

**TWO-DAY INTERNATIONAL WEBINAR
ON
“ENVIRONMENT, POPULATION AND DEVELOPMENT: CHALLENGES &
OPPORTUNITIES”**

October 17 & 18, 2020



Organized by

**DEPARTMENT OF GEOGRAPHY, MALDA WOMEN'S COLLEGE, MALDA,
WEST BENGAL, INDIA, 732101**

KEY SPEAKERS

Date-17th October, 2020



Prof. Malay Mukhopadhyaya
Department of Geography,
Visva-Bharati, Santiniketan,
West Bengal, India
Topic: “Neo-deterministic approach-
the future trend of development”



Prof. Ramkrishna Maity
Department of Geography &
Environment Management,
Vidyasagar University, West
Bengal, India
Topic: “Rational approach to
address climate change induced
hazards”



Prof. Mohammad. Mainul Islam
Department of Population Science,
Faculty of Social Science,
University of Dhaka, Bangladesh
Topic: “South Asia after the
Pandemic: How will COVID-19
transform the ICPD+25 development
agenda and SDGs?”

Chief Patron: Dr. Mandira Chakraborty, Principal,
Malda Women's College.

Jt. Convener: Dr. Priyanka Das & Mr. Bikash
Barman (Assistant Professor)

Jt. Organizing Secretary: Mr. Samrat Majumdar &
Miss Ankana Ghosh (SACT)

Registration Link:

<http://forms.gle/cen4pZCFJQ67LrX98>

Date-18th October, 2020



Prof. Narayan Chandra Jana
Department of Geography,
University of Burdwan, Burdwan, West
Bengal, India
Topic: “Population-Development-
Environment: The Question of
Sustainability”



Prof. Ranjan Roy
Department of Geography & Applied
Geography, University of North Bengal,
Siliguri, West Bengal, India
Topic: “Population Growth and
Environmental Sustainability in West
Bengal with Special Reference to 2011
Census: Some Basic Issues”



Prof. Sujit Mandal
Department of Geography,
Diamond Harbour Women's University,
West Bengal, India
Topic: “Landslides Vulnerability and
Risk in South Sikkim Himalayas, India”



Prof. Pradip Chouhan
Department of Geography, University of
Gour Banga, Malda, West Bengal, India
Topic: “Impact of Fertility Behaviour on
Maternal and Newborn Health among
Muslims of Malda District, India”

E-certificate will be provided through fill up the
feedback form after completion of the Webinar.

Google meet link will be provided in the
Programme Schedule.

MALDA WOMEN'S COLLEGE
AFFILIATED OF GOUR BANGA UNIVERSITY



Programme

A two-day International Webinar on

**Environment, Population and Development: Challenges
and Opportunities**

(17-18 October 2020)

Organised by

Department of Geography, Malda Women's College, Malda

Email: mwcgeography2020@gmail.com

Programme

Inaugural Session

(17 October 2020, 10:00 a.m. to 11:00 a.m.)

Chief Patron:

Dr. Mandira Chakraborty
Principal

Malda Women's College, West Bengal, India

Jt. Convener:

Dr. Priyanka Das & Mr. Bikash Barman
Assistant Professor, Department of Geography
Malda Women's College, West Bengal, India

Jt. Organizing Secretary:

Mr. Samrat Majumdar & Miss Ankana Ghosh
SACT, Department of Geography
Malda Women's College, West Bengal, India

Platform: Google meet link: <https://meet.google.com/xmv-jnvw-yxc>

<i>Programme</i>
Welcome Address by Dr. Priyanka Das , Assistant Professor, <i>Malda Women's College</i>
Inaugural Speech by Dr. Mandira Chakraborty , Principal, <i>Malda Women's College</i>
Key-note address by Prof. Malay Mukhopadhyaya , Department of Geography, Visva-Bharati University, Santiniketan, West Bengal, India Topic: <i>Neo-deterministic approach-the future trend of development</i>
Vote of thanks by Mr. Bikash Barman , Assistant Professor, <i>Malda Women's College</i>

PLENARY SESSION - I

DAY ONE: 17th October, 2020 (11:30 a.m. – 01:00 p.m.) (IST)

Platform: Google meet link: <https://meet.google.com/jjb-hxtk-ifu>

SI #	Title	Speaker
1	<i>Rational approach to address climate change induced hazards</i>	Prof. Ramkrishna Maiti
2	<i>South Asia after the Pandemic: How will COVID-19 transform the ICPD+25 development agenda and SDGs?</i>	Prof. Mohammad. Mainul Islam

TECHNICAL SESSION – I

Google meet link: <https://meet.google.com/cc0-ruxy-sxw>

Date: 17 October 2020; Time: 02 pm. – 04 p.m. (IST)

Theme: Geo-hazards in different geographical space			
Chairperson: Dr. Somasis Sengupta		Co-Chairperson: Mrs. Moushumi Naskar	
Rapporteur: Mr. Syfujjaman Tarafdar		Session Moderator: Mr. Samrat Majumdar	
SI #	Time	Title	Author(s)
1	02 pm. – 04 p.m.	<i>Impact of Boda barrage on downstream flow regime of Tangan river of Indo-Bangladesh</i>	Madhurima Dutta & Swadesh Pal
2		<i>Coastal Geomorphic Hazards And Impact On Ramnagar Coastal Belt Of West Bengal</i>	Dr. Subhankar Patra
3		<i>Conservation Of The Wetland Resources And Securing The Sustainable Livelihood Of The Local People: A Case Study Of Dighali Beel, Nagaon, Assam</i>	Miss Banashree Devi
4		<i>Modelling Water Richness And Habitat Suitability Of The Wetlands And Measuring Their Spatial Linkages In Mature Ganges Delta Of India</i>	Sandipta Debanshi and Swades Pal
5		<i>Hydro-Meteorological Hazard And Disaster Risk Reduction: A Case Study Of Geo-Spatial Analysis</i>	Dr. Beauty Das
6		<i>Flood susceptibility modelling and sensitivity assessment of Tangan river basin of India and Bangladesh</i>	Pankaj Singha and Swades Pal
7		<i>Effects of damming on the degree of hydrological alteration and stability of Lower Atreyee River basin wetlands</i>	Swades Pal and Rajesh Sarda
8		<i>A Scintilla Of Nature Fused With Mystery In Agatha Christie's Detective Fiction Death On The Nile: A Critical Overview</i>	Tanbir Shahnawaz
9		<i>Impact of Stone Mining and Crushing on River Morphology in Dwarka River Basin, Eastern India</i>	Indrajit Mandal & Swades Pal
10			<i>Geo-Hazards In Different Geographic Space</i>

TECHNICAL SESSION – II

Google meet link: <https://meet.google.com/zea-mupx-sqh>

Date: 17 October 2020; time: 02 pm. – 04 p.m. (IST)

Theme: Environmental issues: Varied Aspects			
Chairperson: Dr. Sunil Saha		Co-chairperson: Mr. Tanmoy Sarkar	
Rapporteur: Mr. Nani Gopal Kapasia		Session moderator: Mr. Bikash Barman	
Sl #	Time	Title	Author(s)
1	02 pm. – 04 p.m.	<i>Environmental issues during the COVID 19 period in present scenario</i>	Supriyo Halder
2		<i>Impacts Of Development On Environment</i>	Satya Ranjan Das & Neha Singha
3		<i>Reclamation Of Field Production Sustainability Of Parthenium Occupied Areas Of West Bengal: An Ecosafe Management</i>	Mr. Avijit De and Mr. Alok Pal
4		<i>COVID-19Pandemic and its Impact on the Environment</i>	Bisakha Shome
5		<i>Postmodernism And Sustainable Development</i>	Dr.Dipa Bhattacharya Mandal
6		<i>Impact Of Development On Environment</i>	Amrita Bhattacharya
7		<i>Poverty Alleviation And Environmental Degradation In India: A Sustainable Approach</i>	Dr. Prasenjit Ghosh
8		<i>Examination of radiation and stress degree day index in some food crops of Purulia district of West Bengal, India</i>	Asutosh Goswami
9		<i>Traditional Organic Farming Practice is more Sustainable from Modern Chemical Farming Practice of Balurghat C.D. Block in Dakshin Dinajpur District - A Geographical Appraisal</i>	Pintu Biswas

Programme

PLENARY SESSION -II

DAY TWO: 18 October, 2020 (10:00 a.m. – 1:00 p.m.) (IST)

Platform: Google meet link: <https://meet.google.com/zcf-orpj-vav>

SI #	Title	Speaker
1	<i>Population-Development-Environment: The Question of Sustainability</i>	Prof. Narayan Chandra Jana
2	<i>Population Growth and Environmental Sustainability in West Bengal with Special Reference to 2011 Census: Some Basic Issues</i>	Prof. Ranjan Roy
3	<i>Landslides Vulnerability and Risk in South Sikkim Himalayas, India</i>	Prof. Sujit Mandal
4	<i>Impact of Fertility Behaviour on Maternal and Newborn Health among Muslim of Malda District, India</i>	Prof. Pradip Chouhan

TECHNICAL SESSION – III

Google meet link: <https://meet.google.com/gaq-dmxi-gro>

Date: 18 October 2020; Time: 02 pm. – 04 p.m. (IST)

Theme: Climate Change and Ecological Health			
Chairperson: Dr. Arijit Das		Co-Chairperson: Dr. Beauty Das	
Rapporteur: Mr. Satyajit Paul		Session Moderator: Mr. Samrat Majumdar	
SI #	Title	Author(s)	
1	<i>Predicting And Analysing Climate Change Data Using Data Mining Approaches</i>	Dr. P. Rajesh	
2	<i>COVID-19 lockdown- Impacts on Air Quality Index</i>	Rajrupa Ghosh	
3	<i>Tropical Cyclone And Its Impact On Coastal West Bengal: A Comparative Study Of Aila And Bulbul With Amphan</i>	Amar Nath	
4	<i>Modeling of Damming Effects on Ecological Water Availability and Wetland Habitat State in Lower Punarbhava River of India- Bangladesh</i>	Rumki Khatun & Swades Pal	
5	<i>Ecological Resource and its important</i>	Debasish Sarkar	
6	<i>Changing Relationship Between Water Richness And Ecosystem Service In Pursuance Of Dam</i>	Sonali Kundu & Swades Pal	

TECHNICAL SESSION – IV

Google meet link: <https://meet.google.com/hjo-vtdt-jtk>

Date: 18 October 2020; Time: 02 pm. – 04 p.m. (IST)

Theme: Population dynamics and Sustainable urban development			
Chairperson: Dr. Mukunda Mishra		Co-Chairperson: Mrs. Kabita Lepcha	
Rapporteur: Mr. Salim Mandal		Session Moderator: Dr. Priyanka Das	
Sl #	Time	Title	Author(s)
1	2 pm.- 4 pm	<i>Socio-Economic Marginalization Of Muslim Women: A Case Study Of Murshidabad District In West Bengal, India</i>	Lal Mohammad Saikh & Sandip Kumar howdhury
2		<i>Population Explosion And Its Negative Effects On Indian Society</i>	Ankita Banik
3		<i>Trend And Types Of Rural-Rural Migration In West Bengal: A Decadal Analysis</i>	Dr. Nafisa Banu
4		<i>Urbanization, Changing Economic Landscape and Policy Response in India: An Overview of Empowered Action Group States</i>	Kapil Kumar Gavsker
5		<i>Assessment of Demographic and Socio-economic Backwardness to Natural Hazards in the Coastal West Bengal, India</i>	Manas Mondal & Suman Paul

VALEDICTORY SESSION

DAY TWO: 18 October, 2020 (04:15 p.m. – 5:00 p.m.)

Platform- Google Meet (<https://meet.google.com/pmj-mqyp-ynj>)

Chairperson	Prof. Narayan Chandra Jana , Department of Geography, University of Burdwan, Burdwan, West Bengal, India
Reporting	Dr. Priyanka Das , Assistant Professor, Malda Women's College
Vote of thanks	Mr. Samrat Majumdar , SACT, Malda Women's College
<i>Thank you</i>	

Two-Day International Webinar
on

“Environment, Population and Development: Challenges and Opportunities”

October 17-18, 2020

Book of Abstracts



Organized By

Department of Geography

Malda Women's College

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English Bazar, Malda Sadar

Malda, West Bengal

India-732101

Venue

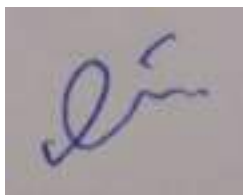
Google Meet

Message of Respected Principal, Malda Women's College



It is a great pleasure and proud privilege that the Department of Geography of this College is going to organize an International Webinar on "Environment, Population and Development: Challenges and Opportunities" on 17th and 18th October, 2020. Discussions of many national and international dignitaries in the webinar will greatly benefit the budding geographers and the inquisitive faculties. The topic adopted for discussion is very relevant and down to earth in the transition phase of environmental crisis.

I wish the webinar all success.

A handwritten signature in blue ink, appearing to be 'Mandira Chakraborty', on a light-colored background.

*Professor Mandira Chakraborty
Principal, Malda Women's College
Malda, West Bengal, India*

From the Convener's desk

It is our great privilege to welcome you, greet you and salute you on this auspicious occasion of Two-Day International Webinar on “**Environment, Population and Development: Challenges & Opportunities**” in the virtual platform (Google Meet) organized by the Department of Geography, Malda Women's College, Malda, West Bengal, India. It gives us immense pleasure for getting an opportunity to organize this International Webinar. It is also a proud privilege for us to be the convener of this webinar. This virtual gathering of young, senior and legendary Geographers and other participants from not only India but also abroad will provide a strong platform for gaining and sharing knowledge, concepts and experiences in different aspect of environment, population and development. We would like to Welcome and congratulate all the renowned key speakers of plenary session and the paper presenter of the technical session and all the participants.

The focal theme of the webinar “Environment, Population and Development: Challenges & Opportunities” is undoubtedly an emerging issue for the geographers, planners, academicians and policy makers. In the modern era rapid growth of population coupled with rapid industrialisation, urbanisation and modernization directly influence the environment and as a result environmental degradation is increasing day by day and which directly affect the human being. It is very important to us to find out the possible way of sustainable development. In this situation we are going to organize this webinar as we can find the possible way of existence by sharing and gaining of experience, knowledge and concepts. We are very fortunate to have with us **Prof. Malay Mukhopadhyaya** (India), **Prof. Ramkrishna Maity** (India), **Prof. Mainul Islam** (Bangladesh), **Prof. Narayan Chandra Jana** (India), **Prof. Ranjan Roy** (India), **Prof. Sujit Mandal** (India) and **Prof. Pradip Chouhan** (India) to share their experience, knowledge and concepts for the improvement of the environment, way of sustainable development and better improvement of quality of life of human being without damaging the environment. We are confident that their stay with us for the two-days will be comfortable and they will give us a lot of knowledge and concepts. Thank You.

With regards

Dr. Priyanka Das & Mr. Bikash Barman
Joint Convener, Malda Women's College

SEMINAR ORGANIZING COMMITTEE

Chief Patron: Professor Mandira Chakraborty, Principal, Malda, W.B, India-732101

Jt. Convener: Priyanka Das and Bikash Barman, Assistant Professor, Department of Geography, Malda Women's College, Malda

Jt. Organizing Secretary: Samrat Majumdar and Ankana Ghosh, SACT, Department of Geography, Malda Women's College, Malda

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Dr. Rameswar Mukherjee, Assistant Professor, Geography, Samsi College

Mr. Syfujjaman Tarafdar, Assistant Professor, Geography, Gour Mahavidyalaya



Mr. Satyajit Paul, Assistant Professor, Geography, Gour Mahavidyalaya

Mr. Nani Gopal Kapasia, Assistant Professor, Geography, Malda College

Programme Schedule

List of Resource Persons

Name of the distinguished Speaker	Topic of deliberation	Photograph
<p>Prof. Malay Mukhopadhyaya</p> <p>Department of Geography, Visva-Bharati, Santiniketan, West Bengal, India</p>	<p>“Neo-Deterministic Approach-The future trend of development”</p>	
<p>Prof. Ramkrishna Maity</p> <p>Department of Geography & Environment Management, Vidyasagar University, West Bengal, India</p>	<p>“Rational approach to address climate change induced hazards”</p>	
<p>Prof. Mohammad. Mainul Islam</p> <p>Deptt. of Population Science, Faculty of Social Science, University of Dhaka, Dhaka, Bangladesh</p>	<p>“South Asia after the Pandemic: How will COVID-19 transform the ICPD+25 development agenda and SDGs?”</p>	
<p>Prof. Narayan Chandra Jana</p> <p>Department of Geography, University of Burdwan, Burdwan, West Bengal, India</p>	<p>“Population-Development-Environment: The Question of Sustainability”</p>	
<p>Prof. Ranjan Roy</p> <p>Department of Geography & Applied Geography, University of North Bengal, Siliguri, West Bengal, India</p>	<p>“Population Growth and Environmental Sustainability in West Bengal with Special Reference to 2011 Census: Some Basic Issues”</p>	

<p>Prof. Sujit Mandal</p> <p>Department of Geography, Diamond Harbour Women's University, West Bengal, India</p>	<p>“Landslides Vulnerability and Risk in South Sikkim Himalayas, India”</p>	 A portrait photograph of Prof. Sujit Mandal, a man with dark hair and glasses, wearing a blue button-down shirt, set against a plain light background.
<p>Prof. Pradip Chouhan</p> <p>Department of Geography, University of Gour Banga, Malda, West Bengal, India</p>	<p>“Impact of Fertility Behaviour on Maternal and Newborn Health among Muslims of Malda District, India”</p>	 A portrait photograph of Prof. Pradip Chouhan, a man with dark hair and glasses, wearing a blue patterned shirt, standing outdoors with green foliage in the background.

Abstracts

Socio-Economic Marginalization Of Muslim Women: A Case Study Of Murshidabad District In West Bengal, India

¹Lal Mohammad SAIKH and ²Sandip Kumar CHOWDHURY

¹M.SC., Junior Research Fellowship (JRF), Department of Geography, The University of Burdwan, West Bengal, India. Pin No.-713104, Email Id: lalmohammadsaikh7@gmail.com

²Ph.D, The University of Edinburgh, (UK), Professor (Retd.), Department of Geography, West Bengal Senior Education Service, (Ex HOD, Chandernagore Govt. College)

Abstract

The Muslim women will generally endure the sexual orientation issue, yet additionally the devastated minority status of the Muslim people group. Muslim women are at twofold inconvenience with low instructive status and network pressure. Their lives, developments call at the open spots are under consistent examination and control. The present investigation looks at the corresponding connection among education and financial determinants as outcomes of the low degree of monetary advancement of the Muslim Community in West Bengal and an attempt to examinations the strengthening of Muslim ladies within the three chose towns of the District Murshidabad is completed. The study lands up with the recommendations to enhance Muslims proficiency, which is an extreme account decrease existing gathering inconsistencies in financial improvement in West Bengal.

Keywords: Empowerment of women, Muslim Women, Education, Work investment rate.

A Scintilla Of Nature Fused With Mystery In Agatha Christie's Detective Fiction

Death On The Nile: A Critical Overview

Tanbir Shahnawaz,
Assistant Professor,
Department of English
Rishi Bankim Chandra College,
Naihati, North 24 Parganas, Pin 743165
West Bengal, India, e-mail:tanbir200ns@gmail.com

Abstract

Literature is a blend of all kinds of emotions. Its charm is incarnated in the stories with images, signals and languages of nature. Through these aspects, the readers try to swing into the emotions and the moods of the scenario. Nature is a huge part of literature. Its facets in literature act as the metaphor of life. Detective fiction, a type amidst popular literature can be formulated with terms such as murder, forgery, impersonation, theft, robbery and more. The sketch of weather in mysteries too links itself to the human lives, thinking and behaviour, suggesting that the environment is more than a setting for human existence. Agatha Christie, an English writer known for her 66 detective novels and 14 short story collections, has constructed her works with the world famous fictional detectives Hercule Poirot and Miss Marple, like Sherlock Holmes. Her famous novel Death on the Nile (1937) featuring Hercule Poirot is set in Egypt though the plot starts from England. The story hinges on to the triangle love story of three principal characters -Linnet Ridgeway, Simon Doyle and Jacqueline de Bellefort with many supporting minor characters. Deception, greed and the murder case of Linnet Ridgeway warps the story into different paths. This paper attempts to dig up the minor role of nature and its elements along with mystery in Agatha Christie's detective fiction Death on the Nile.

Keywords: Mystery, fiction, Nature, detective, metaphor, exotic.

COVID-19 lockdown- Impacts on Air Quality Index

Rajrupa Ghosh

Post Graduate Department of Zoology
BanwarilalBhalotia College
Ushagram, Asansol-713303, West Bengal, India
E-mail address: rajrupaphd@gmail.com

ABSTRACT

The lockdown phase associated with COVID-19 pandemic initiated in full swing on and from 25th March 2020 as preventive measures against the spreading of Corona virus. The objective of this study is to analyse the status of air quality of before and after lockdown in Kolkata and industrial town - Asansol city which is second largest city of West Bengal, India and also known as "coal mining city". Secondary data of five parameters like CO, SO₂, NO₂, PM2.5 and PM10 have been collected from Central Pollution Control Board, India. The result shows significant decrease of five parameters from 42.4 % (CO) to 63.4 % (NO₂) due to close down of all industrial and transport activities during lockdown period. Based on different

investigation a green belt development plan for this polluted city has been suggested for sustainable air quality management.

Environmental issues during the COVID 19 period in present scenario

Supriyo Halder

PhD Research Scholar DR.CVRaman University, Bilashpur, CG.ssupriyo2011@gmail.com

Abstract:

COVID-19 is a huge tragedy for the world community. Everything in the world is affected due to this pandemic right from economy to resources where the economy of major countries of the world are facing recession and resources are surplus with no takers at all. The measures to contain COVID-19 pandemic include lockdown, social distancing, isolation, and home quarantine. Lockdown adopted by the different governments which involve non-functioning of all the industry and manufacturing units. However, as a blessing in disguise, these measures have a positive effect on the environment in terms of reduction in toxic gasses like nitrogen dioxide, aerosols, atmosphere ozone, particulate matter, and improvement in air quality. In this paper, the effect on various environmental parameters like aerosol, ozone, particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and temperature and water quality on India by lockdown due to COVID-19 as a preventive measure has been analyzed. The work involves the refining and preprocessing of raw data of this year and last year of various harmful pollutants present in the environment along with satellite images from National Aeronautics and Space Administration for comparison of different parameters. It has been observed that with the above adopted measures temperature has been reduced to near about 15 degree Celsius, there is also reduction in humidity i.e. it is reduced to 40%, particulate matter (PM2.5) reaches near about normal i.e. 40 g/m³ and carbon monoxide levels has also been reduced to 10 ppm. The main idea is to emphasize the fact that how the environment is self-healing during the lockdown. And this study will be beneficial to environmentalists and industry professionals to make the future strategy for improving the environment.

Key Words: Covid-19, Lockdown, Environmental parameters, Air quality index, Improving the environment.

Impact of Boda barrage on downstream flow regime of Tangan river of Indo-Bangladesh

Madhurima Dutta¹ and Swades Pal²

¹PG student, Department of Geography, University of Gour Banga.

Email: madhurimadutta66@gmail.com

²Assistant Professor, Department of Geography, University of Gour Banga.

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Abstract:

Tangan river (267 km long), of India and Bangladesh is highly affected by construction of dam (1989) at 10 km west of Boda in Panchgarh district, Bangladesh. The aim of the present work is to find out the impact of flow change on hydrological and ecological components in Tangan river and riparian wetlands using indicators of hydrologic alteration (IHA). Estimation of threshold flow, magnitude of hydrological impacts, categorizing the indicators in natural and regulated flow condition is also to be exercised. Day to day flow data of Bamongola river gauge station is used for calculating change and magnitude of flow regime. Range of variability used for calculating threshold discharge revealed that in post dam period, most of the years register flow below threshold limit. Flow failure rate in different seasons ranges from 58% to 100% and it is maximum during pre-monsoon period. Eco-deficit and eco-surplus which provide the degree of alteration of a stream flow clearly exhibits that unregulated flow condition most part of the years shows eco-deficit. Magnitude of flow alteration ranges from 0.451 to 0.582 for different flow regime component groups and it is maximum in case of frequency and duration of high and low flow pulses. Seasonal analysis of the same revealed that river is highly impacted during pre-monsoon periods. In regulated hydrological regime, heterogeneity among the components has reduced significantly. All these things clearly indicate that already this river is impacted hydro-ecologically due to attenuation of flow and fluctuation and if such condition continues the situation will highly be vulnerable. This ensuing situation is not expected because this river passing through a populous tract and huge number of peoples are directly and indirectly engaged with this river for their lives and livelihood.

Keywords

Tangan river, Construction of dam, Regulated flow condition, IHA components, Hydro ecological stress, Threshold flow, Flow failure, Magnitude of alteration and Eco-deficit

Urbanization, Changing Economic Landscape and Policy Response in India: An Overview of Empowered Action Group States

Kapil Kumar Gavsker, Ph.D.

Assistant Professor, Department of Applied Geography, School of Regional Studies and Earth Sciences, Ravenshaw University, Cuttack (Odisha, India).

Gavsker4@gmail.com

Abstract

India's neoliberal practices introduced with new economic policy insisted a globalization process that remains an influence on city development strategy, planning policy and reorganization of urban space. This has come as growing recognition of cities a key player in economic growth, globalization and development of the country resulted in the launch of a handful urban policy in India. They all in common aim at making cities more competitive and investment friendly. Hence, this gives rise to emergence of new economic landscape. Many states with good resources and intelligent manpower have been forerunner in materializing the advantages of globalization. The major questions the present paper addresses are: How urban-economic shift has influenced present affairs of urban management and makeover of the large cities in India and in Empowered Action Group states? What is urban and development status of EAG states in India? What has been the focus of recently launched major urban policies in making cities sustainable and inclusive with reference to EAG states? The study offers a critical spatial perspective on urban scene and developmental status of EAG states. The study is largely a qualitative and descriptive analysis of data. The secondary source of information and data is retrieved from literature, published books and articles, institutional reports; and the Census of India 2011, Urban Statistics of India, 2011, the Ministry of Urban Development and Poverty Alleviation, New Delhi, Selected Socio-Economic Statistics India, 2011, the World Bank etc.

Key Words: Globalization, economic landscape, planning policy, urban growth and urbanization

Predicting and Analysing Climate Change Data Using Data Mining Approaches

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Abstract:

Data mining is the process of analysing data and also retrieve hidden information using various techniques which is available in data mining. Prediction one of the techniques and it is used to finding future. In this paper forecasting future climate changing possibilities and taking consideration into various parameters relating like Temperature, Humidity, Wind speed, Cloud cover, Rain, Wind chill, Sunrise, Sunset and Ultraviolet using Regression model. Numerical illustrations also provided to prove the proposed work.

Keywords: data mining, climate change, regression analysis

Traditional Organic Farming Practice is more Sustainable from Modern Chemical Farming Practice of Balurghat C.D. Block in Dakshin Dinajpur District - A Geographical Appraisal

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Abstract:

Sustainable development has caught the imagination and action all over the world for more than a decade. Sustainable Agriculture is necessary to attain the goal of sustainable development. According to the FAO 'Sustainable Agriculture' is the successful management of resources for agriculture to satisfy changing human needs while maintaining or enhancing the quality of environment and conserving natural resources". In the context of agricultural production, Ikerd (1993) defines a sustainable agriculture as "capable of maintaining its productivity and usefulness to society over the long run, it must be environmentally-sound, resource-conserving, economically viable and socially supportive and commercially competitive" (p. 30). Traditional organic farming practices is based on various laws and certification programs, which prohibit the use of almost all synthetic inputs, and health of the

soil is recognized as the central theme of the method. Adverse effects of modern chemical farming practices not only on the farm but also on the health of all living things and thus on the environment have been well documented all over the world. India is home to a number of traditional agricultural landscapes that have withstood climate variability and varied societal changes for over thousand years. Their sustainability is due to high degree of resilience that is brought about by integrated resource management, maintenance of material cycles, supporting a variety of societal and ecosystems services, etc. other hand modern agricultural systems are highly productive and efficient but are vulnerable to changes in climate and markets due to their optimized nature. Traditional farming is gaining popularity all over the world, as it can diversify agricultural production systems towards attaining improved productivity, farm income and food, as well as environmental safety. Since generation traditional knowledge of agriculture is used by human beings in varied agro-ecological zone. Some of the farmers of Balurghat Block are practicing the traditional organic method of agriculture. This knowledge is coming from generations mostly through oral medium. A number of terms are used interchangeably to refer to concept of IK, including traditional knowledge (TK), Indigenous Technical Knowledge (ITK), Local Knowledge (LK) and Indigenous Knowledge System (IKS). The aim of this study was therefore to evaluate traditional organic farming practice is more sustainable from modern chemical farming practice at Balurghat Block in Dakshin Dinajpur District and issues associated with it.

Keywords: Traditional Farming, Organic Farming, Sustainable Farming, Modern Farming, Chemical Farming, Balurghat and Dakshin Dinajpur

Impacts of Development on Environment

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Abstract:

Development is not a neutral procedure. Despite the different concepts attributed to development over time, in the field of economics, development is related to increase in production of products and services within an economy. The undeniable relation between development and economic growth produces significant relations between development and

the environment. Industrialization has the potential to help achieve different social objectives such as employment, eradication of poverty, reduce gender inequality, greater access to education and healthcare etc. but the industrial processes can have negative environmental impacts, causing climate change, loss of natural resources (forest), soil, air and water pollution and abrogation of species. Sustainable development was introduced as a global priority in the so-called "Earth Summit," in Rio de Janeiro, in 1992. Sustainable development consists of three pillars: economic development, social development, and environmental protection. The development and application of environment-friendly technology, products and services, and management systems have the potential to achieve both environmental sustainability and economic growth. The Indian and the global economy face significant environmental challenges, from resist dangerous climate change to halting biodiversity loss and protecting our environment. The role of environmental policy in managing the provision and use of natural resources. The role of environmental policy is to manage the provision and use of environmental resources in a way that supports improvements in prosperity and wellbeing, for current and future generations. This paper instead examines the link between the economic growth and environmental impact.

Geo-Hazards in Different Geographic Space

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Abstract

Man is the most important animal of Nature. The Nature has its own rules and it works on the basis of these rules. On the other hand the human-being adapt to the different natural environment and works in between it. But sometimes different hazards (like earthquakes, tsunami, landslides etc.) occur on Earth-surface due to different causes which damage the human-life or has a potentiality to cause destruction.

The Hazards are small scale phenomena and it is either natural or manmade which causes damage or loss of property and life. The Geo-hazards or geomorphic hazards (natural or manmade) affect the geomorphic Stability of landforms and affected the life of living organisms. It ranges from very short term scales to very long term scales.

The knowledge of Geomorphology, Geological engineering principles and new emerging technologies helps in the identification, monitoring, predictions, and minimize or help in preventing the geographic hazards. With the development of new Internet Technology, it is applied to enhance the accuracy and efficiency of monitoring and early-warning system for

geo-hazard prevention. The European Union has launched real-time landslide monitoring program based on IoT, the United States Geological Survey and National Weather Service jointly set up mudslide early warning system in San Francisco in 1985. This paper presents the characteristics, causes, effects of different geo-hazards occurred in different geographic areas and also discussed about the management techniques of the hazards. It also presents a study about the new emerging technologies and IoT applied in geo-hazard prevention.

Coastal Geomorphic Hazards And Impact On Ramnagar Coastal Belt Of West Bengal

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Abstract

The Coast is almost important dynamic zone of the West Bengal. This paper assesses the impact of Accelerated geomorphic hazard on recent coastal environment. The coastal erosion is most important for the changing coastal environment along the Tajpur to Mandarmoni coastal tract, which is part of Ramnagar coastal belt of West Bengal. Through the erosional mark and shifting of shoreline and also related data have been detected that the coastal accelerated geomorphic hazard, coastal erosion has remarkable along this area over the last decade. As a result of that the shore line has been shifted landward and the entire environment has changed. It has been observed that the coastal erosion and shifting of shoreline of this area also shifted landward at a rate of 25m to 50m/year. At many places the coastal dunes, coastal vegetation and also ecosystem are totally destroyed by accelerate wave erosion. The agricultural land and fishferms are also affected by this accelerated hazard.

Key words: Geomorphic hazard; Coastal erosion; Shifting of shoreline; Environmental change.

Conservation of the Wetland Resources and Securing the Sustainable Livelihood of the Local People: A Case Study of Dighali Beel, Nagaon, Assam

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Abstract:

The wetlands are one of the important natural resources on the earth's surface. Human being is always getting benefit from it as wetlands offer a diverse range of livelihood options. Dighali is one of the important wetlands of Nagaon district situated in the middle Brahmaputra valley of Assam. It is situated in a lowland flat area. This wetland is rich in various flora and fauna. Traditionally, it fulfills the needs of local people in various way. The wetland is full of a variety of fish fauna. Fishing is done largely by the local people. Dighali beel is a source of livelihood for a large section of people in the surrounding areas. With the rapid rate of population growth, over exploitation of resources from the beel are done in recent decades. Moreover, siltation and human encroachment in some areas leads to disappearing of the wetland. Shrinkages of the wetland leads to change the landscape of the wetland area as well as the water quality and drainage characteristics. So, there is an urgent need of conservation of the wetland. Proper conservation management with participatory approach resulting into develop the wetland as a sustainable source of livelihood for the local people. The study highlighting the present status, problems and need of conservation of the wetland for better option of livelihood.

Key words: Dighali beel, livelihood, human impact, encroachment.

Ecological Resource and its important

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Abstract

An ecological resource is a natural resource that plays a vital role in the keeping the balance of an ecological system. This type of resource is an object in the environment required by an organism for normal growth, maintenance and reproduction. Resource can be consumed by one organism, and, as a result, become unavailable to another organism for plants key resources are lights, nutrients, water, birth or growth place. Ecological resource are natural resources that provide certain necessary system which maintain the function of ecosystem. For animals key resources are food, water and territory. Planet Drum in 1973 was a pioneer

of an effective grassroots approach to ecology which emphasizes sustainability, community, self determination and regional self-reliance which has explained in terms of 'bio-region'. This type of region is a 'life space' of human habitation. The ecological concept deals with the interactions of organisms to one another and their relationship with the physical environment. This paper investigate how ecological resource are important with plant and animal species. This paper highlight. How availability of resources plays a significant role in ecological process. This paper deals how ecological resource is important for different ecological cycle.

Key words : Ecology, Ecological Resource, Ecological Process, Ecological Cycle.

Modeling water richness and habitat suitability of the wetlands and measuring their spatial linkages in mature Ganges delta of India

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Abstract

Present study has attempted to measure Water Richness (WR) and Wetland Habitat Suitability (WHS) in deltaic environment and assessed their spatial linkages. Both the components are very essential and should be measured to explore ecosystem service and environmental health of a region. For investigating water richness of the wetland six water availability indicating parameters have been chosen and for assessing wetland habitat suitability four additional parameters have been taken into consideration. Four widely used and recognized machine learning algorithms like Reduced Error Pruning (REP) tree, Random forest, Artificial Neural Network (ANN) and Support Vector Machine (SVM) have been employed here in order to develop suitable model at two phases. Results reveal that very high water rich zone is found over 200 to 215 km² wetland area followed by high water rich zone over 125 to 140 km² wetland area in both the phases. Wetland habitat suitability assessment shows only 100 to 150 km² of the wetland having very high suitability and 110 to 120 km² of wetland having high suitability. Field investigation and accuracy assessment support the validity and acceptability of the results. Spatial linkage between water richness and habitat suitability demonstrates that 30 to 40% very high water rich zone represents very

high habitat suitability figuring out importance of both the models. Therefore, results recommend that only water richness of the wetlands of the wetlands is not enough to represent the habitat suitability in the densely populated riparian flood plain region.

Keywords: Water richness, Wetland habitat suitability, Machine learning algorithms and Spatial linkage.

Examination of radiation and stress degree day index in some food crops of Purulia district of West Bengal, India

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Abstract

In the present study, an attempt has been made to evaluate the seasonal variation in radiation distribution and stress degree day index of small vegetables and tomato plants in the Purulia district of West Bengal where drought is considered as recurrent phenomena. The study also deals with the relationship between photosynthetically active radiations and stressed degree day index of those crops. For the measurements of radiations on different dates, point quantum sensor has been used. An experiment has also been carried out to identify the impact of meteorological drought on moisture stress (stress degree day index or SDDI) of those crops through canopy temperature technique. Finally, a correlation has been established between PARs and SDDI of the plants and 'p' values have been computed to identify the significance of the correlation. Stress degree day index is found to be maximum in tomato plants during pre-monsoon whereas in the winter season higher moisture stress is observed in small vegetables.

Key words: Small vegetables, Tomato, PAR, stress degree day, meteorological drought.

Impact of Stone Mining and Crushing on River Morphology in Dwarka River Basin, Eastern India

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Abstract

In the developing countries growing construction work encourages stone quarry and crushing activities. Middle catchment of east India's Dwarka river basin has total 239 quarrying and 982 crushing units which produces huge stone dust affecting not only air but also river morphology and water quality. The present study aims to ascertain the impact of stone dust on river morphology change and water quality. The study identified growing channel bed aggradations (average: 0.02m to 0.52m) due to stone dust. Multi-parametric approach based on machine learning methods like Fuzzy Inference System and Random Forest Algorithm incorporating eleven relevant parameters identified river bed accretion susceptibility due to stone dust. In all the cases 06 to 17 % area is identified as highly susceptible areas. Sediment load is abnormally enhanced exceeding the carrying capacity of the river. River bed mining is identified as the major reason behind loitering of thalweg axis of the rivers. Degradation of water quality due to admixing of stone dust is as high as beyond drinkability and irrigability.

Keywords: Stone crushing; Stone dust; River bed accretion; Accretion susceptibility; River bed mining; Thalweg shifting and Water quality

Flood susceptibility modeling and sensitivity assessment of Tangon river basin of India and Bangladesh

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Abstract

Among all-natural disasters, flood is considered to be one of the most dangerous natural disasters, associated with damage to properties, infrastructure, and human life around the world. Managing flood hazards is one of the major challenges in the flood plain region across the world. Prediction of flood susceptible areas is, therefore, a primary task for adopting a management plan for minimizing the colossal failure of flood. The present work intended to identify the flood susceptible areas by using six Machine Learning (ML) algorithms, such as Support Vector Machine (SVM), Random Tree (RT), Random Subspace (RS), Additive Regression (AR), Random Forest (RF) and Bagging (Bag) based on fourteen flood conditioning parameters taking the Tangon river basin of Indo-Bangladesh as a case.

Multicollinearity test and Correlation Attribute Evaluation (CAE) methods were applied to identify the multicollinearity problem and assign the rank of the parameters. Various statistical tests (AUC of ROC, Friedman test, Wilcoxon Signed Rank Test) were applied to validate the ML models. Apart from this, Index of Flood Vulnerability (IFV) using field datasets and 2D flood simulation model using HEC-RAS software were used to validate the flood susceptibility models. The ML models predicted 9.59% to 25.89% area comes under a very high flood susceptible zone to the total study area (2388.88 km²). The accuracy assessment clearly reflects that all ML models were acceptable, but the SVM model more efficiently represented the ground reality compared to other ML models. Therefore, the study recommended the use of the SVM model for flood susceptibility mapping in this study area. The flood simulation model and IFV were also spatially adjusted with the flood susceptibility model. Sensitivity analysis of the model clarified that geology, rainfall, elevation and drainage factors played a dominant role for determining model.

Keywords: Flood susceptibility mapping, Machine learning, Flood simulation, Field-based susceptibility, Statistical tests and Sensitivity analysis.

Effects of damming on the degree of hydrological alteration and stability of Lower Atreyee River basin wetlands

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Abstract:

Numerous studies have discovered damming effect on downstream river eco-hydrological state but little is thought about its consequences on eco-hydrology of riparian wetlands. Hydrological data scarcity at a spatial scale is one of the major constraints. The present study intends to explore the damming effect on eco-hydrological components like wetland depth, consistency in water appearance, hydrological stability, eco-hydrological failure and eco-deficit using spectral indices from remote sensing data taking Atreyee river basin as a case. Time series Normalized differences water index and Modified normalized differences water index are taken as the database. Range of variability approach and flow duration curve

methods are adopted for the computing failure rate of ecological water appearance and eco-deficit in the wetland. The result shows a statistically acceptable positive relation (0.76 to 0.89) between normalized differences water index and modified normalized differences water index value and depth of water in wetland inferring the substitutability of spectral values to depth data. In the post-dam phase (2012 onward) about 82% and 96% wetland area in pre-monsoon and post-monsoon season has turned into a hydrologically unstable state leading to a growing failure rate for attaining ecologically essential water volume and eco-hydro deficit state of wetland. Damming has converted only 100% wetland area into the eco-deficit zone which is ecologically not viable. Based on the findings study recommends that for the survival of the river and wetland ecological flow is required to release from the dam.

Keywords: Damming; Spectral indices; Hydrological stability; Eco-hydrological failure and Eco-hydrological deficit

Population Explosion and Its Negative Effects on Indian Society

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Abstract

The world is experiencing rapid growth of population last few hundred years. Most of the growth taking place in the developing countries. Population itself is not a problem, when it's size in optimum level it represents the strength of a nation, but it becomes unmanageable, it invites unwanted problems. A country is over populated in relation to its area, resources and their utilisation. In this situation population explosion perceived and articulated as a primary cause of poverty, ill health, lack of educational facilities, unemployment, environmental degradation and climatic change. India also experienced unprecedented and accelerated growth of population and after 1951; it has become explosive in nature. According to 2011 census, India occupies 2.4% of the total land area of the world and therefore the population of India is about 17.5% of the total population of the world. Hence, we have seen disparity in relation of land and population. The present paper is based on the negative effects of population explosion in country like India. This paper tries to explore such areas, like social, cultural, environmental and economical perspectives affected by overpopulation problem.

Keywords: Developing countries, Explosive, Resource, Overpopulation

Trend and Types of Rural-Rural Migration in West Bengal: A Decadal Analysis

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Abstract

Migration is a process for population adjustment and balance in terms of mainly social and economic conditions of the people. From the very beginning of human civilization people used to move from one forest land to another in search of products livelihood. Out of different types, rural-rural migration is the movement of people from one rural area lacking social and economic gain to another nearby rural areas with high productivity, more job opportunities and wages. The present study examines the types of migration and identifies the reasons of migration by sex and by stream mainly focusing on rural-rural migration in West Bengal during 1991- 2001. The study is based on secondary data collected from 1991 and 2001 census years. It has been observed that rural-rural migration is far more dominant than other migration streams. From rural areas three fifths of migrants move to rural areas and one fifth to urban areas, but this share is very low from urban to urban areas (18.03%) and urban to rural areas (4.45%). The study explores rural-rural migration by types of intra-district, inter-district and inter-state migration. The intra-district migration is dominant (82.88%), it is followed by inter-district (12.76%) and inter-state (4.36%) migration. Male migrates are generally more in numbers than females but due to marriage migration, the percentage of female rural-rural migration is high in West Bengal.

Key words: Internal migration, Migration stream, Rural-rural migration. Place of origin and destination, Spatial variations.

Assessment of Demographic and Socio-economic Backwardness to Natural Hazards in the Coastal West Bengal, India

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Abstract

Coastal regions of the deltaic West Bengal are highly exposed to rising sea levels and recurrent environmental hazards such as floods, severe cyclones, which triggered storm and tidal surge, embankment breaching, salinisation etc. Most of the places in this active delta failure to protect from vigorous storm surge during cyclonic disaster with embankments breaching. As a result saline water are entering in the low lying coastal and riverine villages and inundated vast agricultural land, fish farms which constantly threaten the livelihood of this area. High soil erosion and land subsidence are also common phenomena in coastal zone. In this juncture, the assessment of demographic and socio economic backwardness of the coastal West Bengal is urgently needed for proper policy planning. This study focuses to quantify the micro-level demographic and socio-economic backwardness of the four blocks Kakdwip Sub-division. These regions are also situated in low lying coastal belts of extreme southern part of West Bengal. Most of these coastal inhabitants survive on local natural resources and constantly adapt their livelihood strategies to the adverse effects of climate change and natural hazards. Principal Component Analysis (PCA) has been employed to assess the variables associated with backwardness and Multi-linear regression model (MLRM) has also shows the determining factors associated with such backwardness. Though IPCC addressed exposure, sensitivity and adaptive capacity to study vulnerability, here PCA and MLRM has been employed to assess the backwardness and future policy planning at micro level.

Key Words: Hazards, surge, embankments, demographic, socio-economic, backwardness.

Reclamation of Field Production Sustainability of *Parthenium* Occupied Areas of West Bengal: An Ecosafe Management

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Nowadays we are all aware about the harmful effects of the noxious alien weed *Parthenium*. Recently it has spread luxuriously in the districts of West Bengal and in almost everywhere. The biodiversity changing in weed pests due to climate change is the key factor for the invasion of the alien weed in the newer ecosystem. Even after using various preventive

checks like uprooting, burning, chemical fertilization, we can't control the prolific nature of this pernicious weed.

It causes health hazards as well as destroys all the useful crops and plants by growing near them. Numerous studies propose that *parthenium* can be used as a Green manure, Compost, mulch that improves the properties and productivity of soil. In a comparative study, it was found that in parthenium compost, nutrients were twice more than ordinary compost (FYM) and almost equal to vermicompost.

As a weed crop, it has a property to absorb more and more nutrients from the soil. Hence, it is rich in nutrients. The high concentration of macro (N,P,K) and micronutrients (Fe,Mn,Zn) in composted parthenium increases the yield of many agricultural crops and in this way a lot of green parthenium can be destroyed.

Public awareness and participatory integrated approaches can manage this ecosafe management strategy for West Bengal, by following D.W.S.R, National Research Centre for Weed Science (Jabalpur), Bidhan Chandra Krishi Viswavidyalay with the help of agriculturalists, scientists and Government. I think besides burning or destroying the allelopathic weed, it is a better way of eradicating it and maintaining better field sustainability.

Keywords: parthenium, parthenium compost, ecosafe management, field sustainability.

COVID-19 Pandemic and its Impact on the Environment

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Abstract

The World is a dynamically changing globe, permanently formed by socio-ecological connections. Difference and changes are common in a nonlinear and lively system such as our earth but passing sureverges may push the constancy of the systems into a new rule which can have importantsignificances at different spatial and chronological scales. Numerous environmental factors affect the outbreak and spread of epidemic or even disease events which, in turn, may reason responses on the environment. The COVID-19 epidemic provides significant challenges to different socio-ecological systems, with clear impacts on many

features of the environment. Limited human interaction with nature during this disaster time has appeared as a blessing for nature and environment. After the outbreak of COVID-19, environmental conditions are improving and wildlife is flourishing. Our India has always been a center of pollution with enormous population, heavy traffic leading to high air quality index values in all main cities. Most surfaces of the environmental impact of the COVID-19 epidemic have not straight resulted from the virus itself. The significance of shortly limiting or closing economic sectors, such as heavy industry, hospitality business, has affected the environment directly. This study presents an early overview of the observed and latent impacts of the COVID-19 on the environment. At present when whole globe is struggling to frame appropriate plans to battle COVID-19, the early lockdown applied has shown an absolute way towards returning environment.

Keywords: COVID-19, Environment, Epidemic, Lockdown, Pollution.

Poverty Alleviation and Environmental Degradation In India: A Sustainable Approach

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Abstract

India, a developing country, has been experiencing the adverse impact of poverty on socio-economic life of the people. To alleviate poverty, the most important goal of Millennium Development Goals (MDG), it is necessary to create adequate level of employment opportunities in India. Employment generation indicates an enhancement of production level or economic growth, but it may increase the excessive and irrational use of natural resources and may be significantly liable for various types of pollution. Employment in industry (% of total employment) (modeled ILO estimate) and carbon dioxide (CO₂) emissions (kg per 2010 US\$ of GDP) have been considered as the indicators of employment generation and environment degradation respectively in the present study and an attempt has been taken to explore the relationship between the mentioned variables in India since economic reforms. After examining the relevant data the study concludes that employment generation in industrial sectors, at initial level, significantly responsible for carbon dioxide (CO₂) emissions or environmental degradation but then it improves environmental quality and shows a

sustainable development between employment generation or economic growth and environment in the Indian economy.

Key Words: Poverty Alleviation, Employment Generation, Economic Growth, Sustainable Development

Changing Relationship between water richness and ecosystem service in pursuance of Dam

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Abstract

Evaluation of ecosystem service (ES) value of different wetlands is well reported with global and regional level studies but how spatio-temporal differences of water richness (water availability) exerts impact on ES is not yet studied so far. The present work has intended to explore the effects of damming on water richness in wetland and effect of water richness change on ecosystem service value (ESV) taking wetland dominated riparian tract of lower Punarbhaba river of India and Bangladesh as a case. Water richness models of pre and post-dam periods have been constructed based on four hydro-ecological parameters (hydro-period, water depth, consistency of water appearance and wetland size) following semi-quantitative analytic hierarchy process (AHP). ESV of different wetland types without considering water richness effect is computed using the coefficient of de Groot et al. (2012).

Result shows that in post-dam period total wetland area is reduced from 73.563 km² to 52.123 km² and 53.788 % high water richness area is reduced. Total ESV of the wetland has reduced by 63.439 % since 1989 to 2019 with an annual reduction rate of 2.11%. This is mainly due to squeezing of wetland area in post-dam period in consequence of flow attenuation in the cognitive river. If water richness effect on ESV is considered, the scenario is found quite different. Total ESV of different ESV zone was 32990000 US\$ in pre-dam and it is reduced to 19710000 US\$ in post-dam period. If it is compared with total ESV of the wetland without considering water richness effect, the computed ESV gap was 105960000 US\$ in pre-dam and 38740000 US\$ in post-dam period indicating enlarging the gap. For

maintaining ES of the wetland hydrological management specifically flow maintenance in river and riparian wetland is highly essential.

Keywords: Wetland, Damming effect, Change of water richness, Ecosystem service value (ESV) and Water richness and ESV

Modelling of Damming Effects on Ecological Water Availability and Wetland Habitat State in Lower Punarbhaba River of India-Bangladesh

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Abstract

The present work intended to explore the impact of damming on the water richness and eco-hydrological condition of the wetland and its consequent ecological responses. Satellite image based hydro-period, water presence frequency (WPF), and water depth based water richness model was developed and exhibited that in the post-dam period, high wetland water richness area decreased from 71.83% to 7.65%. Range of variability (RVA) based hydrological failure rate (>67%) captured 45% of wetland area in post-dam period. Depth of water was used for preparing the flow duration curve (FDC) for pre and post-dam periods to estimate the eco-hydro-deficit and surplus condition in wetland at spatial scale. Eco-hydro-deficit areas increased from 11.22% to 52.19% and 35.03% to 52.67% respectively in pre-monsoon, and post-monsoon seasons indicating growing ecological stress. Trophic status of wetlands needs regular monitoring for efficient wetland management of threatened water bodies. Damming over river remarkably alters downstream hydrological state of the river and riparian wetland vulnerable plain. Considering this assertion the chapter intends to trophic state of the wetland vulnerable plain wetlands and their spatial adjacency of lower Punarbhaba river basin using Carlon's method. This ecological response was very clear, while analyzing the Trophic state index (TSI) of the wetland during pre and post-dam periods. Monitoring of wetland loss is well studied but modeling wetland habitat quality using machine learning technique is lacking so far. But habitat quality modeling is very essential for dealing with the existing wetlands and its management. The present study has intended to explore the damming effect on wetland habitat vulnerability. For exploring the effect more vividly Wetland habitat vulnerability state (WHVS) models of pre and post dam periods have been constructed and the difference is assessed. Machine learning algorithms

like SVM, ANN, Bagging, RBF and M5P have been applied for this including hydrological, surface composition and water quality parameters. Along with statistical measures like Receiver operating characteristics (ROC) curve, Friedman test, Wilcoxon test, field based index of wetland habitat vulnerability state has also been developed for validating the data driven model and finding the suitable one. From the work it is found a large percentage of area primarily in the wetland fringe area, small patches, edges are highly to very highly vulnerable wetland habitat in pre dam period as predicted by the machine learning models. As per the result of validation test, ANN model can be treated as the best suited for depicting the wetland habitat vulnerability in the present area. Maintenance of ecological flow, regular inundation regime, check in massive land use conversion may be some good steps to conserve the habitat quality of the wetland. Maintenance of habitat quality is the key to ecosystem health and vitality. So this work will help policy makers to adopt just step with priority basis.

Hydro-Meteorological Hazard and Disaster Risk Reduction: A Case Study of Geo-Spatial Analysis

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Abstract:

It is globally recognized that disaster losses are increasing exponentially. In recent years, natural disasters have been integrated into the process of development and for this reason, disasters are considered often a function of development. Natural or human-induced disasters have been causing tremendous loss of life and property and damages to public and private infrastructure, eroding gains of development and also leading to mounting expenses on relief and rehabilitation. At present, it is noted that global warming and climate change will impact precipitation, including the likelihood of greater extremes of wet and dry seasons as well as more intense storms. Many regions in India are highly vulnerable to natural disasters on account of geological conditions. West Bengal is highly vulnerable to such hydro-meteorological disasters like floods which have been a recurrent phenomenon in one of its river Atrayee flowing in the marginal district, Dakshin Dinajpur. Since water is a state subject, necessary steps have to be taken by the State and local governments, and other stakeholders for integrated flood risk management. The objective of the present work is to

establish a systematic approach to identifying, assessing, and reducing the risks of flood disasters in the study area.

Keywords: disaster, human-induced, mounting expenses, rehabilitation, global warming, hydro-meteorological disaster, risk management, etc.

Postmodernism and Sustainable Development

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Abstract:

As human beings, our future sustainability could be under threat if we continue to ‘trash the planet’. Sustainable development, suggested as a way of addressing the environmental, economic and social problems ahead, has fundamental implications for the governance of modern society. In a complex system, such as the Earth, linear analysis and rational planning are no longer considered appropriate, and new ways of understanding change are needed. Post modernism offers an alternative approach and a different way of perceiving the world and its problems. It is however, criticized as almost useless because its plurality of competing dialogues is said to undermine the basis for meaningful change. Post modernism may provide a way forward. This paper examines a theoretical approach to exploring discourses around sustainable development in non environmental, voluntary organizations using post modernism, based on a belief that in complex systems small changes can bring about major change and that voluntary organizations, working at a local level, can bring about change in their communities. It highlights how a post modern approach could contribute to securing a more sustainable future, by helping us understand the importance of local narratives in co-creating the future.

Keywords: Sustainable development, post modernism, complex systems, voluntary sector

Tropical Cyclone and its Impact on Coastal West Bengal: A Comparative Study of Aila and Bulbul with Amphan

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Abstract:

Tropical cyclone, also called typhoon or hurricane are one of the most hazardous and destructive climatic phenomena in tropical region mainly 5 degree to 20 degree north and south of both the hemisphere. During summer period tropical ocean becomes intensely heat up by the direct sunshine and so a low circular pressure belt developed over the warm ocean. Therefore the winds from surrounding high pressure region moves toward the low pressure core region. So a wind vortex would be generated due to the effects of coriolis force and earth rotation. Winds circulate anticlockwise and clockwise for the northern and southern hemisphere respectively. When this rotated winds rushed up towards the coastal continental region a huge downpour of rain and thunderstorm occurred. Due to the causes of high wind speed tidal surge have generated over the ocean .so, sea level becomes high from the previous and coastal land becomes inundated. When the tidal surge and high tide coincide with cyclone it becomes very disastrous. On 25th may 2009 when aila destroy the coastal land the similar tidal surge and high tide are coincide with cyclone. We know that, when the pressure difference between core and outside region remain very high, a steep pressure gradient slope formed. Due to the high pressure gradient wind moves rushedly towards the core of the cyclone. If we study the Amphan and Aila a distinctive pressure difference would found. The lowest pressure of the core of aila and amphan was 968 milibar and 920 milibar respectively. Hence generally Amphan became more destructive than the Aila. But due to the correct and timely forecasting the fatality rate and total amount of damage remain less than Aila. Bulbul was comparatively less destructive than Aila and Amphan. if we study the direction of tropical cycone, its cleare that, most of the tropical cyclone are easterly. Which are moved from east to west or north west direction under the influence of trade wind. As a result, eastern part of the continent or country, like india are severly destructed and inundated by the effects of cyclone.

Impact of Development on Environment

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Abstract

The dawn of industrial revolution in late 18th century (say precisely since 1750 A.D.) with the emergence of science and development of more efficient and sophisticated technology initiated the hostile relationship between man and his natural environment. Extreme teleological and economic deterministic concepts of the western world, advanced technologies and scientific techniques of the modern '**technological man**' led to reckless and indiscriminate rapacious exploitation of natural resources for industrial expansion and urban growth which have altogether created most of the present day environmental and ecological problems of global dimension. The impact of modern technological man on natural environment are varied and highly complex as the transformation or modification of one natural condition and process leads to a series of changes in the biotic and abiotic components of the biospheric ecosystems. The man's impact on environment falls into two categories: **1. Direct impacts** include clearing of forests, felling of trees for commercial purposes, burning of grasslands for crop cultivation, changes in cropping pattern by introducing high yielding varieties of seeds, constructions of dams and reservoirs, canals, constructions of roads and bridges, withdrawal of groundwater, increase in urbanization, induce precipitation by cloud seeding etc, such as the earthquakes of Denver in 1962(Denver, Colorado, U.S.A.) due to construction of dams and reservoirs. **2. Indirect impacts** include the air and water pollution due to accelerated rate of industrialization such as river water of Damodor due to polluted by slurry of coal washeries and numerous industries turns into biological desert.