DLGS Dresden Leibniz Graduate School

DLGS Summer School
Programme

21 September 2022
Deutsches Hygiene-Museum Dresden

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Leibniz Institute of Ecological Urban and Regional Development

TECHNISCHE UNIVERSITÄT DRESDEN

DLGS Summer School 2022

Wednesday, 21 September

Programme

08:30	*Registration*	
09:00	Welcome and introduction Prof. Dr. **Marc Wolfram** IOER, TU Dresden	
09:15 – 10:45	**Session A1** KLEINER SAAL	**Session A2** SEMINARRAUM 5
10:45	*Coffee break*	
11:00 – 12:30	**Session B1** KLEINER SAAL	**Session B2** SEMINARRAUM 5
12:30	*Lunch*	
13:30	Workshop Prof. Dr. **L.G. (Ina) Horlings** University of Groningen, Netherlands	
15:45	*Coffee break*	
16:00	Reflection and outlook	

List of participants

Dresden Leibniz Graduate School (DLGS)

- Sai Varsha Akavarapu
- Claire Gallacher
- Riyan Habeeb
- Subhashree Nath
- Tieza Santos
- Raghid Shehayeb

Leibniz Institute of Ecological Urban and Regional Development (IOER)

- Mabel Killinger
- Sophie Meier

Leibniz University Hannover

- Katharina Brüntgens

University of Bayreuth

- Julia Marx

University of Milan

- Valentina Capocefalo

RWTH Aachen

- Amrita Kaur Slatch

Sessions

Session A1 Moderator: Dr. **Alejandro de Castro Mazarro** (IOER)
09:15 – 10:45 KLEINER SAAL

Julia Marx	Shaping the transformation of local food systems
Mabel Killinger	Exploring Sustainable Human-Food Relations in the City through Intra-active Focus Groups. The Conceptualization of Urban Human-Food Resonance
Valentina Capocefalo	Between the desire to experiment and the need to regulate: the cases of CasciNet and Cascina San Romano on the Milanese edges

Session A2 Moderator: Dr. **Neelakshi Joshi** (IOER)
09:15 – 10:45 SEMINARRAUM 5

Sophie Meier	Predicting wild bee habitat from landscape features
Riyan Habeeb	Nature-based Solutions for Urban Water Security in Medium-sized Cities from South Asia
Tieza Santos	Transforming urban water systems through a Social Ecological Technological co-creation framework

Session B1 Moderator: Dr. **Jonathan Morris** (IOER)
11:00 – 12:30 KLEINER SAAL

Claire Gallacher	Hyperlocal mapping of urban heat and pedestrian thermal comfort; an interdisciplinary approach to support evidence-based urban planning in Dresden, Germany
Raghid Shehayeb	An Indicator-based Evaluation Tool of Drought and Heat Risks for Urban Green Infrastructure
Subhashree Nath	Decision-making in community-based adaptation and resilience

Session B2 Moderator: **Marina Novikova** (IOER)
11:00 – 12:30 SEMINARRAUM 5

Amrita Kaur Slatch	Understanding Mine Closure practices – case of Germany
Katharina Brüntgens	Considering the interests of future generations in spatial planning
Sai Varsha Akavarapu	Navigating Sustainability Transformations in India: Elucidating the dynamics between Urban Institutional Capacities and Participatory Futures Practices

Shaping the transformation of local food systems

Julia Marx
University of Bayreuth

The doctoral thesis "Shaping the Transformation of the Upper Franconian Food System" follows the paradigm of transformative and transdisciplinary research wanting to understand how a change of local food systems can happen by actively giving interventions for this transformation and observing its effects.

Within the doctoral project, two real world laboratories that encounter themselves at different stages of food system transformation have been initiated and accompanied. The first one aims to strengthen pioneers of change by building up a community of consumers and producers. Its aim is to be a living example of food sovereignty and food democracy. The second project, the Upper Franconian Food Policy Council brings together actors of the whole food value chain and searches the dialogue with policy makers and administration to work towards the change of frame conditions.

By observing the dynamics that arise though these projects, the research addresses questions such as:

- Which challenges do such pioneer projects face? How can these obstacles be overcome?
- Which actors are needed in which phase for a transformation to be successful?
- How can experimental spaces help to overcome unsustainable habits and discourses?
- How can a niche move into mainstream and how and when can more conservative actors be integrated into the process?

I will present first results during the DLGS Summer School. Moreover, I want to discuss my experiences with the transformative research approach, which offers diverse opportunities but also challenges: As a researcher in this transformative field, my role is constantly changing between an impulse giver, an observer, a moderator, a networker, a coordinator or a participant. How to manage this shift of roles? How to deal with power imbalances that arise if one is having the overview of all project elements? How to bring in objectivity and transferability while being so subjectively engaged in the field?

Exploring Sustainable Human-Food Relations in the City through Intra-active Focus Groups. The Conceptualization of Urban Human-Food Resonance

Mabel Killinger
Leibniz Institute of Ecological Urban and Regional Development (IOER)

The food system of Western societies is identified as an outstanding example for the present social-ecological crisis. Meanwhile, several scholars agree that human's alienation from nature accelerated by the progressive urbanization and the associated external and internal distance from nature presents a major driver of said crisis. Reasons for that are seen in primarily instrumental relations between human beings and nonhuman nature, which are also visible in human-food relations. Therefore, voices are growing louder to refocus on inner transformations of Western societies in regard of relational qualities with food as a major driver for sustainability transformation towards livable futures for human and nonhuman nature.

Here, the recently introduced theory of resonance by Hartmut Rosa, which focuses on human beings' general relational qualities with the world, presents a promising approach to address patterns of unsustainable human-food relations. The theory elaborates on the broken relations of modern societies with the world, lacking qualities of affective and responsive relationality. Accordingly, potential correlations between (not) getting affected by the food system's impact on the social-ecological crisis and corresponding answers in regard of (un)sustainable food consumption are in focus for the conceptualization of urban human-food resonance. With the execution of intra-active focus groups targeting urban dwellers of Dresden (Germany) who are assumed to already have a resonant relation with food, human-food relations are investigated. Thereby, how human-food resonance can emerge and where people are getting affected and develop resonant food relations is addressed in an intra-active workshop environment. In this context, internal dimensions of individuals and external collective (urban) influences in regard of human-food relations are explored. The concepts of agency, care and inner transformation are thereby in focus.

Between the desire to experiment and the need to regulate: the cases of CasciNet and Cascina San Romano on the Milanese edges

Valentina Capocefalo
University of Milan

Urban and peri-urban agriculture (urban and peri-urban farming, community gardens and Food Forests) practised at the micro-scale express themselves on the territory of Milan through a variety of experiences which differ in the rules and customaries applied, in the characteristics of the citizens involved, as well as in the agricultural principles and practises utilized. The first aspect is partially related to the administrative structure of the municipality: indeed, it delegates the management of the green areas to the sub-local authorities, which draw up the specific use regulation of the them. In addition, not all the experiences related are directly managed by the municipality itself and therefore they can be ruled in different ways by independent entities. The regulations applied generally influence both the features of the farmers and gardeners involved and the practices utilized, as appropriate promoted or discouraged.

The research presented focuses on two cases, Cascina Sant'Ambrogio and Cascina San Romano, which are respectively located on the eastern and western edges of the city and managed by two important associations, CasciNet and Italia Nostra. If the last one has contributed decisively to inaugurate the scientific reflection on the phenomena through one of the first important contributions in 1982, the second one is nowadays experimenting innovative agricultural practises both at the micro and the meso scale. The purpose of the research consist in identifying the key factors which have contributed to shape differently these two experiences: although they present some similarities, such as the marginal position and the historical presence of the two farmhouses in their respective territories, they have declined their projects very differently.

The research is conducted through the analysis of the bibliography and the institutional documents, field work, and different qualitative methods such as surveys and semi-structured interviews.

Predicting wild bee habitat from landscape features

Sophie Meier
Leibniz Institute of Ecological Urban and Regional Development (IOER)

Wild pollinators are crucial to sustain food security and biodiversity. Many crops such as legumes and fruits as well as wild plants depend on the pollination by wild insects. However, pollinators like wild bees struggle to find appropriate habitat where they can reproduce within intensively used agricultural landscapes. Intensive agricultural practices mean the removal of small-scale vegetation elements which is a major threat for pollination services of crops and biodiversity.

Therefore, as part of the EU biodiversity strategy 2020, wild bee habitats were mapped for Germany based on information on land use and land cover (CORINE land cover). Each landscape type was ranked by wild bee experts, according to the landscape types' expected provision of wild bee habitat. The resulting map was suitable for national evaluations, however, on the regional level, this data base is too coarse because a fixed value was assigned to each land use/cover type such as grassland and cropland. In this way, local conditions such as mowing intensity of grassland, crop type, degree of sealing or open soil for nesting were not considered.

Thus, in the presented work, the potential of the CORINE-based expert map to predict possible wild bee habitat is assessed by correlating it with wild bee samplings. It will be tested, how well the model predicts different functional groups of wild bees, comparing wild bees with different nesting preferences and pollen specialisation. Furthermore, it will be investigated if information e. g. on grassland type and soil and resoluted data on land cover and land enhance the predictability. The aim is to determine areas where the habitat conditions for wild bees are already favorable and, therefore, suitable for further improvements, for example with wild flower strips, hedges, extensive grassland and open soil.

Nature-based Solutions for Urban Water Security in Medium-sized Cities from South Asia

Riyan Habeeb
Dresden Leibniz Graduate School (DLGS)

Growing urban water crisis in conjunction with urbanization and climate stresses is a major challenge of twenty-first century. While extreme hot weather and rising potable water demand have exacerbated water scarcity, increased frequency and severity of climatic events such as heavy rainstorms has led to urban flooding. To tackle the growing concerns of urban water security and related risks, concept of nature-based solutions (NbS) have been advocated as climate adaptive measure to enhance environmental security, economic viability and social feasibility. However in comparison to Global North, cities from Global South are yet to fully explore the potential of NbS in urbanization, climate and social processes to move towards more sustainable, resilient and just future. This is especially true for small and medium-sized cities which have high urbanization rate and limited adaptive capacity thus making them more prone to climate change impacts. In this context, taking Dehradun city as a representative case, the proposed research attempts to

conceptualize NbS in socio-spatial and environmental context while understanding the association of various parameters related to urban water security. The research using mixed method approach utilizes spatial and social statistical techniques to inquire into contextualization of nature-based solutions for urban water resilience and its applicability for medium-sized cities from South Asia.

Transforming urban water systems through a Social Ecological Technological co-creation framework

Tieza Santos
Dresden Leibniz Graduate School (DLGS)

Water governance is a key priority in rapidly evolving urban regions and cities facing significant pressure such as climate change, land-use transformation, and population growth. The multidimensional nature of urban water transformation is characterized by the coupled social, ecological, and technological systems inextricably meshed with urban systems.

However, prevailing paradigms influenced by techno-centric perspectives of hydro-mechanics, management, and engineering cannot adequately address this complexity. The discipline-bound ontologies and epistemologies, which also direct real-world governance and policy agenda tend to offer blueprint solutions to urban water challenges. It overlooks important geographic, temporal, and cultural contextual factors, among others. Employing conventional linear theories and approaches often leads to strong technological and institutional path dependencies, therefore perpetuating systemic risks and failures.

Given the clear inadequacies of current water transformation paradigms, this research puts forward the Transformation Mosaic Framework (TMF) and Urban Water Transformation Compass (UWTC) as a means towards a critical re-orientation of fundamental UWST's ontological and epistemological assumptions.

The TMF and UWTC are a diagnostic framework and application toolkit based in transdisciplinary, co-design, and co-creating approaches that allow for cross-pollination of diverse knowledge bases and cognitive frames to be represented in the study of UWST. It contributes to new modes of knowledge production and context-sensitive responses to resilience and sustainability challenges. Furthermore, the TMF and UWTC synthesize and leverage an array of ontologies and epistemologies, anchored on the scientific legacies of the Social-Ecological Systems (SES) and Sociotechnical Systems (STS) frameworks. By marrying SES and STS, the TMF also bridges ecology and technology interface specific to urban water systems in explicit recognition that these are co-evolving systems. These are decisive features that guide scholars and practitioners in assessing synergies and trade-offs that emerge during the evolution and implementation process, often defined by spatial, temporal, as well as socio-economic context.

Hyperlocal mapping of urban heat and pedestian thermal comfort; an inter-disciplinary approach to support evidence-based urban planning in Dresden, Germany

Claire Gallacher
Dresden Leibniz Graduate School (DLGS)

Thermal conditions can greatly affect the quality of living in urban spaces. Designing climate-adapted cities with thermal comfort in mind encourages the use of urban space and sustainable modes of mobility such as walking and cycling, and has numerous additional environmental, economic and social benefits. Indoor thermal comfort has been well researched, however outdoor thermal comfort is a field of study which remains open, especially in the context of urban planning. In previous studies, mobile climate monitoring devices have been employed to measure meteorological variables of thermal comfort at the hyperlocal level (with resolutions of 10 – 30m). However, such mobile climate monitoring devices are often costly and difficult to operate without significant technical knowledge. In response to this, a novel low-cost device was developed using a user-friendly Arduino board in accordance with the Verein Deutscher Ingenieure (VDI, 2022) standards. Measurements of air temperature, air humidity, air pressure, surface temperature and global radiation were collected along a number of measurement lines within the city centre of Dresden, Germany using the device. This data was used to calculate the thermal indices of predicted mean value (PMV) and physiological equivalent temperature (PET) using the software Rayman. In addition to meteorological measurements, the empirical index of thermal sensation vote (TSV) was calculated along select measurement lines using questionnaire data from pedestrian participants. The thermal and empirical indices were then statistically compared in a highly interdisciplinary approach which combines the objective and subjective measurements to provide a holistic picture of spatial variations in thermal comfort at the hyperlocal level. The results of the analysis are presented, statistically and cartographically, in a user-friendly way which can be easily interpreted by the relevant actors to inform climate-adapted, evidence-based decisions for the future urban planning of Dresden's city centre.

An Indicator-based Evaluation Tool of Drought and Heat Risks for Urban Green Infrastructure

Raghid Shehayeb
Dresden Leibniz Graduate School (DLGS)

Although urban green infrastructure (UGI) is a prominent concept towards climate adaptation and urban resilience, drought and heat risks for UGI components and their ecosystem services (ES) are not sufficiently addressed within the literature. Hence, this study analyzes the drought and heat risks for UGI and derives an indicator-based tool for the evaluation of these risks, paving the way for knowledge creation and decision support. The situation is addressed as a Coupled Human and Natural System (CHANS) to represent the material and information flows, the interconnections between subsystems, and between the elements within. The CHANS enables the derivation of system endpoints such as the species and life cycle of biota, physical structure of water bodies, and soil-water dynamics. Based on

the Drought and Heat Risk (DHR) assessment framework, the multi-risk assessment into two stages, multi-risk analysis, and multi-criteria evaluation. The framework defines vulnerability of UGI into two tiers: the susceptibility and resilience of the UGI biophysical elements, and the degree to which delivering ES can be affected under drought and heat hazards. As part of the second stage of the risk assessment, the evaluation includes translating the biophysical endpoints into vulnerability information following a multi-layer and lane-based approaches, and in combination with exposure and hazards information, evaluate the risks for UGI. To quantify and evaluate the vulnerability and risk information, a tool including descriptors and spatiotemporal indicators is proposed, offering a simple and adaptive application, making it transferable and effective for researchers and actors. The framework enables the inclusion of local actors in both of the assessment stages, by revisiting the developed risk system, selecting site-specific indicators, and discussing evaluation results and potential risk-reduction alternatives, fostering evidence-based judgement, interventions and practices to deal with risks.

Decision-making in community-based adaptation and resilience

Subhashree Nath
Dresden Leibniz Graduate School (DLGS)

Decision-making ability is a crucial contributor to the adaptive capacity of marginalised groups like slum-dwellers (Pandey et al., 2018). In adaptation strategies like community-based adaptation (CbA) that specifically cater to (but not limited to) marginalised groups, structured decision-making approach takes precedence, given the requisite participation and coordination of wide range of stakeholders like community members, local government, civil society as well as gathering and processing of various site-specific information which are often not accessible and/or comprehensible. In addition, a system supporting structured decision-making can assist in developing adaptive capacity by enabling the community to combine different types of knowledge, facilitating self-organisation and imbibing a culture of learning and preparing them for the uncertainties climate change ensures (Caputo et al., 2015; Folke et al., 2002). However, preliminary literature search showed that there is currently no published evidence synthesis on the process of decision-making adopted in CbA and uncertainty remains as how to best facilitate community-centric decision on adaptation strategies, developing specific resilience to heat/drought as well as enabling general resilience.

Through a review of 32 papers, selected through a systematic database search, this paper focusses on the decision-making process involved in CbA. The review identifies the key enablers and barriers to CbA, including data and information requirements, level and stage of participation of various stakeholders. It maps the steps taken for the implementation of various adaptation intervention, their type and size, further assessing whether the process of decision-making is structured and adequately documented. The results are extrapolated to derive necessary steps to make effective decision-making in CbA in urban slum neighbourhoods.

Understanding Mine Closure Practices – Case of Germany

Amrita Kaur Slatch
RWTH Aachen

Germany started to debate an accelerated coal phase-out in 2014 and it agreed on transitioning to more renewable sources of energy. It was since 1990 that the consumption of coal decreased by a third, and all the derelict mine sites were being increasingly discussed to undergo structural level policy changes. Regions such as the Ruhr valley, one of the highly industrialised regions abundant with hard coal deposits and underground mines sites went through intensive restructuring initially by top-down approach (limited consultation with local actors) and later by a more bottom-up approach by the urban and regional development instrument – IBA (Internationale Bauausstellung). The Lusatian region too, abundant with open cast lignite mines were given a new identity by developing it into a lake district through the IBA. It is interesting to note that that each region being different in scale and geography requires a tailored structural policy, which the IBA provides. But IBA works in a very regional scale so how is the closure process carried out within the context of a mine and its surrounding community? The paper will attempt to understand the mine closure practices undertaken for Hambach Tagebau, which is presently one of the few operational lignite mines in the Rhineland.

Considering the interests of future generations in spatial planning

Katharina Brüntgens
Leibniz University Hannover

Decisions in society and politics are often characterized by a present bias, in which present benefits get stronger weighted in the choice of action than the associated actions in the future. Particularly in the domain of spatial planning, this is a contradiction since planning decisions in their very nature are decisions with a long-time horizon. Shortsightedness in planning decisions imposes severe costs on future generations and do contradict the guiding principles of sustainability and equal living conditions in planning. While these principles are deeply rooted in law, their aspiration gets lost in the implementation. In consequence, decisions are made that are at the costs of the prospective living conditions and planning practice thereby contravene against the principle of creating equal living conditions.

In my research, I will build on insights from the behavioral and social sciences and examine how the interests of future generations can be integrated more profoundly into the multi-layered spatial planning system. As outlined, it is thereby not about changing the legal foundations, but rather defining institutions, processes and instruments that ensure that the interests of future generations are comprehensively considered in existing decision-making processes. At first, I will identify points in the existing planning process/system at which the topic of future justice is or should be integrated. In a subsequent step, I will then examine with which measures and tools future generations can be given a voice so that their interests get better considered in planning decisions and will ultimately grant them a livable future. In this research, I will work conceptually reviewing relevant literature from spatial and regional planning, behavioral sciences and

transformation studies. Complementary, I will develop interventions with which the interests of future generations can be brought more to the focus of relevant decision-makers and test them empirically. These interventions will be carried out and evaluated, for example, in participation-oriented planning processes at the municipal level.

Navigating Sustainability Transformations in India: Elucidating the dynamics between Urban Institutional Capacities and Participatory Futures Practices

Sai Varsha Akavarapu
Dresden Leibniz Graduate School (DLGS)

Recent use of the concept of Anthropocene in the urban arena signifies challenges, uncertainties and opportunities that the nature, scale and magnitude of human impacts bring about on global and bio-physical scales. However, its true substance lies in how the concept can be used to guide attributes, choices, policies and actions that can influence the future. And future as it seems, lies in guiding the transformation of the future of our societies through SMART & Sustainable means. Joining the discussions on the future, India too heralded a new paradigm for urban transformation through its Smart City Mission in 2015 emphasising largely on envisioning performative urban futures that are technologically smart, ecologically sustainable and inclusive of the local communities in question. And as such, central to the success of the mission is the governance of the urban sustainability transformations and the transformative capacities of the institutions to drive dialogues and actions with the local communities through participatory futures practices. Existing research acknowledges that the success or failure of participatory futures practices depends not just on the way they are staged and conducted, but also on the capacities of the urban professionals/practitioners who inform, facilitate, conduct, guide, record and implement the outcomes of such practices. However, there is considerably little insight into the particular sets of resources, skills, interactions and knowledge sharing mechanisms that local governments would require to comprehend, conduct and proliferate the use of participatory futures practices. To this extent, this research would focus on developing a framework in order to understand the current capacities of local governments in advancing participatory futures practices as well as empirically demonstrate the current realities in a case in India under the backdrop of the Smart Cities Mission. This research will utilize qualitative methods such as landscape imaging, structured and non-structured questionnaires, assessment of policy documents, critical discourse analysis of landmark judgements, interviews with relevant officials and the civic organisations to decipher the extent to which participation is seen/not as an essential practice and the ways in which it is conducted for smart and sustainable urban futuristic transitions. Through the research, the study aims to provide insights into the current realities vs the transformative potential of local governments in achieving inclusive and sustainable communities of the future.

We must realize that when basic needs have been met, ***human development is primarily about being more,*** *not having more.*

– from 'The Earth Charter'

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