



# CENTRE FOR GEOGRAPHICAL STUDIES

ARYABHATTA KNOWLEDGE UNIVERSITY, MITHAPUR, PATNA-800001  
E-MAIL-cgs.aku@gmail.com

## ANNUAL REPORT OF CENTRE FOR GEOGRAPHICAL STUDIES IN THE FINANCIAL YEAR -2021-22

### ABOUT CENTRE FOR GEOGRAPHICAL STUDIES, PATNA

The Centre for Geographical Studies, Patna is established by Government of Bihar in 2018 and it started to function in 2020. This Centre for Geographical Studies is the first Geographical research Centre in India which is established and fully financed by the Govt. of Bihar. Centre for Geographical Studies (CGS) is fully a part of Aryabhatta Knowledge University. CGS is envisioned as a centre for geographical research in areas of policy and development. The centre's immediate goal is imparting skills in the discipline of Geography, at a level which is comparable with the world's leading institutions. The overarching goal is employment of these skills and skilled individuals towards geographical planning and policy intervention for the advancement of Bihar. CGS maintains its focus on complex issues, where application of scientific geographical principles can lead to significant developmental gains for the state of Bihar. This gestalt forms the fulcrum of the centre's efforts.

In culmination of its role as a centre for research and planning of public policy, CGS aims to substantially contribute towards state, and eventually towards national developmental policies and strategies. In this vein, CGS aspires to incrementally emerge as a world class research institution. The centre is also committed to moving beyond traditional research avenues such as consultancy and training programs, to take the philosophy of planning beyond academia, and into the public sphere. In the public sphere, CGS will endeavor to address the complex relations between the limits imposed by the natural world, and the possibilities that human action can create in its sustainable future.

- ***Principles***

Realization of the vision and mission is based on these value-based principles -

- **Excellence:** Basic commitment to the development of academic, educational, and research of human and natural systems, land use change, and geospatial information science. Harnessing the interrogative nature of geographic science to answer the fundamental questions of local regional and global importance.

- **Collaboration:** Collaboration and integration across institutions and disciplines locally and globally. Outreach through partnerships to foster the development of skills learning, scholarships, and policy work.
- **Sustainability:** Informed and active future should be developed by understanding mutual interdependence and symbiotic relationship with nature if they are to make responsible choices for the future.
- **Diversity:** We value our diversity and accept its strength. The sustainable future development has to be based on the edifice of these diversity and mutual respect for each other.

### • *Vision*

Centre for Geographical Studies will be a cornerstone of learning and of academic excellence. It will be the destination of choice for meritorious students. This will be achieved by actively fostering learning and enquiry.

### ▪ *Mission*

- To build intellectual, creative, and practical abilities of the institution and students.
- To recruit and retain outstanding faculty to foster the advancement of developmental vision and mentoring emerging scholars to realize their highest potential and assume roles of leadership, responsibility and service to society.
- To create a wealth of Knowledge through rigorous research work and make vital publications.

### • *Achievements*

- Research Project on the topic “Neighbourhood Environment Improvement Plan” has been started in CGS.
- Agreement with BBOSE (Bihar Board of Open Schooling & Education) for the ‘Amin’ Training Programme.
- Collaboration with university of WOLVERHAMPTON as a project partner.
- 17 Webinar Lectures Series and 3 extramural lectures has been successfully conducted by CGS.
- Edited book named ‘Contemporary Inquiry in Geography-Research Lecture Series-I’ was published by the Centre.
- Admission in Ph.D. has been done.
- **XVI DGSi International Online Geography Conference** was organized by Centre for Geographical Studies, Patna on 10-12 September, 2021

- M.A./M.Sc. in Geography and M.Sc. in Remote Sensing and GIS courses are going to start in the Centre.
- **Upcoming Programme/Courses in CGS (2021)**
- Ph.D. in Geography
- Certificate & Diploma Programme in Research Methodology
- M.Sc. and Diploma Programme in Remote Sensing and GIS
- M.A. in Geography

## ACADEMIC ACHIEVEMENT

### Media Highlights of the Centre: -




## **Admission in Ph.D. Programme in Academic Session 2020-21: -**

1. Centre for Geographical Studies, Patna has published its first advertisement in the newspaper for Ph.D. admission in the session 2021 and also educational activity has been started as per the rule after completing all selection process by the centre for Ph.D. programme. Three students have got admitted after clearing all selection process. Name of all three students as Ph.D. Research Scholar is given below: -

SI.NO	NAME	ROLL NUMBER	REGISTRATION NUMBER	CATEGORY
1	Swati Singh	0004	BRCGSPG0004	GENERAL
2	Saurav Kumar	0019	BRCGSPG0019	BC-I
3	Sarita Kumari	0020	BRCGSPG0020	GENERAL (F)

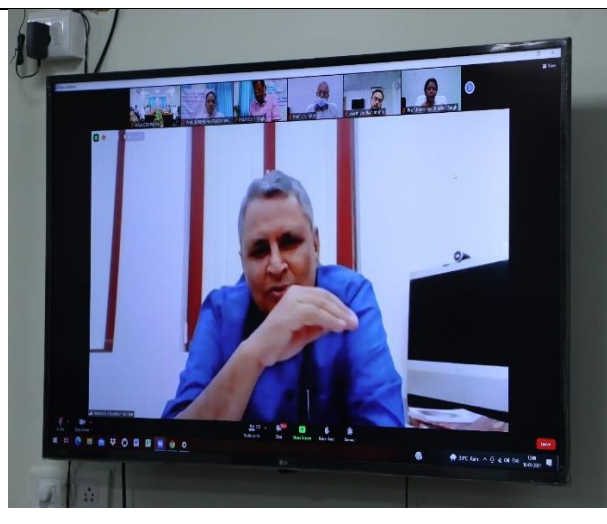
### **Formation of Interview Board for admission in Ph.D. Programme:**

- |   |          |
|---|----------|
| 1. Prof. R.B.P.Singh, Ex- Vice Chancellor, NOU & PU Patna:          | Chairman |
| 2. Prof. V.N.P. Singh, (Retd.) Professor, Patna University, Patna:  | Member   |
| 3. Prof. Md. Ataullah, (Retd.) Professor, Nalanda College, Nalanda: | Member   |

## **CENTRE FOR GEOGRAPHICAL STUDIES ORGANIZED XVI DECCAN GEOGRAPHERS (DGS) INTERNATIONAL ONLINE CONFERENCE IN THE FOCAL THEME OF 'ENVIRONMENTAL, POPULATION AND SUSTAINABLE DEVELOPMENT**

2. **XVI DGS International Online Geography Conference** was organized by Centre for Geographical Studies, Patna on 10-12 September, 2021. Total 558 scholars registered for the conference. Participants participated in the conference from 27 states of the country and 4 Union Territories. Total 432 papers were presented in the conference. Nine special lecture series was held in the international conference in which renowned professors from all over the world and India delivered a special lecture. Centre for Geographical Studies was globally recognized through this conference. After successful completion of the international conference, we generated feedback form and received 450 positive feedbacks from all over the world.





## **XVI DGS International Conference Report, 2021**

XVIth International Geography Online Conference of “The Deccan Geographical Society, India” held on “Environment, Population and Sustainable Development”, 10 to 12 September, 2021 at Centre for Geographical Studies, Aryabhata Knowledge University, Patna. Chief Guest of the conference was Shri Vijay Kumar Chaudhary, Hon’ble Education Minister, Govt. of Bihar. Prof. Mike Meadows, President IGU & Head, Department of Environmental Geographical Science, University of Cape Town, South Africa delivered the Key Note speech. The inaugural function was presided by Prof. S.P.Singh, Hon’ble Vice-chancellor, Aryabhata Knowledge University, Patna and Prof. R. B. P. Singh, Ex. Vice-chancellor, Patna University and President DGS. Convenor of this online conference was Prof. Poornima Shekhar Singh, Director, Centre for Geographical Studies, Aryabhata Knowledge University, Patna. Prof. R. B. P. Singh, President of DGS and Ex. Vice-chancellor, Patna University, Patna, Prof. B. C. Vaidya, DGS General Secretary, Dr. Sapana Sasane, DGS Secretary, Dr. Manish Parashar, Organizing Secretary, XVIth International Geography Online Conference, Ms. Kanchan, Head of the technical support team, XVIth International Geography Online Conference were present during conference. The senior faculty of DGS conference were namely Dr. Sadhna Deshpande (Nagpur), Dr. Anshu (Delhi), Dr. Uma Gole (Raipur), Dr. Savismita Chauhan (Mumbai), Dr. Sanjay Patil (Jalna), Dr. K.N. Singh (Allahabad), Dr. Anita Pande (Nanital), Dr. P.R. Vyas (Udaipur), Dr. Jagadish Singh (Varanasi), Dr. Parag Khadke (Nanded), Prof. Abha Lakshmi Singh (Aligarh), Prof. Debendra Kumar Nayak (Shillong), Dr. V. Raghavaswamy (Hyderabad), Prof. Rajiv R. Thakur (USA), Prof. R. B. Bhagat (Mumbai), Prof. M. Satish (United Kingdom), Dr. Pradhan Parth Sarthi (Gaya), Dr. Das Diganta Kumar (Singapore), Prof. A.R. Siddiqui (Allahabad) and Dr. Naveen Kumar (Jodhpur) were present during the conference.

This conference conducted four Special Lecture Sessions and four Technical Session having 27 parallel sessions in three-day conference. Name of the speakers in Special Lecture -1 held on 10.09.2021 were: Prof. Abha Lakshmi Singh (Aligarh) given lecture on “Urban Environmental Challenges”, Prof. Debendra Kumar (Shillong) given lecture on “Words are Weapons: Using Right Lingo in Environmental Discourse”, Dr. V. Raghavaswamy (Hyderabad) given lecture on

“Indian Satellite Observations for Repository of Climate and Environment Database Towards Sustainable Development”, name of the speakers in Special Lecture – 2 and 3 held on 11.09.2021 were: Prof. Rajiv R. Thakur (USA) given lecture on “Understanding Climate Change: Implications for Environment, Population and Sustainable Development”, Prof. R. B. Bhagat (Mumbai) given lecture on “Population, Migration and Citizenship in India”, Prof. M. Satish (United Kingdom) given lecture on “Climate Change and Sustainable Development: The Conundrum of Growth Ending Poverty or Destroying the Planet”, Dr. Pradhan Parth Sarthi (Gaya) given lecture on “Regional Warming Impact on River Basin and Urban Heat Island (UHI) in the Eastern Gangetic Plain of India” and name of the speakers in Special Lecture – 4 held on 12.09.2021 were: Dr. Das Diganta Kumar (Singapore) given lecture on “Smart Urbanism: Experiences from India and Singapore”, Prof. A.R. Siddiqui (Allahabad) given lecture on “Role of satellite derived data and Geoinformatics in Mapping of droughts and desertification”. Chairpersons of all four special Lecture sessions were: Prof. M.H. Qureshi, Prof. Prof. Rana Pratap (NAGI), Prof. S.C. Rai (Delhi), Prof. Krishna Mohan (Chandigarh). Co-chairpersons of all four special lecture sessions were: Prof. Vishwanath Prasad Sinha (Patna), Prof. Anuranjan Jha (Darbhanga), Prof. Anuradha Sharma (Jammu), Prof. Md. Nazim (Patna). One technical session having seven parallel sessions was held on 10.09.2021, two technical sessions having seven parallel sessions each were held on 11.09.2021 and one technical session having six parallel session was held on 12.09.2021. The chairperson of all 27 parallel sessions were: Dr. Murarilal Meena (Varanasi), Dr. P. R. Vyas, Dr. Sanjay Patil, Dr. Poonam Sharma (Delhi), Dr. Subhash Anand (Delhi), Dr. Rajendra Parihar, Dr. Narendra Kumar Rana (Varanasi), Dr. Sadhana Deshpandey (Nagpur), Dr. S. K. Singh, Dr. Omprakash Koli (Jodhpur), Dr. Megha Sawarkar (Nagpur), Dr. Sapana Sasane (Pune), Prof. Sarfaraz Alam, Dr. V. K. Thakur (Rohtak), Prof. Seema Mehra Parihar (Delhi), Dr. Ashwajeet Chaudhary (Allahabad), Dr. Kavita Arora (Delhi), Dr. Vinita Parsad (Patna).

The Co-chairperson of all 27 parallel sessions were: Dr. Govind singh, Dr. Vinod Veer, Dr. Tapas Pal, Dr. Ramesh Gavit (Mumbai), Dr. Nimba Ram (Jodhpur), Dr. Vishwa Chandel (Chandigarh), Dr. Sarfaraz Asgher (Jammu), Dr. Narendra Verma (Varanasi), Dr. Aparna Phadke, Dr. Govind (Jodhpur), Dr. Ravindra Hande (Pune), Dr. Amit Kumar (Ranchi), Dr. Dilip Kumar (Delhi), Dr. Jaya Laxmi (Bangalore), Dr. D. S. Charan (Udaipur), Dr. Sushant Sawant (Mysore), Dr. Swati Thakur (Delhi).

It is very heartening to announce that 536 scholars registered and 332 papers were presented. It is so because many articles were co- author, we had divided the theme into 26 Sub-themes and the papers were presented from each and every sub- themes. The 1<sup>st</sup> sub – theme titled concept and function of environment and other sub theme named Urban environment issues and challenges had 32 papers each. This simply reflects that the focal theme is widely acknowledged, justified and appreciated by the Scholars.

When we see the spatial Coverage of the participants, out of 28 states have their representation in the paper presentation in this conference. Out of 8 U.T. 4 had their representation. Even one Scholar registered his presence from as far as Andaman and Nicobar Islands.

Finally, Centre for Geographical Studies, Patna express its deepest gratitude to DGSI for posing their faith and confidence in a year-old institution of centre for Geographical Studies. The obligation also goes to all the research Scholars, faculties, delegates, and participants who joined this platform to make this event successful. This gives us immense pleasure to announce that the Centre is shortly going to start M.Sc. Course in Remote Sensing and GIS. It Will be highly unfair to leave the dias without again thanking the President of XVI DGSI, Prof. R. B. P. Singh for his continuous support.

- Centre has also published an Edited Book named ‘Contemporary Inquiry in Geography Research Lecture Series – I’. A committee was formed for publishing the edited book. The members of the committee were as follows:

S.NO.	NAME	DESIGNATION
1	Prof. Poornima Shekhar Singh	Patron
2	Prof. R.B.P.Singh	Editor in chief
3	Prof. V.N.P.Sinha	Editor
4	Dr. Gaurav Sikka	Editor
5	Swasti Vardhan Mishra	Editor
6	Mr. Anand Bijeta	Editor
7	Asif Shahab	Editor
8	Dr. Manish Parashar	Managing Editor

Editors of the book are Rash Bihari Prasad Singh, Vishwa Nath Prasad Singh and Poornima Shekhar Singh. The edited book includes 13 chapters with 121 pages. It was published by Sanjay Gupta, Rajesh Publications, New Delhi. Details of the chapters is given below:

S.NO.	NAME OF THE CHAPTER	AUTHOR
1	Importance of Geographical Research in the Sustainable Development of India	Prof. Rash Bihari Prasad Singh
2	Issues and Challenges of Urbanization in India	Dr. Anil Kumar, FeSRA
3	Urban-Rural Linkages and Environmental Issues	Prof. Abha Lakshmi Singh
4	Geomorphic Characterization of a part of the Ganga River System between Varanasi and Munger	Prof. Atul Aditya Pandey and Prof. Ramesh Shukla
5	Aspects of Urban Geological Studies w.r.t. Patna Urban Agglomeration	Akhouri Bishwapriya, Priya Upadhyay, Abhishek Kumar Chaurasia, Shikha Dagar, G.S. Gokul and Sandeep Kumar
6	Sustainable Thinking and Applied Sustainable	Dr. Tapas Pal



	Development: Experiments to Responsibility	
7	Pandemic and Exclusions: Towards a Geographical Epistemology	Prof. R.B.Bhagat
8	Groundwater Arsenic Poisoning and Health Status of the exposed Population of Bihar	Dr. Arun Kumar and Prof. Ashok Kumar Ghosh
9	Indoor Air Pollution: The Invisible and Silent Killer	Dr. Saleha Jamal
10	Re-imagining the World Cartographically	Prof. Sarfaraz Alam
11	Unorganised Sector Workers during Pandemic and Role of Government Entitlements	Dr. Ashish Ranjan
12	Knowledge Economy, Labor market and Spatial Science: Challenges and Opportunities for Bihar	Rajiv.R.Thakur (Ph.D.)
13	Psychology of Climate Change: Changing Human Behaviour, Changing Lifestyles and Cutting Consumption to Curb Carbon Emission	Dr. Habibullah Ansari

### Admission in Ph.D. programme in Academic Session 2021-22

4. Centre for Geographical Studies, Patna has published its advertisement in the newspaper for new Ph.D. admission on 06.11.2021 and also educational activity has been started as per the rule after completing all selection process by the centre for Ph.D. programme. Five students have got admitted after clearing all selection process from November, 2021 to February, 2022.

SI.NO	NAME	ROLL NUMBER	REGISTRATION NUMBER	CATEGORY
1	Kritika Priyadarshini	20023	21PGF001	EBC
2	Rahul Bhushan	20035	21PGF013	BC2
3	Ravi Ranjan Sinha	20029	21PGF007	BC2
4	Vishwanath Prasad	20009	21PGF027	EBC/BC-1
5	Poornima	20039	21PGF017	EBC

### Extramural Lectures

5. A mural lecture of Prof. Abha Lakshmi Singh, **Prof. Abha Lakshmi Singh (Retd.), Aligarh Muslim University, Aligarh, Uttar Pradesh and President, NAGI** was organized by Centre for Geographical Studies, Aryabhatta Knowledge University, Patna on 26.04.2022 at 09:30 a.m. on the topic “Geological Research and Use of Methodology: Some Examples”.

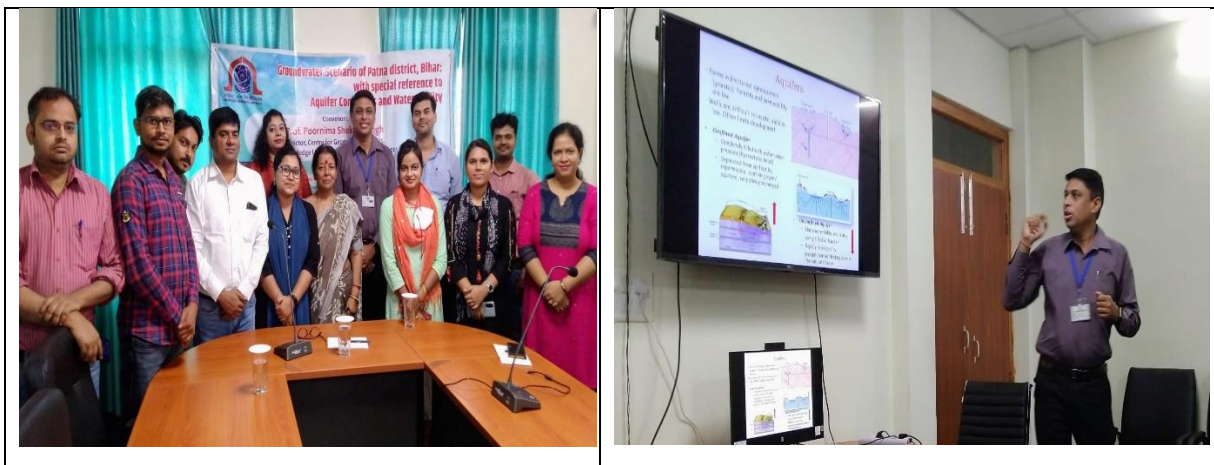




6. A mural lecture of Prof. Pradhan Parth Sarthi, Dean, Department of Environmental Science, School of Earth, CUSB, Gaya was organized by Centre for Geographical Studies, Aryabhatta Knowledge University, Patna on 27.04.2022 at 12 p.m. on the topic "Climate Change over the Eastern Gangetic Plain of India".



7. Director, Centre for Geographical Studies, Patna has organized an extramural lecture delivered by Akhouri Bishwapriya, Director, Geological Survey of India, Patna on 07.05.2022 in the Centre. Topic of the extramural lecture is "Groundwater Scenario of Patna district, Bihar: with special reference to Aquifer Conditions and Water Quality".



8. Centre for Geographical Studies, Aryabhatta Knowledge University, Patna will start the M.A. in Geography Programme and M.Sc. in Remote Sensing and GIS from August, 2022. Regarding this, advertisement will be published by Aryabhatta Knowledge University, Patna.

1. Development and Designing of the Centre's Website has been completed successfully. The name of the Centre's Website is **cgspatna.ac.in**. All the academic activity is being done through this website. Centre's Facebook account, twitter account, email account has also come into function.



2. Centre for Geographical Studies, Patna has formed different committees for starting different courses and programme of the centre, like Ph.D. Committee to design Ph.D. course work syllabus, Research Methodology committee to design syllabus of Certificate & Diploma courses for Research Methodology, Remote Sensing & GIS committee to design syllabus of M.sc & Diploma Courses for GIS and Remote Sensing and so on.

#### **Committee for designing Regulation Ordinance and Syllabus: -**

- |   |             |
|---|-------------|
| 1. Prof. Poornima Shekhar Singh, Director, CGS:                                   | Chairperson |
| 2. Prof. R.B.P.Singh, Ex- Vice Chancellor, NOU & PU Patna:                        | Member      |
| 3. Dr. Sanjeev Kumar, Assistant Professor, Raiganj University, West Bengal:       | Member      |
| 4. Dr. Gaurav Sikka, Assistant Professor, LNMU, Darbhanga:                        | Member      |
| 5. Dr. Rakesh Tiwary, Assistant Professor, A.N Sinha Institute of Social Studies: | Member      |
3. Centre for Geographical Studies, AKU Campus, Patna also established syllabus design & lab development committee for starting diploma and M.sc course in GIS and remote sensing. For this process, formation of computer lab has also been started.
  4. Centre has formed a committee for starting M.A./M.Sc. in Geography course in the Centre.

#### **Committee for designing Regulation Ordinance and Syllabus: -**

- |   |             |
|---|-------------|
| 1. Prof. Poornima Shekhar Singh, Director, CGS: | Chairperson |
|---|-------------|

2. Prof. R.B.P.Singh, Ex- Vice Chancellor, NOU & PU Patna: Member
3. Prof. V.N.P. Sinha, Ex-head, Patna University, Patna Member
4. Dr. Rakesh Tiwary, Assistant Professor, A.N Sinha Institute of Social Studies: Member

All courses got approved in the 18<sup>th</sup> meeting of Academic Council held in the Aryabhata Knowledge University on 17.02.2021(Thursday).

## RESEARCH AND TRAINING

1. Collaboration with University of WOLVERHAMPTON as a project partner has been done by the centre. In 2022, a training cum workshop will be organised by the Centre in which training of the faculty & Research Scholar will be given by trainer of WOLVERHAMPTON University.



9<sup>th</sup> March, 2021

To,  
The Director  
Centre for Geographical Studies,  
AKU Campus, Patna,  
Bihar, India.

Subject: Urban Studies Foundation (USF) seminar Series Awards '**Recasting the City, Lives and Livelihoods, and Inequalities in the post-COVID-19 world (RECLIC)**'

Dear Prof.(Dr.) Poornima Shekhar Singh,

I am pleased to inform you that our application to the Urban Studies Foundation (USF) seminar Series Awards has been successful. I thank you for your support as a project partner for the seminar series on "**Recasting the City, Lives and Livelihoods, and Inequalities in the post-COVID-19 world (RECLIC)**". As a project partner, I confirm that the centre for Geographical Studies, Patna will be the host Institution for 5-days capacity building workshop for early career researchers. The programme is tentatively planned for June 2022 (subject to the COVID-19 situation). Please let me know if you are willing to extend your support on this project and agree to comply with the terms and conditions of the grant as laid down by USF.

Looking forward to hearing your positive reply.

Yours faithfully,

*Komali Yenneti*

2. Centre for Geographical Studies, Patna has also signed an agreement with “Bihar Board of Open Schooling and Education” (BBOSE) for the “Amin training programme”. BBOSE has marked Centre for Geographical Studies, Patna as the advance centre for the training. By this agreement, students will be benefited by the training and get various job opportunities through this course.



3. It is a matter of great pride that Centre for Geographical Studies, Aryabhatta Knowledge University, Patna will be the host institution for 5-days capacity building workshop on “Geospatial Analytics and Post-COVID-19 Urban development for early career researchers under Urban Studies Foundation (USF) Seminar Series Awards on “Recasting the City, Lives and Livelihood and Inequalities in the Post COVID-19 World (ReCLIC) in collaboration with University of Wolverhampton, United Kingdom. The program is planned for 17<sup>th</sup> May 2022 to 21<sup>st</sup> May 2022. In this workshop cum 5-days training program, resource persons and participants are from different states of India as well as United Kingdom.



12<sup>th</sup> April, 2022

To,  
The Director  
Centre for Geographical Studies,  
Aryabhatta Knowledge University,  
Patna, Bihar, India

Subject: Urban Studies Foundation (USF) seminar series Awards ‘**Recasting the City, Lives and Livelihoods, and Inequalities in the post-COVID-19 world (ReCLIC)**’.

Dear Prof. (Dr.) Poojamma Shukla Singh,

I am pleased to inform you that our application to the Urban Studies Foundation (USF) seminar series Awards has been successful. I thank you for your support as a project partner for the seminar series on “**Recasting the City, Lives and Livelihoods, and Inequalities in the post-COVID-19 world (ReCLIC)**”. As a project partner, I confirm that the Centre for Geographical Studies, Patna will be the host institution for 5 days capacity building workshop for early career researchers. The programme is scheduled from 17<sup>th</sup> May, 2022 to 21<sup>st</sup> May, 2022. As per the agreement, £4243 will be transferred soon. Kindly make necessary arrangements for organising the workshop.

Yours faithfully,  
*Kamali Tenneti*

Wolverhampton, UK

**Dr Kamali Tenneti**  
BArch, MPhil (Env Plan), PhD (Geo & Enviro), FHEA, FRCGS, RACIA, AGLAT, AITPE, BEDA  
Lecturer in Geography, Urban Planning and Environment  
Program Leader ‘Geography, Urban Environments and Climate Change’  
University of Wolverhampton, School of Architecture and Built Environment, Springfield Campus  
Crimstone Street, Wolverhampton WV10 0JB, United Kingdom  
E: kamali@wlv.ac.uk W: www.wlv.ac.uk/FRE/50488

THE UNIVERSITY OF OPPORTUNITY



# **REPORT OF 5 DAYS EARLY CARRIER WORKSHOP ON GEOSPATIAL**

## **ANALYTICS AND URBAN PLANNING**

Five days International Workshop (17.05.2022 -21.05.2022) was launched in collaboration with Wolverhampton University, Urban Studies Foundation, United Kingdom on 17.05.2022 at Centre for Geographical Studies, Aryabhatta Knowledge University, Patna. The title of this international workshop is "Geospatial Analysis and Urban Planning". Hon'ble Minister, Shri Sumit Kumar Singh, Science and Technology Department, Govt. of Bihar, Patna was present as a Chief Guest in the Inaugural Session of the workshop. Shri Deepak Kumar Singh, Additional Chief Secretary, Education Department, Government of Bihar, Shri Rash Bihari Prasad Singh, Former Vice Chancellor, Patna University and Komali Yenneti, Wolverhampton University, United Kingdom were present as special guests. Key Note Speaker was from National Institute of Urban Affairs, New Delhi, Professor Debolina Kundu.

Prof. Kundu presented her Key Note Lecture titled – “Covid19 and Indian Cities”. She said that there was a reduction in the level of consumption due to the effect of Covid-19. Problems like lack of income, shortage of food grains etc. have been noticed. She talked about the need to take various steps at the policy and implementation level and focused on people living in poverty. Prof. Kundu pointed out the emergence of new poor which can become a big problem if properly not taken care of. Thus, she emphasized on the need of real time tracking building, housing and the infrastructure.

Prof. Debolina also mentioned the United Nation's Moto - “Leaving no one behind”. Dr. Komali Yenneti, from Wolverhampton University followed her. In her lecture on the study of urban heat island and its hotspots presented her views in the context of the construction of Dashboard by Covid, urban planning, and capacity building plans through 3D modeling.

After this, Prof. Rash Bihari Prasad Singh, former Vice Chancellor, Patna University said that our country and the state of Bihar need new technology-based skilled people in huge quantity who can do the work of urban Centre, urban planning through GIS and remote sensing. For this, he told that at present the rate of urbanization in Bihar is very low. Many problems are emerging due to new urban planning in small towns of Bihar like Muzaffarpur, Bhagalpur, Gaya etc. In such a situation, the result or report of this workshop can be used by the government for planning so that the society can get maximum benefit.

Shri Deepak Kumar Singh, Additional Chief Secretary, Education Department, Government of Bihar also expressed his views in this regard. He told on the basis of observation that Urban Heat Island is becoming a widespread problem. At present, the temperature of a metropolis like Delhi has gone up to 46 °C in Patna. The main reasons for this are the structures made of concrete, bitumen and glass. All these factors are responsible for the rise in temperature. Drawing attention to the drainage system of the cities, he stressed on the need to locate the

water bodies around the cities and also told that it is not practical to completely abolish the old drainage systems. Its conservation and promotion need attention. Hon'ble Minister Shri Sumit Kumar Singh, the chief guest of this program, extended his best wishes for the successful organization of this international workshop. He said that the Geographical Studies Centre was established with the thinking of the Honorable Chief Minister Shri Nitish Kumar, which seems to be fruitful. He said that whatever results come from this workshop, there is a need to reach it to the general public so that everyone can benefit from it. The second day of the International Workshop was successfully completed on 18-05-2022. In the second day's workshop, firstly Atul Saini of Delhi University presented his lecture on the topic - "Climate Change in Cities and Modeling". He observed that there is a rapid change in temperature. Presenting his research with the help of various models, he said that at present the temperature rise in Leh and Ladakh region is an unusual and untimely phenomenon.

He also described the characteristics of various sensors of the satellite and gave a detailed description of different types of climatic maps.

After this, Prof. Komali Yenneti of Wolverhampton University presented her lecture on the urban heat island. In her lecture, she discussed various reasons responsible for the increase in temperature in cities, she also talked as to how the temperature can be reduced with the help of various parameters which was presented as a model through example maps of many cities of the world.

Again, the practical class was conducted by N. N. Salghuna of Madras University. She apprised the students present in the workshop about the various techniques of making Landsat map.

The third day of the International Workshop was successfully completed on 19.05.2022. On the third day a short lecture was presented by Dr. Pankaj Kumar, Associate Professor, Delhi School of Economics, University of Delhi. He presented the analysis in terms of the functionality of GIS. He was followed by Ranjan Kumar, a representative of the State Health Society, Govt. of Bihar. He discussed in greater details the preparation of battle with the Covid-19. He discussed the various processes of the data collection through various technical software and accordingly the decisions were taken at different level. Through his presentation, he made it clear that as the preparation went on, the strong software was built in due process.

With the help of these software, the data was linked from the PHC level to the National level New Delhi. From sample collection of Covid 19 to its identification and sending it to the laboratory, work used to be done with the help of GIS. Along with this, information was given to the investigator through SMS and it was continued all through the inspection process till the patient become healthy. He also told that the help of this type of portal was taken to ensure the

availability of oxygen cylinders along with ensuring the beds in the state hospitals through various portals.

In the Hands-on session, N.N Salghuna who is head and proprietor, member of Active Spatial Science Research Group, told us about a new app called tableau from which Dashboard can be created. During this learning session, any data, description can be represented by statistical details like construction of map, bar diagram etc. Finally, in the workshop by Naga Venkata Sai Kumar Manapragada, Assistant Professor, Manipal University, talked about new software like Python, Anaconda and Spider and explained the importance in the research work.

The fourth day was successfully completed on 20.05.2022. The International Workshop of the Fourth Day began with a lecture by Dr. Anil Kumar Roy, Associate Professor, Faculty of Learning, CEPT University, Ahmedabad. The title of his lecture was "Knowledge, Skill and Employability of Planning Profession". In his lecture, Dr. Roy, firstly described the history related to the planning from the very beginning till the date. He also talked about the planning in different regions like Europe, Africa, Asia, India etc. Accordingly, there has been a change in its form. In India, the planning first started in 1955 and till now the various dimensions of the planning has been developed.

He observed that the educational planning is going through various types of changes. In the past, planning was used for industrialization, urbanization and modernization but now there is a paradigm shift towards multi-disciplinary approach, which includes civil engineering, geography, economics, social science, political science, architecture, law, information technology, etc. Through this the approach of holistic planning can be realized.

Dr. Roy stressed that the land use plans are done under three main categories, namely, physical or spatial planning, socio-economic planning and design planning. He emphasized the need for collaborative research analysis in the field of planning, which is not being used at a bigger scale.

Dr. Roy also talked about the need for gender planning in the present-day context and also to keep in mind the climate change for the future of planning.

At present there are a total of 4500 planners in the country but by 2030, the country will need about three lakh planners as said by Dr. Anil Roy. Finally, while discussing the problems related to planning in the urban area at present, he said that planning can be successfully done with new technology but community participation is must. He explained the various methods of operating the Rhino Grasshopper tools while creating the Urban Geospatial strata for

Sustainable cities and communities. He told that with the help of this tool, urban modeling and analysis, study of urban heat island, study of urban heat island and wind speed can be done.

After that Naga Venkata Sai Kumar Manapragada, Assistant Professor, Manipal University explained the various methods of operating the Rhino Grasshopper tools while discussing the Urban Geospatial strata for Sustainable cities and communities. He told that with the help of this tool Urban Modeling and Analysis, Study of Urban Heat Island, Study of Wind Speed can be done.

On the last day, presentations were given by research participants in the workshop (21.05.2022). It was given through various software already taught in the classes during the workshop of the last four days. Participants were divided into two groups. The name of the participants of group -A are Swati, Ravi Ranjan, Kritika, Poornima, Sarita, saurav , Vishwanath and Rahul. The topic of the Presentation of Group-A is “Groundwater Pollution Assessment of Nalanda District”. They discussed about the groundwater level of Pre-monsoon and Post-monsoon period and also presented different maps of groundwater level, rainfall and flourid level.

The name of the participants of group -B are Amol Jarag, Pravin, Sasanka Ghosh, Budhadev Hembram, Vidya, Bhawana and kanan. The topic of the Presentation of Group-B is “Identification of Flood Inundations of Patna District using GEE (Google Earth Engine)”. They discussed the impact of flood on landuse and land cover of Bihar and Patna through different maps.

After that Sriparna Saha, Associate Professor, IIT, Patna delivered a talk on “Future of Data Analytics”. She discussed about introduction of data, features of data analytics techniques, application of data analytics techniques in survival prediction of cancer patients. She also discussed chat-bot -development and many real-life applications.

#### 4. Research Project

Centre for Geographical Studies, Patna has also decided to start a project work and for starting this one committee has been formed. After sanctioning of the project through committee, project has come into function. Details of research project is given below: -

Name of the project	Name of Principal Investigator	Duration	Sanction Amount
Neighbourhood Environment Improvement Plan of Darbhanga and Motihari town	Prof. Poornima Shekhar Singh	March 2021 – Aug 2021 (6 Month)	4,95,000



1. Celebrated Bihar Diwas 2021 on 22.03.2021 in the Centre for Geographical Studies, AKU Campus, Patna by planting 11 Neem Trees in the campus on the theme of “Jal, Jeevan, Hariyali Chaaro or Khushihali”.



2. World Autism Awareness Day was organized by Centre for Geographical Studies, Aryabhatta Knowledge University, Patna on 2<sup>nd</sup> April, 2022 at 10:30 a.m. in collaboration with Utkarsh Seva Sansthan.



3. Celebrated Earth Day, 2022 on 22.04.2022 in the Centre for Geographical Studies, Aryabhata Knowledge University, Patna by planting 22 Neem Trees and 11 Arjun Trees in the campus and also conducted essay competition on the topic “Discuss in detail the ecological processes involved in the soil system, their relationship with human and its protection in context of World Earth Day, 2022”.



4. Centre for Geographical Studies, Aryabhata Knowledge University, Patna has organized a workshop on 9<sup>th</sup> May, 2022 at 12 p.m. on the eve of National Technology Day, 11<sup>th</sup> May, 2022 by State Health Society, Govt. of Bihar, Patna on the topic “Dashboard Presentation on Covid-19 Bihar Portal”.



## CONCLUSION

Centre for Geographical Studies, Patna is striving hard to become the Centre of Excellence in which we need the support of the university as well as the Government of Bihar so that the Centre will achieve its goal very soon.