

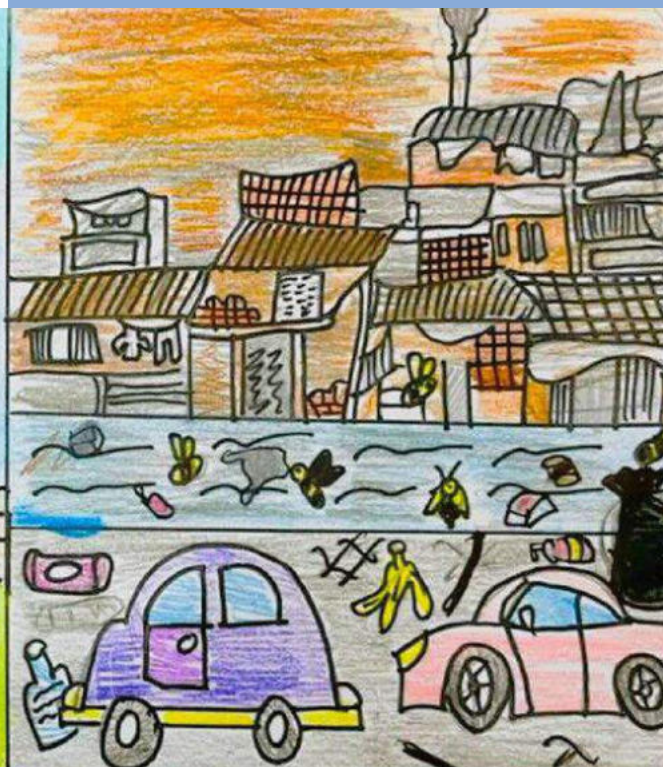
IGCS EXPERIENCE REPORT 06/2023

Indo-German Centre for Sustainability (IGCS)
Summer School 2022, RWTH Aachen, Germany



experience reports

Akash Saha



Experience Report on IGCS Winter School 2023, IIT Madras, India

IGCS School Participant

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Affiliation

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IGCS School Theme

IGCS Summer School 2022, RWTH Aachen University, Germany

“Sustainable Waste Management in the Nexus of Climate Change and Low Carbon Economy”

Starting/End date of the student exchange period

18. July – 29. July 2022

Organisers

IGCS Area Coordinator, Prof. Dr. R. Vinu (Indian Institute of Technology Madras),
Former IGCS Area Coordinator, Prof. Dr. Martin Kranert (Stuttgart University),
Former IGCS Postdoc, Dr. Gabriela Garcés (Stuttgart University).

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Zurück zur Erde: A Workshop on Human-Nature Relationships and Sustainability for Students and Teachers

Co-organized by Goethe Institute and the Indo-German Centre for Sustainability (IGCS)



Experience Report from Winter School 2023, IIT Madras, India

Funding Period and Title of Engagement with IGCS

The Indo-German Centre for Sustainability (IGCS) Summer School 2022 was organised at RWTH University, Aachen, Germany from 18th – 29th July, 2022. Titled ‘Sustainable Waste Management in the Nexus of Climate Change and Low Carbon Economy’, the summer school aimed at providing exposure to four focus areas of IGCS i.e., Water, Land Use/Urban and Rural Development, Energy, and Waste to the participants.

Summary of activities

The 12-day program at IGCS Summer school presented an interdisciplinary overview towards environmental, technical, social and economic activities related to the field of solid waste management under the purview of sustainability and circular economy. The day-to-day activities were focused on learning the basic concepts along with working together in a group and also in making collaborations for the future in order to come up with sustainable strategies and solutions for the challenges faced globally related to the environment. These solutions are the key to cope with the vulnerable conditions that can exist due to climate change and socio-economic differences.

The summer school program had brought together a series of informative lectures which was aimed at bringing out the connections of sustainable waste management with clean energy, energy efficiency, reducing CO₂ emissions, bio-based economy, and restoration of the ecosystem and its services. The topics of discussion included Sustainable Solid Waste Management in Germany, Impact of marine microplastics on the coastal systems, Sustainable Wastewater Management adapting Circularity Principles, Public Private Partnerships in Solid Waste Management, Low carbon technologies to valorize unsegregated municipal solid wastes, Anthropogenic pressures on rivers, Plasma assisted disposal of hazardous and infectious wastes, Anaerobic digestion of organic wastes, Thermal waste treatment, Landfill Management in Germany, Methods and Indicators for a Sustainable Circular Economy, E-Waste Management, Evaluation of waste-to-fuel technologies for a low carbon economy etc. All these lectures helped the participants from various disciplines to learn and engage in sharing knowledge related to various techniques and methods which can be applied to their own area of research and to expand the horizon of their knowledge. It

was a wonderful opportunity to interact with the international experts of various fields in an exclusive environment.

The program also consisted of several Panel discussions including both the subject matter experts and participants to share their knowledge and come up with innovative ideas. The panel discussions were focused on topics related to Sustainable development, Contribution of the waste management sector to a low carbon economy with its challenges and possible solutions, and an open student discussion session on various matters related to the environment and the society. The panel promoted the students to become active learners, develop critical thinking and show leadership skills. Questions were formulated in a precise way so that the discussion had a clear focus.

Two onsite excursions were arranged in the program to provide practical experience to the participants. The first excursion was at Metabolon, Lindlar which is an engineered landfill site. The other excursion was at the biological waste treatment plant at Wuerselen. The excursions provided a platform to witness the best management practices for the solid wastes in an engineered landfill and also the management of bio-waste in an eco-friendly sustainable manner by forming

compost from it. Also, an interesting workshop was organised by the RWTH team on entrepreneurship in the second week to provide some insights on how to transform our ideas into a business model.

What was your educational / research question when you planned your stay with IGCS/participation in the school?

The research question in which I was interested was related to the Integrated management of domestic organic waste and wastewater to achieve circular economy and on how to come up with an assessment framework for the evaluation of the treatment techniques and the various pathways of by-product utilisation, based on metrics related to environmental, economic, social and technical aspects.

Which results did you collect? What was the most valuable input you gained from your stay at IGCS/participation in the school?

The experience that I gained during my stay at the IGCS summer school was the most valuable asset. As a research scholar in the field of environmental engineering, I was able to critically analyse the problems discussed related to the environment and could share knowledge and insights on the given topic towards finding strategies and solutions for the same based on the

informative lectures, panel discussions and onsite excursions.

The lecture by Prof. Marzia Traverso on “Methods and Indicators for a Sustainable Circular Economy” was the most helpful for me. As my research problem is related to developing an assessment framework to evaluate a wastewater treatment option, this lecture opened up new horizons of knowledge related to life cycle sustainability assessment through environmental, economic, technical and social metrics. It emphasised the importance of incorporating social aspects in decision making which is often being neglected. The lecture was about the various methodologies and indicators which are necessary to assess the different scenarios and process towards a circular economy with a holistic approach which guarantees a much better performance, by identifying the measures to overcome the tradeoffs.

Which activity was the most helpful for your academic/personal interests?

The panel discussion which was led by students was the most interesting and helpful for me during the summer school. We were asked to formulate and propose our own questions and present in front of everyone for an open discussion to come up with solutions together. It prompted us

to become active learners and develop some critical analytical thinking towards the problem and also show some leadership and collaborative skills. Apart from this, many lectures during the program which were related to my research interests also attracted my attention by gaining useful insights on topic related to Sustainable Wastewater Management adapting Circularity Principles, Public Private Partnerships in Solid Waste Management, Anaerobic digestion of organic wastes, Methods and Indicators for a Sustainable Circular Economy.

Did you make valuable contacts that you pursue to build up upon? If so, with whom?

Yes, I did make valuable contacts at the IGCS summer school on which I would like to build up in future given an opportunity. I got the chance to interact to almost every subject matter expert, and to name a few, I had insightful discussion with Dr. Martin Kranert with whom I was able to share knowledge about biological systems and technologies in solid waste management (e.g., composting, anaerobic digestion), and food waste. Also, the discussions with Dr. Gabriela Garcés Sánchez, related to sustainability aspects of waste and wastewater management were quite interesting. I also had a chance to interact with Dr. Marzia Traverso, with whom I could discuss my research problem related to

Life Cycle Sustainable Assessment to achieve circular economy and the importance of incorporation of social parameters in the evaluation. Also, the discussions with Dr. Christoph Woiwode and Dr. Anna Kathrin Uffmann during the Working group sessions were quite informative and useful to expand my knowledge.

What would you recommend fellow students when they plan their stay with IGCS/participation in the Summer or Winter Schools?

I would recommend fellow students to keep an open mind and allow themselves to welcome the ideologies and viewpoints of the participants and subject matter experts from various disciplines while discussing a topic and not to limit themselves on only technical aspects but rather think about the socio-economic challenges related to a problem. The summer school provides a platform to work together towards finding an innovative solution which will take care of the interests of the environment and the people of society at large, hence it is important to broaden the horizon of viewpoints. Also, it is important to go through the booklet beforehand, to have a basic understanding of the program and the topics which will be discussed, which will allow them to have a clearer picture

and ask the right questions during the lectures, panel discussions etc. They should not be hesitant to interact with the international experts of various fields and clear out their queries which will eventually help in their research. In addition to these, it is also important to indulge into the various intercultural sessions with different activities and explore the place nearby, where the Summer/Winter school is being held.

Information regarding the organisation of your stay/participation and the teamwork

I would really like to thank the entire team of IGCS for organising a wonderful stay at the guesthouse, taking care of all the necessities. The service persons were really approachable and cooperative at all times. I was really lucky to share my stay with international students from different parts of the world and enjoy the cross-cultural experiences.

The working group activity was one of the most fulfilling experiences at the summer school, where we worked on a specific topic and came up with innovative solutions in that aspect. I was part of the group which was working on the topic of “Socio-economic aspects of waste management and possible solutions in urban areas”. This project involved the analysis and identification of selected case

studies related to socio-economic aspects of waste management in relation to climate change mitigation and low carbon societies majorly in India and Germany. It was an important activity for me because being an engineering I was not much familiar with the socio-economic aspects and concepts of waste management, to which I got introduced to through this activity.

The overall program was very well planned, organized and coordinated. I am very grateful to be a part of this wonderful group of 30 participants from different parts of the world. I would like to thank the IGCS team and specially the coordinators for making this program a success.

I would really love to be a part of this group and stay in touch with the IGCS family through future collaborations or other opportunities.





About the IGCS Schools

IGCS' flagship teaching projects are the annual interdisciplinary Summer and Winter schools. The annual schools are held under the motto of one of our IGCS focus areas and are organised by the respective area coordinators and their partners. The itinerary is about two weeks long and consists of lectures, discussions, group work, and field trips. The Winter Schools take place at IIT Madras in Chennai in February / March while the Summer School takes place at one German partner university in June / July. For more information on IGCS' events, see [here](#).