socio-economic disasters. The earthquake of 12th October 1992 with magnitude 5.4 in Egypt, where the buildings were not earthquake resistant, resulted in 554 deaths, 20,000 people injured with a reported loss of one million US$. Chennai the fourth largest metropolis in India is the focus of economic, social at cultural development and it is the capital of the Tamil Nadu State. The city is growing at a rapid pace, and there is a demand for integration of the past developments with the future requirements The Seismic Zonation map of India depicts that Chennai is categorized under Zone III (expected Magnitude of 6.9) . Safety of this city is extremely important for safeguarding human lives and property. The present study aims to bring out the damage scenario for a known earthquake magnitude in the GIS platform. To understand the vulnerability of the built environment and infrastructure, a spatial/non-spatial database on the built environment, critical facilities, transportation and lifeline utilities was created for the Chennai city. The steps involved in the vulnerability assessment are identification of high risk areas by integrating the seismic hazard map over the vulnerability map and the focus the vulnerability assessment on areas and or structures located in the high risk areas. Earthquake damage scenarios can fill this void by providing critical information and motivation. HAZUS methodology has been designed for different scenarios and also for the post-earthquake loss estimation. The scenario earth quakes M5.0, M6.0, M7.0, and M8.0 were applied and damage scenario maps for Chennai city were produced. Based upon the damage estimation, the expected functionality of different critical facilities and lifeline utilities available in the city calculated for 14% functional after one day , 26% functional after 3-days, 34% functional after 7 days, 39% functional after 30 days, 60% functional after a 3-month restoration period.

KEY WORDS: Earthquake, damage, Ground shaking, Hazus, GIS

Current Status of Child Centred Disaster Risk Reduction (CCDRR) in Bangladesh: A Review ofExisting Literature

Rahman, R.[1] and Rahman, F.[2]

Abstract:
This paper aims to investigate the current status of Child Centred Disaster Risk Reduction (CCDRR) at the communities of Bangladesh. CCDRR is a child focused and child led mechanism of building resilience of communities so that disaster vulnerabilities of children can be lessened. It analyses the existing literature including journal articles, legislative documents, working papers and project documents to investigate the best possible ways of establishing CCDRR in this country. The background preparation of this report includes identifying and reviewing relevant literature. In particular, journal articles, policy papers and project documents pertaining to CCDRR have been reviewed to prepare the report. A content analysis has been done to analyse the legislative and policy document of Bangladesh Government. Afterward, based on the findings of existing literature the specific objectives of this report have been fulfilled by writing a critical analysis of literature and recommendations. The study has identified that the Children Act of 2013 is formulated in light of United Nation's Convention on the Rights of the Child (CRC). It has adopted the legislative issues of the CRC and is focused on protecting child rights in the situations of exploitation, abuse, child marriage, work, and other issues associated with the justice system. It has no specific focus on child rights protection during disaster period. Moreover, National Children Policy has 13 specific agendas for protecting the rights of Bangladeshi children.
Notably, the sections 6.6, 6.9, and 6.12 of the policy have particular concentration on protecting children's right during and post disaster periods. Both of Disaster Management Act (2012) and Disaster Management Policy (2015) have particular focus on reducing disaster risk of children. Remarkably, the 'Section 10.2' of the policy

is entirely dedicated for children. The GoB has established 13,500 clinics at community level to render essential support for women and children healthcare issues. The primary concern of these clinics is given on providing treatment of disaster related injuries, preventing outbreaks of diseases, addressing mental health issues. After the major climatic event 'Sidr' in 2007, 240 Child Friendly Spaces (CFSs) after 'Aila' in 2009, 140 CFSs were immediately established in the affected areas with the assistance of UNICEF. The GoB also took necessary initiative to incorporate Disaster Risk Reduction (DRR) issues in primary, secondary and higher secondary level of education. There are several chapters on DRR related topics in the text books of class V to XII. Several NGOs such as Save the Children, Plan International, BRAC, Oxfam, Action Aid, Christian Aid, Concern Worldwide, Hope Foundation and Aparajeyo Bangladesh etc. also work for protecting children rights during disasters. Necessary effort should be made for developing and building capacity of community based adolescent counsellors to sensitize relevant issues across their community. Based on the identified gaps, this paper recommends necessary actions for ensuring contribution of private sector organizations in establishing CCDRR across the communities.

Keywords: Children, Protection and Disaster Risk Reduction

THEME 5: ECOLOGY AND BIODIVERSITY

Green Technology: A Weapon against Ever Increasing Environmental Dissatisfaction

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Abstract

Green technology refers to technology that is environmentally friendly, developed and used in a way so that it doesn't disturb our environment and conserves natural resources. Its uses are getting widespread in response to global warming fears and the increasing scarcity of many natural resources. This paper reviews the previous studies related to green technology and also show the existing scenario, potentialities of using green technology in Bangladesh. Data identifying strategies are gathered from a literature review, relevant green technology policies, government documents, interview with experts. Summarizing and sorting those data, the discussion part is accomplished. Applications of green technology are in water treatment, waste management, air pollution control, transportation, building, and even agricultural sectors. There are some organizations who certifies green initiatives e.g. EPA, the green grid etc. It is revealed that green technology can slow down the effects of global warming and environmental dissatisfaction. Besides, green technology-based products, industries do not emit anything harmful to the environment. More importantly, this technology uses renewable energy resources. On the other hand, there are some challenges in using green technology such as high initial investment cost, still not familiar with people, many of the products are at the R&D stage, lack of skilled human resources etc. the above discussed green technology can be a powerful pollutant and particulates reducing tools in spite of having some shortcomings . As an era of globalization and urbanization worlds are getting more developed and consequently deteriorating the living condition as some developed countries emit the erroneously environmental pollutant gases and suspended materials. So, for reducing the predicament of environment and development, green technology can be used successfully. Widespread atomic practices which most prominently contributing to the global warming and such other problems can also be solved through this approach. So, the overall applicability of green technology with the consensus of its cost, shortcomings, possibilities and all other relevant factors are considered here for its widespread dissemination.

Keywords: Green Technology; Global Warming; Existing Scenario; Potentialities; Applications; Challenges; Environmental Pollutant Gases;

An Effective Modeling on Ecotourism and Bangladesh: A Case Study at Cox's Bazar District

Md. Easin Ali, Shehab Uddin, Prof. Sheikh Md. Monzurul Huq

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Abstract

In the modern world tourism is one of the fast growing industries in developing countries. These tourism industries are developed on the basis of natural beauties or cultural heritage of country. Tourism is closely related with environment. With the benefit tourism has some harmful impact on environment. Considering the fact ecotourism concept developed. It is a responsible travel to natural areas that conserves the environment and sustains the well-being of local people. This study represents a prevailing condition of the ecotourism policy compliance system in cox's bazar district and its limitation.

This study conducted field observation and informal interview both on the tourist and local community. Simple statistical technique is used to data analysis. For measuring the present status of cox's bazar tourist sport regarding ecotourism Huub Gaymans's model on ecotourism has been used. Tourism in the study area are not developing by the maintaining all the rules of ecotourism fully. This study manly focused on environmental sustainability, Interaction with nature and Community involvement and interaction with people in the study area. This study observed lacking of awareness; security problem and distance between local community and tourism development authority are the great limitation to develop ecotourism in the study area. The authority is indifference to about the environment. Local community involvement for environmental sustainability is very essential for ecotourism in study area.

Key Words: Ecotourism, sustainability, local community, environment, development

Can We Really Save Water?

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Abstract

Water simply can't be created more or taken away from the earth, the amount of water on earth stays the same forever no matter what we do

(Except a few liters of water which was gone with Kalpana Chawla in the space). Then how we can save or conserve water?

Water is a renewable resource. We can't run out of water because water continuously works its way through the water cycle; each stage of the water cycle takes different amounts of time to complete. Water spends a very brief amount of time as rain or snow, but water in lakes can take decades to cycle through. Water in oceans or trapped in glaciers takes even longer, up to thousands of years. Water fall can vary widely even in the same state. So, in areas of little or no precipitation, water becomes almost non-renewable. Once the water is used up,

it doesn't return for a long, long time. Therefore sometimes water can be hard to access. The other reason is more rain falling over the oceans than the land, because of the miss- management of land conditions for more conducive to rain on land.

Yes given these arguments, still people from certain regions face water scarcity. Salt water and polluted fresh water are useless for human without treatment- which is often impractical in a given situation. Likewise abundant rainfall in one place won't help people live in other place. The main source of water for a given country often originates in another country. And if the originating country comes to need that water...well, the downstream country is going to have a lot less water. Food habits are also creating big amount of water scarcity. It takes upwards of 1200 gallons of water to produce one pound of beef. But everyone is afraid to talk about food production and more efficient ways of producing food including drastically cutting down on meat and dairy. People in wet climates really don't have to go on water conservation measures. People living in deserts, living off of stored aquifers and counting on every drop of rain and snow, are going to be in trouble if they don't establish a more efficient water use regimen.

Water is a Nature's gift to all living beings; it should be shared with all according to their need.

Environmental survey and sustainable management of a mountain hamlet situated in the Eastern Himalayas, India

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Abstract

Introduction: The Eastern Himalayas in India demonstrate diverse ecological characters in its varied range of flora and fauna. The local communities form an integral part of the ecological landscape; deriving various services from the forest and mountain ecosystems. Many scattered hamlets are found in this zone and some of them are proximate to the forests areas. *Chibo* is a small village situated in *Kalimpong* district, India. The village is one of the newest tourist destinations in the Eastern Himalayas.

Objectives: The study focuses on an interdisciplinary understanding of the physical and cultural environment of the village and adjoining forest areas. The survey work integrates the perspectives of human and social ecology, ecosystem services and sustainable development.

Methodology: Primary data were gathered through field survey and direct contact with common people and authorized centres in the village area. Structured questionnaires and semi-structured interviews supplemented by field notes were arranged to collect data from the village area. Biodiversity of the region was documented by visiting the forest areas.

Findings: The common cultivable edible plants in *Chibo* are potato, sweet potato, garlic, ginger, round chilli, raisak, large cardamom etc. The inhabitants of *Chibo* practice organic farming; rainfed Irrigation is practiced in the agricultural fields. Occasionally spring water is used for irrigation during the period of water crisis. Large cardamom and broom grass are the commercial plants cultivated in *Chibo.* The common livestock in *Chibo* village are local breeds of cows, goats and pigs. Meat, eggs and milk are the main livestock products which are among the important economic sources.

The main water source of *Chibo* is the water coming from the hills through natural water channels like *"jhoras"* (local springs). Network of pipelines distribute the water from the cisterns to the houses. According to the local villagers, there has been a noticeable decline in rainfall in recent times. The summer temperature has increased significantly, water crisis is prevalent.

In *Chibo* village, the solid wastes are usually collected in bins. The inhabitants burn the solid wastes or bury in the ground. Burial of bottles and plastic packets may have serious effects on the local ecosystems and biodiversity.

The tourism business has been flourished in *Chibo* in the last 3 years. Number of tourist remain maximum from October to December, followed by an above average tourist inflow during March-April and lowest inflow in the rainy season (June-September).

Chibo is situated around 25 km. away from Neora Valley National Park (NVNP), which is located in the Eastern Himalayas as a global 'biodiversity hotspot'. Human animal conflict in the village areas is mainly centred on the attacks of rabbits and wild boars in the agricultural fields. Fences are used in the agricultural field for protecting the plants from wildlife attacks.

Kalimpong is under rapid habitat destruction due to several anthropogenic pressures and developmental activities. These factors have an incremental effect on the fragility of the Himalayan ecosystems, leading to an increase in the incidence of landslides in the region. There are frequent landslides and small earthquakes in *Chibo* village; landslide management are done by the local initiatives.

Conclusions: The present work is the first ever socio-environmental survey conducted in *Chibo* village. There is an urgent need for implementing an integrated sustainable development system for the conservation of forest ecosystems and traditional human settlements in the Eastern Himalayas. Extensive investigations in the hill areas of Eastern Himalayas should be carried out so that necessary measures could be brought in for their conservation. Bringing local communities into protected area management will also have a significantly positive impact on the long-term biodiversity conservation in the trans-boundary Himalayan landscapes.

Keywords: Survey, Forest, Himalayas, Environment, Biodiversity.

REVISITING UNCONFINED COMPRESSIVE STRENGTH BEHAVIOUR OF WOVEN AND NON-WOVEN GEOTEXTILE REINFORCED SOIL

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Abstract:
Considerable research has been conducted on properties of soils to find out the relationship among inter connected frictions and cohesive attraction between adjacent particles. This shear strength parameter or c-φ soil behaves accordingly depending on overburden dynamic load, pores associated in soil mass and moisture content. Thus, reinforcing mechanism can improve the performance of inter connected frictions of soils. Application of geo-grid as geotextile reinforcement has gained wide much popularity in the last two decades. In the present study, a series of laboratory experiments have been conducted in the laboratory to determine the effect of reinforcement on unconfined compressive strength of clayey sand soil considering both woven and non-woven geotextile sheet. Three soil samples were collected from the site Chandona which is in Gazipur Chowrasta at a depth of 30 feet. Laboratory tests were conducted to determine the soil properties like grain size, atterberg's limit, specific gravity and compaction. Finally, unconfined compressive strength test was performed on each of the soil sample by the provision of reinforcement and without reinforcement for both woven and non-woven geotextile sheets. Geotextile sheet samples, collected from Kaniz Fashions Ltd. at BSCIC Kona Bari Gazipur, were incorporated in soil sample in different layers varied from zero to three. The findings of the study

suggest that both woven and non-woven geotextile sheets improve the peak axial stress of soil. Non-woven geotextiles causes some increase in axial stress but the number of layers is negligible due to significant increase of peak axial stress and standard deviation of axial stress. Woven type geotextiles are more effective compared to non-woven geotextiles in terms of minimum deformation.

Impact of 2017 Rohingya-Refugee-Influx on Vegetation Cover in Cox's

Bazar, Bangladesh: A Remote Sensing Approach, Mizanur Rahman, Md. Saiful Islam*, Tahmid Anam Chowdhury, Department of Geography and Environment, Shahjalal University of Science and Technology, Sylhet – 3114, Bangladesh * Correspondence: mdsaiful91@gmail.com

Abstract

Nearly one million Rohingya Refugees are now living in Cox's Bazar—a southeastern district of Bangladesh, of which more than half a million have fled Myanmar since August 2017 after a violent military campaign. There are always some impacts of refugee sites on the host environment. Hence, this study has made an initiative to investigate the changes of vegetation covers in four refugee occupied Unions of Teknaf and Ukhia Upazila. Analyzing the remotely sensed Landsat imageries using Normalized Difference Vegetation Index (NDVI) method, the spatial extent of sparse vegetation, moderate vegetation, and dense vegetation before and after the occurrence of influx have been quantified. The result reveals that nearly 21,000 acres of dense vegetation and more than 1,700 acres of moderate vegetation have been reduced within the period of one year in-between 2017 and 2018. On the other hand, during the same period, the refugee sites have been expanded by almost six thousand acres. The main reasons for this drastic reduction of vegetation covers include the construction of refugee camps by felling the forest and continuous collection of firewood by refugees from the surrounding forest of their camps. Arrangement of alternative cooking fuel like gas cylinder, coal, etc., accelerating the repatriation process, and lessening the consumption of firewood by distributing the cooked meal instead of raw foods to the refugees may reduce the further degradation of vegetation covers.

Keywords: Bangladesh-Myanmar Crisis; Deforestation; NDVI; Rohingya Refugee; Vegetation Cover

Estimating the growth rate of immature stages of Helicoverpa armigera (Hübner) (Lepidoptera: Noctuidae): How does a caterpillar grow?

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Abstract

For a successful AWM (area-wide management) and IPM (integrated pest management) strategy, understanding a pest's biology, ecology, life cycle and behaviour are very important. The juvenile growth period is the most important in a pest's biology as this stage inflicts the physical damage to plants. The different larval instars and moulting make the growth curve of insect-larva complex. In lepidopterans, like other arthropods, larval development is discontinuous; progressive increase in mass occurs through larval instars and decreases at the time of moulting due to a period of fasting and loses of cuticle and water. It is often supposed that larvae grow exponentially and there has been a little research on the allometric growth (growth should decrease as it slows down gradually before moulting and stops entirely during moulting) of insects. There is a debate about the relative growth rate (RGR) of early and late instar. And researches are more lacked on the RGR of early and late instar considering the allometric growth pattern. The objective of our present study is to proof that first instars have relatively higher growth than the late instars by considering their allometric growth pattern; to observe whether egg size has significant effect on this growth rate or not. The laboratory work was done in the

University of Queensland. Helicoverpa armigera were being reared on artificial standard diet for H. armigera. Very precise measurements were taken during the experiment; e.g: the initial weights (weight just after hatching and before eating the egg shell) of neonates were measured and recorded, weight measurement when the larvae stop feeding (focusing on moulting time) etc. The result of this study shows that the first instars have higher relative growth rate than the last instar in all treatments, though the egg size did not have any effect on the growth rate. Also this study suggests that the relative growth rate decreases with the increase of larval instar. Decrease of metabolism with the increase of body size, higher efficiency of conversion of ingested food in early instar, gut-surface area might be reasons for it we suggest. The findings of our study have removed the debate on the growth rate of any insect. Also the establishment of allometric growth pattern of insects may show other researchers about the correct methodology of measurement.

THEME 6: GENDER AND DEVELOPMENT

Exploring Women leadership in Pond based Aquaculture in Polderized Area of Southwest Bangladesh

Farzana Shabnam[1], Rokibul Islam[2]

Abstract

The objective of this study was to explore the women leadership and status of their empowerment who involved in pond based aquaculture in the coastal area of Bangladesh. Primary data were collected through group discussions (2), focused group discussions (6) and case study (3) in the Beel Pabla village under Dumuria Upazilla in Khulna district, Bangladesh. This study found that 45% females are involved in the pond based shrimp cultivation, but they are not directly involved in the marketing but 55% males are involved in both cultivation and marketing of shrimps. This study found that though women carry out the bulk of tasks in the pond based aquaculture but their works are largely unrecognized. Women also encounter different challenges, including the lack of resources, inputs, technology transfers, education, skills, finance, representation and decision-making opportunities and rights. It was revealed that there are fewer women in pond based aquaculture than men due to a lack of knowledge, skills, lack of control over earning and profits, restrictions over their mobility, and a lack of access/ownership over lands and pond based shrimp cultivation. The study noted the deprivation of women and their exploitation in different forms in the pond based aquaculture cultivation. Women are paid low wages for their labor in the pond based aquaculture cultivation. The pond owners set unequal wages between male and female laborers, because according to them, not one woman has ever resisted this discrimination. Even though financial needs push women to work in pond based aquaculture related activities, they work in a context of occupational risks, hazards as well as in the absence of social laws. The women have no means to challenge these obstacles. This study suggests that enabling environment can be created by providing women with facilitative services in forming women' groups, providing them with training on aquaculture, encouraging control over capital and decisions over harvesting and selling fish products, their access to market, and their ownership over land.

Achieving Gender Equality for Sustainable Development: An Analysis of Local Journalists' Role

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Abstract
Gender equality is crucial to all sectors of a society. It is not only a fundamental human right, but also considered as a foundation for a peaceful, prosperous and sustainable future. Unfortunately, all over the world, gender discrimination makes women and girls as marginalized community who are deprived of their basic rights and opportunities. As a traditional value-centric and gender sensitive society, it is more realistic scenario in Bangladesh. However, the goal five of the global Sustainable Development Goals (SDGs) directly calls for achieving gender equality and empowering women and girls. Some analysts also intend that gender equality has a linkage with achieving all the 17 goals of SDGs. In such perspective, promoting gender equality through media portrayal is a key to sustainable development. Different literatures also focused on media professionals' responsibilities for raising awareness about gender-based discrimination. But, media mainly give more concentration on the central or core level issues of a society. Thus, the representation of local or peripheral gender issues on media remains poor. Media professionals, particularly, local journalists as the change agent may play significant role to promote local gender issues for equal access of women and girls to education, health care, decent work, and political and economic processes. Under the given context it is essential to analyze to what extent do the local journalists play role in achieving gender equality for sustainable development. Through a survey of journalists working in different media in Chittagong, a south-eastern traditional value-centric district of Bangladesh, and in-depth interviews from gender and media analysts, this study suggests guidelines for the policy makers to use local journalists for achieving gender equality in local level.

Key Words: Gender Equality, Sustainable Development, Empowering Women, Media Professionals

Opportunities of Financing Eco-friendly Jute Products for Women Entrepreneurship

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Abstract
Over the last decade, Bangladesh economy has sustained impressive growth in spite of significant challenges – scarce natural resources, environmental catastrophes, population pressure, widening economic inequality and climatic hazards. As her transform, environmental sustainability and climate change resilience are two key elements of Bangladesh inclusive socio-economic strategy.
Bangladesh is becoming a middle income country by 2021 and in its journey she is facing challenge of poverty both rural and urban areas. To achieve sustainable development goals and being economically developed country Bangladesh has to overcome its hardcore poverty. Environmentally sustainable approaches for rapid poverty eradication by narrowing down inequalities in the advancement of opportunities are our policy priorities in promoting socially responsible, inclusive and sustainable financing. Basically, agriculture, SME's modernization of payment system and adoption of environmentally oriented green output practices. Priority of rural agriculture and women entrepreneurs in access to finance also figures importantly in our initiatives.
Our country's demographic structure consists of 50% of women of its total population. And among the adult one, most of them are engaged in household work which does not include in national GDP. Most of the women of developed as well as developing countries have the opportunities of education and they engaged themselves in economic activities. A large number of women entrepreneurs have grown in those countries and our neighbor countries also have great contribution of their women entrepreneurs in their development process. As both the

men and women participation is needed or is an urge for socio-economic development, in Bangladesh most of the women for away from that.
Women particularly the rural area are deprived but they can engage themselves as entrepreneur through eco-friendly jute products by taking SME loans or other source. They can produce, sale, expand or attain in national or international trade fair with proper training and guide this aspect. Jute products are environment friendly, biodegradable and recyclable and can be disposed off without causing environmental hazard. And both the local and foreign market has demand of jute products. As a concern citizen, people are moving away from hazardous plastic products to jute products.
The green finance scheme of different financial institutions is related with renewable energy, energy efficiency, solid waste management, liquid waste management, alternative energy, fire burnt brick, recycling and recyclable product, green industry, safety and security of factory, organic manures under the different fiscal year. In this context, financing eco-friendly jute products − ladies clogs, sandal (choti), jute -leather sandal, beach bags, sling bags, handicrafts produced by Bamboo -jute and jute cotton applique, photo frame, ornament box, tissue box, plate, glass, mattress, soft sweaters and cardigans, floor coverings, home textiles, high performance technical textiles, genotextiles, composites may encourage women entrepreneurship.
This study analyses how the banking mechanism, NGO's, private organizations and government nexus may finance of eco-friendly jute products to encourage women as entrepreneur, its opportunities, hindrances and recommendations for sustainable economic development in Bangladesh.

Attitude of Males towards Working Women in Bangladesh

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Abstract
Introduction: According to the latest labor force survey, the number of working women has been significantly increasing in Bangladesh in the last decade. Being a conservative society, the traditional belief has always been towards men as the earners and providers while women are supposed to be the caretakers. However with more women working the perception and attitude has taken a dramatic shift. Due to this drastic shift, the traditional concept of gender roles is also shifting leading to numerous researches in this field.

Several researches in the Middle East region have demonstrated that changing family structures and access to education were reported to be the dominant determinants of empathetic attitudes towards working women. It was found that younger men were more considerate toward working females. Another aspect revealed from the research was that working women who could prioritize their family responsibilities over their professional roles were preferred by most of the male respondents. This finding reveals an important dimension of the overall perception of males towards working women. The researchers of this paper intend to replicate the study in Bangladesh to understand which variables have an impact on the empathy of men towards working women in the local cultural context.

Objectives: The objective of the paper is to understand the degree of empathy urban men feel towards the participation of females in workforce in Bangladesh.

Methodology: The primary data has been collected from 400 male participants. The instruments used in the survey were the Multidimensional Aversion to Women Who Work scale (MAWWWS). In addition to the marital status, the other parameters of this study are the age, income, the societal and the religious background

of the participants. A crosstab analysis is done to determine the relation of these parameters with the degree of empathy.

Findings: The findings reveal that marital status does not significantly affect the degree of empathy but other parameters like age, income and occupation of the respondents significantly influence the degree of empathy towards working women.

Conclusion: This study discusses the societal prejudices as well the acceptances women face who are engaged in income generating activities. These attitudes and behaviors these women receive from their spouses and from other men, especially in their respective workplaces. Literature related to empathy and prejudices towards working women is limited though this field needs significant research. Further research could be done by extending the survey in other countries and having a comparative analysis.

Keywords: working women, empathy towards women, attitude, gender roles

CLIMATE CHANGE AND GENDER VULNERABILITIES: BANGLADESH PERSPECTIVE

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Abstract

In Bangladesh, the impact of climate change is visible and widespread. The adverse effects of climate-induced disasters, however, fall disproportionately on gender. Moreover, the approaches for responding to disasters also differ in context of gender. Considering the climate determinants of Bangladesh, a study was undertaken to assess gender vulnerabilities in Bangladesh. The primary objective of the study was to find out the effects of climate change on gender based on disaster perspectives and reduce the disparities of gender role on climate change adaptation. The study area was divided into three different hazard-prone zones: cyclone-prone coastal areas, drought-prone areas and flood-prone areas. Considering the time and budget constraint for conducting the study and based on the risk assessment, a total of 25% of the area was selected from the total study area. The most risky and highly vulnerable areas were selected as the sample study areas. The research has been divided into three thematic areas, which are interlinked: climate change impacts and their gender implications, the hazard-specific impacts of climate change, current adaptation strategies and future viable livelihood options. An extensive literature review and Focus Group Discussion (FGD) sessions were carried out to attain the objective of the research. Under this research, different future equitable adaptive strategies were suggested which will help to reduce the gender vulnerabilities. By illustrating existing publicly available literatures and personal communications with experts in the field of gender and climate change, the study highlighted the challenges of mainstreaming gender into climate change adaptation programs and of making gender more central to all policy development. The safety and security of children, elderly people and people with special needs during the

disaster and post-disaster period mostly depend on women. Hence, adaptation strategies need to bolster women's capacities, power, and social resilience. Moreover, there is a need for engagement of both women and men from a gender perspective in development and implementation of climate change related development projects.

Keywords: Climate Change, Gender, Vulnerabilities, Disaster, Adaptive Strategies

Gender Based violence for misconceiving practices of sexuality- a study of socio cultural construction of sexuality in Bangladesh.

Kaniz Fatema

Abstract

In literary, the word Sexuality defines a natural feelings presented in all human beings. It's just one of those things everyone born with. But when we are observing it from various cultural perspective, it defines an another meaning. In Bangladesh, the socio –cultural construction regarding sexuality maintain taboo, which don't give allowance to talk about sexual experience, sexual disorder or sexual relation publicly. This practices has developed the gender roles more stronger in Bangladesh, where women body is more important and male are given importance by their power and wealth. This increased the ratio of sexual harassment case in Bangladesh where women are being abused both in domestic and working area. This study has experienced the gender based violence on women of Bangladesh for misconceiving practices of sexuality, also analyzed the socio – cultural construction of sexuality. Concerning it- this study followed qualitative method as research approach including – purposive sampling, stratified sampling, open- ended questionnaire, semi- structured interview, unstructured interview and ethical consideration for data collection .The outcome of this paper might help to focus on restricted practice of sexual attributes to give attention for developing a healthy practice of the notion 'sexuality, thus mitigating violence upon women in all sphere.

Keywords- Gender based violence, misconceive of sexuality, socio- cultural construction, violence on women.

THE COST OF LIVING: Situation of Female Street Based Sex Workers in Dhaka city

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Abstract:

In Bangladesh population living under national poverty line 31.5% of total population including 17.6% who are said to be "Extremely poor" according to Bangladesh Bureau of Statistics (BBS) 2010. Many women and children are still compelled to earn a livelihood through hazardous jobs. Female Sex workers (FSWS) and their children in Bangladesh are the most socially excluded and marginalized groups. They are systematically denied and left behind in the process of development planning and implementation. There are estimated number of FSWS in Bangladesh, which ranges from a minimum of 82,884 to the maximum of 102,260; the maximum contribution has been from street based FSWS, which is estimated to be a minimum of 31,837 to the maximum of 41,350. The overall objective of the research is to assess the present situation of street based sex work for a particular zone of Dhaka city in terms of problem, challenge, opportunity, limitation and to identify the ways to change the problem situations and reduce levels of violence and exploitation. There are estimated 100 female street based sex workers aged between 15 years to 35 years at CHANKHARPUL zone. This research addressed

80 Sex workers from random sampling at the 3 spots. The research used a mix of quantitative and qualitative methods.
Among the respondents are aged between 31-35 years, 26 % are between 26-30 years and 24% are between 20-25 years old. Majority of the street based workers are presently married. It has been found that 74% of the respondents are married and 26% are unmarried. 70% of the respondents have children 27% of the sex workers keep children with themselves, 63% keep their children with their fathers and grandparents or relatives at village home. 80% of the respondents are free and 20% sex workers are doing the job under VARUA (Fixed friend). 28% of them are homeless who lives on street, 15% live in shared shelter with other sex workers, and 3% live with husbands and 55% live by renting house in slum area. They are harassed and face violence from their customers, relatives, husbands, Students, police, local political parties, staff of the park, goons, Shopkeeper, driver/helper, rickshaw puller, house owner etc. Street based sex work is very hazardous job because of it is a low income job. Though their income is spend in different item and liabilities but still they feel that they can spend their money according to their own will. Most of them started savings in bank and SAMITY because the earning is sufficient for them none of them feels that sex work is a secured profession. Most of the sex workers have many future plan for themselves but very few are in place. Rehabilitation, Security, shelter, housing at village home is their future thinking. The development activities of the NGOS and government are operating for 25years at Dhaka city with street based sex workers but yet to get sustainable changes. Some changes have initiated in the areas of HIV & AIDS Prevention, Health awareness and counseling, Condom promotion, Medicine and Lubricant distribution, Reproductive health treatment, Water & Sanitation, Children's Education, Safe Shelter, Awareness for not to inspire to in this profession before 18, Human Rights Awareness, legal aid support etc. Sex Workers Network and Sex Worker Organizations need to rethink their roles and responsibilities and find out ways to work together.
Keywords: violence and exploitation, social perception, low income job, rehabitation, Social service and developmental activities.

The Female *'Breadwinner'*: Her Contribution to Her Family

Tah-Ima-Tabassum
Tasnim Rahman
Farhana Rahman

Abstract
The purpose of this study is to examine the economical contribution of gainfully employed women in their home. *'Women empowerment'* has become a largely popular phrase that has been the goal and mission that many NGOs and even some governments aspire to achieve. However, the question of the actual contribution of women in the society still remains as it cannot be easily measured in quantitative scale. The reason for such is that most of the women in Bangladesh society is still working as a support to their male counterpart or working in informal sectors and so their contribution cannot be truly measured. As such, this research has been narrowed down to the women that are recognized as one of the earning members in their family. The study will mostly focus on the economic contribution made by the female earners and also provide a brief glimpse into the struggles that they face in their juggling of their family and work. The sampling method that has been followed in order to conduct this research is both *Stratified Sampling* and also *Simple Random Sampling.* Thereto, *99 adult women* **(18 or above)** from the total female citizens of Bangladesh has been taken into consideration for the research. Those 99 females were segregated into 3 *strata* or *group* **(low income group, middle income group, and high income group)** based on their *socio economic position* in the society where each *strata* or *group* consisted of *33 representative members.* The aspects inspected are; how is their **(samples)** living situation, whether they are married or not, if they have children or not, which job sector they belong to, how much they earn in which area of expenditure they are formally responsible for, how much actual amount of the money they have to spend for their family, which are expenditure areas for them they spend their earnings on,

what are the reasoning behind for the associated expenditure and so on. The first phase of the research includes distributing a questionnaire prepared for the purpose of this study to the *66 members* belonging to the *middle income* and *high income group*. The second phase is to interview a sum of 10 women, *5 members* from each of the middle income and high income group. The third phase to complete this paper is to visit the remaining *33 member*s from the *low income* group with the abovementioned questionnaire to conduct interview sessions. The data that are gleaned from the research objects are analyzed both quantitatively and also qualitatively. The quantitative analysis are done with the use of tools like; *MS Excel 2007, and Stata 2013.* The result of the study seems to give a strong indication of women's economical contribution in the family is *equal to* or *even more* in certain circumstances compared to the males belonging in the same family. The research shows the necessity for the women to establish themselves as a working member in the society and in doing so, it is hoped that any prejudice against female earners will be reduced in the Bangladesh society.

The Nexus Between Men and Women Sphere: Exploring the Dynamics of Social Practices of Balipara Village of Sylhet District

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Abstract
The countries around the world have their dynamics of social rules and regulations which are culturally rooted and backed by tradition and therefore restrict women to go beyond their yard which makes women strive to realize their aspirations and potentials. The present paper would endeavor to focus on the objective which is to exploring basic practices of social norms and values regarding women in the Balipara village of Fatehpur Union of Sylhet district. For the purpose of the paper, mixed method in qualitative study is used to bring out the valuable findings from the field. The paper will also include the dynamics of acceptance of these traditional rules and values due to which the presence of women in the market (Bazar) are not being cordially accepted by the mass people and how the people maintain and regulate the norms within their own locality. The paper will also try to evaluate the fact that whether the global development discourses regarding women which makes its way through the NGOs, are actually being accepted or being performed or not and how the discourses are challenged with the local people's idea of "development" and traditional norms. The paper will thus thoroughly try to link a connection between these culturally constructed values, which deliberately makes manoeuvre of women difficult and whether these norms and values are keeping the women far away from the development initiatives taken by the NGOs and other global development initiators.

Key Words: Women, Social practices, Global Development Discourse, Development

Women and WASH during Disaster at Hard to reach Area

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Abstract
Drinking water and proper sanitation is the very primary basic need who does not know that is important for life, yet more than 780 million people worldwide use water from insecure sources and 2.5 billion people are

lack adequate sanitation services. So proper knowledge of Water, Sanitation and Hygiene (WASH) facilities could have supported to communities and saved lives in both routine and crisis situations but this is rarely the situation moreover, recapitulation of the natural hazard of recent decades and indicates enormousness deviation from the situation in WASH. There are strong linkages between access to water, sanitation and hygiene, and gender equality. And, the role of women during disaster is become more intricate in water supply and sanitation programmes in Bangladesh. The purpose of this paper is to augment accepting of how the resilience of WASH systems to hazards can be developed by women at the hard to reach area. Primary data was collected through semi-structured questionnaire survey in Perikhali union, Rampal, Khulna, Bangladesh. It is found that in a disaster situation, women were more responsible beyond to their usual day to day routine activities, taking a leading role in caring for gammy person and elderly people; providing responsive support to family members and even collecting relief goods, food, firewood. This project finds the increased uses of drinking water from natural water bodies e.g. pond that could enhance the spread of water borne diseases like diarrhoea. It is also evidenced that the access to good sanitation has reduced and using hanging/open latrine doubled from 19.1% to 38.0% by the respondents during disaster period. The study finds out the condition of proper hygiene practice was very low with only 20.9% of respondents. During and after disaster, women faced severe health diseases e.g. diarrhoea, dysentery, skin disease and so on. Women also faced difficulty in menstrual hygiene management due to lack of proper sanitary napkins, cloths or even disposal waste. Few respondents were found to receive WASH training, provided by NGO and government which could support the communities during natural calamities. The study recognized socio-cultural factors, individual characteristics, legal and institutional factors and socio-economic factors as obstacles which limit women's role in disaster risk management.

Key words: water supply and sanitation, disaster, hard-to-reach areas, women in disaster.

Role of Media to Remove Stigma and Ensuring Inclusion of the Third Gender People in SDG Movement

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Abstracts

SDGs- the ambitious 2030 agenda of UN, viewing the transformation of the world into aGreen Future but is challengingly shrouded by the curtains of hurdles that are needed tobe uplifted and removed if the world needs to see that long cherished dream to be true.Creating Green Future, a very high sounding expectation- no matter how lofty it seemsbut achieving it demands mammoth task of ensuring the participation of all sectors of life around, as negligence towards any sect no matter how small that is cannot guarantee the actualization of that dream. Since Bangladesh has been on the same march with the rest of the world since the MDGs (Millennium Development Goals) and pursuing the SDGs with strong conviction and enthusiasm therefore, for a successful achievement of the target the Govt. should assure the participation of all as no development can be materialized without wholesome effort. With that view this article will focus on the inclusion of the third gender people, a very minority group of Bangladeshi nationals in the sustainable development projects- where the emphasis will be on the role of media as the most powerful, revolutionary and mobilizing weapon of change in society. Being one of the most isolated, marginalized and extensively abused sections of the society, these people have nowhere to go, no part to play, no dream to achieve- just in a limbo of pain and in constant denial of even being HUMAN. If creating Green Future is the target then the society of Bangladesh in no way can be green by leaving behind a total group in oblivion and suffering. Ensuring the inclusion of these people needs to be made mandatory as our country needs all the hands to participate in accord to achieve the SDGs and safeguard the motto that NO One Is Lagging Behind. This paper will emphasis on the role of Media- both printed and electronic as it is a strong catalyst of change in society.

My research findings indicate that in the context of Bangladesh, media is not playing a positive role rather the ridiculous caricature and mocking representation of the third gender people in the mainstream media is actually denouncing them and contributing to their social ostracization. To clarify my viewpoints, mixed method approach will be applied to conduct the research.

THEME 7: SUSTAINABLE AGRICULTURE AND FOOD SECURITY

AGRICULTURAL MANAGEMENT AND PROFITABILITY OF IRRIGATED WHEAT IN THE SOUTH-CENTRAL COASTAL REGION OF BANGLADESH: A CASE STUDY

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Abstract
A complete management of irrigation water and fertilizers is a necessary in irrigated crop agriculture for maintaining a sustainable livelihood. Winter wheat is the major non-rice grain crop in Bangladesh and its cropping season falls during the dry season, making it an irrigated Rabi crop. A study was conducted to assess the on-farm water and fertilizer management practices of wheat as well as the effects of water and fertilizer management on the yield and profitability of the crop in the selected area of south-central region. Khanpura village of Rahmatpur union under Babuganj upazila of Barishal district in Bangladesh, was purposively selected as the study area on the basis of agronomic suitability of growing wheat. Farmers' field study was conducted to assess the on-farm water and fertilizer management practices for wheat. The actual crop water requirement of wheat for the selected season was estimated through CROPWAT software. The water management of wheat suggested that the farmers' irrigation application was about half of the actual water requirement. The number of irrigation was also less than the recommendation. The farmers also did not apply balanced fertilizers for the wheat. Hence, the farmers achieved half of the potential yield of wheat at their field. For the assessment of production, use of inputs and profitability of wheat, a questionnaire survey was conducted on the selected farmers followed by several focus group discussions (FGDs). For an assessment of the profitability of wheat, a benefit-cost analysis was carried out, the result of which suggested that wheat was a moderately profitable crop in the study area. It was evident from the FGDs that the wheat producing farmers of the study area faced many problems in irrigated wheat cultivation including less availability of surface water for irrigation, farmers' lack of interest to apply more irrigation as the production cost might increase, and application of unbalanced fertilizers. Higher yields of wheat in the study area can be achieved if these problems are minimized through proper training of the farmers as well as providing sustainable irrigation facilities during the dry season.

Key words: Irrigated wheat, water requirement, water use, fertilizer management, FGD.

Assessing the Environmental Burden of Land Use Change: A Local Scale Case Study in Bangladesh

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Abstract
We have been experiencing land use change and subsequent environmental burden across the globe from the beginning of civilization. Though we are aware of the pattern of land use change through a large pool of scientific literature, we are, not aware of the magnitude of environmental burden due to this transformation. This particularly holds true for developing countries like Bangladesh. Owing to this, it was an embryonic attempt to assess the environmental burden of land use change from agriculture to aquaculture in the small village of Amirabari, Mymensingh. We measured land use change from 2009-2017 through GIS analysis and utilized one of the robust tools, life cycle assessment (LCA) to assess the environmental impact of land use change. GIS analysis of land use change in Amirabari sufficiently confirms a drastic growth of aquaculture compared to agriculture within the studied time period. Upon further examination of the environmental impacts of this land use transformation, through LCA of aquaculture. The resulting assessment has pointed out the magnitude of impact per kg of fish that was produced from the fish farm. The results of the LCA of aquaculture was then compared with a study on LCA of agriculture. By comparing LCA results, it was revealed that the impact of climate change is twice as much for fish production than it is for rice production since for producing 1kg fish, 6.96kg CO_2 eq was generated while it was 3.15kg CO_2 eq for producing 1 kg rice. Other noteworthy results have showed more or less the same trend. For example, ozone depletion was 1.09 kg CFC-11 eq for aquaculture while 1.39 kg CFC-11 eq for agriculture; freshwater eutrophication is 0.002914095 kg P_{eq} from aquaculture while 0.00122 Kg P_{eq} from agriculture; marine eutrophication from agriculture is 0.2115 Kg N_{eq} while marine eutrophication from fish is 0.024718555 Kg N_{eq}; ionizing radiation from fish production is 0.171307461 kBq U235 eq and from rice production it is 0.11 kg $U235_{eq}$; photochemical oxidant formation for fish 0.01088 Kg NMVOC while as photochemical ozone formation is 0.01533411 Kg NMVOC eq; marine eutrophication caused due to aquaculture is 0.024650424 kg N eq and 0.01545 Kg N eq due to agriculture; water resource depletion is 0.250825807 m^3 water eq and 2.96767 M^3 for rice. Contribution analysis shows that feed application and electricity use during aquaculture are the most environmentally burdening stages across all major impact categories. Agriculture and aquaculture both contribute to the increase of Bangladesh's GDP and fulfill its growing food demand. Hence it is not feasible to substitute one sector of food production for another based on its level of environmental burden. Therefore, the country needs to strike a balance between its two major food production sectors, agriculture and aquaculture in such a way so as to minimize the level of environmental burden by adopting to a region specific and economically suitable land use transformation system.

Evidences of climate change impacts and adaptation strategies in Nepalese Agriculture: A country Paper

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Background
Nepal is a least developed country and is most climate-vulnerable. It is rich in biodiversity and so is the case of climate that are prevailed almost all the climate available in the world, hence called the micro-museum of world climate. In each of broad agro-climatic zone there is variation of land type, vegetation and cropping patterns. The economies of any developing countries depend heavily on climate-sensitive sectors such as agriculture, forestry, fisheries, water supply, and other natural resources. The agriculture sector contributes nearly about 33% of Nepal's Gross Domestic Product (GDP) and supports the livelihoods of more than 86% of the population.

Objectives:

This paper provides empirical evidence (positive and negative) of climate change impacts on Nepalese agriculture along with best adaptation strategies followed. The evidences and lessons from mountain, hill and terai region of Nepal are reviewed. Paper will highlight government adaptation strategies, policies, plans, programs and explore some farming models accepted by the community. The paper tries to explain the consequences of climate change on Nepalese agriculture from view point of soil fertility, crop production, post-harvest management and market functions and climate risk. Further, paper explained the detailed understanding about local adaptation plans of actions, institutional mapping technique, agro-forestry and community farming models adopted in Nepal. Farmer's indigenous knowledge on climate change adaptation is a key topic of this paper that critically explains the knowledge that is in practice. Apart from this, factors affecting adaptation with key issues and challenges regarding adaptation to Nepalese agriculture will be explored. As a lesson learned, some recommendations are made for other developing countries while investing in climate change adaptation strategies that effectively reduce the vulnerability of some of the world's poorest communities.

The broad objective of this paper is to illustrate the evidences of climate change impacts and adaptation strategies whereas specific objectives are;

- Illustrate the evidence based impacts of climate change in Nepalese agriculture
- Elaborate Government policies and farmer's level climate change adaptation strategies
- Success and failure story of adaptation measures from Nepalese agriculture and their economic relevancy
- Summary of lessons drawn from a case study in Nepal with recommendations for developing countries

Methodology

The paper is based on the literature review, desk review and field level experiences collected from government offices focusing impacts of climate change in Nepalese agriculture. Detailed methods of adaptation measures are described based on farmers' participatory assessment. Also, a case study was conducted to assess the results of the adaptation measures for mitigating the impacts of climate change.

Findings

The literature review and the lessons from government programs found positive as well as negative evidences of climate changes. Paper explained the detailed understanding about one local adaptation plans of actions, institutional mapping technique, agro-forestry and community farming models adopted in Nepal. The tremendous impact is found in area, production, and incidence of insect, pests and disease, physiological characteristics of crops. Farmers in the case adapt the changing climate through using their own local knowledge and experience in order to mitigate adverse effect of climate change. In order to increase the agricultural production they apply more chemical fertilizers and pesticides in their crop field along with the use of hybrid crop varieties, they were willing to use short duration crop varieties in order to respond the impacts of pronounced drought. Community and institution mapping techniques for climate change adaptation found strengthen farmers better and in advance. Local adaptation plan of action and agroforestry with sustainable soil management practices were found highly effective in adaptation techniques. Farmers in the study area (case study) were found to practice many adaptation strategies to combat climate change impacts in their farm and farming practices. Followings were the adaptation strategies they were practicing for adaptation to climate change;

- Use of mulching material in the crop field to conserve moisture and to respond drought, composting of weeds and crop residues.
- Use of plastic tunneling, hot bed to protect crops and their seedlings.
- Initiate integrated pest, nutrient and disease management to respond the increasing attack of pest and disease in crop field.

- Use of hailstone safety nets.
- Seed treatment and soil treatment with chemicals.
- Application of organic manures as vermin compost, Bokashi, jholmol etc.

Conclusion

With properly tailored policies, smallholder farmers can adjust to climate change and improve their crop production. To do this, climate change policies need to factor in farmers' understanding of the risks they face and potential adaptations to climate change. In this regard, interventions of the Nepalese government should focus on the development of intensive plans of actions with adequate farmer's participations. More specifically, the development of efficient mapping of resources, listing barriers for adaptation, farmers-friendly adaptation majors' identification and capacity enhancement in local adaptation plan of action is found highly fruitful and should be replicate to other part of the country and other developing countries. Also, the provision of crop insurance, access to weather information, crop diversification, natural resource conservation, trainings and demonstration, credit facility should be made accessible and made tied up with the focused programs to the farmers for better adaptation. As such, a bottom-up approach must be used to ensure that farmers' beliefs and understanding are a crucial part of the design and dissemination of adaptation practices.

Land productivity improvement opportunities in the coastal polders to address food security challenges of Bangladesh

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Abstract

The coastal zone of Bangladesh comprises low-lying lands with a dense network of rivers and canals. The rivers are tidal and tidal fluctuation is more extreme during the rainy season, resulting in tidal flooding of adjacent lands. About 1.2 million ha of land were, therefore poldered during the 1960s and 1970s to reduce the loss of life and property and to enable the production of a single, tall, late maturity and low yielding rainy season rice crop (dwarf high yielding rice varieties were not available at that time). The cropping intensity and productivity in this region are much lower than in other parts of Bangladesh. However, over the past 50 years, there have been tremendous improvements in both rice and non-rice crops, and in cropping system technologies and practices. Bangladesh has achieved self-sufficiency in rice using these green revolution technologies. But the coastal zone has been left way behind the rest of Bangladesh despite huge efforts from the government, non-government and international organizations. The polders are still home to the world's poorest and most vulnerable rural people. However, there are tremendous opportunities to increase the productivity of the land and water resources within the polders through the use of improved rice varieties followed by a range of *rabi* crops. But the adoption of improved production systems in the coastal polders has been limited by the misperception that the river water is too saline.

The results of our study showed that most rivers in the south-central coastal zone remain non-saline throughout the year; will remain so until 2030 with a moderate climate change scenario A1B with 22 cm sea level rise and a moderate precipitation change. And that in south-west Khulna and Bagerhat districts remain suitable for crop

production from July to mid-February. The cropping system trials in the farmers' fields in the low and medium saline polders from 2011 to 2017 showed the feasibility of intensifying *aus-aman-boro* and *aus-aman-rabi* cropping systems in the south-central, and *aman-boro* and *aman-rabi* in the south-west coastal zone having 2-3 times higher productivity than the current farmers' practice. The key prerequisite to enable cultivation of high yielding rice and *rabi* crops is the drainage during *aman* season and in early November prior to *aman* harvest. The drainage will not only allow the timely harvest of aman rice but will also facilitate the early establishment and safe harvest of the *rabi* crops, and this can easily be achieved free of cost by systematic operation of sluice gates synchronizing with high and low tides occur twice daily in the peripheral rivers of the polder ecosystem. Thus Bangladesh can make a quantum leap in meeting future food security requirements. Since cropping intensity and productivity in other parts of Bangladesh are already high, the under-utilized polder lands may well be the only region where significant gains in food production can be made to address future challenges to the food security and in achieving the SDG1 and SDG2 of Bangladesh within the timeframe with minimum investment.

Keywords: Rice, rabi, cropping pattern, system productivity, polder, sluice gate, tidal river water, food security

Organic Farming vs. Inorganic Farming: Poverty Reduction Scenario Analysis at Select Areas Near Dhaka

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Abstract

Background and Rationale: According to literature review, inorganic farming system and inorganic food have several environmental and health effects. Most of the farmers in Bangladesh seem to be interested in inorganic farming, primarily because they believe it produces higher profit. Bangladesh has now become a lower-middleincome country and does not have any problem with food security. So, the nation should think about food quality, not quantity anymore and go towards organic farming.

Aims: One of the aims of this research was to find out whether, in reality, inorganic food/inorganic farming produces more profit than their organic counterparts or not in terms of market price, environment/health costs and cost of production. The author also tried to prove that organic farming can be at least as profitable as inorganic farming to help in poverty alleviation.

Methodology: This research encompasses a literature review and primary analysis by using survey tools such as structured questionnaires and unstructured interviews with the locals (mostly farmers and consumers involved with both types of farming) of Savar, Srinagar &Rupganj and analyze their opinions to understand the present status of organic and inorganic farming which can bring about poverty reduction in the true sense using tabular, graphical and statistical analyses.

Analysis and Results: The reality, according to the research is that a lack of proper market management in Bangladesh is a big reason that organic farming or organic products are less popular, not the lack of awareness only. It was also found that organic farming can successfully reduce poverty. Unfortunately, it was furthermore evaluated that even though only 32% respondents were unaware about the environmental and health effects of inorganic farming, they still preferred it for more money. In addition literature review and primary data, organic farming was found to be better to alleviate poverty, not only because the production cost is low, but also because in the long run it can keep input costs lower by keeping soil quality intact and causing negligible health effects. For example, from the survey the production cost of inorganic corn was found to be 10,100BDT/bigha (119.53USD/bigha), whereas it was valued at 5,900BDT/bigha (69.82USD/bigha) under the organic farming system, while the pollution cost from organic farming is almost zero.

Recommendations and Conclusion: Certification systems should be authorized by the government as a part of market management for organic food; this will make it possible to ensure a price premium for organic products which in turn will fewer those farmers who perform organic farming. Hence, it was concluded from the analysis that going towards organic food is both economically and environmentally a good decision, but is only possible through the enhancement of market management by the authorities, awareness building among consumers about organic products, and providing farmers with incentives to shift from inorganic farming to organic farming.

Keywords: Inorganic farming, market management, organic farming, poverty reduction, market management

Technological impact on agricultural activities & rural life

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Abstract
Bangladesh is a developing country. In recent 20 years it is undergoing crucial technological change in every sector. This study will help to measure the technological impact on agriculture sector & rural life condition of the present time. As the productivity of the cropland is decreased day by day, it is essential to adopt new technological strategy on agriculture in the form of new crops, improved breeds of animal, or changes in agricultural practices and crop choice. Bangladesh is an agricultural country, and it is an era of information and technology. To achieve the maximum productivity it is badly in need to made a combination between the agriculture and the technology. The aim of the study is to compare the Technological impact on agriculture & living condition of rural life of Dhaminkour village, Shuvodanga Union,Bagmara Upazilla in Rajshahi District. In Bangladesh, Agriculture is a major source of income and employment and agriculture is directly linked with the poverty alleviation. It is important to take into consideration the labor and capital investments that are necessary to enable adoption of the technology. Because, the main reason to use technology in agriculture is profit maximizing, reducing the production cost. There is many reasons why technology is applied in agriculture and agro-based activities. Firstly, Bangladesh is one of the most vulnerable to climate change and its effects on environmental degradation because of its geographic location. These impacts on average temperature and precipitation have a baseline impact on the productive capacity of agricultural activity.
Two third people of total population live in rural areas. So without the development of rural areas the Bangladesh will not be developed. The aim of the study is to analysis the present condition of agriculture & rural area to find out major problems and give possible solutions for the improvement to find out the sustainable technology for agriculture thus it will give impact in rural livelihood.

Keyword: Technology, agro-based activities, livelihood etc.

Sustainable Institution Management in Agriculture and Rural Livelihoods: Way Forward to Redefining “the New Rurality” in India-A Case Study.

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Abstract
The word ‘sustainable’ implies the ability to enhance the means of survival. ‘Institution’ may be defined as a conceptual whole made up of certain socio-economic and political rules (norms and behaviours) which constructs social interactions and persists over time. Since the efficient production and active participation of

people in economic activities depend on various institutional frameworks (e.g. technological breakthrough, transaction cost, network possibility), its process interlinks land and credit markets, tenants and landlord power. In this study, the district of Murshidabad of West Bengal, India is chosen as a case study which shows a prominent contribution in the sectoral distribution of economy. However, agricultural workforce in the district has decreased from 68 percent in 1981 to 52 percent in 2011. Besides, the substantial changes in net sown area have decreased and area under non-agriculture has increased during 1981-2011. The main objectives of this study are (1) to analyse the process and structure of institution management in agriculture (2) to focus on small farmers' livelihood strategies and rural sustainability.

Indian agriculture has undergone significant structural changes followed by the process of marginalization of agrarian economies and predominance of market economies in the last two decades, especially after neoliberal reforms in the 1990s. The process of deconcentration of land and a shifting trend of the workforce from agriculture to non-agricultural activity are observed in Murshidabad district in particular and India in general. A trend of employment opportunities in non-agricultural sector has also linked to migration as an alternative income source of formal agricultural labourers.

The practice of agriculture encompasses various process and structure such as laws, policies, and culture (process); levels of government intensive, private sector (structure). Resources or assets of an individual, household or community meant for influence and access of institutions and organizations that affect how people use various forms of capital to cope with and recover from stress and shock (context on vulnerability) on one side, and to pursue livelihood strategies on the other. Sustainable rural livelihoods can be thought of as use of asset portfolios to enhance well-being and capabilities of an individual, household or community. In Murshidabad District, agrarian crisis and farmers livelihood challenges on the context of vulnerability led to creation of 'new rurality' where people are getting away from agricultural practices and they search for the ways of alternative livelihoods. Due to the effect of reduced agricultural practices, people become engaged in various informal sectors where varied livelihood strategies are being questioned. So, the revival of public interest towards agriculture can be achieved through transforming process, structure and institution management.

The present study is based on primary information through FGDs and secondary sources i.e. Bureau of Economics and Statistics, Govt. of West Bengal, and Agricultural Census Reports provided by Socio-Economic and Evaluation Branch, Kolkata, Director of Agriculture, Government of West Bengal. Focus Group Discussions (FGDs) are used to see the essential problems of smallholder farmers in the district of Murshidabad. GIS tools and descriptive statistics are also used for explanatory purposes to interpret the two micro geographical regions i.e. Rarh and Bagri in Murshidabad. The study revels genuine concerns especially for credit markets, supply-chain management, price of crops and government intensive which may redefine the structural change through engagement of people in agriculture and bring a sustainable rural livelihood

Sustainable Livelihood Approach to Food Security: A Review of Indian Central Himalayan Region

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Abstract

Sustainable livelihood approach to food security and poverty reduction has become a burning issue and the need of the hours, particularly in the wake of growing population, food insecurity and malnutrition. The Indian Central Himalayan region is worst affected in terms of food insecurity and malnutrition although, it is bestowed with the abundance of natural resources such as water, flora-fauna, spectacular landscape and varied climate. These natural resources support livelihoods of the people, living in the upstream and downstream river valleys. About 93% area of the Indian Central Himalayan Region is mountainous, which is ecologically fragile,

geologically sensitive and tectonically and seismically very active. Both, terrestrial and atmospheric hazards are frequent, intensive and very common. Water resources are enormous, as India's major rivers originate and flow from the region. In the meantime, it is economically underdeveloped and socially backward region. Livelihood of the people is dependent on practicing subsistence cereal crops with low output. This has resulted in exodus rural-urban out-migration, land abandonment in the rural area and over population in the urban centres. This paper aims to examine the optimum use of natural resources for the sustainable livelihoods, food security and poverty reduction. The author has developed a sustainable livelihood approach model with elaborating five livelihood assets/capitals – natural, human, physical, financial and social. Both qualitative and quantitative approaches were employed to analyze data, gathered from the primary and secondary sources. About 70% population of the region is living in the rural areas, of which, 50% people are practicing agriculture, 20% people are working in the tertiary activities and rest of people are landless labours and shopkeepers. Agro-climatic conditions are quite suitable for growing various kinds of food grains, fruits and vegetables and for livestock farming, as plenty of fodder – tree leaves and grasses are found in the region. However, a large number of people are living below poverty line (30%). Diversifying and enhancing livelihoods options through cultivating all varieties crops, according to altitude and climatic conditions, development of eco-tourism, construction of micro-hydroelectricity power projects, practicing livestock farming and sustainable use of timber and non-timber forest products, are the major sustainable livelihood approaches that can reduce poverty. Development of natural and pilgrimage tourism is the potential sector for sustainable livelihoods because, the Indian Central Himalayan Region has the number of highlands and valleys pilgrimages and numerous natural locales. Further, development of infrastructural facilities including transportation, access to market and educational facilities will lead to sustainable livelihoods. Value edition in the primary agriculture products and fruits/vegetables' processing centres will enhance income and augment employment of the marginal farmers.

Keywords: Sustainable livelihood approach, malnutrition, food security, natural resources, Indian Central Himalayan Region.

The farming of Poisonous Plant – Tobacco in Bangladesh: A Story of Environmental Ethics

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Abstract

Nowadays, how "development would be eco-friendly of agriculture friendly" is a conflicting question under the era of neo-liberalism. Commercial cultivation has been resulted the alteration of climate as the indiscriminate use of land changes the ecosystem stability. Commercialization of agriculture and agricultural land intensifies transfer of agricultural land and water body to non-agriculture uses. Loss of agricultural land and water bodies are a common figure in this regard. Tobacco is an economic crop in Bangladesh which is fundamentally grown in Kushtia, Chittagong Hill and Northern regions of Bangladesh. In point of fact it is a non-food plant harmful for health, environment and society. Consequently, its fabrication raises ethical concerns. This learn is aimed to estimate the factors affecting tobacco yield and look into whether any ethical issues influence the production behavior of tobacco farmer in Kushtia district. Both primary and secondary data are used in this paper. Primary data is collected from 100 farmers using random sampling method from Daulatpur Upazila of kushtia district. To estimate the influencing factors including ethics on the tobacco yield, both multiple linear and double log regression model are used. Tabular method is followed to describe the socio-economic profile and explore ethical consideration of tobacco farmers regarding its cultivation. The result shows − major farmers have no ethical and environmental concerns about tobacco production. The linear regression result of tobacco yield shows that the variables fertilizers, pesticides, seed, labors, support from the company and land quality is positively significant to affect the tobacco yield. From the normative point of view, ethical concern of the

farmers would be negatively related with their tobacco yield. But the paper finds an insignificant relation between ethics and tobacco yield in rural Bangladesh.

Keywords: Tobacco, Environment, Society, peoples thought, crop production

Use of TPB in Understanding Consumer Behavior in Organic Food Purchase: A Case Study in Bangladesh

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Abstract

Objectives: This study has explored the broad perspectives of theory of planned behavior regarding organic food purchase. Current research has focused on the effect of attitudes, subjective norms and perceived behavior control on purchase intention of Organic food items.

Methodology: To address the objectives, researchers reviewed the different related literatures and collected data from different people of the society. To validate the study, 337 respondent's feedback were collected and analyzed through statistical software package.

Findings: The findings of this study will definitely supports the policy makers and business bodies in Bangladesh in order to ensure the quality food and creating awareness among the mass people regarding organically produced items. Findings also revealed the truth that what sorts of Behavioral attitudes, Subjective norms and perceived behavioral control will influence customers' purchase intention for organic items rather than genetically modified objects (GMOs)? This study result support the positive effect of attitudes and perceived behavioral control on purchase intention rather than subjective norms.

Conclusion: The world accepted phenomenon that organic food is safer, notorious, and salubrious for health and sustainable growth for the society then genetically modified items. Currently consumers in Bangladesh is also raising their interest for purchasing organic foods for different reasons, like health concern, environment and Societal long run best interest . It is to be noted that usually well aware customers' who are guided by trustworthiness/ beliefs, normative values and self-efficacy will exert effort for purchasing organic items in future.

Key words: Organic food, Consumer Purchase Intention, Theory of Planned Behavior (TPB).

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THEME 8: GREEN CITIES AND HUMAN SETTLEMENTS

A Study on Pedestrian Level of Service of Selected Footpath Stripes of Dhaka

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Abstract

Walking is considered to be the most important mode of travel across the world. It is especially preferable for short distance travel. In Dhaka city, 19.6% of the trips are made by foot. So, it is necessary to ensure a pedestrian friendly walking environment in the footpath for the welfare of these pedestrians. The purpose of this study is to make a comparative analysis of Pedestrian Level of Service (PLOS) of footpaths of Dhaka through Multi-criteria Analysis. Four road stripes have selected based on surrounding land use characteristics: Segunbagicha road connecting Kakrailmorh and Press club along residential land uses, Mothijeel Junction Bus Stop to Fakirapul Bus Stop on Toyenbi Circular road along educational institutions, Nilkhet Morh to Science lab crossing on Mirpur Road because of commercial land uses and Intersection of Hare Road and Baily road to Shiddeshiri Girls School on Baily Road due to mixed land use characteristics. Total number of pedestrian has been surveyed is 240 with 60 from each of walk way segment. A list of factors influencing PLOS has been prepared from literature review and ten factors have been short listed based on opinion of pedestrians for the study. These factors are: footpath width, connectivity, pedestrian flow rate, comfort, surface characteristics, availability of crossing facilities, landscaping elements, street lights, buffer from vehicular way. Weight of each factor has been determined from pedestrian opinion by using Analytical Hierarchical Process. Path width, Pedestrian flow rate and connectivity have been found to be first, second and third most important factor. Value of the factors has been has been collected through questionnaire and physical survey and field observations. To bring all the factors in a unique platform, they have been indexed on a scale of 1-5. Weight of the different factors have been multiplied by respective indexed value and summed up to determine PLOS for each footpath section. PLOS has been classified into four categories in an equal interval. It has been found that PLOS of Segunbaghicha is in very poor condition while other three footpath stripes have poor PLOS. Based on the findings of this study, relevant organizations can further explore the reasons behind the poor PLOS of selected footpath and can identify possible interventions to improve condition of these footpaths and prioritize the improvement schemes considering preferences of pedestrians.

Role of urban greenery for mitigating the urban heat island effect: A case study of Delhi, India.

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Introduction:

With the increasing rate of population pressure in the urban area of the global south, urbanization is becoming a continuous process and grab the attention of contemporary researchers for its negative impacts upon the urban natural environment. Most noticeable and direct impacts of urbanization on the environment is the changes in daily and seasonal thermal variable and increase the hydraulic stress. Both are cumulatively formed the urban heat island (UHI) effects. From the sustainability point of view, it is very crucial for research to focus on how to mitigate UHI. Previous studies have found that urban greenery has the potential capacity to mitigate UHI, but every city has specific environmental setup, still not well established. Hence, it is important to find out the how the urban greenery reduced UHI effects.

Settings:

This study focused on the capital of India, Delhi, the 2nd largest populous and densest city in the world.

Objective:

i. To assess the role of urban greenery to mitigate the UHI.
ii. To evaluate the cooling effects of different types of urban greenery.

Materials and Methodology:

For land surface temperature, Landsat 8 – TIRS and for greenery mapping Sentinel 2A imageries have been used. LST was derived using the single channel algorithm (SCA), and greenery was mapping using combination of unsupervised (i.e., ISODATA) and supervised (i.e., Maximum likelihood) image classification techniques. Numbers of class level metrics like PLAND PD; LPI; AREA_MN; ED; LSI; SHAPE_MN; COHESION and ENN_MN used to measure composition and configuration of urban greenery.

Ordinary least square regression, multiple linear regression, and spatial autoregression (SAR) model were used to measure the cooling effects of urban green space quantitatively.

Brief Result & Conclusion:

Amount of urban greenery in terms of percentage of land cover or average size of the green patch is very important to reduce the UHI. PLAND, LPI, AREA_MN and COHESION negatively related with LST whereas PD, LSI, SHAPE_MN, and ENN_MN positively related with LST. So, fragmented vegetation area, green space with complex shape could increase the LST. If we look at the vegetation types and relation with LST, only dense vegetation and trees & plantation can effectively reduce the LST. On the other hand, sparse vegetation and grassland have no significant relationship with the LST. LST can be reduced by not only increase the volume of green space but also optimizing the spatial configuration of urban green space. In addition, result from Moran's I shows there was a significant amount of spatial autocorrelation, hence, SAR result was able to capture better output than OLS, which could enhance the efficiency of the model. Finally, this study could help for better planning of urban green space for UHI mitigation and sustainability.

Abbreviation:

PLAND: Percentage of land cover class; **PD:** Patch Density; **LPI:** Largest Patch Index; **AREA_MN:** Mean Area; **ED:** Edge Density; **LSI:** Landscape Shape Index; **SHAPE_MN:** Mean Shape Index; **COHESION:** Cohesion; **ENN_MN**: Mean Euclidian Distance.

Analysis of Public Bus Service in Khulna city

Nur- Nabi-Alam[1]; Sumya Sydunnaher[2]; Md. Ahsanul Kabir, PhD[3]; Monoara Khatun[4]

Abstract

Public Transportation plays an important role in the country's economy. It is an integral part of any city's transportation system. Therefore, in order to ensure efficient public transport service, careful planning is required. This study examines the current situation of the public bus service and its management system including route, fare, accessibility and socio-economic charecteristics of the passengers and so forth. Again this study has also proposed potential routes for its expansion in service, share and spatial coverage.This study has mostly used secondary sources, experiences and interviews for the analysis of data. The major findings of this research are 1) poor quality of bus services and facilities 2) inadequate public bus route coverage encourage people to use other mode. Therefore, this study will help the authorities to take necessary steps for the improvement of public bus service and the proposed route will support the passengers to use sustainable public bus mode in Khulna city.

Key Words: Public bus, services and facilities, area coverage**.**

SMART GREEN INFRASTRUCTURE AND URBAN GREEN SPACES IN THE WESTERN WARDS OF THANE MUNICIPAL CORPORATION, MAHARASHTRA, INDIA

Puja Banerjee

Abstract

The rapid pace of urbanization has resulted in the expansion of unnatural and artificial environment where the green cover is transformed into a mass of concrete. The gradual urban sprawl, thus, has adversely affected the natural environment. But under the lime light of the smart city planning there is a growing need for considering the integrated and interdisciplinary approach to improve the green spaces. The green spaces include urban parks, roof gardens, green wall creeper, green fields, urban woodlands, Street Park and also riparian zones and lakes too are considered. The present building projects and newer development are incorporating the smart green infrastructure to promote and build urban green spaces, which plays a vital role in the sustainable

development of the cities. So, it becomes important to study the smart allocation of green spaces in the city. This study considers the newer developing parts of Thane West wards of Thane Municipal Corporation (TMC) to highlight the number of green spaces available to its citizen in the wards via the application of the per capita green index method. Thus, this study would help the planners to improve the green spaces and greenery at the particular geographical location within the city where it is deteriorating.

Keywords: Smart City, Green spaces, Sustainable development, Smart green infrastructure, Thane

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Toward an Eco-efficiency Assessment in Urban Green Space Planning based on Flooding Adaption Approach – A Case Study of Tainan City

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Abstract

The IPCC fifth Assessment Report(AR5) proposed human related activities such as urbanization and economic growth are considered as the key factors that triggered unprecedented global warming since the mid-20th century. With resulting in the extreme climate impact and natural disaster happen in urban areas, the emerging advocacy on urban resilience researches suggest that the formation of urban green space network as green infrastructure would be an effective non-structural adaption measure to ameliorate climate impact by the implementation of spatial planning strategies.

International governments and organizations are unanimous regard promoting green infrastructure as the fundamental of sustainable development in urban areas, which enhancing vulnerability to natural hazards and meanwhile providing diverse ecosystem services for human wellbeing. While the benefits of green infrastructure and its measure indicators have been discussed explicitly within various study field, yet based on the optimization of resources allocation, a few of studies have taken the cost of green infrastructure into account to examine a holistic evaluation of green infrastructure implementation for the resource efficiency approach.

Based on the concept of optimization in resources allocation, this research established the comparison of eco-efficiency evaluation between the current status of urban green space and the vision of zoning plan strategy in Tainan city. With the consideration on the economic affordability of public sector in the execution of zoning plan, this study attempted to link the decision process with the assessment on planning resources allocation regarding on the frequent and increasing flooding in Tainan.

To illustrate the eco-efficiency analysis on urban green space planning performance, this study introduced the integration on spatial planning and operation research discipline on the theory of Pareto optimality, which in order to identify the potential spatial tradeoff within monetary status and the capacities of flooding adaption of urban green space. By far, this research selected related input and output variables of green space based on literature reviews and quantified for the data envelopment analysis and slack variable analysis in order to conduct the resource efficiency analysis and contribute feedback on decision making. Further effort will focus on the spatiotemporal analysis in Geographical Information System(GIS) with Malmquist productivity index to analyst the comparison with current and zoning plan status of the efficiency of urban green space.

Keywords: Urban Resilience, Green infrastructure, Data Envelopment Analysis, Ecosystem Services

Optimization of Wind Energy Generation Based on Fuzzy Logic Controller

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Abstract
This research paper represents a method of extracting the efficient power as well as maximum power point (MPP) from small scale wind generator based on fuzzy logic controller (FLC). Since the wind energy mainly depends on wind speed and pitch angle, so FLC is used to bring out the maximum power in an effective way which reduces the deviation in system response. At first, a wind turbine has been developed by adopting a mathematical model according to wind power equation. After that for MPPT technique, a DC to DC boost converter is used to trigger its MOSFET switch using FLC for controlling rotor speed of wind turbine. The output of the FLC is duty cycle. The duty cycle triggers the gate of DC-DC boost converter through pulse width modulation (PWM) by a change in power and change in voltage ratio known as error signal that depends on wind speed and pitch angle. The simulation results of MPPT system have shown more effectiveness than conventional one such as various operating conditions without MPPT system

Criteria for Sustainable Housing Affordability in Dhaka, Bangladesh

Fawzia Farzana

Abstract: The affordability of housing is a persistent problem in third world cities like Dhaka where trade-offs between affordability and adequacy are common among income-constrained consumers. It not only affects individual households but also has implications for wider economy and environment, e.g. employment, education, health and sustainability. So to achieve the SDGs, the traditional concept of affordable housing, that only considers prices and income terms, should be modified. Quality of housing and the environment are to be considered while defining housing as affordable. The fundamental concept of this research is the theory that affordability is not only affected by housing costs and incomes, but by a wider range of criteria that also influence a household's quality of life. Housing affordability must be evaluated in a wider context if sustainable outcome of national housing policy and goals set in SDGs and Dhaka Structure Plan are to be achieved. The research is based on intensive literature review to explore a wide range of criteria, linking affordability and sustainability issues in context of developing countries. A set of criteria are identified which should be considered in measuring housing affordability in Dhaka to create sustainable settlements for the future. The criteria have been proved or rejected via questionnaire surveys with professionals from state housing agencies; housing experts and the developers who claim that they deliver affordable housing. Questionnaires are designed to seek verification and prioritization of the criteria that are important to sustainable housing affordability in context of Dhaka. The criteria system for sustainable housing affordability proposed in this paper would be beneficial for local authorities and housing associations of Dhaka. It would assist in monitoring affordable housing development and at the same time promoting and maintaining quality life for sustainable communities and settlements.

Keywords: affordable housing, sustainable housing, sustainable settlement, living environment

Renewable Energy Mix and its Relationship with Economy and Environment: An Endogeneity Corrected Panel Data Approach

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Energy is a key driver for the business and a necessity for development. Universal access to modern energy for all is a Sustainable Development Goal (SDG-7) of United Nations. It is observed in last couple of decades that energy sources are diversifying globally and a clear shift from conventional to renewable sources could also be

noted. In fact, the dramatic fall in costs of renewable energy is one of the most important phenomena on the global energy arena. The dynamics in the energy mix – share of different sources in energy portfolio – calls for a study of disaggregated energy generation and economy, environment nexus; where the available literature is sparse. An index for diversity of energy sources is proposed and based on that a panel of OECD countries with highly diversified energy mix is filtered. Effect of two renewable energy sources, solar and wind, on economy and environment, is established through econometric tools. FMOLS and DOLS regressions are conducted, as unit root analysis and cointegration analysis respectively indicate that series are stationary only at the first difference and there is a long run cointegration among the variables. Diagnostics such as check for serial and contemporaneous correlation indicate that there are such correlations in the panel and we also fail to reject homoscedasticity, so FMOLS and DOLS are discarded in favor of Driscoll-Kraay robust estimator for pooled panel. We have used second generation unit root tests for panel data, they take into account the cross sectional dependence in the panel, which is relatively new approach in energy economics literature. Further, Toda-Yamamoto causality for individual countries shows that there are some feedbacks from GDP to the renewable sources. As the variables in question are non-stationary we cannot conduct usual panel granger causality analysis, rather we have conducted Dumitrescu-Hurlin panel causality analysis on growth rates which are far less plagued with the issue of unit roots. The feedbacks indicate the problem of endogeneity in the model. Endogenous variables which are not adequately taken care of in the extant energy literature, is dealt with by introducing two instrumental variables: research and development and total primary energy supply in the country. The instruments are shown to be adequate as the null of week instruments is rejected. The robust 2SLS results indicate superiority of wind over solar energy. We have chosen energy diversified OECD countries for the analysis with the rationale that they are the leaders in renewable energy deployment and also in its diversification. The results are
useful for emerging economies where electricity generation has to be increased and is poised to be diversified. Also, the diversification must be environment friendly and welfare enhancing. These are preconditions of sustainable development. The analysis should be beneficial for both policy makers and energy firms for selecting better energy mix.

Keywords: Energy diversity, endogeneity, renewable energy mix, wind, solar

THEME 9: GREEN ECONOMY

Sustainable Reporting Practices: A Comprehensive Analysis of the Listed Companies in Bangladesh

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Objective: The recent literature of sustainable reporting shows its acceleration in research arena not only in developed countries but also in developing countries. This paper will examine the nature of the sustainable reporting practices in developing countries especially in Bangladesh.
Methodology: A content analysis which is developed on the basis of Global Reporting Index (GRI) sustainability reporting standards 2016 published by Global Sustainable Standards Board (GSSB) , has been used to measure the extent of sustainability. A disclosure index has been constructed based on the weight from 0 to 3. As the sustainability report of the GSSB requires three major dimensions, ten indexes has been selected equally each of the major dimensions, thus a total of 30 index has been designed to conduct the study. The content of the sustainability index has been derived from the sustainability literatures. This cross-checked index has been used to measure the extent of sustainability disclosures of the listed companies in Bangladesh. Through a systematic random sampling 30 sustainable reports has been selected for analysis.
Findings: It is found that the quality of sustainability information is very poor in Bangladesh. Out of the 30 samples, most of the companies have a sustainable score below the average. It indicates that the concerned authority should take necessary actions on this issue. The local authority should consider the sustainability as a legal issues rather than legislative issues.
Implication: The findings of the study will provide a clear picture about the phenomena of sustainable corporate reporting in Bangladesh. It will encourage the corporate people to disclose more information regarding sustainability issues. Moreover, a further research can be conducted to explore the association between the level of sustainability and corporate performances.
Key words: Sustainable Reporting (SR), listed companies, Disclosures, GRI, Bangladesh

A sustainable and circular resource governance policy of minerals in developing countries for low carbon technologies.

Author: Kazi Jawoad Hossain

Abstract
Renewable energy technologies has been playing a pivotal role in the transition to a low carbon economy. Although a remarkable growth has been observed, now accounting for about 17% of global energy consumption, these new technologies are in many cases material intensive in their composition than current traditional fossil-fuel-based energy supply systems. Climate change as well as energy security issues are likely to drive demand of metals/ minerals including aluminum, copper, iron, nickel, lithium, steel and rare earth metals including but not limited to molybdenum, neodymium, and indium. There has been a little analysis conducted on the material implications of a low carbon economy. This article explores and analyzes the implications of the rapid commercialization of climate-friendly technologies from ecological, geopolitical, economic perspective. From comparing geological distribution of fossil fuels in respect to minerals for renewable resource we have concluded that developing economies has significant window of opportunity to take advantage of the future commodities market responding to Paris Agreement and related Sustainable Development Goals (SDGs) if those countries have political will to undertake resource governance policies that this paper proposes. In addition, the developing countries can play a crucial role in recycling the e-wastes to maximize the resource efficiency and provide a circular supply chain for these metals for achieving sustainability. This paper underlines how the resource governance can enable developing nations not to fall in tarp of resource curse unlike hydrocarbon boom of previous century and can use collective bargaining power to creata win- win situation.

Key Words: resource governance, sustainable development, circular economy, low carbon technologies, rare earth metals

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Impact of Institute Based Vocational Education and Skills Training on Rural Economic Development

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Abstract
Bangladesh has witnessed an unprecedented growth in its economy during recent years and development of many sectors. Bangladesh, the new Asian Tiger has a lot of booming trades and prepared for global integration with an era of modernization. As a country, Bangladesh has a huge manpower with a population of more than 163 million. For sectoral developments, the country requires a skilled workforce with high adaptation to changing working conditions. More than 4000 rural union councils of Bangladesh are facing an enormous industrial development. In this situation, skilled workforce development in rural areas has become an important issue. But research has already revealed that Bangladeshi graduates in rural areas are ill-prepared for their future jobs and this is a substantial challenge for Bangladesh. NGOs, Development Organizations and skills development institutes are working relentlessly together but it is a generally accepted that informal skills development programs are not yet able to provide enough sufficiently qualified people with the necessary skills employers now need. Informal skills training has developed at a large scale in the rural areas of Bangladesh but without skills training in the formal sector, the economic development of rural areas are facing a big threat. However, research shows that the institute based vocational education and skills training have an extensive positive impact on the economic development of rural societies. Proper delivery and integration of employability skills in a vocational school context and establishing more skills training and vocational education institutes can become an accelerating factor for rural economic development.

Keywords: skills, vocational, formal, training, development, rural.

Assessing the water footprint of Fashion Industry from fibre to fabric

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Introduction and objectives
Textile industry becomes the largest foreign currency earners of Bangladesh in recent days however, it considers as one of major water polluters around the world. The whole supply chain of this industry requires large amount of water which ends with unusable water. The present analysis aims at understanding the impact of textile production in water quality throughout different production stages, by calculating the grey water footprint of polyster, cotton and cellulosic fibres and textile washing, dyeing and for textile dyeing, washing and finishing mills.
Methodology

Water consumption at different stages during production area was calculated in India and Bangladesh by applying water footprint assessment methodology. Cotton production was not widely performed in Bangladesh therefore, water usages data for cotton firming were collected from the 3 different states. 53 washing, dyeing and finishing factories of India and Bangladesh were visited to collect the water usage data. The grey water was also calculated at different stages for different fibre and fabric production in Bangladesh to identify the pollution load and associated socioeconomic impact.

Findings

Water footprint of cotton production varies dramatically across the different agricultural practices, level of toxicity of pesticide and reuse practices of agricultural wastewater. Reusing wastewater for agriculture is not widely applied in study countries. In India, 1 out of 3 states emphasized on reusing wastewater of agriculture field which was only 4% during the study period. The total water consumption for cotton was approximately 30,000 m^3/tonne in cotton field. Depending on fabrics, processes and practices, 25,000 m^3 of water was consumed for 1 tonne of fabric water in study areas which was below than cotton field however, the reusing textile wastewater was absent in textile industries. During the study, it was found that 163 m^3/kg of water used in dyeing area and it decreased to 67 m^3/kg in finishing area. The majority of all production sites analyzed for fibres, fields and mills, were located in areas with unsustainable water pollution levels, which worsens the impact of the textile production in these regions. Results also indicate, that management practices and processing choices, both at industrial and farm levels largely influence the size of the grey water footprint, i.e. level of pollution caused.

Conclusions

Conventional practices and processes were seen in firm and textile industry which have huge impact on water quality. Grey water calculation was not prioritized in many production processes which had greater impact on water quality. Use of benign chemical, reusing of chemicals and closed-loop cycle production at industrial level can enhance the wastewater quality and treatment methods.

Community Based Ecotourism: A Driver to Achieve Sustainable Livelihoods in the Chittagong Hill Tracts, Bangladesh

Manila Khisa

Research Objectives:

Chittagong Hill Tracts situated in the South-East part of Bangladesh contains some of the greatest tourist spots of the country. It is one of the greatest tourist attractions of Bangladesh for its distinct natural landscapes, green hills, mountains, and a wide range of distinct flora and fauna. The natural beauty of the region, the distinct culture and lifestyle of the communities living in the region can offer the scope of potential ecotourism enterprises and income generating activities for the inhabitants which can enable them achieve sustainable livelihoods. However, due to various socio-economic and political constraints ecotourism enterprise has not yet flourished in this region to its full potential. This area has gone under different sorts of development initiatives which have had remarkable change and impact on the nature, demography and livelihoods of the people. The ongoing socio-political unstable condition in the region also has huge negative impacts on the livelihoods of the communities and exacerbates their already vulnerable situation. This research analyzed the possibility of promoting ecotourism in pursuit of sustainable livelihoods for the communities residing in the Chittagong Hill Tracts.

Methodology:

Secondary data that have been acquired from community reports, websites, records, blogs, archival collections and newspapers, government census data, government and private tourism information, socioeconomic baseline survey done by various NGOs etc. for information on communities' assets and living standard. Additionally, existing national and international ecotourism polices and examples from other developing countries' have been

explored from journals, books and newspapers. Finally, the research includes primary data collection method through face to face interviews with community leaders and personnel previously worked with government tourism organization, and with ecotourism operators in CHT. To analyze the context, the Sustainable Livelihood Framework designed by the DFID has been used.

Findings:

It is argued that, through well planned ecotourism policies, their proper implementation and management that both directly and indirectly involve the local communities; their capabilities and financial benefits for them can be enhanced. The research pointed to some major shortfalls that can hinder ecotourism development in the Chittagong Hill Tracts such as local communities' lack of knowledge, empowerment and participation in ecotourism activities, unimproved infrastructure, and unclear role of various institutions associated with ecotourism development in the CHT. A broad analysis of ecotourism governance and its relevant institutional and organizational influences on local communities and their access to various livelihoods resources that both directly and indirectly shape the potentials of their livelihoods is provided. The research demonstrated that, empowerment and participation of local communities and improved ecotourism governance at local, regional and national level are crucial for improving the livelihoods condition of poor communities through ecotourism activities.

Conclusion:

Ecotourism activities integrated with other livelihood strategies can enable the CHT local communities achieve sustainable livelihoods as it has potential to reduce poverty and vulnerability and improve wellbeing amongst the communities through producing income generating activities. Skills and capabilities of the communities increase through physical and intellectual participation in decision making and implementing process of ecotourism. Through ecotourism, natural resources and the biodiversity of CHT is also conserved. However, all these factors are highly affected by different socio-economic and political trends such as the relation of power between different groups living in CHT, factors relating to empowerment and participation of the local communities. Possibilities are also influenced by the facilities and opportunities provided by the associated governance systems and organizations. Ecotourism initiatives can be made possible and effective only when ecotourism as a livelihoods strategy for the local communities can adapt to the existing socio-political condition and has improved governance structures and processes. Only then, can the communities control the natural, environmental social and financial capitals needed to improve their livelihoods.

Sustainable Banking in Bangladesh: The Case of Green Banking Initiatives

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Introduction

In recent years, Sustainable Banking is receiving enormous attentions of regulators, practitioners, and academicians. Bangladesh Bank (BB) has also embraced this idea and is taking initiatives to implement sustainable banking through green banking, corporate social responsibility and financial inclusion.

Objective

This paper aims to evaluate different green banking schemes (Products) undertaken by banks and non-bank financial institutions (NBFIs) in Bangladesh.

Data

This research is highly dependent on secondary data collected from different publications of Bangladesh Bank including but not limited to "Quarterly Review Report" on Green Banking Activities of Banks and Financial Institutions and Annual Report of Bangladesh Bank. In addition, related publications by the banks and NBFIs, working paper, journal, newspaper and other valid and reliable sources will be used.

Methodology

Green banking initiatives in the financial sector of Bangladesh will be studied for 2012-2016 by using descriptive statistics tools. Trend analysis and graphical representation of information will be shown in relevant cases. For facilitating the analysis, Microsoft Excel 2016 will be used.

Findings and Conclusions

Based on the analysis, this research will discuss about the role of Bangladesh Bank in promoting green banking in Bangladesh. In addition, allocation and utilization of fund for direct and indirect green2 banking initiatives will be evaluated. The discussion will also be made on relative contributions of different types of banks i.e. state-owned banks, specialized banks, private commercial banks, and foreign commercial banks in issue of green banking. At the end, this study will provide some recommendations for increasing the effectiveness of green banking initiatives in Bangladesh.

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Knowledge, and Practice of Social Forestry among Beneficiaries: Challenges to Overcome

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Abstract:

Forest Department started participatory Social Forestry and Agroforestry in 1982 in Bangladesh under ADB aided Community Forestry Development Projects. Social forestry has the immense impact to empower rural community, to ensure sustainable livelihood, to cater unemployment problem, and to bring economic solvency. But all things highly depends on how much knowledge and practice of participants possess towards social forestry. It is urgent need to evaluate the level of knowledge and practice of beneficiaries to make social forestry success in all manner. The study, firstly will explore the level of knowledge and practice of social forestry among beneficiaries. Then, there will be an attempt to find out demographic and socio-economic variables influencing on knowledge and practice among participants of social forestry project. Methodologically, this piece of research includes first-hand data based on survey among beneficiaries, while the secondary data is scored from journal articles, books and government documents and reports. To describe the results, descriptive statistics has been used, and logistic regression model also is developed to determine the effect of demographic and socioeconomic variables on knowledge and practice.

Keywords: Knowledge and Practice, Social Forestry, Demographic & Socio-economic variables

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Need for developing System of Integrated Environmental and Economic Accounts to address Sustainable Development Goals

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Abstract:
The UN Sustainable Development Summit , 2015 adopted on 25 th September, 2015 seventeen sustainable development goals for "Transforming Our World: the 2030 Agenda for Sustainable Development" to take actions for ending poverty, protecting the planet and ensure safety and security to all. Climate change has been impacting public health, food and water security, migration around the world. Action on climate change will drive sustainable development and vice versa. Goal wise indicators of sustainable development have already firmed up by the by the UN Statistical Commission. Therefore, conventional national income accounting (SNA) or the Gross Domestic Product (GDP) is unable to be a complete indicator of sustainable development because it deals only with changing stock and flow of manmade capital but not of natural capital such as land, water, air, forest etc., and of its depleting stock as used up through its present economic activities. The accounting is entirely done on the commodities which are valued in terms of the market prices. Continuous effort to find the right indicator as appropriate signaling mechanism of sustainable development, green accounting emerged as one of the possible indicators of sustainability. Appropriate quantification of natural asset would help in the assessment of stock and flow. So representation of development processes through indicators of sustainability can provide a reasonable tool for policy making and monitoring of implementation. India is an important signatory to the Declaration of Sustainable Development Goals(SDGs) at the Sustainable Development Summit, 2015 and also at the Paris Agreement on Climatic Change Conference, COP 21. India will only be able to reach its target if all the state contributes in a sustainable way in the growth trajectory of the country. And therefore the issue of sustainable development considering the resource base becomes vital to ensure that the resources are being used optimally. The System of Integrated Environmental and Economic accounting (SEEA) of UN, 2003 aimed at integrating environment and social dimensions in the accounting framework at least through satellite system of accounts. This paper is an attempt to understand how to account for the resources for sustainable development and some problems faced while attempting to account the natural resources with respect to West Bengal. Lacks of documentation leading to data gaps make the accounting a much more difficult task. But the prospect of this study is that it can be used by policy maker for monitoring development pathway on sustainable development direction. This study provides the methodology and if updated from time to time lead to revision of policies based on the findings, addressing the priorities on a periodical basis. With such framework the resource situation can be understood which will try to make alter people's perception about resource use, arrest unnecessary misuse in some cases and help in better management of the resources. These local attempts will help in global climate change management and ensure a sustainable future for all.

Towards A Sustainable Livelihood: Street vendors in Mumbai and the Coping Mechanisms in their Occupation

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Abstract
This paper attempts to study the Livelihood conditions of street vendors in Mumbai from the framework of Sustainable Livelihood and their access to important assets/resources. Street vending is one of the easiest means of earning a livelihood for all these people as it requires very low financial input and technical skills/educational qualifications. Moreover, vendors provide cheap commodities which is feasible for the other urban poor in the

cities. With everyday challenges of forced removal, exploitation, limited earnings, long working hours, poor working conditions etc this paper attempts to explore the Livelihood conditions of the Vendors in Mumbai City and their main coping mechanisms.

Keeping the main DFID (The British Department for International Development) Sustainable Livelihoods Framework the study tries to analyse the livelihood of the vendors in terms of their Occupational Vulnerability, Access to Assets and Resources, and what are the Strategies that the vendors adopt for better conditions. For the purpose of the study static vendors, vending from a particular fixed location, was chosen, with the help of simple random sampling method followed by snowball sampling method. Vendors were selected from three main and popular locations of Mumbai- Colaba Causeway located in For Area, Bandra Hill Road and Chembur Market.

With the help of in depth and qualitative interviews, the study brought out the following main points a) Vendors have minimal access to Natural, Physical, Financial Capital and depend on their Human and Social Capital for livelihood b) vendors face vulnerable conditions due to limited access and knowledge of resources, technology, finance etc and insecurity of employment because of the bribes and idea of 'illegality' attached to their occupation, c) Depend on their social relations and networks as main assets in this occupation and d) regularly negotiate with authorities to maintain a sustainable nature of work. The study becomes more interesting because in spite of the prevailing Street Vendors Act, 2014, the situation of the vendors has not significantly improved. Vendors with better access to knowledge/networks automatically are able to gain benefits from different policies. The study also aims to highlight the possible ways in which the different government policies can be more inclusive and sustainable for a larger community of vendors.

Keywords: Sustainable Livelihood, SLA Framework, Street Vendors, Inclusive Policy

THEME 10: COASTAL ZONE MANAGEMENT

Coastal pollution at Chittagong Port from ship-generated wastes

Bornali Rahman

Abstract

The Bay of Bengal is rich source of living and non-living natural resources, habitat of enormous number of fishes and marine lives. It has been seen that in most cases, sea is considered as a convenient place for dumping waste from ship, thus resultant adverse environmental effect on marine flora and fauna. International Maritime Organization (IMO) adopted MARPOL convention in order to eradicate the sea and coast pollution, the party of this convention is bound to provide effective measures to control pollution from ship. Chittagong port is the economic gateway of Bangladesh and situated near the coast of 'Bay of Bengal', where large numbers of vessels are welcomed every year. As a port of MARPOL signed country, Chittagong port is obliged to provide sufficient facilities to diminish pollution at the coastal area of the port. Nevertheless, coastal water of the port is continually contaminated by ship generated wastes.

This study was conducted to reveal the coastal pollution in Chittagong port from sea-going vessels and also keep a look over the practice of international law and regulation specially the 'MARPOL' convention in the port territory. A review was made on the national environmental laws which are related to maritime and coastal pollution. The author also tried to demonstrate the crucial factors which are important to eliminate this pollution.

For this study, Chittagong port was visually observed for data collection. Relevant data were explored through literature review, field survey and interview. The main methodologies employed consist of both quantitative and qualitative data analyses.
This study discovered that coastal area near the Chittagong port is drastically contaminated by garbage from ship and there international regulations are not being complied properly. Alternatively, the deficiency in national regulation and absence of proper guideline are also accountable for this coastal pollution.
Needless to say, coastal pollution is going to be a great hazard for the Bay of Bengal region. In order to prevent this pollution, a concerted effort should be adopted and implemented in which government participation is most vital.

Key words: Bay of Bengal, Chittagong port, coast, waste, pollution, regulation.

Multivariate Statistical Techniques to Assess River Water Quality for Efficient Coastal Zone Management – A Study of Southern River Estuary of Bangladesh

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Abstract

Water quality deterioration of the coastal estuary river system of Bangladesh is a burning question currently. Salinity and other factors are responsible behind this quality degradation. Herein, Coastal Zone management becomes more critical and decisive gradually in this regard. The application of Principal component analysis (PCA) and cluster analysis (CA) have been widely used in the simplification of complex data sets of different water quality parameters for the evaluation of the water quality and different environmental issues and coastal zone management. The study area is classified into three different estuary system (WES, CES and EES). Among the three estuary system, The Lower Meghna, the Tetulia and the Lohalia along with the three spill channels captures the EES, CES consists of the Burishwar, Bishkhali and Baleswar and WES covers the western river system including Sundarban . In the need of diversification of the water samples to assess different water qualities around 94 water samples were collected from different zones of the estuary system of Bangladesh . In this study, a total 19 physical, chemical water quality parameters are considered in PCAand CA. The PCA analysis was checked for 19 parameters at three different zones (WES, CES, and EES). Only Seven principles components were taken because it explained above 80% of the total variances. Eigen values, and Cumulative variability (%) were computed and with the help of the scree plot five, seven and six principal factors could be selected on the existence of the largest magnitudes of the eigen value in the WES, CES and EES zone respectively. Dominating water quality parameters that were influential for describing the water quality in all the three zones were Salinity, EC, TDS and SO_2. PCA conducted extensive reduction in overall dataset and finally came up with three or four principal components. Cluster analysis was responsible for clustering western, central and eastern part into three, four and four cluster respectively. All the stations under the same cluster had similarity in water quality characteristics. So, all these methods are handful for proper quality assessment and implementing major development projects and coastal zone management in the Southern river estuary of Bangladesh.

Keywords: Water Quality, Principal Component Analysis (PCA), Cluster Analysis (CA), Southern River Estuary System.

Response of Coastal Mangrove Sediment Ecosystem to Ocean Acidification along Fukido River Estuary, Ishigaki, Japan

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Abstract
Increasing ocean acidification challenges mangrove sediment ecosystems' function. This paper aimed to understand the response of autotrophic (i.e. oxygen fluxes, primary production) and heterotrophic variables (i.e. respiration, bacterial abundance) to ocean acidification along Fukido river estuary, Ishigaki, Japan using sediment cores from five stations under close to natural light and temperature condition. Incubation experiments were conducted under ambient and ocean acidification stress condition under natural illumination. Although significant effects from acidification were observed during the experimental period, many were rather moderate. Our study revealed that, autotrophic variables like, oxygen fluxes, primary production, pigment composition increased significantly under ocean acidification. Therefore, uptake of nutrients increased, strengthening the role of coastal mangrove sediments as sinks for inorganic nutrients. Among heterotrophic variables dark oxygen fluxes and respiration responded less clearly to acidification than did autotrophic variables. Bacterial abundance increased significantly under the acidification stress. Although respiration and bacterial abundance increased, the system remained dominantly autotrophic during the incubation experiment due to the photosynthetic role of benthic microalgae. The presence of a well-developed benthic microalgal community appeared to adapt acidification stress. It therefore seems that, benthic microalgae in mangrove sediments help to reduce the ecological cost of acidification stress in near future during illuminated period maintaining the system net autotrophic. These findings are necessary to reliably inform policy makers for developing sustainable marine ecosystems management solutions.

Keywords: ocean acidification, primary production, nutrients, chlorophyll *a* and bacterial abundance.

Evaluation of erosion-deposition along the south-eastern coastline of Bangladesh

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Abstract
Bangladesh is located at the confluence of sediment laden Ganges and Brahmaputra Rivers across low lying alluvial and delta plains that have accumulated over the past few thousand years. The geography of the coastal areas of Bangladesh is more dynamic than generally recognized. Although abundant sediment supply has resulted in accretion on some parts along the coastline, others are experiencing rapid erosion. The East coast of Bangladesh goes through various coastal processes causes erosion and deposition over the years. This paper mainly focuses the erosion-deposition scenario along the south-eastern coastline using long term LANDSAT images. Shoreline identification was done utilizing both manual digitization and indexing method. The zones of erosion and deposition were identified and their rate of changes was estimated. It is observed that the overall change in the area is relatively small across the entire east coastline over the last 30 years, whereas, the rate of changes were more subdued in the Chittagong and Cox's Bazar coastal areas.

Keywords: LANDSAT images; Manual digitization; Indexing method; Erosion-deposition; East

coast; Bangladesh;

THEME 11: INTEGRATED WATER RESOURCES MANAGEMENT

Achieving Sustainable Economic Development through the Marine Resources; A legal and Policy Analysis in Bangladesh Perspective

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Abstract
Oceans are increasingly gaining in importance in terms of economic development. Over the period of time, these are triggering more attention from economic perspective. The concept of "Oceans Economy" or "Blue Economy" is recent phenomenon. It has originated from the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012. In this modern era, the marine economy is one of the most highly valued economic sectors for all the nations. All countries are trying to extract the resource from the sea with the help of science and technology. Multi-dimensional economic activities are carried out by the state authority in the sea to reach the economic development. Sometimes, this results in maritime disputes among the nations and creates the emerging issues in the context of international law. To resolve those issues, with the passage of time, various international institutes are established by the civilized nation and trying to reach an amicable solution. After resolving those conflicts, all countries are trying to establish their sovereignty over the sea and focusing on economic activities to build the nation as economically developed. Bangladesh is also trying to utilize these resources to secure the optimum economic development. Actually, it got momentum in Bangladesh after resolving the maritime dispute with India and Myanmar. In contrary, when a country conducts those economic activities in the sea, it may adversely affect the environment of that country and neighboring countries at large. This reality is also not above exception in case of Bangladesh. In this regard, the environmental laws take its place and try to protect the environment with the fundamental concept of sustainable development. The ultimate goal of this study is to analyze the role of marine resources to foster the economic development in Bangladesh and also to examine the laws which can ensure the marine environment protection in its maritime zone to ensure the sustainable economic development.

INTEGRATED LAND AND WATER RESOURCES MANAGEMENT FOR SUSTAINABLE DEVELOPMENT OF THE JAMUNA RIVER BASIN IN THE GANGETIC DELTA, INDIA

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Abstract
Land and Water resources are the foundation for the agricultural production, fishing and aquaculture that provides nutrition and income. These resources also support the production of livestock and forest products that provide food, fuel, and fodder and building materials crucial for the livelihood of impoverished families. At the same time, the ecosystem provide critical services to a wider rural and urban population, including surface and groundwater restoration, regulation of flooding and maintenance of biological diversity among other in the study area. This paper has been deal with the Jammu river Basin (JRB) which is one of the small tributary of the Bhagirathi-Hooghly River Basin in the Lower Gangetic Delta, India. The Geographical area of the basin is 647.85 sq. km. It is situated at the Tropical Monsoon Climatic Region where total population is 1132441 persons (as per 2011 census, Govt. of India).
Identified problems are: i) the area is density populated region (1748 persons per sq. km. as per 2011 census) where as 76.36% population depends on agriculture (i.e. land and water resources); ii) High intensity of agriculture and H.Y.V. rice cultivation are required more water and chemical fertilizer which is ultimately impacts on depletion of groundwater and land degradation, iii) Most of the agricultural families are marginal and small farmers where 28.00% people are living under Below Poverty Line; iv) Unscientific method of agriculture has been practices and natural ecosystem has been degraded simultaneously, v) The quality and quantity of regional water resources are under stress due to increasing variability and scarcity, compounded by pressure ground and surface water resources to meet intensified agricultural outputs and industrial needs.

The principle objectives of the study are – (i) identification of environmental feature (land and water) in relation to flora and fauna in study area; (ii) to investigate for the protection of environmental ecosystems; (iii) to find out the land and water resources and their use and misuse; (iv) finally, prepared a map on land and water resources potentials zones for sustainable development and ecosystem management of the area.

The methodology is adopted in the present study includes: (i) Pre-field method included collection of data (both primary and secondary), the existing reports, maps and remote sensing data as available; (ii) Field work method included as detailed survey of the area under study inregard to the characteristics of resources (physical and human). Field work has done at the time of Pre-Monsoon, Monsoon and Post-monsoon period. (iii) Post-field work is mainly confined in the laboratory i.e. the data analysis, correlation and rational interpretation of the data has done.

Finally, the JRB area is divided into three macro and seven micro planning region and separate planning strategies and models are recommended for integrated land and water resources management for sustainable development. Planning strategies should be implemented into two ways: (1) short-term planning (2-3 years) – keeping in mind the immediate gain (employment generation, food production and environmental protection) of the local people and (ii) long-term planning (3-5 years) for all-round sustainable development of the area.

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PREVALENCE OF NON-TUBERCULOUS MYCOBACTERIUM (NTM) IN DRINKING WATER DISTRIBUTION SYSTEMS

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Objectives
Current study is carried out with an aim to identify the prevalence of Non-tuberculosis mycobacteria (NTM) in drinking water distribution system. The study gain more importance because NTM is an environmental mycobacteria and distributed throughout the world, where the exposure to NTM is mainly occurring from environmental sources, predominantly water. NTM are emerging pathogens that affect both immuno-compromised and immuno-competent patients. The incidence and prevalence of NTM cases are increasing worldwide and many countries, there are no nationally representative data about the prevalence of NTM related diseases similar to India.
Methodology
Here total 52 water samples were collected from different places of Pudhucherry, an union territory of India as 10 batches and each sample has a duplicate. The collected samples were processed on the same day-one sample for NA plate and one for MGIT tube, and NA plate chosen for incubation with an aim of checking the growth as well as appearance of bacteria. MGIT tube smear were prepared and confirm the presence of acid fast bacilli by ZN staining, where, smear positive tubes then go for ID test using SD Bioline TB Ag MPT64 Rapid Assay, a rapid immuno-chromatographic identification test for the *M. tuberculosis* complex and confirmed as NTM.
Findings
Seven different pathogenic species were isolated, and the total 66.66% of species were identified out of 36 positive samples. *Mycobacterium species* (AS*)* Comple**x**, *M.abscessus*, *M.fortuitum*, *M.scrofulaceum*, *M.gordonae, M.cehlonae* and Gram positive bacteria are the identified species.88.88% of hospital water shows positive for NTM and dominant species identified are *Mycobacterium species* (AS) complex and *M.abscessus* were the dominant species.

Conclusion
The current study therefore provides vital information that will contribute significantly in the management of NTM in drinking water distribution system as well as the need for avoiding the chances of exposure.

Keywords: ***Non-tuberculosis mycobacteria (NTM); drinking water; exposure; incidence; distribution***

Lifestyle of the Nomadic River Gypsies and Their Threat Narrative: A Tale of Two Villages in Bangladesh

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Abstract
Rivers have been an attention of human activities throughout the history. The livelihood of people is essentially dependent on river and its resources in Bangladesh, but the story of river gypsies are totally different. River gypsies are an ethnic group in Bangladesh. They are known as “water gypsies” or “bedey” to local people. They

have their own lifestyles and culture. This paper focuses on the Bangladeshi gypsy community living in Porabari, Savar and Dakatia River in chandpur sadar district. This study investigated the gypsies identity in the society and status in the community level and also explore their existing entitlements, need and social rights, and finally examine the problem and threats they frequently face for living an unstable condition in the society. Both primary and secondary data are used in this study. A questionnaire survey and focus group discussion (FGD) are conducted in the study area. Besides these data some secondary data is also used in this study. The major empirical findings are: I) in Bangladesh context day by day river gypsies lost their culture; II) one of the major problems in bedey community is water and sanitation, in Chandpur sadar district 260- 280 families (approximately 500-600 people) use only 4 kacha toilets by sharing. They are directly drinking the river water by using potassium aluminium sulphate (KAl (SO4)2); III) about their own opinion they use the river water to clean, cook, bath and drink and they have no land; IV) they want their domestic culture but the problem is they do not want to roam in the river and jungle because their traditional professions losing their demand. Now they want to transform their occupation and many of them runs grocery shop in porabari; V) more than 96 percent of bedes are illiterate and they are living below the poverty line, only 3 percent bedey children got the opportunity to be vaccinated against vaccine preventable deadly diseases; VI) in chandpur sadar district most of the bedes are enlisted in the voter list but the scenario of savar porabari are totally different. Most of the bedes still could not enlist themselves in the voter list. This research demonstrates the overall lifestyle of gypsy community in the study area. At present they are facing many problems, due to rapid urbanization and drying out the rivers, many of them changing their profession. Government and NGOs should take some initiatives to support them for protect their culture and also need provide them an environment friendly living place.

Key Words: River Gypsies, Ethnic group, Water and sanitation, Deadly Diseases, Environment friendly.

THEME 12: HEALTH AND WELL-BEING

A Network Model for Introducing Health Insurance in Bangladesh

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Abstract

The Sustainable Development Goal (SDG) 3 is related with ensuring better health services and promotes well-being. In this paper we attempt to align the insurance companies business into the SDG goal. The contribution of insurance sector assets is around 3% of country's GDP. Although the first year insurance premium collection in Bangladesh is lowest among South Asian countries, the country's GDP per capita is third among the South Asian economies. This represents that there is gap in supply and demand. If insurance companies come up with new innovative products, the insurance premium could be raised. In Bangladesh, there is no national health insurance system for all citizens. Therefore people are insecure at the time of sick or injury. All most all Bangladeshi life insurers are offer conventional products and health insurance products are few. Hence this paper we theoretically proposed a model for life insurance companies to cover health insurance which helps the country to achieve SDG 3 and the insurers will also get business as well. In this paper we briefly discussed about the history of life insurance business in Bangladesh and its business process. In methodological part we analyze the life insurance sectors financial data from 2010 to 2016 and conduct comprehensive discussion on Bangladesh health sector expenditure. We adopt the network model among three parties such as insurers, clients and government. A dummy entity "New life insurance company" in the market we actively considered in our model. In this paper we found that if any new entity attempt to enter in the market with health insurance product, it can successfully enter into the market and the citizens will be avail their health insurance coverage

through private sector insurance comapnies. In this paper we proposed that although the life insurance business in Bangladesh is highly competitive but if any new entrant or existing company comes up with health insurance related product it would be commercially viable and helps the country to achieve SDG within 2030.

Key words: SDG, Network model, Health insurance
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Clean Air, Health and Wellbeing: The Case of Environmental Valuation in India

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Abstract

Objectives:

Revealed preference (RP) and stated preference (SP) techniques are the two more familiar approaches of valuation of non-marketed goods and services. An alternative approach to such valuation rests on observing the impact of a change in the provision of a non-marketed good or service on happiness. The approach is commonly known as the happiness or life satisfaction approach of non-market valuation. The objective of the paper is to offer a brief background of RP and SP techniques and further extension to discuss the happiness approach of valuation. Further, the paper uses the 5^{th} wave of World Values Survey (WVS) data to measure willingness to pay (WTP) for air quality in India by applying the happiness approach.

Methodology:

The happiness approach of environmental valuation observes the impact of a change in the provision of a non-market good or service on happiness. In happiness studies, respondents are asked to report their level of happiness along with their opinion regarding provision of non-marketed commodities such as water quality, air quality etc. Respondents knowingly or unknowingly offer happiness responses that move systematically with the change in the level of provision of the non-marketed commodity. The relationship between level of happiness and the level of income is used to estimate the trade-off between income and the level of the non-market commodity. This approach of valuation of a non-marketed commodity that uses happiness or life satisfaction measure is known as 'The Happiness or Life Satisfaction Approach of Valuation'. The method uses two correlations. First, the correlation between self-reported happiness or life satisfaction and the level of the non-marketed commodity which gives marginal utility of the non-marketed commodity. The second correlation is between self-reported happiness or life satisfaction and income that yields marginal utility of income. These two marginal utilities can be used to obtain the marginal rate of substitution (MRS) between the non-marketed commodity and income. Thus the approximate marginal monetary valuation of the non-marketed commodity can be calculated.

Findings:

It is found that income and happiness have a positive relationship for all the econometric models. The relationship between air quality and happiness is also as per a-priori expectation. People who perceive their local air quality as not serious at all express greater happiness. It is found that respondents those who perceive their local air quality as poor are less happy and respondents are eager to pay for improvement in local air quality. A 1 % change in air quality standard is associated with around 1.1% change in income to keep happiness constant.

Conclusion:
The paper provides a value of air quality for changes in perception regarding local air quality and the WTP estimate is robust for different model specifications. Thus public authorities should frame policies to reduce air pollution as it increases happiness. While doing so suitable taxation strategies can be taken to mop funds to finance air quality improvement programmes. The aggregate marginal valuation, as obtained by multiplying the total number of households with the WTP of a typical household might be within close proximity to the necessary cost required for mitigating activities.

Keywords:
Air Quality; Happiness; Health; Revealed Preference; Stated Preference; Wellbeing

Ethno-epistemologies for a prosperous society: An integrative approach to early childhood development and well-being

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Abstract
Global goals for sustainable development are expected to be achieved through programs implemented at local levels, in the sense ethno-epistemologies or contextually specific knowledge and methods are of vital importance in the implementation of those programmes. Prosperity of the society which promotes human well-being and happiness is the ultimate goal of the 2030 agenda for sustainable development of which the third goal (good health and well being) strives to ensure a healthy life and promote well-being, that finally contributes in the building prosperous communities. Ensuring multidimensional well-being of people without any discrimination and inequality is a perilous challenge so that contextually specific and community particular epistemologies and methods are highly essential, as that would embark effective strategies against the identified challenges. This research, therefore, focuses as to how social and emotional well-being as a part of Global Framework for Learning can be strengthened while ensuring a conducive environment for children in their early childhood particularly in the estate sector, Sri Lanka (considered to be an excluded and unprivileged community in the country). This research provides community based – more contextual approach to good-quality early childhood development (ECD) and well-being that would affect in later lives of the people positively. Constructing grounded theory methodology with *a single case - multiple unit* case study design has been employed in this research. In line with the methodological assumptions, five estates were studied. Once collected data were analyzed the research arrived at a general theory concerning as to how conducive environment for good-quality early childhood development and well-being has been hindered due to internal and external forces on the people. Based on the theoretical assumptions, which reflects ethno-epistemologies and methods, an approach to the good-quality early childhood has been developed, however, this paper specifically considers about the approach developed for addressing internal forces and making a conducive environment for children. Furthermore, as the theory reflects some of the identified hindrances include lack of awareness about reproductive health, less access to relevant information or prevalence of wrong information regarding health and well-being, internalized marginalization, commonly accepted persons' habitus which places the people on a wrong track, low level of self-reflexivity and the kind. In order to move out from those community-internal hindrances, even though the public-private and community (people) partnership is inevitable, community initiatives are significant as that would easily be aligned with ethno-epistemologies and methods. Each and every stakeholder of that particular community (children, parents, neighbours, community leaders) are responsible for the continuation of locally derived and organized programmes. These programmes can be perused giving particular attention to making communities aware of their situation in the society with correct information, effective involvement of community midwifery service, community level curricular planning in ECD centres, proper and organized religious involvement, using public clinics as information and service centres, community advocacy, properly planned community bank system (for money, grain, food, information etc.). In conclusion, this research focused on developing an approach to good-quality early

childhood development and well-being in line with ethno-epistemologies and methods, that would ultimately contribute in the achievement of sustainable development by 2030.

Keywords: Contextually specific approach, ECD, Estate Sector, Ethno-epistemologies, Sri Lanka,

Socioeconomic Determinants and Mental Health: A Comparative Study between Rural and Urban Women (60-75 years) in Bangladesh

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Abstract

The growth rate of senior citizens whose age 60 0r 60+ is increasing at high speed in Bangladesh for the result of the improved quality of life and good health services. At present, it is approximately one crore 30 million (8% of total population) and projected 4.5 crores in 2050. Women are also in a high number in this amount, and they are the most vulnerable group in the context of Bangladesh for lack of economic, social and cultural capital. So they are facing numerous challenges including mental health and often experiencing a complicated situation, undergoing physical, psychological and social changes while adapting to the aging process. The study will explore the socioeconomic determinants which have the impact on mental health, especially for women group. Both rural and urban women are included in this study to show the comparison and differences of determinants. For this study, probability sampling will be done to select women from both urban and rural area based on the national voter list. Bivariate analysis including cross tabulation will be applied to the presentation of the data and chi-square test will be done to test the association between socioeconomic determinants and mental health. Binary logistic regression model will be developed to measure the effects of socioeconomic determinants on mental health. So, this study reveals both the association of socioeconomic determinants and mental health as well as the comparison between rural and urban women's mental health status.

Keywords: Mental Health, Socio-economic Determinants, Women & Mental Health

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Health of Schedule Castes of West Benagal, India: Special References to Namasudra

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Abstract

Health defined in the Constitution of WHO (1994) that, "Health is a state of complete physical, mental and social well being and not merely absence of disease and infirmity" is broad one which implies a perfect harmony of man's internal environment with his external environment consisting of physical, chemical and biological surroundings. This harmony also implies the status of health which can be measured on the basis of the parameters like sex-ratio, literacy, marriage practice, age at marriage, fertility, mortality, life expectancy at birth, forest ecology, child bearing and maternal mortality, maternal and child health care practices, family welfare programme, sexually transmitted diseases, genetic disorder and other bio-social issues.

However, health of scheduled caste people is the perception and conception in their own cultural system with less awareness of the modern health care and health sources. The article analyzes on as to namasudras of West Bengal react to both traditional and exogenous health management practices? What are the facilitating and

inhibiting factors in their health management? How their health and diseases shall be managed in a sustainable manner? The study was conducted in the villages namely Purba Bongaon, Paschim Ramchandrapur and Kansona in Bongaon Block in North 24 Parganas of West Bengal. Interview schedule, case study, observation, focus group discursion and documentary sources were the tools used for data collection. Historically, namasudra communities have followed traditional healing practices. But today, not only the number of those who were not attending to any healing method have decreased significantly but also their dependence on modern health practices have increased. Villager's dependence on state initiated health management mechanisms. There is a need to accumulate the traditional healers by linking them with modern health practices.

Keywords*: Namasudra, Health, WHO, Bongaon, West Bengal.*

Health Situation of Elderly People at Slum Area in Sylhet City

Biback Das[4]

Abstract

The research is carried out to assess factor affecting the health condition of the elderly people in the slum areas in Sylhet City. This research was quantitative type. In Quantitative approach, primary data were collected and used from the randomly selected elderly people in the Sylhet City slum areas. The secondary data were collected from many articles, documents, newspaper, magazine etc. By analyzing the survey data, it is illustrated that the slum dwellers are deprived from the basic needs. Meanwhile, elderly people can't fulfill their medical treatment due to their financial condition because of their work incompatibility. This study identifies the factor affecting health condition such as financial condition, lack of knowledge about proper medical facilities, communication gap between the authority and patient, unemployment, and so on. These factors also affect their health situation. Many diseases like asthma, heart disease are occurred. This study also mentions about the livelihood of slum people are so poor in condition. Due to financial condition, aged people can't take their proper treatment and their family member can't afford it. This study also understands that the people from slum areas are getting concerned about their medical care. They are easily going to the hospital and take their service because of low pricing. On the other hand, people are meanwhile stopped their treatment of financial situation. This study finds the health situation of elderly people at slum areas in metropolitan city and their consciousness.

Key-Words: Health situation, Health care facilities, Elderly people, Slum areas.

Selecting Covariance Structure to Model the Body Mass Index of Primary School Going Children in Bangladesh

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Abstract

Background

In longitudinal study, data are correlated as the observations are collected from the same subject over time. To analyze these kinds of data, selecting the better covariance structure is very important to get the better results.

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Therefore, we aimed to select better covariance structure to model the body mass index (BMI) of primary school going children in Bangladesh.

Methods

To do this study, at first we conducted a longitudinal study, we built a cohort of 100 primary school going children in Sylhet city, Bangladesh. We collected the information from the same children at the initial time (T_0), after six month (T_6), after twelve month (T_{12}) and after 18 months (T_{18}). Linear Mixed Model (LMM) was applied for selecting the better covariance structure and then to model the body mass index.

Results

To find out the better covariance structure, we used Diagonal, Unstructured (UN), Auto Regressive order 1 (AR1) and Compound Symmetry (CS) covariance structures in the collected longitudinal data. Observing all the criteria, it is found that the covariance structure 'CS' (compound symmetry) gives better results of LMM. Finally using the CS covariance structure, we observed that over time BMI of male students' are comparatively less than female students' (-0.040, p=0.034).

Conclusions

Taken together, we may conclude that Compound Symmetry (CS) gives better output to model the body mass index of primary school going children. As female students are getting more obese, in addition, today's female children are the mothers of the future; therefore, parents should give concentration on female children to reduce their weight. This study may be useful for researchers in public health sectors to select proper covariance structure to analyze their longitudinal data.

Keywords: Compound Symmetry, Obesity, Longitudinal study, Linear Mixed Model, Public Health.

UNDERSTANDING THE AWARENESS LEVELS AND CONSUMPTION PATTERN OF ANIMAL-BASED LUXURY PRODUCTS: THE CASE OF DHAKA CITY RESIDENTS

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Aim: To find out whether consumers' awareness levels will affect the consumption pattern of products containing animal ingredients among the dwellers of Dhaka city.

Methods: A questionnaire was developed about their consumption pattern of products with animal derivatives and their awareness about the ingredients present in those products. This was surveyed by random sampling technique. The quantitative data have been analyzed through the help of SPSS software, and a descriptive analysis has been performed with the open-ended questions. Graphs and figures have been added to demonstrate their level of awareness.

Results: Majority of the consumers have low levels of awareness on the animal ingredients used in the consumer products. However, it has also been found out that an increase in their awareness levels will decrease the consumption pattern of such products.

Conclusion: According to the research, consumption patterns will be affected (that is consumption levels will go down) with higher levels of awareness regarding use of animal derivatives on consumer products.

Keywords: animal-derived ingredients, awareness, consumption pattern, consumer products

Patient's Needs and Receive Medical Consultation-Department Wise on OPD Basis at a Private Hospital, In Dhaka City

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Abstract:

Objective:

The main objective of the study was to measure the patient needs and attending in department wise on OPD in a private hospital of Dhaka city.

Materials and Methods: A cross-sectional study was conducted to measure the patient needs and attending in department wise on OPD in a private hospital. The respondents were selected purposively. Data were collected through face to face interview and hospital records.

Places and period of study: The study was conducted among 11182 patients attending the outpatient department (OPDs) of a reputed private hospital in Dhaka. Study period was four months (January 2018 to April 2018)**.**

Results:

Among the 11182 patient's, 64 % patients were male and 35.71% patients were female. Most of the patient 48.57% were in the age group of 31-50 yrs. 31.43% patient were age group of 10-30 yrs and 20% patient were age group of 51-70 yrs , 0.91% visited to cardiology department0 , 59.17% pt were visit to Gastroenterology department , 16.37% pt were visit to Hepatobiliary and pancreatic department , 6.60% pt visited to Obs & Gynecology department , 0.97% pts were visited to General & lap surgery, 2.98% pt were visited to nephrology department, 1.43% pts visited to internal medicine department , 588 (47.23%) pts were admitted in IPD through OPD.

Conclusion:

In recent years, we see a growing interest in the role of technology and the built environment as part of the holistic treatment of patients. In order to assess the importance, needs of the patients who were attending OPD of a private hospital was the main goal of this study.

KEY WORDS: OPD (Outdoor Patient Department), IPD (Indoor patient Department), Hospital.

THEME 13: GOVERNANCE AND SUSTAINABLE DEVELOPMENT

DYNAMICS OF GOVERNANCE AND LIVELIHOOD OF POWER LOOM WORKERS: AT THE PERIPHERY OF MUMBAI CITY

Rinku Gupta

PhD student
TISS, MUMBAI

Abstract
India is a traditional textile producing country and it is also among the world's top producers of yarns and fabrics, and the exporter of quality products. Textiles industry stands as a pioneer activity in the Indian manufacturing sector and has a primordial importance in foreign currency revenue generation. This study explores the dynamics between governance, development and livelihood of migrant workers of industrial town situated at the periphery of Mumbai city. This study looks into the issues of policy failure, inclusivity and struggle of powerloom workers in terms of their livelihood and social security. Textile industry employs a significant number of people both skilled and unskilled in India after agriculture. It offers employment to 45 million people. Powerloom is important element of textile industry that accounts for significant contribution in the production and revenue generation. Around 62% of the total cloth production in the country comes from powerloom industry and also it employs around 4.86 million people. Study area is 'Bhiwandi' which is situated at the periphery of Mumbai city and it is known as the Manchester of India in term of cloth production. Bhiwandi hosts around 1 million powerlooms, which is more than 30% of total powerlooms in India. For the study, sample of powerloom workers and workshops was taken along with local MLAs, Minister of MSME, and others- Powerloom Owners, local journalist and Activists. The Powerloom workshops and workers were chosen by simple random sampling and snowball sampling. Along with survey, in-depth interviews, focused group discussions and observations were also used to collect the data and information. The study brought out that workers, who work in informal or unregistered powerloom workshop, face vulnerabilities of occupation due to different sorts of problems related to their livelihood. These workers do not have any land for farming and/or work opportunities to their native villages or the place from where these workers have migrated and how they get exploited at their work place, where they have migrated for work, in terms of long working hours, poor working condition in powerloom workshops and very low amount of wages paid to them. The study will also highlight that, how these workers survive and work as a collective unit to become safety nets for each other to protect their livelihood with help of their social network and in absence of labour unions.

Keywords: Livelihood, Megacities and Periphery, Governance and exclusion, Informal Industry Workers, Bhiwandi Powerloom, Social networks and livelihood.

Power and Good Governance in Nigeria's Democracy: An Imperative for Sustainable Development.

Dr. Wanan Cornelius Terzungwe, Department of Political Science, Federal University Gashua, Yobe State, Nigeria

Abstract
The campaign for democratization in the post cold war era has contributed to democratic transition in most African states including Nigeria. However, achieving development and to a large extent sustainable development remains in doubt in most of these nascent democracies particularly Nigeria. Considering the experience of Nigeria in the fourth republic, the study examined the nexus between the acquisition of power, used of power by the political leadership and how it can engender good governance which is imperative for sustainable development. Using secondary data collected from documentary sources, a qualitative descriptive method of analysis, and the study argues that power in Nigeria is seem or view as tool for personal gain in government and as such it has not been used by successive leaders to achieve good governance. This to large extent will affect sustainable development. Relying on the theory of post-colonial state, we demonstrated that the limited autonomy of the Nigerian state and its employment as a means of primitive accumulation by the ruling elite has led to intense struggle on the one hand by the ruling party to retain itself perpetually in power and a corresponding struggle on the other hand by the opposition to change the status quo. The paper therefore

recommends among others that for democracy to make meaning in Nigeria, acquisition and use of power must be to serve but not to be served. To achieve this, leaders should be selected on merit devoid of ethnic and religious coloration.

Key Words: Power, Good Governance, Post- Colonialism, Democratic Governance, Sustainable Development

Tourism Expansion and Sustainable Economic Growth: The Case of Bangladesh

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Abstract

Objectives: In 2016, the direct and total contribution of tourism was respectively 2.2% and 5.3% to Bangladesh's GDP. Tourism is a non-tradable good which means, consumer and producer must be present at the same place, same time and sell the environment, so it has an impact on sustainable economic growth. It is generally assumed that the volume of tourism has a correlation with the size of a country's economy. But at the same time, identifying any causation between these two variables are difficult due to the presence of equivocation that comes with this topic. It can happen that either tourism causes the economy to grow or economic growth contributes to tourism or both causes another to grow. So, our paper would try to find out if there is any long-term relationship between tourism receipt and Bangladesh's GDP growth and then delve into further to find causation and if any, then whether this causation is unidirectional or bidirectional.

Methodology: We will use different co-integration tests to find out if there is any kind of long-term relationship between tourism and economy and compare their results. Our next task would be to find causation and for this, we will use bivariate Granger causality tests. We will use the data on tourism and GDP from 1988 to 2016.

Findings: In our analysis, tourism-led growth has been investigated through co-integration and causality analysis.(GDP growth & tourism receipt). We have checked the stationarity of the variables and we have found at the level both variables are non-stationary. (Using ADF & Philips Perron test). Finally, using co-integration analysis we have found there exist a long-run equilibrium relationship between the variables.

Conclusion: In our study, we have shown that tourism-led growth will play a pivotal role in achieving sustainable economic development**.** The combination of results pointed to a two-way causality for economic growth and tourism growth which certify that economic expansion is necessary for tourism development in the country. So, pragmatic sustainable policies will require to ensure the development of the tourism sectors and it will improve the economy as well.

Illegal Logging: A felonious encroachment towards sustainable development

Dr.Ripon Bhattacharjee, Assistant Professor, Adamas University, Barasat, Kolkata 700126, West Bengal

Abstract

In contemporary times, illegal timber trade is one of the potential factors leading to global warming and climate change. The doctrine of sustainable development is blatantly violated in case of illegal timber trade. The requirement of timber for infrastructural needs and industrial growth is stupendous and is increasing day by day. Since, legally controlled and regulated trade is not able to meet the market demand for timber, illegal timber trade is flourishing. There is a well-known route through which illegally felled timber reaches the world market. It is to be noted that the international instruments or the WTO and Foreign Trade Mechanism miserably fails to address the issue. So far as the Indian law is concerned, the Indian Forest Act is the only legislation to boast of and that is by far too inadequate. It is only the Supreme Court's guideline in Godavarman case which directly addresses the issue but a comprehensive and a complete framework is yet to emerge.

This paper is therefore a sincere attempt to explore the issue critically analyses the existing legal machinery and suggest suitable remedies for curbing this menace so as to ensure sustainable development and secure environmental justice in India.

"Responsibilities of Manufacturing Companies for Sustainable Development in Bangladesh"

Shakir Mahmud Shourav
Southeast University
School of Business Studies
Major Finance

Abstract

Summary

Sustainable development is very important part at present in the world for long term growth in a country. Poverty, greenhouse effect, global warming, pure food and water, natural disaster, climate change etc. have remained in the same line with sustainable development. In our present century, manufacturing industries have been seen because of technological advantage.

Objective

- To identify how manufacturing companies play an important role for sustainable development in our country.

Methodology

The abstract explores whether sustainable development is influenced by the business activities of manufacturing companies in our country. Some related journals and articles as secondary data have been studied.

Introduction

Our country, Bangladesh, is being developed day by day by rapid growth of industrialization. Local companies and also foreign manufacturing companies have placed their mills, factories in industrial areas. But the companies have hardly aware of the natural disasters and climate changes in our country. Although at present our country has been greatly affected by natural disasters, climate change and some unsustainable problems.

Most of the times, they are considered as main liable for the problems. Because the manufacturing companies sometimes have misused natural resources like poisoning pure water, soil, destroying trees, filling up rivers and canals etc. As a result the normal livelihood of ours has greatly hampered.

We know that our natural resources are limited and it must have proper line for using it. The natural resources have given ours not only living elements but also carried out an emerging economic condition.

Findings and Conclusion

In our country, manufacturing companies have produced lot of products like cements, foods, cloths, medicines, cosmetics etc. Every districts have at least one manufacturing mill or factory. Water, soil, iron, energy etc. are greatly being used every day by the mills and factories. As a result climate change is greatly appeared in our environment. The natural resources are poisoned increasingly more and more. Natural disaster are frequently occurred. People will be getting harmed by various diseases because of poisoning natural resources. They will lose their working capability. The mortality rate will be increasing. Human resource of our country will be

hampered. The gross domestic products (GDP) will then decrease. From both side, our production resources and human resources will decrease. These problems seem that the manufacturing companies have created their own problems.
The fact is that, a company must have long term strategies. The strategies must have same as sustainable development. If the companies think about the flow of problems, they will get a good environment and long term profit earning sources. Otherwise our country will be unsuitable for living and investing in a particular business.

Role of International Law in Achieving Sustainable Development Goals (SDGs)

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Abstract:
The Sustainable Development Goals (SDGs) adopted in 2015 have marked a great instant in strengthening the international governance and citizenship. The 1992 UN Conference on Environment and Development (UNCED) produced five instruments explicitly proclaiming sustainable development as a true institution of international law. While different SDGs theoretically form a part of international law obligations, the SDGs have been received by international lawyers as much more than a simple policy document. The SDGs are grounded in international law and made consistent with existing commitments expressed in a number of international law instruments. It cannot be denied that the influence of international law plays a pivotal role while demarcating the state obligations in ensuring sustainable development worldwide. However, in spite of considerable academic discourse and jurisprudence on sustainable development as well as its customary international law status, it is still unclear as to whether this development is a binding principle of international law or merely a concept or an objective only. This piece of academic research mainly strives to explore the implications of international law for the adoption of SDGs and it examines as to how international law provides a normative environment for achieving the SDGs. This study also argues that, though self-proclaimed as integrated and indivisible, SDGs reflect the fragmented structure of international law. Finally the challenges of achieving SDGs through the effective implementation of international law norms are also rightly focused in this present study.

THEME 14: DISABILITY AND SDGS

"LIVING STRATEGY WITH COMMUNITY-BASED FACILITIES FOR PEOPLE WITH INTELLECTUAL DISABILITY BY ADAPTATION OF SUSTAINABLE DEVELOPMENT GOALS"

Afsana Latif
Architect

Sarah Jabeen Kristy
Researcher

Abstract

The process of living strategy is where community members come together to require collective activity and produce arrangements to common issues. Community security like economic, social, built environment, environmental and cultural are regularly changes from this sort of collective activity being taken at a grassroots level. So the Community development looks for to move forward quality of life. Effective development improvement comes about in shared responsibility among community members. The improvement recognizes has the differing qualities of interface inside a community and its relationship to building capacity. But our community-based Facilities are too restricted and are being increasingly extended as they look forward to meet wants of a developing number of disabled people with complex medical, physical, natural and behavioral needs. So the living strategy with community-based facilities is executed through the combined efforts of debilitated individuals themselves, their families and communities, and the suitable wellbeing, instruction, professional and social administrations. This strategy is working in network improvement in the recovery, adjustment of chances and social addition of all people with disabilities. Now people with intellectual disability are no longer isolated in "special care" facilities.

A broad line methodology was based on extensive research to get the real picture of the current situation of problems. Also gathering data will cover- resource mapping, FGDs, and observation. The overall process for the Rapid Assessment of Disability (RAD) survey was used to identify people with disabilities based on their responses to activity limitations. The levels of well-being and access to the community for people with disabilities were compared with controls matched by age, gender, and cluster. Information on barriers to accessing the community was also collected.

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), one of the completions is people with all types of disabilities must enjoy all human rights and fundamental freedoms; all people with disabilities, should be part of the normal societal processes such as education, employment, housing, socialization and access to all societal services. And also highlights the right to community living by proper to community living by all individuals with incapacities, a right to select where and with whom to live, and a right to support to ensure social consideration. The sustainable development goals (sdgs) 2015–2030, given the current global agenda for "leave no one" behind through inclusion of all people, including those with intellectual disability who are among the most vulnerable to social exclusion. It follows that then that people should not be "left behind", either through exclusion in institutions, or through isolation in the community.

The aim of this paper will find out the living strategy to build community-based facilities in order to address issues and take advantage of opportunities, find common ground and balance competing of disability and compare the well-being and access to the community between people with and without disabilities.

Disability, Human Rights & SDG: Transformative and Integral Approach to leave no one behind

Rakhi BARUA, Coordinator, Centre for Disability in Development (CDD), Bangladesh.

Abstract

Objective: To contribute towards building an inclusive and just society where persons with disabilities benefit from economic, social, political rights and entitlements on an equal basis with others.

Methodology

1) Twin Track Approach i) Sensitizing and capacity building of community & mainstream actors to create enabling environment for inclusion of persons with disabilities and ii) extending specific rehabilitation support & facilitate empowerment of persons with disabilities & DPOs to play an effective role in society.
2) Communicating the message „Disability Inclusive program benefits all".
3) Citizen engagement to create constructive dialogue to improve responsiveness and better service delivery
4) Direct support to persons with disabilities for IGA, assistive devices and education materials
5) Human Rights Based Approach
6) Mainstreaming, synergy and Nexus Method

Findings:
Since its establishment in 1996, CDD is working for creating an enabling and inclusive society for persons with disabilities in Bangladesh connecting local to global communities...

CDD is contributing to create an enabling environment for empowerment of persons with disabilities to claim their rights and entitlements and to improve responsiveness and accountability of local authorities and public institutions to become more pro-people and disability inclusive CDD along with its local partners have successfully mobilized and brought together a large number of persons with disabilities in the community. Initiatives are taken to listen to the voices of persons with disabilities and to create a conducive environment for constructive engagement with all relevant stakeholders so that change agents have willingness and ability to support disability inclusion. Persons with disabilities are increasingly accessing different development opportunities and social protection schemes; untapped local resources are being tapped- creating waged and self-employment opportunities; different service provider's institutions are becoming inclusive to a great extent! Violence against persons with disabilities are being reported and protested to seek justice. Society is now giving more respect and value to persons with disabilities. These interventions have been aiming to address Goal 1 Target 1.4 ; Goal 3; Goal 4 Target 4.7 ;Goal 5 Target 5.1 & 5.5 ; &Goal 6, Target 6.1 & 6.2 Goal 8 Target 8.5 Target 10 Target10.2; Goal 13 Target 13.1 & 13.2; Goal 16 Target 16.3, 16.6,16, 16.9 & 16.8 , Goal 17 17.14 & 17.16 , 17.17

Conclusion: Bangladesh is committed to achieving the targets of the Sustainable Development Goals (SDGs). The SDGs pledges to "leave no one behind" and "reach the furthest behind first", which strongly carries the spirit of inclusion and people centered partnership for peace, prosperity and planet. One of the thematic issue in UNESCAP Regional Road Map to implement 2030 agenda is Leaving no one Behind .Hence, We need a transformative and integral approach by integrating governance (goal 16) and systemic issues (goal 17) to properly translate the idea of „leaving no one behind", special efforts need to be given on rightful inclusion of marginalized people including persons with disabilities.

Mainstreaming Disability to Disaster Risk Management in Rural and Urban areas in Bangladesh

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Abstract
Objective: Visualize examples of the success engagements of persons with disabilities in different stages of disaster risk management in the Urban and rural areas in Bangladesh.
Methodology: A) Formation and strengthen community led grassroots institutions
B) Practice disability inclusive disaster resilient livelihoods
C) Advocacy for DiDRR at local, national and international level
D) Gender, Age and Disability Disaggregated Data (GADD) collection and its effective utilization.
Findings: CDD is working for Community Driven Disability Inclusive Disaster Risk Reduction (CDDiDRR) in the flood prone areas of north Bengal since October'2009 to till date with the partnership of CBM international. The approach has resulted to a significant achievements including institution building (SHGs of persons with disabilities, Apex Body comprising of SHG representatives, Ward Disaster Management Committee – WDMC), community based disability inclusive disaster preparedness, disaster friendly disability inclusive sustainable livelihoods promotion, accessible & disaster risk considered infrastructure development, disability inclusive education in emergency, capacity building and engagement of women both with and without disabilities, increased mobility & functional capacity of persons with disabilities, effective participation of persons with

disabilities in decision making process on DRR, practicing savings by school students, etc. The community has benefitted from DiDRR initiatives.
Now CDD in partnership with CBM is working to enhance the advocacy skills of persons with disabilities and their organizations; as a result, they are in a position to contribute to effective and inclusive implementation of DRR practices involving persons with disabilities for materializing the slogan “No one leave behind”.
Again, the intensity and frequency of earthquake is increasing in south Asia including Bangladesh. According to a study the seven-magnitude quake could completely collapse 30 percent buildings of Dhaka city. Japan International Cooperation Agency and the World Bank initiative "Urban Building Safety Project" and "Urban Resilience Project" mentioned in a study of such information. At the same time Disability resource organizations like CDD are at earthquake risk which may hamper DiDRR promotion in Bangladesh. Considering the fact, a process of capacity building on disability inclusive DRR focusing earthquake preparedness is now in action under the leadership of Savar Municipality in urban context.
Conclusion: Lots of changes took place for last 5-7 years. But still there are many scopes to improve the bridge relation between policy and practice for effective implementation of DiDRM.
Key words: “Inclusion of Disability Issues - Strengthening Disaster Risk Management”

Social protection for better inclusion of people with disabilities

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Technical Unit Coordinator
Handicap International Bangladesh

Abstract:
People with disabilities live in poor households with limited access to employment; have lower enrollment rates and limited access to social services. Many disability specific supports are centered to providing basic support without considering the specific barriers faced by them. Recent studies have shown that such benefits have very limited contribution to overcome deeply entrenched discrimination faced by persons with disabilities. There is a dire need for social protection measures to go beyond welfare approach and establish innovative approaches that promotes active citizenship through social inclusion and community participation to achieve the Sustainable Development Goals (SDGs) in Bangladesh. Situation in Bangladesh Disability is central to achieving the 2030 Agenda for Sustainable Development and has targets for disability inclusion within the Sustainable Development Goals. Estimates of disability prevalence in Bangladesh range from 1.4% to nearly 32%. Differences reflect the range of methods used to define and measure disability in different studies. While the government in Bangladesh has some disability specific measures and recently increased the disability allowance amount, still a large number of persons with disabilities do not simply have access to these programs. Besides, whatever provisions have been made to benefit persons with disabilities seem largely insufficient to cover the extra cost that is required for disabled person to make their living. There are additional concerns because of the recurrent natural disasters in Bangladesh. Various studies conducted around this topic clearly indicate that persons with disabilities will never be able to have equal participation in the development process unless they are provided with additional support.
Possible ways forward In a country like Bangladesh where there is widespread discrimination and stigma against people with disabilities, properly planned social protection measures seem mandatory to reduce exclusion and vulnerability. Following national and international agreements, in order to ensure ‘no one is left behind’, the government needs to advance social protection measures and make necessary legislative and administrative reformations. Below discussed are some possible ways:

- Improve accessibility of disabled persons in the social protection programmes. Wheelchair users and disabled persons such as deaf-blind may not simply have access to information and thus prohibited to benefit. Therefore, consultation with all types of people with disabilities and their representatives in the designing of the protection measures is valuable. This will help to break the barriers and open up better opportunities.

- Targeting and the accrual cost calculation is another major concern for all social protection programmes. For that, the concerned departments need to seek help from the agencies working in the field of disability to determine benefit packages and accurate cost analysis for treatment, care and mobility and the targeting mechanisms.

- Bangladesh will benefit highly from an expert meeting where different policy makers, practitioners and the key stakeholders including persons with disabilities and their representatives are invited to explore good practices and discuss future opportunities for collaboration towards ensuring the right of the disabled through effective social protection. Such events will be of utmost benefit to provide necessary legal and development support to better align social protection in view of human rights. Lastly, only having social protection programmes is not enough to eliminate vulnerability and exclusionthat persons with disabilities face. As highlighted by the 2011 World Report on Disability, there is a need of complementary programmes such as rehabilitation, health, education, training, and environmental accessibility etc embedded with the safety nets.

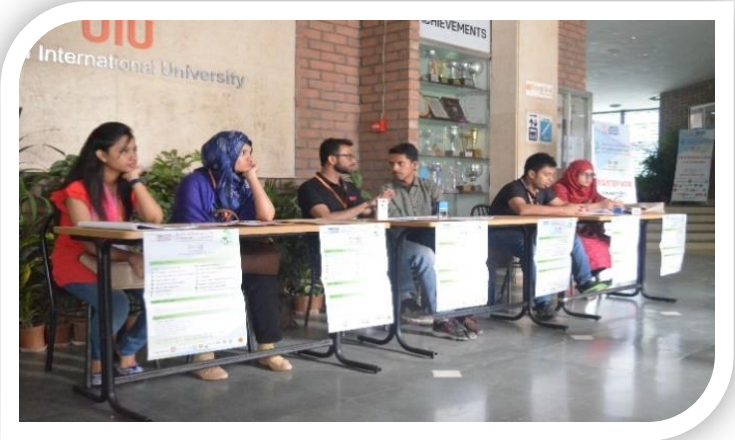
Key words: Disability, social protection, inclusion

Disability and Sustainable livelihood

Chowdhury razia rasul

A person’s livelihood refers to their "means of securing the basic necessities -food, water, shelter and clothing- of life.” Livelihood is defined as a set of activities performed to live for a given life span, involving securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire above necessities working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are usually carried out repeatedly. These had been found to be too narrow because they focused only on certain aspects or manifestations of poverty, such as low income, or did not consider other vital aspects of poverty such as vulnerability and social exclusion. It is now recognized that more attention must be paid to the various factors and processes which either constrain or enhance poor people’s ability to make a living in an economically, ecologically, and socially sustainable manner.





PREPARATIO INAUGURAL



Prof. Dr. Ahmed Mushtaque Raza Chowdhury, Vice Chair, BRAC



Prof. Dr. M. Rezwan Khan, VC, UIU

International Advisors

1. Professor Dr. M. Rezwan Khan 2. Professor Dr. Chowdhury Mofizur Rahma 3. Professor Dr. Amirul Islam Chowdhury 4. Professor Dr. Abul H Azam 5. Professor Dr. Hamidul Huq 6. Professor Umme Kulsum Navera 7. Professor Mahbuba Nasreen 8. Dr. Megan Farrelly 9. Professor William H. Derrenger 10. Dr. Jeroen Warner 11. Professor Nimal Gunawardena 12. Professor Abul Shaban 13. Professor Mukta S. Lama (Tamag) 14. Professor Boris Braun 15. Professor Rajib Shaw 16. Professor Margreet zwarteveen 17. Professor Dr. Hajime Nakagawa

Conference Themes

Sustainable Livelihoods, Climate Change Adaptation, Sustainable Agriculture and Food Security, Renewable Energy, Extreme Poverty Alleviation, Disaster Management, Disability and Development, Gender and Development, Sustainable Finance, Green Business, Green Banking, Green Cities and Human Settlements, Good Governance, Migration, Biodiversity and Ecosystem Services, Coastal Zone Management, Integrated Water Resources Management

PLENARY SESSIONS



Dr. Taibur Rahman



Prof. Dr. Shamsul Alam



Dr. Zafar Ahmed Khan



Dr. Nimal Gunawardena

PARALLEL SESSIONS



CLOSING



Prof. Dr. Rezwan Khan



Prof. Dr. Abul HMG Azam



Mr. Peter de Vries

The UIU -ICSD 2017 brought together stakeholders from government, knowledge institutions, academia, international agencies, NGOs, private development sector, and grassroots organizations to share practical solutions towards achievement of more sustainable and inclusive societies. Scientific discussions among the participants were created and possibilities for new collaborative initiatives are imminent in the new future. The participants, presenters made the conference a complete success.















Day-1: Inaugural Session of ICSD, 2018

[This session was started with welcome speech from Prof. Dr. Hamidul Huq, Director of IDSS,UIU and other honorable guests of this program were- : Prof. Dr. Chowdhury Mofizur Rahman, Vice Chancellor, UIU, Dr. Rajib Shaw, Professor, Keio University, Tokyo, Japan, Peter de Vries , First Secretary, Embassy of Kingdom of the Netherlands, and Dr. Sultan Ahmed, Additional Secretary and DG, DoE, Ministry of Environment and Forests;]

Day-2: Parallel sessions of paper presentations on different topics with feedbacks from experts

2nd day of the conference has started with parallel paper presentation sessions on different topics with individual chairpersons for interactive feedbacks. Some of the glimpses of those sessions have shown below:









Sustainable Livelihoods Session





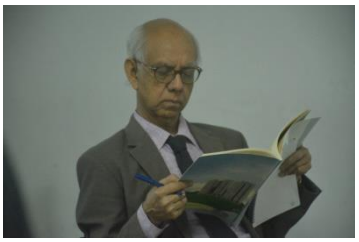




Integrated Water Resource Mgt. Session





Disaster Management Session **Green Cities & Human Settlement**

Day-2: Plenary Session followed by Open Discussion

The plenary session of 2nd day was really an informative one which held under the supervision of Prof. Dr. Hamidul Huq, Director, IDSS, UIU. Prof. Dr. Monwar Hossain, Executive Director, IWM was there as chairperson of the session and Prof. Dr. Shamsul Alam, Member (Senior Secretary), General Economic Division, Planning Commission, Ministry of Planning was also there as chief guest. One of the representative from Ministry of Planning, presented The Bangladesh Delta Plan and SDGs. Besides that, Prof. Dr. Umme Kulsum Navera, from WRE, BUET attended as a panelist of the session.









Day-3: Parallel sessions of paper presentations

Gender and Development Session **WASH Session**










Day-3: Plenary Session followed by Open Discussion

UN SDGs 6-Clean Water and Sanitation: Challenges and Strategic Approaches to win over the Challenges' was the key discussion topic for the plenary session of last day. Prof. Dr. Anwar Hossen, Dhaka University and Prof. Dr. Mohammad Rezaur Rahman, IWFM, BUET were penalists of the session under the supervision of Tapas Ranjan Chakraborty, Oxfam in Bangladesh.









Closing Session of 2nd International Conference of Sustainable Development











Honorable guests of the closing ceremony were- Prof. Dr. Abul HMG Azam, Dean, SoBE, UIU , M B Akhter, Programme Director, Oxfam in Bangladesh, Prof. Dr. Abdus Shaban, UIU-ICSD International Advisor, Tata Institute of Social Science, India and Dr. Saleemul Huq, Director, ICCCAD, IUB . The program has ended with note of thanks from Prof. Dr. Hamidul Huq, Director, IDSS, UIU.

Master in Development Studies (MDS)



UNITED INTERNATIONAL UNIVERSITY | IDSS Institute of Development Studies and Sustainability

Institute of Development Studies and Sustainability (IDSS)

Class Timing

- Classes take place on Friday at 9:30 am – 12:30 pm and 2:30 – 5:30 pm.
- On Saturday at 9:00 am – 12.00 noon and 1.00 – 3.00 pm.

Eligibility for Admission

1. A Bachelor degree (Hons.) in any discipline with CGPA of not less than 2 or equivalent.
2. Applicants with at least two years experience in a public, private or NGO sector program/project shall get priority in admission.

Tuition Fees, waiver and scholarship policy

UIU charges Tuition Fees for MDS program @Tk.3700 per Credit. But UIU offers **25%** Tuition Fee Waiver for the students having CGPA 3.50 on Scale of 4.00 & CGPA 4.37 on Scale of 5.00 in HSC & above or equivalent level of public examinations.

The MDS students who have been working in government, semi government and NGO sector having a minimum of 5 (five) years' experience will be entitled to **40% tuition fee waiver**.

Top 20% of UIU students get 25% to 100% tuition fee waiver on the basis of trimester examination results.

ADMISSION OPEN

Trimester Summer 2019

***LIMITED SEATS AVAILABLE

Faculty Members

- Prof. Dr. Amirul Islam Chowdhury (AIC)
- Prof. Dr. Hamidul Huq
- Prof. Dr. M. Anwar Hossen (DU)
- Dr. Rokeya Khatun, Gender and Development Specialist
- Mr. Tapas Ranjan Chakraborty (PhD Scholar), Oxfam.

Highly qualified external faculty from different universities.



UIU Campus, United City, Plot # 02, Madani Avenue, Badda, Dhaka - 1212
09604-848 848 (Ext-1301-4)

United International University (UIU)

The United International University (UIU) offers **Master in Development Studies** (MDS) program since 2009 with a commitment to contribute in producing young professionals with capacity of interdisciplinary knowledge and skills to response to the growing demand of professionals in government, NGO and private sectors in Bangladesh.



Master in Development Studies (MDS)

A 39 credit hours MDS program focuses on Interdisciplinary Education and Research. Students have scope of engaging in collaborative research projects; present papers in International Conference on Sustainable Development held every February at UIU; produce and publish articles jointly with UIU Faculty; build networks with development organizations, research and education institutions through participation in forums and seminars.

MDS Program Structure

- ✓ Core Courses – 9 (3x9=27 credits)
- ✓ Elective Courses – 2 (3x2=6 credits)
- ✓ Thesis – 6 credits

Students must take two Elective Courses in addition to two [general] elective courses if do not opt for Thesis.



Please contact for details:

Prof. Dr. Hamidul Huq, Director
Institute of Development Studies and Sustainability (IDSS), UIU.
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United City, Madani Avenue, Baridhara, Dhaka -1212

Course Curriculum

CORE COURSES

MDS 501: Economics for Development
MDS 503: Sociology & Social Anthropology of Development
MDS 505: The Political Economy of Underdevelopment
MDS 633: Poverty Analysis and Programs
MDS 510: Sustainable Development: Policies and Tools
MDS 511: Philosophy and Forms of Development and Governance
MDS 530: Program and Project Analysis and Design
MDS 686: Disaster Management
MDS 690: Research Methodology and Tools for Development
MDS 698: Thesis

ELECTIVE COURSES

MDS 502: Issues in Development Economics
MDS 504: Basic Statistics for Development Research
MDS 521: Development Organization and Management
MDS 531: Project Management and Implementation
MDS 550: Microfinance: Theory, Principles and Performances
MDS 605: Pubic Policy Analysis, Approaches and Techniques
MDS 610: Advanced Topics in Development Economics
MDS 620: Studies of Governance and Development Organization
MDS 622: Governance and Development Organization
MDS 630: Economic Evaluation of Health Services
MDS 632: Public Management, Reforms and Governance
MDS 640: Environmental Impact Assessment
MDS 650: Integrated Assessment of Projects and Programs
MDS 655: Development and External Assistance
MDS 670: Development Ethics
MDS 672: Environmental Policy
MDS 680: Readings in Development Studies



