SaciWATERs

SOUTH ASIA CONSORTIUM FOR INTERDISCIPLINARY WATER RESOURCES STUDIES

# SAWA REGIONAL WORKSHOP 2020 REPORT

# LEADERSHIP AND RESEARCH METHOD FOR INTERDISCIPLINARY WATER RESEARCH

**7th December - 15th December, 2020**

IDRC | CRDI

International Development Research Centre

Centre de recherches pour le développement inter

Canada

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*Dr. Manoj Jatav*

*Prof. Peter Mollinga*

*Prof. Vishal Narain*

*Dr. Veena Sreenivasan*

*Joydeep Gupta*

*Dr. Anjal Prakash*

*Shreya Chakraborty*

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**WORKSHOP REPORTING AND EVALUATION**

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# CONTENT

# ORGANIZERS

## Centre for Water Resources (CWR), Anna University

The Postgraduate Institute of Agriculture (PGIA), University of Peradeniya was established in 1975 with the main objective of developing in-country capacity for postgraduate education in agriculture and to provide appropriately trained scientific personnel for a rapidly expanding agricultural sector of the country. Over the past three decades it has achieved substantial progress and has emerged as a "Centre of Excellence" in higher education in agricultural sciences in the country. http://www.pgia.pdn.ac.lk/

## SaciWATERs: South Asia Consortium for Interdisciplinary Water Resources Studies

SaciWATERs is a policy research institute at Hyderabad, India and working on the issue of water resources education, capacity building, research and action in South Asia. It is committed to bringing about structural changes in the dominant water resources management paradigm in South Asia by focusing on transforming water resources knowledge systems through working with universities and academic institutions. The key ideas are in interdisciplinary approach to undertaking water resources issues from a pro-poor, gendered and human development perspective and emphasis on exchange, interaction and collaboration at South Asia level. SaciWATERs is active in three domains- Education, Research and Advocacy. http://saciwaters.org/new1/

# SPONSORS

## International Development Research Centre (IDRC)

IDRC is a Canadian Crown Corporation that initiates, encourages and supports research in developing countries in order to help find practical and sustainable solutions to social, economic and environmental problems that are being faced in these countries. Additionally, IDRC on the means for applying and adapting scientific, technical and other knowledge to the economic and social advancement of those regions. http://www.idrc.ca

# BACKGROUND

The workshop has been conceptualized under the 'South Asian Water Leadership Program on Climate Change', a fellowship project funded by the International Development Research Centre (IDRC) Canada. The aim of the program is to increase the number of women occupying leadership roles in the water sector fostering an interdisciplinary approach linking climate change and water insecurity by awarding fellowships to 36 women enrolled in masters-level Integrated Water Resources Management (IWRM) programs in Bangladesh, India, Nepal and Sri Lanka.

This project continues as part of an earlier project coordinated by SaciWATERs namely the South Asia Water (SAWA) Fellowship Project also funded by IDRC. The project is implemented by SaciWATERs and its four partner institutions, namely:

- Institute of Water and Flood Management (IWFM) of the Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
- Centre for Water Resources (CWR), Anna University, Chennai, India
- Centre for Post Graduate Studies, Nepal Engineering College (NEC), Kathmandu, Nepal.
- Post Graduate Institute of Agriculture (PGIA), University of Peradeniya, Peradeniya, Sri Lanka

A key feature of this program is an intensive training in the application of research methods for interdisciplinary water research. Three such trainings are proposed under the project. These trainings are held once a year at the regional level for each batch of the awardees. The training includes classroom learning, practical exercises and fieldwork. The first workshop for the 1$^{st}$cohort of awardees of the program was held in Nepal, and the workshop for the 2$^{nd}$ cohort of fellows was held in Chennai, India. The 3$^{rd}$ workshop was organised and held online due to the onset of the covid pandemic and related lockdown and restrictions on travel.

# OBJECTIVE AND EXPECTED OUTCOME

## Objective

To impart training to the awardees of the SAWA Fellowship from four South Asian countries in order

(a) To build the capacities of the SAWA fellows in understanding climate change and water insecurity through the application of interdisciplinary research methods that include gender and social approaches,
(b) To develop leadership skills through activities such as team-building sessions, communication skills, application of negotiations and conflict resolution in the field.

## Expected Outcomes

- A clear understanding of interdisciplinarity and interdisciplinary research
- Conceptual understanding of gender

- Fundamental know-hows of methodological frameworks to carry out interdisciplinary research on water and climate change
- Basics of scientific writing
- Enhanced communication and presentation skills

# METHODS USED FOR FACILITATION

The workshop this year needed a new modified structure for the following conditions:

- The SAWA ToT lecture series which was recently conducted remotely through a total of 8 intensive lectures spread over 4 weeks by Dr. Vishal Narain in October 2020, was attended by all the fellows of the current batch. The lecture series covered at length two of the core training themes which are usually covered in the regional workshop – **Interdisciplinary Field Research Methods** and **Gender and Water**. The workshop was not intended as a repetition of these themes for the workshop.
- Since the students have already attended a month of intensive lecture based training in theory, the regional workshop this year focused more on practical themes and hands-on exercises.
- The workshop had to be done in a remote online format which made long hours of focussed participation a challenge. Also, each University had responded to the pandemic differently and therefore finding common dates when all Universities are available all day would be a challenge.

In response to these circumstances the workshop focussed on the following training methods:

**1. ONLINE LECTURES**: Maximum of 2-2.5hrs lectures by experts were planned after normal University coursework schedule of students. Each lecture was complemented by small practical exercises, interactive sessions and breakout room discussions. The practical exercises provided were aligned with the fellows' fieldwork training so that the lectures could feed into the practical fieldwork training.

**2. FIELDWORK**: All students were asked a week in advance to choose and share one water related issue in their near vicinity, from an area of their choice and convenience for travel and interaction. This could be their neighbourhood, their own residential complex, a slum nearby, a park/water body in the neighbourhood etc. Examples of issues were water scarcity, pollution, water consumption, seasonal scarcities, flood related vulnerabilities, drinking or domestic water access, wastewater use, any water based livelihoods, any water institutions etc. Each University coordinator was requested to assist fellows identify such an issue.

The instructors of the workshop were requested to structure their teaching of questionnaire design, field methods, writing exercises, reading material, and secondary data aligned to these themes as closely as possible. The field research was designed to incorporate a few qualitative KPIs and indepth interviews (5-8), a few questionnaire based quantitative data collection (5-10), photographs, field diaries, resource mapping etc. Students were encouraged to use GIS mapping techniques, secondary data, and some policy document assessment to add to their analysis. The weekends, when students did not have University coursework, was entirely structured for fieldwork activities. The topics selected and submitted by fellows for their training is provided in the annexure.

**3. POSTER PRESENTATIONS AND FEEDBACK**:

The training was evaluated through regular feedback sessions with the students at various stages of the research training – design of methodlogical framework, questionnaire designs, analysis of data, and communication of final research findings. 2 hour sessions were planned on all 3 fieldwork days for students to present the ongoing data collection. Methodology design and questionnaire design were put through multiple drafts with feedback and comments from the resource person incharge. The final day of the workshop was structured for fellows to present the 5 day research in poster form with feedback from the resource person discussant.

# WORKSHOP SUMMARY
# TRAINING SESSIONS

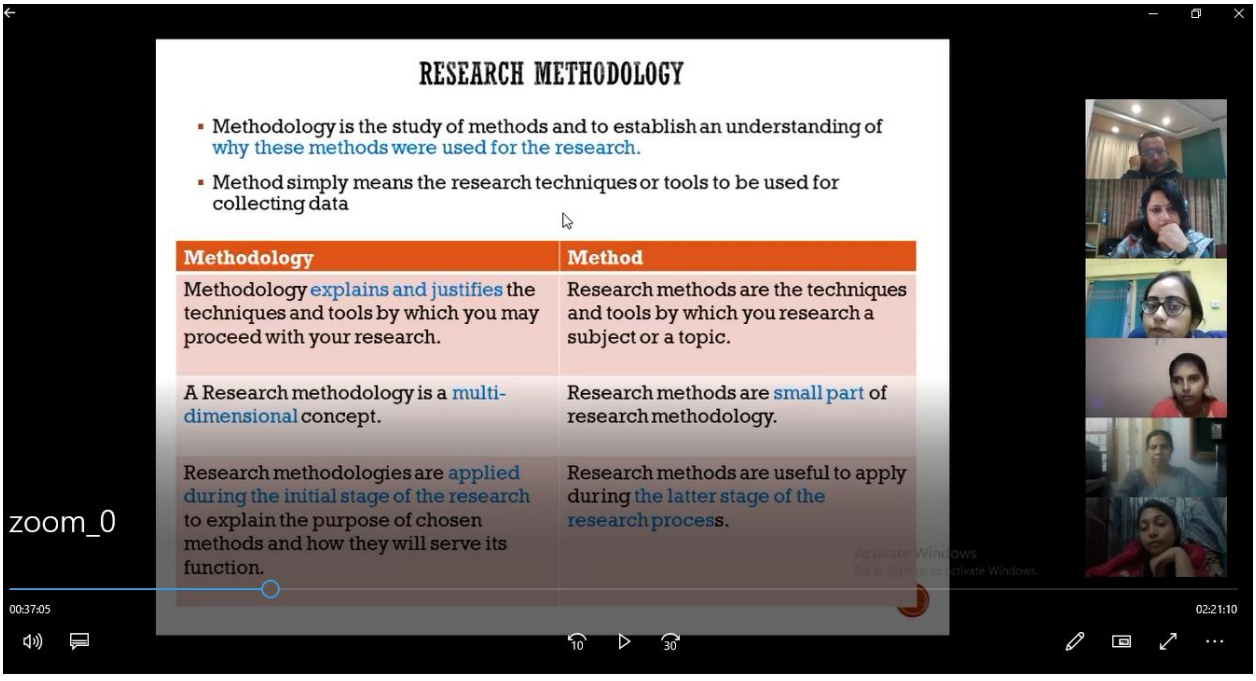
## DAY 1

### OPENING CEREMONY

A simple 15 minute introductory session was planned with a welcome message from Prof. Dayawansa. The message was followed by the sharing of experiences by the coordinators from the 4 Universities about the program, the workshop, and success stories of previous fellows.

### FIELD DATA COLLECTION METHODS : Dr. Tanusree Paul

Dr. Tanusree Paul, an instructor with SAWA presented a lecture to recapitulate the fundamentals of qualitative research, data collection methods and also to design questionnaires. She started the lecture by explaining the difference between the "Methodology" which is the study of methods and to establish an understanding of why these were used for the research and the "Method" which simply means the research techniques or tools to be used for collecting data. She also explained how the method is a part of methodology. She described the basic principles of doing a 'good' qualitative research on gender questions and characteristics that the research must possess such as objectivity, ethicality, reflexivity, informed consent and power relation dynamics.




**Data collection methods**

She explained the importance of understanding the institutional setting and environmental, economic and social trends of the field area that we would be going. In interview method, she described the difference between structured, semi-structured and unstructured

interviews with examples. In the Oral history which is also taken as a form of an interview where one goes with a few questions and allow the respondents speak their experiences. She elucidated how it was popular during the World War – II, when people were more interested in documenting the events.

Focus group discussion involved the gathering together of pre-configured groups of participants. She explained the intricacies of this method and how this method plays a part in understanding the needs and interests of a group of people rather than the individual points of view. She also stressed on the importance of the role of the moderator in ensuring that all members get a say in the discussion. Participant observation is one of the most commonly-used methods for participatory research. This method derives from the understanding that a community's values, dynamics, relationship, structure and conflicts is best obtained from their actions.

Ethnography is the systematic study of people and cultures where the researcher observes society from the point of view of subject of the study. It is the primary method of social and cultural anthropology and also integral to the social sciences and humanities generally, and draws its methods from many quarters.

Participatory Rural Appraisal is intended to enable local communities to conduct their own analysis and to plan and take action. Dr. Tanusree Paul clearly explained that PRA is not a single tool, but a collective of several methods and also described about the Rapid Rural Appraisal and how PRA and RRA are interchangeably used. PRA tools include transect walk, participatory mapping, diagramming such Venn-diagrams, seasonal calendars, etc., and innovative assessment such as matrices, scoring and ranking different actions. She further proceeded as to how these methods are to be followed and explained them in detail. She also elaborated on how to apply the 'gender lens' to these methods of data collection.

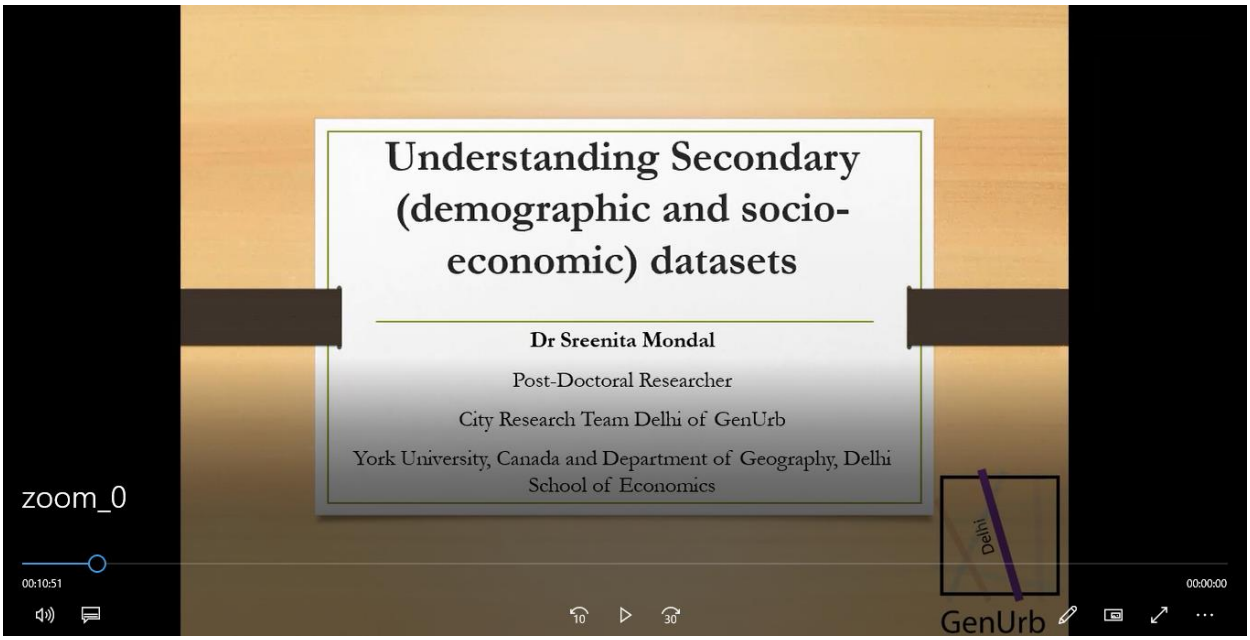
**Designing of questionnaire**

She explained why questionnaires are used to collect information and the four types of information collected (Attributes, Actions and behavior, Knowledge of participant and Attitude and opinion of the participant). She further explained in detail on how to set the objectives for designing the questionnaires and also described the considerations to be taken into account for choosing the questions relevant to the objectives as well as the participants. The types of data collected by questionnaires are continuous data, category data, ordinal data and ratio. She enumerated the points that are to be remembered for designing a questionnaire.

## DAY 2

### QUANTITATIVE DATA: SOURCES AND ANALYSIS METHODS :
### Dr. Sreenita Mondal and Dr. Manoj Jatav

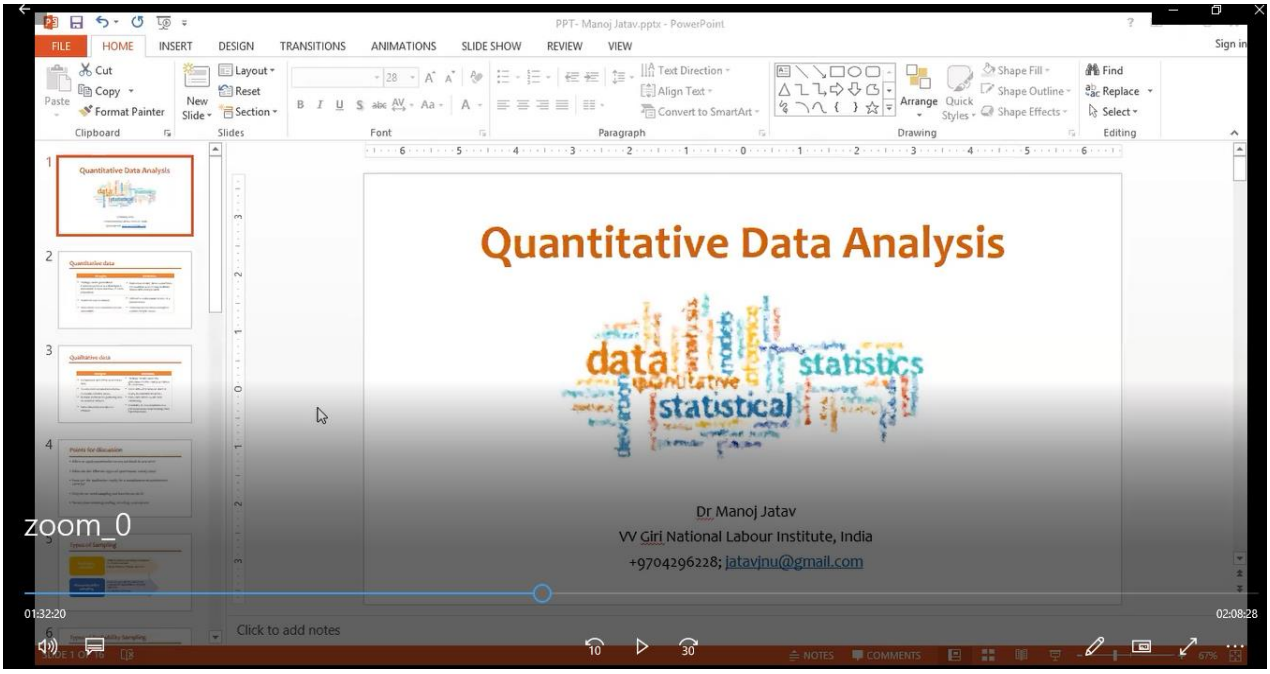
Dr. Sreenita discussed on Understanding Secondary (demographic and socio- economic) datasets. The goals of this session were Knowing different datasets from four countries (Bangladesh, India, Nepal, Sri Lanka) of South Asia, When and why to use Secondary (demographic and socio- economic) datasets, issues to consider before using the dataset with special reference to census data and how knowledge of secondary data helps in primary field data collection? She explained about the concept of Secondary data and its different forms. The usage of secondary data for research was discussed with some examples. Housing and population census, labor force survey, demographic and health survey, household income and expenditure survey, standard of living survey and time use survey are the major Secondary (demographic and socio- economic) datasets. She also mentioned about the information from where we can access the existing statistical data sources in the above said countries.




She also gave the key considerations for the research. They are, a) learning about when the data was collected (month and year) b) learning about geographical coverage and method followed ( De jure and De facto method) c) learning what the objective of the original study was d) learning the concepts and definition e) learning about how the data was collected (Questionnaire as data collection tool) f) Characteristics of questionnaire - Generic information to specific information and highlighted some important things like how to frame the questions and g) Understanding what the response categories were for each question displayed to survey respondents. She also discussed how the census data helps in primary data collection with some pictures.

Dr. Manoj Kumar's session started with Mentimeter presentation to know the expectation from the session among the SAWA fellows. His lecture was about the Discussion on sampling techniques used widely in sociology economic research. Initially he explained about the Strength and limitations of Quantitative and qualitative data in detailed manner. The session had the following points for discussion such as when to apply quantitative survey methods in research, what are the different types of quantitative survey data, how can the quantitative inquiry be a compliment to quantitative surveys? why do we need sampling and how do we do it and explained about the Survey data cleaning, coding, recording, analysis. Next to above discussion he explained about the types of sampling- probability sampling and non-probability sampling.

He discussed about the types of probability (unbiased) sampling and the types of non-probability (biased) sampling and their importance. Probability sampling includes simple random sampling, stratified random sampling, systematic sampling and cluster random sampling whereas types of non-probability (biased) samplingincludeconvenience sampling, quota sampling, judgement sampling and snowball sampling and he also explained the use of mapping with many pictorial representations.




**SPSS**

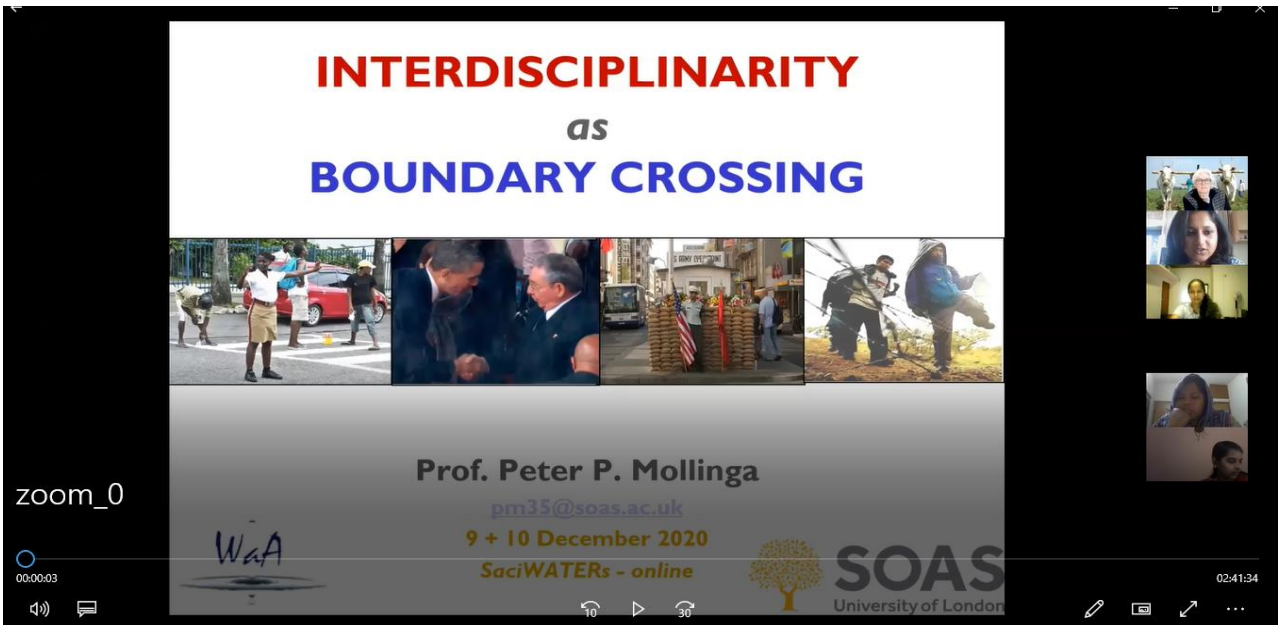
The next presentation of Dr. Manoj Kumar was about how to use SPSS software. The software file was sent to the fellows the previous day. He explained about the software (version and product development),the importance of understanding the data and its types (structured, unstructured data), data importing processes and data entry process, clear explanation of data view and variable view along with observations, types of variables, variable identity- numerical to string and its usage accordingly with examples, do's and

don’ts while naming a variable, importance and basic understanding about codification of data in structured database using qualitative inquiry and formation gathered through quantitative inquiry towards data analysis, importance of labelling by running frequency analysis , adding value to the labelled data, how to save and access the output window of SPSS, methods of Replacing missing value using SPSS, interaction phenomena of one variant with other covariant - using cross tab plugin in SPSS, analysis of data and reporting the case summary using Summary command of in SPSS with relevant statistic tool related to central tendencies in data series and descriptive statistics of data, correlation among variables in SPSS with relevant correlation coefficient towards its significance, understanding and usage of Regression commands with linear regression analysis in SPSS, usage of Select cases command to filter out the selected cases for analysis using if condition and recoding of variable from old to new dataset in SPSS for data analysis.

## DAY 3

### CROSSING BOUNDARIES: Prof. Peter Mollinga

**Prof. Peter P. Mollinga** delivered a lecture on interdisciplinarity. He correlates interdisciplinarity with boundary crossing. He introduced him as Irrigation Engineer. He done his under graduate and post graduate degree by designing an irrigation system. He completed his master’s degree thesis in Senegal river of African country (1981-83). He done an internship to understand the farmer’s perception in doing a manual lift irrigation and what kind of institutional rules, village organization required in managing irrigation water. Alongside of his introduction, he added some anecdotes related to his research work. He answered the question that how he decided to became an Interdisciplinary scholar through his introduction.



He stated that interdisciplinarity within the social science is easy and within the physical science is easy but it is difficult to cross the boundary between engineering science and social science. Disciplines have an object, theory and method that is specific to them but interdisciplinarity involves the combination of disciplines. It is the amalgamation of different insights.

He explained interdisciplinarity with practical examples by displaying Leonardo Vinci's picture and by stating Homo Universalis. The problem with disciplines includes rigor, control and disciples. Disciples of a discipline are disciplined to imply or suggest that the best way of understanding the world, or at least certain fields of the world, is through the specific discipline that they obey.

The degree of disciplinary organization is very narrow, very focus, very limited in that view. He gave an introduction of normal professionalism. It is the thinking, values, methods and behavior dominant in a profession. Reproduced through education and training and sustained by hierarchy and rewards, it tends to specialized narrowness. He explained this concept of normal professionalism by showing the difference between normal problem and normal solution.

He answered for the question that why disciplines are not enough because disciplines can't understand the complexity. Some problems are too complex to be solved by a single discipline. He said that academic disciplines need to be 'saved from themselves' which was started by Harris 2002. Disciplines need to be saved from themselves to avoid that 'specialization and focus, translate into a very limited and partial view of the world'.

He illustrated that emergence is the bedrock of the rationale for interdisciplinarity. He explained the typology of different words that used to describe the different ways of disciplinarity and collaboration between disciplines. Interdisciplinarity is one of the forms or ways in which disciplines are combine. It comprises of 5 types such as disciplinarity, multi-disciplinarity, participatory, interdisciplinarity and transdisciplinary.He said that new interdisciplinarity concept emerged on the wave of social movements from 1960's as the first wave and in response to increasing complexity (problems in) society from 1980's as the second wave.

# DAY 4

## DOING INTERDISCIPLINARITY: Prof. Peter Mollinga

Prof. Peter P. Mollinga, delivered a second day lecture on interdisciplinarity as boundary crossing. He explained the challenges in doing the interdisciplinarity. He stated the hurdles to be faced during boundary crossing of interdisciplinarity. It includes language issue, paradigms (positivism, critical realism, interpretivism), organization and incentives.

He explained how knowledge crosses the boundaries in stepwise from syntactic transfer to pragmatic transformation. He presented his paper on transdisciplinary research. He shared his experience in searching resources for doing interdisciplinary and transdisciplinary

research. His favorite source is td-net and he asked attendees to search for 'interdisciplinarity.net'.

He stated examples related to interdisciplinary field study. He explained his own research on unequal water distribution in Tungabhadra left bank canal, Karnataka, India. Tungabhadra is the tributary of Krishna river which is one the major rivers of South India. It flows from western mangroves to eastern sea. On that river, Irrigation system was constructed such as canals and check dams.

On one side of this canal, farmers were cultivating sorghum and millet crops for one season which requires less amount of water for irrigation. The farmers on the north side were cultivating sugarcane with other major crop in one season. Here, the problem starts with unequal distribution of water. The water requirement increased from 4 to 5 times higher than the normal requirement if they had cultivated two crops per season.

Due to this reason, insufficiency occurs in irrigating the crops. He also mentioned the illegal activities carried out by the farmers for irrigating their crops. Farmers, nearby the canal, were having the pump to suck water for their irrigation requirement. Blocking and unblocking of canal in night time by the farmers were very common in that area.

He explained that the basic challenge of interdisciplinarity is modelling a heterogeneous, interconnected system. His formula for equal distribution of water is the function of changes in cultural, political, economic through power, water, body, technology and landscape over time. He concluded with a formalized approach for problem framing.

## DAY 5 – Day 7

### STUDENTS' FIELD DATA COLLECTION AT LOCAL FIELD SITES : Feedback and Supervision sessions with Dr. Sreenita Mondal and Shreya Chakraborty

Students carried out short field visits in their near vicinity during the day. In the evenings from 4pm to 6pm for the three days, Dr. Sreenita Mondal and Shreya Chakraborty handled the sessions in monitoring the progress of each SAWA fellow's field work and guided in each and every possible way to design a robust questionnaire survey, analysis framework and modes of presentation. Each student detailed their day's fieldwork processes, challenges, and data narratives collected. Mentorship was provided to enable the fellows to think through the data, assess the linkages between the various social and natural elements, develop the research narratives, and potential ways for communicating findings through visual presentation.

## DAY 8

### Academic Scientific Writing : Dr. Veena Sreenivasan

Dr. Veena Srinivasan, delivered a lecture on communicating science. She clarified the difference between scientific writing and the conventional writing. She explained that scientific writing is not just writing about science; it is the technical writing that scientists do to communicate their research

to others. Scientific writing is predicated on the rigors of scientific inquiry, so it must reflect the same precision as that demanded in the research process. She described the types of scientific writing as peer-reviewed journal articles, reports and primer and policy brief.

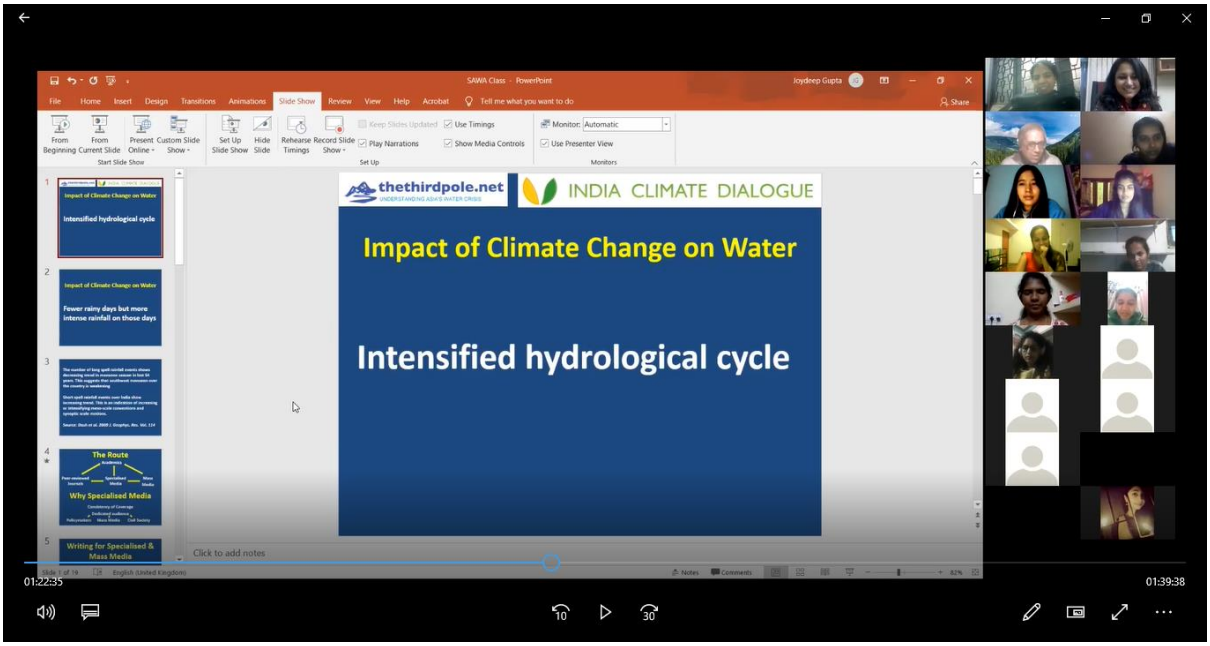
To answer the question of who the audience are and why a journal is written, she divides the whole process into three stages which are theorize, inform and persuade. She also tells the characteristics of the writings which would make the readers read them. The style of the writing boils down to avoiding "Buzzword salad" and writing long sentences. She advised to use active voice wherever possible with caveats and good grammar. Writing sentences in a clear and concise manner is also of importance. Hemingway editor is a tool which can be used to control the style of writing to get better understanding and readability and to increase the standard of writing.


After style, the topic covered by her was the structure of writing. The principles of structure comprise of chunking, hierarchy, relevance, labelling and consistency. To understand the importance of chunking, a small activity was conducted mid-lecture. Chunking can be done by concern (sufficiency, sustainability, environmental amenities), or by user (domestic, agriculture, etc.). Hierarchy is used to prioritize the order in which writing is to be done. The third principle to be consider is the relevance of flow of information so as to provide the reader a better understanding of the writing. Consistency is very important to enable the readers to build up their understanding in a single flow rather than having to understand the ever-changing terms and terminologies. Usage of consistent font size and header for concepts at the same hierarchical level is important. Logic is usually divided into deductive logic and inductive logic. Dr. Veena also enumerated the differences between the deductive and the inductive logic with examples. She described the process of writing a scientific paper in a vivid way using flowcharts explaining where and what are to be considered important and essential.

## POPULAR AND MEDIA SCIENCE COMMUNICATION: Joydeep Gupta

The second lecture of the session was conducted by **Dr. Joydeep Gupta** on the topic Intensified Hydrological cycle. He started with the impact of climate change on water by indicating fewer rainy

days but more intense rainfall on those days explaining the change in the intensity of rainfall. He then proceeded to show the route through which communication is carried out from the academic side to the other side. This is done by means of peer-reviewed journals, specialized media and mass media and he further went on explaining the role of specialized media through its consistency of coverage with the policy makers, mass media and the civil society.

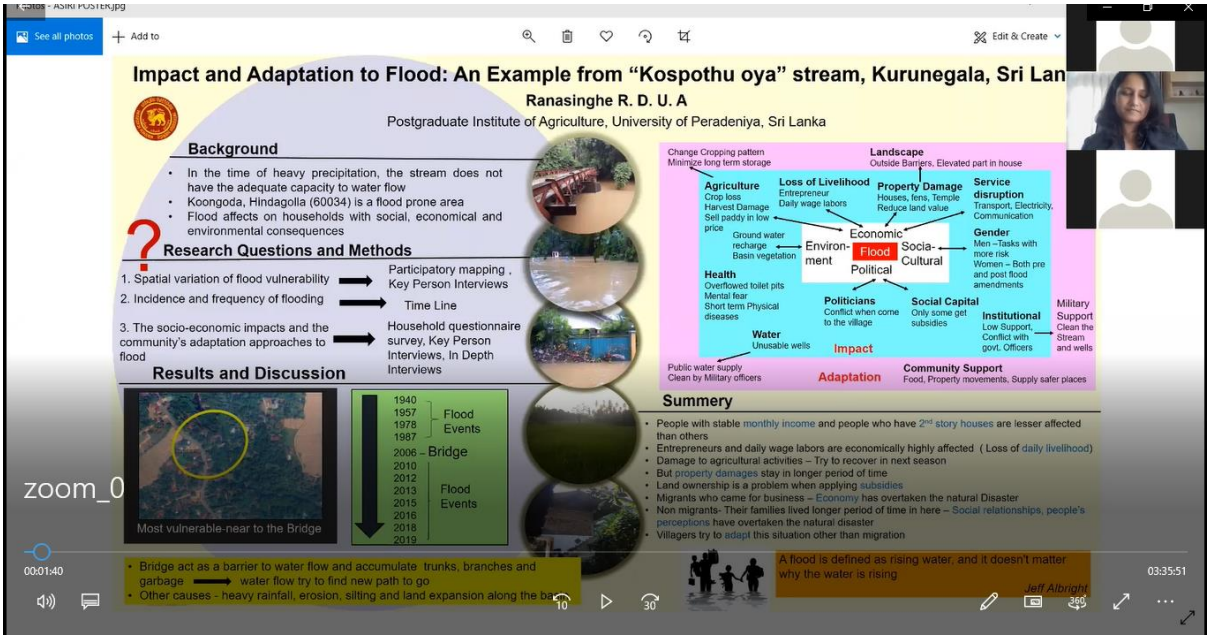



He also explained the importance of structuring of writing in a scientific paper. He also presented a case study on the evidence of health impacts from a study in Dacope, in Khulna district of Bangladesh. He showed the impacts of increase of mean temperature on rise in sea level with an animation showing the regions in Chennai that might go under water. He also the pointed out the most vulnerable parts of a scientific writing such as gap in information, low scientific input, lack of coverage of resources, lack of understanding on the editor's end etc.

# DAY 9

## Student presentations

The last day of the session was full of the SAWA fellow's presentation. The students were expected to present their field work by a poster. Dr. Vishal Narain and other faculties from the four countries were there in the session. Dr. Vishal narain gave his comments and suggestions for each SAWA fellow after their presentation.




**Khadiza** from Bangladesh done her work on "Impacts of river pollution on service communities of Shitalakshya River". This river was once known for its outstanding water quality and now got extremely polluted. She studied about the physical and social impacts of river pollution around that area. She adopted Semi-structured interviews, FGD, KII, Social mapping, oral history, time-use exercise etc. as data collection tools for her work. She found that the fishermen community are the most sufferers of direct impacts of river pollution and almost no river dependent communities can now rely on only it for full economic support to their livelihood. Women are at health risk because of the contact with water for a longer period of the day whereas men are the sufferers from various economic aspects.

**Meena** from India presented her work on "Urban flood vulnerability due to Nivar cyclone in Velachery, Chennai". She started her work with question as why Velachery is prone to flood often? To proceed her study, she divided the study area into three clusters. Her aim was to find which cluster region is more vulnerable to flood. Key informant interview, house hold survey, questionnaire, resource mapping and in-depth interview are the data collection tools she has used. She has selected three vulnerability indicators for the study. They are sensitivity, adoptive capacity and exposure indicators. Derived the indices value from questionnaire using weighted score method. She found that the cluster 1 area has more adoptive capacity. Cluster three zone is highly vulnerable in terms of exposure indicator since it is near to the bank of the river. Through in depth interview she found out that elder women above 50 years are highly vulnerable due to their physical and health condition. She used some anecdotes to address the real time condition. Young women are vulnerable next to the elder women and lastly children below 14 years are vulnerable to the flood. She also mentioned about water insecurity and social impacts caused due to the Cyclone. She also addressed about the main determinants which make the area vulnerable to flood disaster.

**Radha Dhakal** from Nepal presented her work on "Vulnerability assessment of flood on the slum area of the Bagmati River". Her presentation was about the land encroachment along the Bagmati river by Thapathali slum. Her work mainly focused on the assessment of vulnerability of the slum area on gender aspect during and after flood event. She also assessed the economic and social impacts of flood in that area. She used time line survey. focus group discussion, house hold survey

and key informant interview as data collection tools. This study found that the governmental, donor agencies and private sector engaged in sanitation, early warning and post flood disaster assistance to the slum communities. were reported as the most active group in all activities. The old age people, pregnant women are seen most vulnerable to flooding events. She also mentioned that from her observation, mitigation measures were used to be taken with minimum support from Government organizations.

**Chaminie Wanasinghe** from Sri Lanka has done the work on "Assessment of Spatial and Temporal Variability of Groundwater Availability for Domestic Purposes in Idampitiya area, Mawanella". She talked about the geographical characteristics of the region. She also mentioned that there is an increase in pipeline water supply from this region. Community in the village specially settled in high terrain areas have a matter with spatial and temporal groundwater availability for their domestic purposes over the time. People who live in low terrain area comparatively have enough groundwater for their domestic activities. But during the dry period (non-rainy) water level in the both dug wells and tube wells constructed in high terrain areas getting decline and over the time. Some wells have dried up totally and never refilled. Due to this issue people in the high terrain area have to face many burdens. As a result, demand for the pipeline water is increasing but water board has not upgraded their service yet to supply water to all. As of this unsolved matter high terrain settled households are suffering seasonally. Also, as per the people's reflection climatic factors such as rainfall and temperature has been changed with time.

**Melba Respina** from India presented her work on "Implementation of water supply act and the potential impacts in Mylapore, Chennai". She explained about the performance of a water supply board in a semi urban area and the potential social impacts on two different set of residents. She used social mapping, time line survey, time use survey, questionnaire survey, key informant interview to collect the data. She categorized her work on intersectionality between two set of residents, flood issues, burden of women and water quality. The water supply board in that area provides intermittent supply for the consumers. Upper class people in that area receive regular supply in all season whereas the slum residents deprived of receiving water during the water scarcity period. The major findings from the study are the intersectionality in gender roles and caste. Slum people sometimes receive poor quality. She also mentioned the reasons of failure of the supply board in meeting the quality standards and ignorance of complaints from the slum people. Hence, accountability of the board is a question here. She also mentioned about the poor drainage in the slum area. During rainy season, they are facing severe health issues also. She highlighted some anecdotes which clearly indicate that women from the slum area are more vulnerable.

**Sulochana Dhungana** from Nepal presented her work on "Impacts of earthquake on water and gender" on Thulgaun, a small village at a hilltop in Bhaktapur. Her study focused on the impact of earthquake on water availability and gender. She adopted the following tools to collect data from the respondent's key informant interview, household survey and focus group discussion. For the same village the water supply source is 'DhurkeDhara' which was completely dried up after the earthquake which hit on 2015. The water source that was being used by the local people dried up creating scarcity in the village. Now, the people have to walk about 2 hours just to fetch water which is usually done by women in most of the households in addition to all the household chores that they have been doing. Agriculture is now dependent on precipitation with crops like maize, millet, barley replacing paddy, wheat farms and vegetables. Likewise, alcohol production has been halted

which was one of the main economic activities that women in the area used to do. In order to reduce the scarcity issue in this region, the government has come up with a project which would really help women from this region in fetching water and to have leisure as well as productive time if the project implemented soon.

**Sumaiya** from Bangladesh presented her work on "Assessment of inadequate in access to water using gender lens: A case study on Tejgaon slum of Dhaka City". She mentioned that gender gaps are comparatively higher for the women living in low-income settlements due to their less participation in education and decision-making process. She adopted household survey, social mapping, focus group discussion and key informant interview to collect the primary data. In this context, the study attempts to investigate gender inequalities due to limited access to water and sanitation services in a floating slum of Dhaka City. The study measured the prevailing inequality issues in Tejgaon railway slum covering different aspects, such as water supply nexus, collection of water for HH, sanitation facilities, participation and equity in decision making process, confronting seasonal scarcity and consequences of extreme high-water pricing.

**Priyadharshini** from India have done her work on "Inequality in Accessing Irrigation Water from Putheri Village in Kanchipuram Taluk". She studied how the Economy of the farmers vary according to the availability and accessibility of irrigation water from the tank. She used PRA techniques in her study area which includes Resource Mapping overlaying by Social Resource Mapping to locate the irrigation water resources and agricultural fields. She had done timeline survey to found out the frequency of tank fillings from the year 2000 to 2020. She also administered the questionnaire survey among the farmers of the study area. From the analysis of survey, she found out that rice was the major crop practiced in that village. It requires plenty of water for irrigation. So, the farmers were having different sources of irrigation for cultivation. But it was varied based on the location of their fields from the irrigation tank. The farmers who were having their fields at the downstream side of the tank could be able to access three sources of irrigation supply. The farmers both at the upstream side and behind the tank had only two sources of irrigation supply. So, the farmers at the downstream side could be able to cultivate paddy for all the three seasons. But the farmers away from the tank were cultivating paddy for only two seasons in a year. This variation affects the economy of the farmers especially small farmers at the upstream side.

**Asiri Ranasinghe** from Sri Lanka done her field work on "Impact and adaptation to flood: An example from Kosputhuoya stream, Kurunegala". She mainly focused on spatial variation of flood vulnerability, frequency of flooding, the socio-economic impacts and community's adaptation approaches to flood. She used resource mapping, key informant interview, time line survey, house hold questionnaire survey and in dept interview to collect the data for the study. From her time line survey the flood events before after the construction of bridge across the stream can be understood. She linked flood with economic, environment, political and socio- cultural aspects with many factors to know about the impact and adaptation. She summarized the work that people with stable income and 2 storey houses are lesser affected than others. Entrepreneurs and daily wage labors are economically highly affected. Agricultural activities are severely affected. Villagers are trying to adapt this situation other than migration.

**Sahika Ahmed** from Bangladesh presented her work on "Dealing with Groundwater contamination in Haripur Union of Rajshahi". She has used transect walk, social and resource

mapping, household survey and key informant interview as the data collection tools for her study. She divided the area into three classes as middle class, lower middle class and lower class. She mentioned about the reasons why people collect water from river or why they use contaminated water. Effects of collecting or using the contaminated water are extra labor, health hazards, utensil damages, high fuel demand, gender inequality and the reasons are presence of iron/ manganese in groundwater. She also explained about the water collection and water management based on class wise variation. Some findings from her study are local people doesn't even know that the amount of manganese which is higher than iron in their water. Until the study area comes under the city corporation, no water supply project can be done by WASA. The basic mentality prevailing in the study area is naturally women's responsibility is to fetch water. She also mentioned about the beliefs about taking bath in the river and there is no proper drainage system.

**Nabina** from Nepal presented her work on "Changing pattern in quality and quantity of water supply available at an old settlement in Bhaktapur". The study area is rich in water resources. Her work was to find out how the changing pattern has affected the day-to-day life of an individual? The data collecting tools used are key informant interview, household survey and timeline mapping. She explained the changing pattern of a pong from the study area with some pictures. She explained about burden faced by the women, the water scarcity and the water availability in the study area. The affordability of rich people in buying water during the seasonal scarcity was found through the questionnaire. She explained the water accessibility with some pictures. She highlighted that water is usually fetched and collected by women. She addressed about the declining natural / man made water resources from the study area with poor water quality.

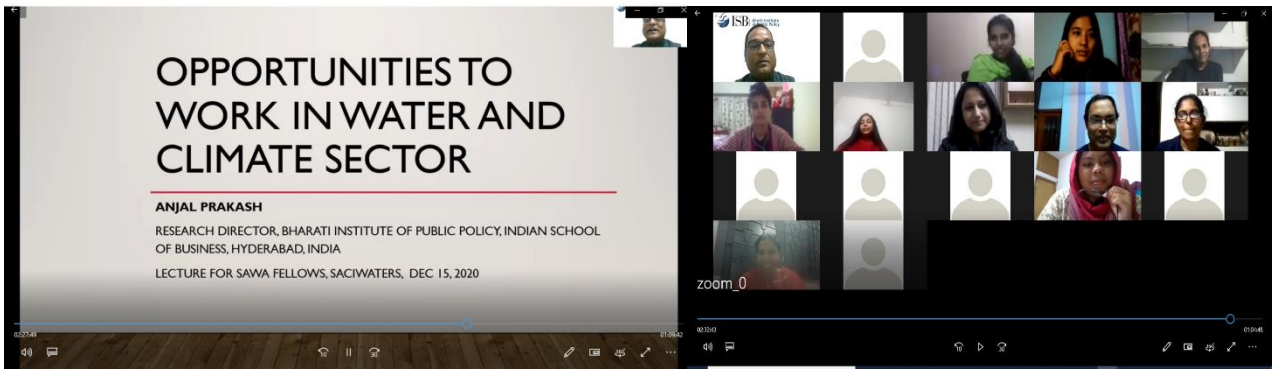
**Awanthi** from Sri Lanka presented her work on "Evaluation of Water availability and domestic water consumption: Survey in Welimada". Her study area located in the hill area in the country. The study is prone to water scarcity. The study identifies and assess the pattern of water consumption, socio – economic characteristics of the residents, sources of water supply and domestic water consumption characteristics. She related the economic, social and health issues with the water shortage for domestic water consumption. The data collection tools used are key informant interview, direct observation, questionnaire survey and resource mapping. The major findings of the study are male didn't have much knowledge about domestic water consumption behavior. Most of the male members of the family are involved in decision making. Young generation have poor involvement in water collection but have high consumption behavior. Women from the study area been facing double burden in water collection and domestic works.

## Spaces and Opportunities for Leadership and Change in the Water Sector : Dr. Anjal Prakash

The session started with an interaction on opportunities to work in water sector and climate sector. Three categories of opportunity were given to students. The students whoever is willing on those categories can give their opinion on Needs, opportunities, Improvement, Strengths and Exceptions (NOISE) for chosen category.

Dr. Anjal Prakash discussed on two major topics. The first topic was about opportunities to work in water and climate sector and the second thing is about personal development. The main goal of the session is to make what one should do and don't on their working platform.He shared his working

experience on evaluating the drip irrigation program conducted by the Government of Gujarat, to see the efficacy and how the farmers adapting to the new age technologies. He inferred that there were some serious difficulties for the farmers in adapting such technology.




He also mentioned that some problems are too complex to understand through a one form of discipline. To rectify such a diplomatic condition, there were three major forms of disciplinary we can go through. They are, Multi-Disciplinary (Peoples from different sectors comes together and solve a problem), Inter -Disciplinary (core sector remains the same, but working on other discipline), and Trans-disciplinary (when social and technical knowledge become inseparable), Example: Studies on climatic change. He addressed about the availability of opportunities and categorized it into Research, Grass Root(working and the bringing changes in the community),Academics, Influencing and Training & Capacity Building. From his very own experiences he explained about the requirements that needed for being a new age professional. The requirements are Knowledge about the subject (To know up-to-date with the exact information), Influencing (to have awareness about people over shading us), Communication skill and Emotional Intelligence (ability to understand, use and manage your own emotions in positive way).He pointed out the key considerations for how to be being professional and maintain the professionalism mannerisms. For that one should have Specialized Knowledge, Competency, Honesty and integrity, Accountability (promising to be accountable for someone), Self-regulation and Image development.

He gave a valid definition about dividing and spending 24 hours in a day. He insisted that the first 8 hours to be spent on sleep, second 8 hours to be spent on work and the rest of 8 hours to be spent on leaser (i.e., playing, using social Medias, and other habitual and usual works). Finally, he advised the fellows to organize the time which is merely as same as time management - Setting goals to finish the work on time, reviewing such a work and time, making into habitat and leaving extra time at the end which gives us some relaxation without any sufferings.

## CLOSING CEREMONY

The workshop came to a close with a simple closing message and feedback from students on the sessions attended.

# APPENDIX I

## AGENDA: 3rd SAWA REGIONAL WORKSHOP 2020

SaciWATERs
SOUTH ASIA CONSORTIUM FOR INTERDISCIPLINARY WATER RESOURCES STUDIES

IDRC | CRDI
International Development Research Centre
Centre de recherches pour le développement international

### SAWA REGIONAL WORKSHOP 2020

**'Leadership and Research Methods for Interdisciplinary Water Research'**

**7th December - 15th December, 2020**

| DATE | SESSION THEMES | TIME | RESOURCE PERSON |
|---|---|---|---|
| **7th Dec 2020 Monday** | Introductory session | 4pm – 4:30pm | SAWA coordinators and alumni |
| | Field Data Collection methods | 4:30pm – 6:30pm | **Dr. Tanusree Paul** *Vishwa Bharati University* |
| **8th Dec 2020 Tuesday** | Quantitative data: sources and analysis methods | 4pm – 6:30pm | **Dr. Sreenita Mondal** *Delhi University* **Dr. Manoj Jatav** *V.V Giri National Labour Insitute* |
| **9th Dec 2020 Wednesday** | Concepts of Interdisciplinarity | 4pm – 6:30pm | **Prof. Peter Mollinga** *SOAS, UK* |
| **10th Dec 2020 Thursday** | Doing Interdisciplinary Research | 4pm – 6:30pm | **Prof. Peter Mollinga** *SOAS, UK* |
| **11th – 13th Dec Friday - Sunday** | Students' field data collection at local field sites | | |
| **14th Dec 2020 Monday** | Scientific Writing and Science Communication | 4pm – 6:30pm | **Dr. Veena Srinivasan** *ATREE, Bangalore* **Mr. Joydeep Gupta** *The Third Pole* |
| **15th Dec 2020 Tuesday** | Student presentations | 4pm – 6 pm | **Dr. Vishal Narain** *MDI, Gurgaon* |
| | Spaces and Opportunities for Leadership and Change in the Water Sector | 6pm – 7pm | **Dr. Anjal Prakash** *ISB, Hyderabad* |
| | Closing session | 7pm – 7:15pm | **Dr. Melanie Robertson** *IDRC, Canada* |

# APPENDIX II

## TOPICS FOR STUDENTS FIELDWORK

| S No. | Name of the Student | Topic selected | Water Issue under the topic *(50 to 100 words on the water issue – on why it has to be considered as a matter of importance)* | Social issue of the topic *(50-100 words on how this water issue affects the local society).* | Access to Potential respondents | Location |
|---|---|---|---|---|---|---|
| 1 | Meena S | **URBAN FLOOD VULNERABILITY DUE TO NIVAR CYCLONE IN VELACHERY, CHENNAI.** | Tamil Nadu state and Puducherry were on high alert with Cyclone Nivar that made landfall on November 25 2020 afternoon between Karaikal and Mamallapuram. Indian Meteorological Department has forecasted extremely heavy rain and placed Tamilnadu under "Alert". Chennai has received an average rainfall of over 127 millimetres. Out of other places in Chennai, Velachery faced a maximum hazard. Many streets of Velachery have experienced waterlogging problem. Many electricity poles at Velachery areas were also uprooted in the rains. During this flood, rainwater entered the house and was up to their knee. No steps were taken immediately by the Chennai Corporation to start draining the water with help of pumps. | Thousands of Chennai residents living in Velachery had a sleepless night, fearing floods. Flood caused serious damage to the property of the local people. Temporary huts and houses were damaged. The sharp things carried with flood caused serious injuries to the people. The drainage water mixed with rainwater inundated the residential area, thereby increased the risk of health problems. There was no provision to cook food at home. People were threatened by snakes and other reptiles in floodwater. Women, Children and Elderly people were highly affected due to lack of accessibility. People heaved a sigh of relief only when the rain stopped. Many people were rescued in schools and colleges. | General Public, Women, Elderly People, Parents of Young Children, Disabled people, New residents, Shop owners. | Residential area, Baby Nagar& Bharathi nagar, Velachery, Chennai - 600042. |
| 2 | Awanthi Jayasekara | **EVALUATION OF WATER AVAILABILITY AND DOMESTIC WATER CONSUMPTION: SURVEY IN WELIMADA, SRI LANKA.** | The research site is located at the hill country of Sri Lanka with elevation 1017 m from mean sea level. Most of the people who are living in this area is facing seasonal water scarcity with time to time. National Water Supply and Drainage board was unable to supply water pipe lines to this area and people who are living in this area has started Community based water supply project to avoid this problem. But, problem is capacity of this organization is not enough to supply the water to overcome their domestic requirements. Then people have been facing some problems with the consumption of water for domestic purpose. | In the time of less rain, people have to travel the long distance to access the water and mostly women in the house holds are affecting by this. Foods (vegetable, fruits, milk) for the most of them in the community are provided by their home gardens and livestock. But without water it's difficult to manage those gardens and livestock and they have to expend some additional money to buy those. And lack of water will cause the sanitation problems and maintaining hygiene is difficult with it. So it has some issue with healthiness of family. | People who are served by the Community water supply project | Residential area of Welimada, Sri Lanka |

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| 3 | Asiri Ranasinghe | IMPACT AND ADAPTATION TO FLOOD: AN EXAMPLE FROM "KOSPOTHU OYA" STREAM, KURUNEGALA, SRI LANKA | This stream is going through the villages. In the time of heavy precipitation, the stream does not have the adequate capacity within the banks to the water flow coming from the upper catchment area. Especially with the North East Monsoon. The carrying capacity is decreased further by the construction of a bridge, erosion, and silting. So with time, the frequency of flooding events is increasing. But In the time of low precipitation, farmers do not have enough irrigation water to cultivate paddy due to unavailable of a proper reservoir to store rain water. | Loss of property and livelihood, deterioration of health condition, non-availability of essential commodities, reduction of the land value, and disruptions of clean water and services (electricity, communication) generate adverse social and economic impacts in flood-prone areas as well as adjacent non-flooded areas. The sense of insecurity and fear in the minds create short and long-term psychological impacts. The ineffective response of politicians and decision-makers in provincial and municipal government lead to the loss of peace and stability in the area. | People in the village | Residential area near to a stream (Seleted one village: Koongoda, Hindagolla 60034, Kurunegala, Sri Lanka). |
| 4 | Chaminie Wanasinghe | ASSESSMENT OF DOMESTIC WATER AVAILABILITY IN UHANGODA, IDAMPITIYA AREAS IN MAWANELLA, SRI LANKA | Dug wells are higher in depth, tube wells dried up sometime after the installation, no water for paddy fields, NWSDB water supply is not enough to fulfill the water requiremnt in this area | People get NWSDB (pipe line water) only at night time, during dry period less availability of water, drying up dug wells and tube wells, people need more water but NWSDB is not in the position to extend the capacity. | Villagers, dug well and tube well owners, pipe line water users | Uhangoda, Idampitiya in Mawanella Sri Lanka |
| 5 | Melba Respina B | IMPLEMENTATION OF WATER SUPPLY ACT AND THE POTENTIAL IMPACTS IN MYLAPORE, CHENNAI. | Mylapore is a neighbourhood in the central part of the city of Chennai, India. The people in this area receives water supply from the Chennai Metropolitan Water supply and Sewerage Board (CMWSSB). By reviewing the act of this water supply board, there is a question mark whether the water supplied for the domestic purposes meet the quality standards and proper distribution among the community. This study will help to bring out the gaps in the act. | People in Mylapore face problems during summer and the rainy season. During the summer season water scarcity will be there. People have to pay more to get water during summer. Poor supply and water theft from the water supply lorries are the major issues in that area. During the rainy season, flood inundation is the major problem in that area, which has a definite impact on human health. Water governing organizations role and response have to be examined. | People dwelling in that area | Residential area, Mylapore, Chennai, Tamil Nadu. |
| 6 | Priyadharshini R C | INEQUALITY IN ACCESSING IRRIGATION WATER FROM PUTHERI TANK AT KANCHEEPURAM TALUK. | Kancheepuram is the leader of tank irrigation system in Tamilnadu. It has a total of 1942 tanks irrigating over 60,000 hectares of farmland in the district. In Kanchipuram district, the Putheri tank is choosen for the field work. Its ayacut is less than 100 acres | The rice field at the head of the Putheri tank is receiving water for all the seasons but it is not same as for field at the tail end. Hence the economy of the farmers having same size of land varies. | Beneficiary of the tank and people of the village | Village area of Kancheepuram district, Tamilnadu |

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| | | | and major crop practiced here is Rice. Some of the farmers accessing this tank water by field channels and many of them were constructed bore as well as open well. During the summer season, the water in this tank is getting reduced. so, the fields only nearby the tank are able to access the irrigation water. Here the accessibility of water varies due to the location of fields from the tank and also inequality arises. | | | |
| **7** | **Khadiza Tul Kobra Nahin** | **APPRAISAL OF RIVER POLLUTION ON SERVICE COMMUNITIES OF THE SHITALAKSHYA RIVER WITH A GENDER PERSPECTIVE** | Shitalakshya river is situated in Gazipur and Narayanganj districts of Bangladesh and connected with Dhaleshwari river. Once the river water quality was excellent which served the livelihood purpose of fishermen, farmers, cottage handloom industries (i.e. Jamdani) etc. With the rapid growth of industries the water quality has been extremely deteriorated which affected these service communities adversely. Also the riverine people who are still dependent upon river water for household purposes need attention to overcome the existing and potential health risks related to the water consumption. | The existing problem affects different communities with various situations. The water pollution has decreased the fish production in this river abruptly which caused extreme losses to fishermen community. This river water cannot be supplied for irrigation, so the farmers need to take alternate and expensive ways as solutions. Production of Jamdani (a traditional product of cottage handloom industry) has been reduced a lot and the related people has to shift to a new profession for living. Moreover, the riverine people suffer from health problems due to bad quality water while using it and getting in touch during monsoon or flooding. Also these impacts varry for men and women of different ages, economic and social conditions which need to be addressed to get proper solutions. | Fishermen, Farmers, riverine people (depending on river water) and people of cottage handloom industries | Rural, periurban and industrial areas along shitalakshya river. Kutubpur, Sonargoan, Shiddhirganj are some proposed locations situted at Narayanganj District. |
| **8** | **Sulochana Dhungana** | **ASSESSMENT OF DOMESTIC WATER AVAILABILITY AFTER THE DEVASTATING EARTHQUAKE AT KHARANITAAR AND BUDUNE INTREGATED SETTLEMENT,NUWAKOT ,NEPAL** | Nuwakot district at Bagmati zone,Nepal is located on the bank of Trishuli and Tandi rivers with the elevation of 1022 m from mean sea level.This district was in most affected and vulnerable list after earthquake.Though Nuwakot is not at higher distance from the capital of the country,the restoration has not been completed yet.Kharanitaar being a small city of Tandi municipality,public are facing water related problems.Budune Intregated settlement sites constructed by INGO,still there is scarcity of | Budune intregated settlement site has been constructed by INGO for vulnerable people in order to provide basic shelter.More than 500 people lost their shelter and relocated at kharanitaar.They are now facing lack of coordination with local peoples.Loss of property,poor living standard , worst health status,scarcity of water,minimum connection of electricity& communication generates adverse effect on social and economical status of this settlement.On the other hand local people are not ready to accept them as their residents. Lack of | Chairman of WUCs, Chairman of budune intregated settlement | Kharanitaar-3,tandi municipality,Nuwakot,on the bank of Tandi River |

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| | | | domestic water.Ingo with coordination of rural municiplaity have been working on this sector but cause of geographical topography,proper management of water source and weak administration it seems very difficult to provide adequate water throughout the residence. | awareness ,motivation ,induction,promotion of proper hygiene and sanitation seems some of the issues to the society. | | |
| **9** | **Sumaiya Binte Islam** | **(TENTITIVE) NEGLECTED WELFARE WHITE HAT: A STUDY ON THE PRESENT SITUATION OF HOSPITAL CLEANERS AND SWEEPERS IN DHAKA CITY**. | The broad categories of water professionalists contain a significant portion of service/support staff who are contributing for the convenient working environment. Comparatively less attention is provided towards this group. Under this category the target group is selected who are working as cleaners and sweepers in different hospitals of Dhaka city. They are vulnerable with health hazards compared to other work zones. Working in a contagious environment, it's high time to analyze whether their basic rights as workers, safety measures, health insurance, job privileges etc are satisfied or not. They have a water based livelihood as cleaners or sweepers and in COVID-19 situation lots of steps were taken to provide the safety for doctors and nurses but how about for these low class workers. The study is an attempt to find the real scenario of the hospital service staff responsible for washing and cleaning the contagious objects. | The targeted group belongs to the low living standard community of the society. Their contribution is significant but not recognized. Moreover, focusing on gender relations the female staff also experience household violence, social criticism and ostracism compared to male staff. The vulnerability will vary based on public and private sectors. Aparts from health risks, household responsibilities, child care, fear of abandonment in marriage life, depressed social life etc. these issues are making them less component for providing their assigned services. | Hospital cleaners, sweepers, hospital authority from both public and provate hospitals of the study area. | Dhanmondi and Tejgaon, North Dhaka. |
| **10** | **Sahika Ahmed** | **DEALING WITH IRON CONTAMINATION IN DRINKING WATER IN HARIPUR UNION OF RAJSHAHI** | The study area, named as Harhupur, situated at the bank of Padma river. In this area, groundwater contains too much iron.This is making the situation complex for the inhabitants. This water can not be used in cooking, they have to fetch water from the river. The river water is not always safe too. For the presence of excess iron in water, they have to do some extra works for cleaning purposes. Also for bathing and washing | Mainly the extended workload due to iron contamination is imposed upon women of this locality. They are responsible for fetching water from river for cooking purposes. Also, as they use ground water for drinking and sometimes cleaning purpose, they have to clean the base of the tubwell and utensils quite often. Goverment water supply institute WASA haven't yet started suppling domestic water in this area. But there is a water source from WASA, little far from this | Local peoples, BWDB and WASA officials. | The area named Harhupur under Haripur union, Paba, Rajshahi is situated just at the left bank of Padma River. |

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| | | | purposes they are depended on the river. In spring, when the river flow is minimum they face the problem of ground water depletion. | locality. But due to the social norms, women don't often go to fetch water there | | |
| 11 | Nabina Prajapati | CHANGING PATTERN IN QUALITY AND QUANTITY OF WATER SUPPLY AVAILABLE AT AN OLD SETTLEMENT IN BHAKTAPUR. | Bhaktapur District lies in the east corner of Kathmandu Valley. The Old settlement of Bhaktapur is as old as the Malla Dynasty which dates back to 15 th century. The source of water at those time were wells, Kuwas and few public tap having natural source. With changing time those sources have vanished and its not been very long, the system of piped water supply has developed. It's not easy to lay pipeline in those compact old settlement. So, the people of those old settlement has scarcity of water supply both in quality and quantity. | The Problem about water supply is, its more in quantity in winter season and more in quality in summer/rainy season. So, to make water available for household purpose, the person in charge in home has to spend a considerable amount of time. With unsufficient water available , hygiene level is not good as it should be. | People in the community | Kwathandaou Tole, Nagpokhari-Bhaktapur |
| 12 | Radha Dhakal | PEAK FLOW CHANGE IN KATHMANDU AFTER MELAMCHI COUPLED WITH CLIMATE CHANGE | Due to climate change,the inter basin transfer of the melamchi river in to kathmandu valley, land use pattern of kathmandu,rapid urbanization and encoarchment of bagmati river Urban flood takes place in the rainly day of rainy season.After peak event women are more vulnerable to disastrous consequences because of the domestic role of women in the care of children and husbands at home. | Around 100 households are there.All are homeless.Women in the event of a disaster are described as universal victims crying, besieged and overwhelmed while men are described as being sturdy and resourceful.After the flood in the bagmati river they face the critical condition.lack of access to sanitation,female group are more vunrable to sanitation,lack of access to the drinking water,food,cloths etc. Many childrens becomes ill due to poor sanitation and contaminated water. | people in the slum area,specially women. | Slum area of kathmandu metropolitancity, Thapathali,bank of Bagmati River Kathamandu, |

# APPENDIX III

## Resource Persons Profile

### PANEL OF INSTRUCTORS

**SAWA Regional Workshop 2020**

## Prof. Peter Mollinga

Peter Mollinga is a Professor of Development Studies at the School of Oriental and African Studies (SOAS), University of London. Peter is a widely published scholar on interdisciplinary research of water. His research expertise and interests are on South Asia, Central Asia; comparative political sociology of water resources and development; technology and agrarian change; boundary work in natural resources management; interdisciplinary social theory. Peter Mollinga has taught graduate and undergraduate courses on irrigation & development, intervention methodologies for irrigation reform, and research methods at Wageningen University, the Netherlands. At ZEF, Bonn he has taught on inter- and transdisciplinarity as part of a PhD teaching programme, and a Masters course on Development Sociology at Bonn University. He has taught guest lectures and courses on water and natural resources related topics and on interdisciplinarity, at the Geneva Centre for Security Policy - GCSP; Ecole Polytechnique Fédérale de Lausanne – EPFL; Center for Development Research - ZEF, Bonn; CERIS - Brussels; SaciWATERs - Hyderabad; Faculty of Geography, University of Vienna. Given his educational background in irrigation engineering and later transitioning to water management and development sociology, Peter understands and appreciates the roots of disciplinarity in water studies and is a renowned expert of interdisciplinary water research. He is the editor of *Water Alternatives* is an international interdisciplinary journal on water, politics and development.

Know more about Prof. Peter Mollinga at-
https://www.soas.ac.uk/staff/staff59646.php

## Dr. Veena Srinivasan

Veena Srinivasan is a Senior Fellow at the Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore, where she leads the Water, Land and Society Programme. She also leads the Centre for Social and Environmental Innovation. With her undergraduate studies from Indian Institute of Technology Mumbai, postgraduate studies from Boston University, and a PhD from Stanford University – she is a highly distinguished scholar and one of the leading voices on issues of environment and water resources in South Asia. Veena is also a prominent voice on challenges of women in STEM and the need for building women leaders. She has recently been appointed

an Associate Editor of the prestigious Journal of Hydrology. Since 2018 she has also held the Prince Claus Chair at Utrecht University for her research into sustainable and inclusive food production in Asian delta regions. Know more about Veena here –
https://www.atree.org/users/dr-veena-srinivasan
https://veenas-water.medium.com/

## Joydeep Gupta

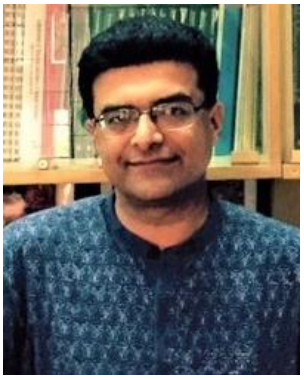
Joydeep is an Indian journalist who has been writing on environmental issues since covering the Bhopal disaster in 1984. Joydeep Gupta writes and commissions articles on climate change, biodiversity, pollution and sustainable development for the bilingual environmental news website www.thethirdpole.net. He is the South Asia director for The Third Pole media platform. He is a lead trainer at workshops for environmental journalists from South Asia and South-East Asia. Gupta covered the 1992 Earth Summit in Rio de Janeiro, UN climate summits in Bali, Poznan, Copenhagen, Cancun, Durban, and Paris and the biodiversity summit in Nagoya. He has reported for Indo-Asian News Service, The Statesman, The Sunday Observer and Sunday Mail, and is the Vice President of the Forum of Environmental Journalists in India. For his contributions to environmental journalism, Gupta won the 2012 Green Globe Award at the Delhi Sustainable Development Summit. Joydeep teaches Development Journalism to postgraduate students at Jamia Millia Islamia University in New Delhi and holds a Masters in Environmental Economics and Environmental Management from the University of York (UK). He is also the Director for the Third Pole Project of Internews Earth Journalism Network and China Dialogue. Read Joydeep's writings here:
https://www.thethirdpole.net/author/joydeep-gupta

## Dr. Anjal Prakash

Dr. Anjal Prakash is Research Director and Adjunct Associate Professor, Bharti Institute of Public Policy, Indian School of Business (ISB), Hyderabad India. Before joining ISB, Dr. Prakash worked with TERI- School of Advanced Studies, New Delhi, India as an Associate Professor in the Department of Regional Water Studies. His earlier association was with International Center for Integrated Mountain Development (ICIMOD), in Kathmandu, Nepal where he was the Coordinator of the programme - Himalayan Adaptation, Water and Resilience (HI-AWARE) Research on Glacier and Snowpack Dependent River Basins. Before joining ICIMOD in 2014, Dr Prakash led the South Asia Consortium for Interdisciplinary Water Resources Studies (SaciWATERs) as Executive Director. Dr. Prakash is coordinating lead author for the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC). He has also a Lead author in the chapter on cities, settlements and key infrastructure in the Working Group II of IPCC's 6th Assessment Report. Recently he was nominated as member of the Gender Task Group of

IPCC to develop a framework of goals and actions to improve gender balance and address gender-related issues within the IPCC. He is an Associate editor for the Elsevier journal *Current Research in Environmental Sustainability*. Dr Prakash's work focusses on water and climate change, urban resilience, gender and social inclusion issues covering south Asia. Anjal is an extensively published scholar of water research. Find his writings at:
https://scholar.google.co.in/citations?user=uxNtqTIAAAAJ&hl=en

## Dr. Vishal Narain



Vishal Narain is Professor, Public Policy and Governance, at the Management Development Institute Gurgaon. He holds a PhD from Wagenningen University, the Netherlands. His teaching and academic interests are in the inter-disciplinary analyses of public policy processes and institutions, water governance, gender, rights and equity analyses in water management, periurban issues and vulnerability and adaptation to environmental change. In particular he is interested in the relationship between technologies and institutions in water management, and how they are impacted by each other. He explores these issues using qualitative research tools with a strong reliance on ethnography. Prior to MDI, he was Assistant Professor, Department of Policy Studies, TERI. He received the SR Sen Prize for the best book on Agricultural Economics and Rural Development (2002-03) conferred by the Indian Society of Agricultural Economics for his book 'Institutions, technology and water control: water users associations and irrigation management reform in two large scale systems in India (Orient Longman, 2003)." He was a lead author for the chapter on human vulnerability to environmental change for GEO (Global Environment Outlook), the flagship publication of UNEP, the United Nations Environment Programme. He has completed consultancy assignments for a wide variety of international organizations such as the Food and Agriculture Organization of the United Nations, Bangkok. He is a widely published scholar and has been associated with the SAWA programme for many years.
You can find his writings at:
https://scholar.google.co.in/citations?user=W79DQlcAAAAJ&hl=en&oi=ao

## Dr. Manoj Jatav

Dr. Manoj Jatav is working as Associate Fellow at V.V. Giri National Labour Institute, Noida. He has over 8 years of working experience in research and training. He received the award of PhD. (2016) and Master of Philosophy (2009) in Regional Development from Centre for the Study of Regional Development, School of Social Sciences, JNU. He has conducted training programmes for labour officials from Central and State services, trade union leaders, NGO professionals, researchers, and officials from different services including IRPS/ IRAS, Indian Navy, and Social Security Officers from ESIC. Prior to this he was a Research Fellow with SaciWATERs. He

worked on livelihoods & water (in)security projects funded by WaterAid, TATA Cleantech Capital, UNICEF, CGIAR, Netherlands Organisation for Scientific Research (NWO), Bordeaux Metropole, Arghyam, and Government of Telangana. He has also worked with the National Council for Applied Economic Research (NCAER) and VV Giri National Labour Institute (VVG NLI) as a consultant. His experience in handling and conducting extensive research using complex primary and secondary quantitative data makes him an extremely able instructor in quantitative research methods for students conducting interdisciplinary research.

## Dr. Tanusree Paul

Dr. Tanusree is an Assistant Professor at the Centre for Women's Studies at the Visva Bharati central University in West Bengal. With a PhD from Jawaharlal Nehru University, New Delhi, she is an established geographer and gender expert who is widely published. She has been associated with the current phase of the SAWA project as an extremely effective instructor and mentor for the students. She was earlier associated with the Transform Nutrition project at Public Health Foundation of India as a Research Associate.

Know more about her and her writings at:
https://visvabharati.irins.org/profile/134669#personal_information_panel

## Dr. Sreenita Mondal

Dr Sreenita Mondal is a postdoctoral researcher with the city research team Delhi of GenUrb. A geographer by training, she has completed her M. Phil and doctoral degree in Regional development from the Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi. Sreenita has previously worked with SaciWATERs as a research fellow and coordinated South Asian Water (SAWA) Leadership Programme on Gender and Climate Change and the SaciWATERs Cap-Net (capacity building network) Network (UNDP Cap-Net). Prior to that she was an assistant professor of geography at Raniganj Girls college, West Bengal. She works primarily with various issues of regional development, like- natural resources management (land and water), labour market, etc. through gendered lens and has also published on these issues in various journals and online platforms.