team presented future scenarios for three selected areas in the Nordhausen region during the third and final workshop. These future scenarios encompassed various approaches and strategies to address key issues and achieve the envisioned goals fort he region's development.

The workshops were significant milestones as they provided a suitable framework for local actors to collaborate with the research team. Together, they exchanged their perspectives on the region, discussed goals for future spatial development, and, based on these discussions, formulated concrete development approaches. This collaborative process allowed for the exploration of innovative ideas and strategies, paving the way for a promising and impactful future for the region.

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IMECOGIP

IMECOGIP Toolbox helps Assessing Water-Related Urban Ecosys-tem Services

Among the main challenges cities worldwide face today are those related to water. At first-hand, one might think of aggravated storm surges due to climate change and sea level rise. Some of the SURE projects indeed have a planning perspective on the associated risks. Furthermore, flooding by overland flow is likely to increase because of continued surface sealing and climate change resulting in more torrential rainfall events. Beside these hazardous events, planners must also keep in mind the provision of water, especially groundwater for drinking, for industrial and other uses. Good planning considers risks for development and assesses the potential of the current environmental conditions in a spatially explicit way with the help of Geographical Information Systems (GIS). Planners must also know how to reduce risks and mitigate harmful consequences that derive from previous developments. It is necessary for them to estimate the impact of planned land cover changes on the services that natural processes, e.g. related to the water cycle, might cause. A key to foster sustainable water-sensitive urban development is Green Infrastructure.

It is common thinking that Green Infrastructure defined as a strategically planned network of green and blue elements has positive effects on the well-being of city-dwellers. In order to assess the benefits, planners and politicians are often bound to trust their own guts rather than being able to rationalize or even quantify existing or tentative contributions of Green Infrastructure for humans, also known as ecosystem services.

To alleviate this deficit, the IMECOGIP team develops a GIS-supported toolbox. It wishes to support the implementation of ecosystem services thinking into to the planning of Green Infrastructure. Together with our partners, we are setting up this toolbox as a freely available and open-source program which we apply to real life planning situations. Cooperation partners are in Shanghai, Beijing and in the German Ruhr metropolis coming from academia, municipalities and companies. Among the more than twenty ecosystem services available through our toolbox, the following ones are related to water: flash flood regulation, temperature regulation, baseflow regulation and groundwater recharge. In the alpha-release of the toolbox, the first two services have recently been implemented. In the following, we introduce them and give a preview on how we tackle the third and fourth in the beta-release, which is in the testing phase.

Flash Flood Regulation

Estimating the discharge volume of a contributing area to overland flow is one of the most important and well-established indices in the so-called Rational Method. The key parameter is the discharge coefficient. It expresses the percentage of rainfall that will not infiltrate into the soils and percolate further into the underground. The percentage depends on the nature of the land cover. We assigned discharge coefficients to all types of urban land use/land cover, ready to be used. Hereby, users are able to display maps and get an idea of the spatial arrangement of areas especially prone to overland flow.

The IMECOGIP Toolbox shows how Green Infrastructure is regulating all aspects of human relationship to water: cultural ecosystem services, as well as provisioning and regulating services. For latter causes, two services have recently been implemented: flash flood and temperature regulation.

You could go a step further and define a meaningful catchment area and subsequently accumulate the discharge of this predefined catchment area. Introduce Green Infrastructure in your plan wherever possible and run the toolbox again to see the effect. Assuming the rainfall amount, you can estimate the water volume that is retained by the newly introduced Green Infrastructure. According to the sponge-city concept, planning green space and bio-swales contribute to lowering the discharge coefficient.

The Hydrological Cycle – Base Concept for Water-Related Services at different Time Scales

Atmosphere, plants, surfaces and fluid water interact permanently through hydrological processes. Via evaporation and transpiration, the water budget is intricately linked to the energy budget of the ecosystems. In short, the more water is available for plant transpiration, the larger the cooling effect of the vegetation. IMECOGIP accounts for the water demand and water availability to assess the temperature regulation of urban and peri-urban green surfaces. There is evidence from Shanghai, that the Urban Heat Island can be mitigated by increasing Green Infrastructure (Wang & Shu 2020). Within the IMECOGIP Toolbox, we express transpirative cooling by a newly established index.

This way, planners can quantitatively estimate the effect of their Green Infrastructure interventions, i.e. the different grades of cooling due to plant

In urban areas, natural and restored creeks, their riparian zones as well as ponds provide multiple ecosystem services.
Photography by IMECOGIP

transpiration. Besides plant transpiration, the soil influences most how much water is released to the groundwater that underlies each city, be it in form of porous aquifers or solid rock aquifers. That is why the users of the toolbox should input at least rough estimates of the water holding capacity of the soils in their area of interest. IMECOGIP takes into account that transpiration and groundwater recharge are high when the soil is wet. Both processes use up the water stored in the soil. For the groundwater recharge the time scale is one year, whereas for temperature regulation the time span of interest is usually less than half a month. All this is incorporated in the toolbox in a meaningful way. In many urban areas, groundwater is a prime resource for drinking water. Lowering groundwater tables due to increasing surface sealing is a threat for healthy communities. A steady groundwater recharge contributes to stabilize the amount of water in rivers and creeks during periods without rainfall.

This is of utmost importance for the aquatic communities. Humans profit from it through recreational activities enjoying walking along riverbeds that are not dried up and show attractive biotopes. These secondary aspects touch cultural ecosystem services, whereas the previous examples are commonly classified as provisioning and regulating services.

Harold Zepp

SURE F&SR

Fusion Cuisine Insights, aka SURE Status Seminar 2023

One of the main highlights in 2023 was the SURE Status Seminar in Bangkok, Thailand, from September 25 to September 28. It was a dynamic platform to foster dialogue and collaboration among 11 SURE collaborative projects with circa 100 participants from Germany, Thailand, Myanmar, Laos, Cambodia, Vietnam, Indonesia, and China. With the central theme, "Local and Cross-Cultural Settings and Cooperations," this conference emphasised the importance of effective collaboration in diverse contexts. This conference represented a significant milestone in the SURE community collective journey, halfway through the R&D phase. It provided a unique opportunity to showcase the progress made so far, share groundbreaking research findings, and gain invaluable feedback from peers. Here's a glimpse of some of the exciting events and discussions that took place:

Uncovering Bangkok's Flood Legacy (Side event)

Started with a captivating lecture by Mr. Sajjapongs from Landprocess on Bangkok's risk management and flood prevention. Followed by a guided tour of the Chulalongkorn University Centenary Park, where we could see the flood management practices in action during heavy rainfall.

"Good Practices" Day at the Status Seminar

Day one burst with energy, hosting a vibrant mix of presentations, round table discussions, and world cafe sessions. We kicked off with keynote speakers Dr. Verena Hebbecker from the German Federal Ministry of Research and Education and Niramon Serisakul, the Director of the Urban Design and Development Center at Chulalongkorn University, who set the stage for an intellectually charged day. The round table discussions focused on critical themes such as Comparative Urban Transformation Approaches, the Social Significance of Sustainability, and the intricacies of Urban Planning and Decision-Making Towards Sustainability. Beyond just tables, these discussion hubs became dynamic platforms for the 11 SURE projects to share their unique insights, fostering an environment encouraging participants to contribute, reflect, and engage in meaningful dialogue about their experiences. Adding another layer to this rich tapestry, the WorldCafe session delved into the significance of reflection and its seamless integration into project activities. Discussions at different tables focused on specific dimensions of reflection—overarching, content-related, internal, or learning reflection. The day of intensive exchanges has concluded in a feast to settle and fuel the minds for the following days.

Summary and Reflection on the SURE Status Seminar 2023, Bangkok, Thailand

"Building Alliances" Day at the Status Seminar

Day two was like stepping into a bustling marketplace of ideas. The Market Square session was a lively bazaar of knowledge, where project representatives showcased their best practices in risk management and disaster prevention, juggling topics like ecosystem services, eco-tourism, and the intriguing concept of a transition lab. In this vibrant exchange, we witnessed an orchestra of deep interactions—project representatives engaging with keynote speakers, panellists, and fellow participants. The grand finale of the day? A captivating panel discussion featuring luminaries like Frank D'hondt from UN-Habitat Vietnam, Joachim Bergerhoff of GFA Consulting Group, Niramon Serisakul, the powerhouse from Chulalongkorn University, and Riccardo Maroso from UN-Habitat. The panellists discussed the role of actionable and localised knowledge in implementation. They pondered the intricate dance between science, acting as a neutral knowledge trader, and the SURE projects—coined "fusion cuisine" for their magical blend of planning and implementation in the complex, intercultural realm. It was a day where diverse perspectives converged, creating a tapestry of shared wisdom.

Cultural Finale: Visit to The Siam Society

The conference ended with a visit to The Siam Society, which promotes knowledge of Thailand's culture. Participants enjoyed a guided tour of the house museum and library, adding a cultural touch to our experience.

Looking back on this extraordinary conference, I am inspired by the spirit of collaboration, innovation, and knowledge sharing that filled the event. The connections made, and insights gained will undoubtedly drive our collective mission toward sustainable urban development.

Ágota Barabás