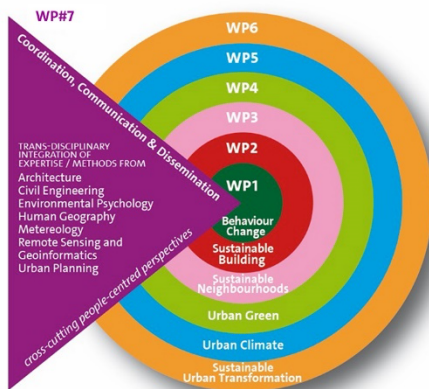# EVENT REPORT
WP4 Science Workshop

14 OCTOBER 2021

The Build4People work package 4 (WP4) titled "Urban Green Infrastructures" Science workshop held on 14th October 2021. The event aimed to discuss the WP4 research plan/milestones and related activities in the B4P RD phase (2021-2025). It also included the introduction of the theoretical research approach of WP4 to the local research and implementation partners.
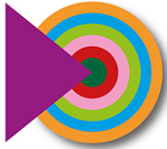

The workshop was moderated by WP4 Leader Dr Jan-Peter Mund and WP4 Research Associate Gulam Mohiuddin and organized by the WP4 team members.

WORKSHOP AGENDA

13:50 - 14:00   Informal joint exchange

14:00 - 14:15   Welcome and introduction to the general approaches of the Build4People project during RD phase
Dr. Michael Waibel, Build4People consortium leader (10 Min + 5 Min Q&A)

14:15 - 14:30   UGI and UNGI: Theory and Approach, adaptation in B4P Project
Dr. Jan-Peter Mund, Work Package Leader "Urban Green Infrastructures" (10 Min + 5 Min Q&A)

14:30 - 14:45   Experience from the UGI Ground-truthing using Open-Source App (ODK and Input)
Dr. Sanara Hor (10 Min + 5 Min Q&A)

14:45 - 15:00   The Importance of Urban Green for the Well-Being of Citizens
Annalena Becker (10 Min + 5 Min Q&A)

15:00 - 15:15   Built-up area detection from satellite image in Phnom Penh
Gulam Mohiuddin (10 Min + 5 Min Q&A)

15:15 - 15:30   Urban Land Use and Land Cover Map Using Sentinel Dataset and Random Forest
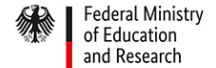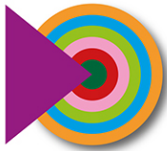*Dr. Sanara Hor (10 Min + 5 Min Q&A)*

15:30 - 15:45   Work plan and milestones of WP4 during RD phase
Dr. Jan-Peter Mund & Gulam Mohiuddin (10 Min + 5 Min Q&A)

15:45 - 16:15   Open discussion and Closing remarks   30 Min

The workshop started with the welcome speech of the Build4People consortium leader Dr Michael Waibel, and he also provided an introduction to the general approaches of the Build4People project during the RD phase.

Dr Michael Waibel concluded that the project aims to improve people's subjectively perceived urban quality of life while matching objective urban sustainability criteria. He emphasized that successful multi- and transdisciplinary research is a matter of intensive time consumptive exchange and of personal dedication of all parties involved.

After that, Dr Jan-Peter Mund explained the theory of Urban Green Infrastructures (UGI) and Urban Neighbourhood Green Index (UNGI) and how the B4P project adapted the approach using these concepts.

Dr Jan-Peter Mund mentioned that the green spaces are not only the managed and planned green spaces, it also includes the vegetated land covers and protected green areas (for example the Royal Gardens in Phnom Penh). We also need to look into new ideas like green roofs, green walls etc. He also explained how the modified urban neighbourhood green index will be calculated later in the project. Dr Lutz Katzschner asked if the open spaces include both green and concrete surfaces or not. Dr Jan-Peter Mund answered that open ground, vegetated ground, and the compacted-ground will be labelled differently.

After that, Dr Sanara Hor, WP4 Local Coordinator and Dean of Faculty of Land Management and Land Administration (FLMLA) at RUA shared his experience from the UGI Ground-truthing using Open-Source App (ODK and Input).
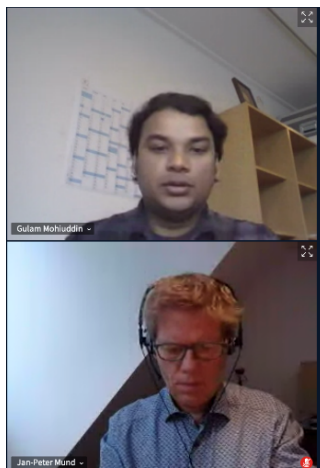
Suggestion

- Input is best for geo information gathering comparing to ODK.
- For urban green package, we should consider Input when we are using the app for geo information collection.
- When we wish to gathering both social and geo information together; we suggest ODK application.
- Data storage should be considered to enlarge and data storage policy is needed for further uses.
- Set up data storage system in RUA or in German must keep priority. Data should be shareable, secured and reuseable.

Dr Sanara Hor provided a comprehensive comparison between ODK and Input APP discussing, the advantages and limitations of both applications, especially in the context of B4P application. He concluded that while collecting the geo-information, the Input application is comparatively better, but while collecting social and geo-information together, ODK has its advantages too. Dr Jan-Peter Mund highlighted in the followed discussion that the experience we have about the Input APP is from the normal-user perspective. Once we move to the designer role and customize it according to our requirements and preferences, the experience will be different compared to the normal-user experience. Dr Michael Waibel reminded everyone that the project has a contract with the Lutra consultants company to provide technical support for modifying the application as per our requirement, and we should take this opportunity to design our survey from different work packages.

Followed by Dr Sanara Hor's presentation, WP1 "Behaviour Change" Research Associate, Ms. Annalena Becker from Otto-von-Guericke University Magdeburg, presented the importance of urban green for the well-being of citizens.
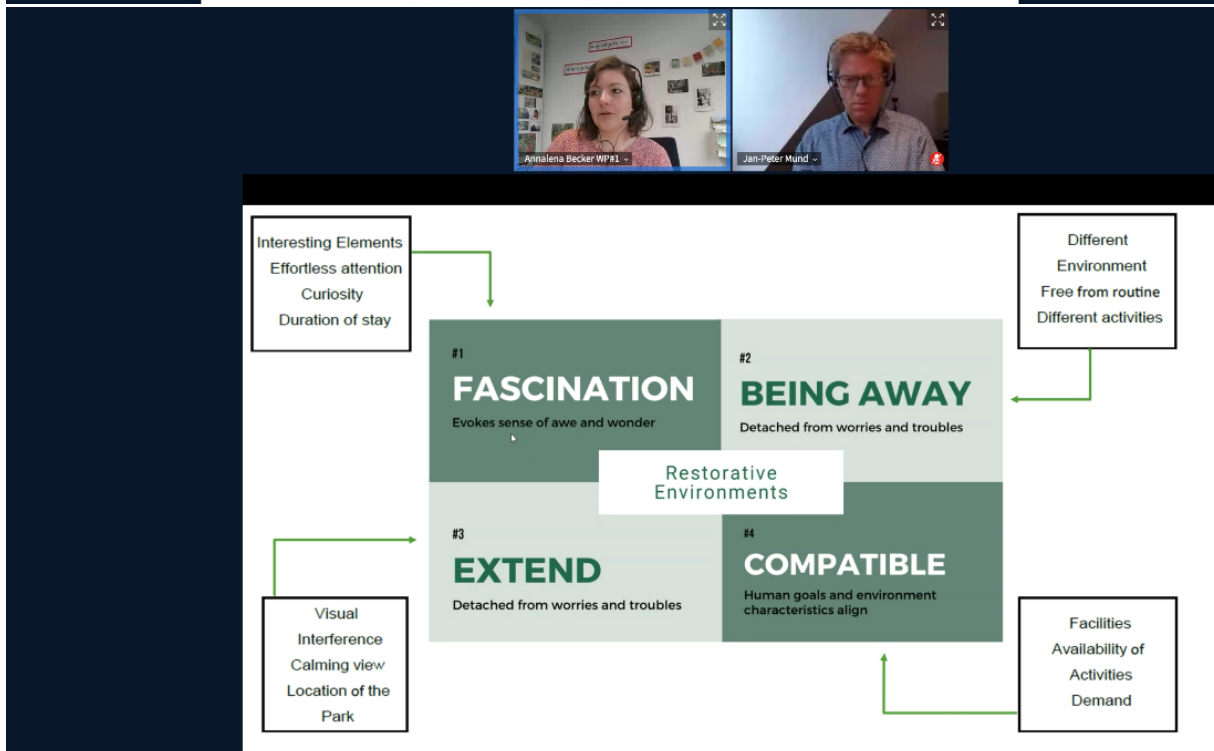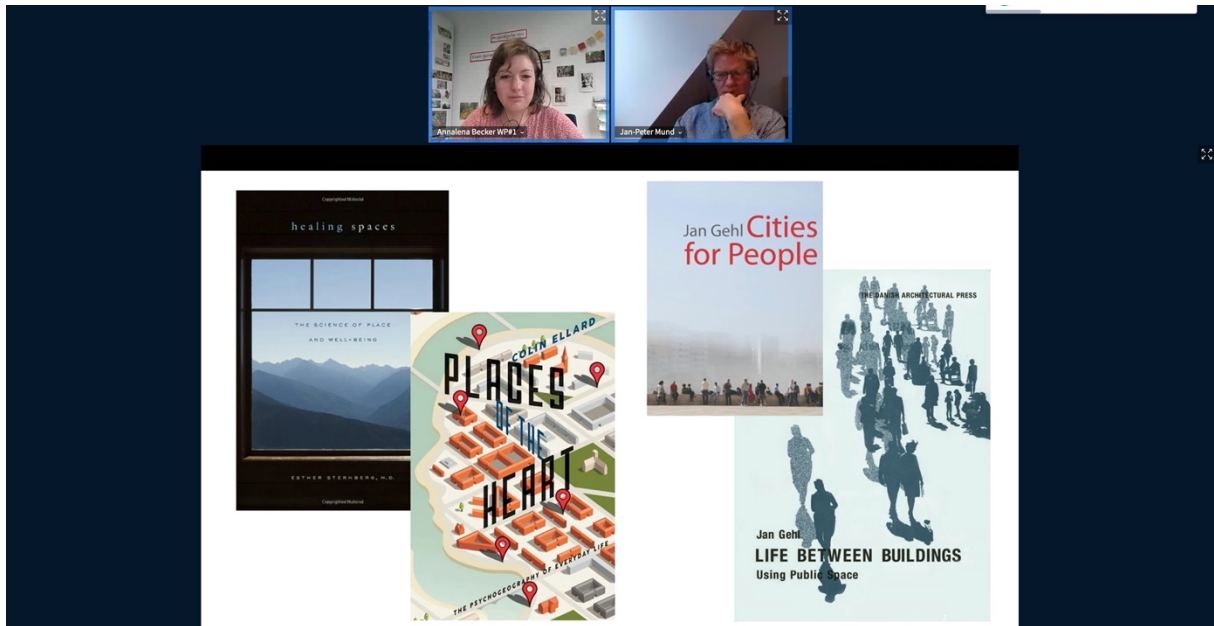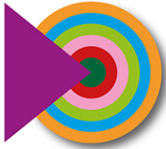
Annalena Becker highlighted access to urban green and environmental justice. She said that it is important to ensure access to public green spaces, and it is beneficial for the citizen if they engage with nature. Dr Michael Waibel asked if the literature findings mentioned in the presentation can be linked with the upcoming household survey. Annalena Becker responded that these mentioned findings from other studies help to conceptualize the survey queries that is under design. It also takes direct collaboration from other work packages and colleagues from Phnom Penh. Dr Michael Waibel mentioned that there will be an extensive

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pre-test of the survey questions during next March (2022) from the Royal University of Agriculture (RUA) and Cambodian Institute for Urban Studies (CIUS) under the supervision of Dr Sanara Hor and Dr Tep Makathy. Dr Jan-Peter Mund suggested a further discussion on how to conceptualize and integrate the different aspects of queries to understand people's perspectives and the connection of that data with respective locations. He also mentioned that previously it is observed in the studies that the location of the people during the survey has an impact on their responses. Dr Michael Waibel appreciated this idea and concluded that communication is the key to success. Dr Lutz Katzschner said that we also need to consider thermal comfort (both inside and outside climate) in this discussion.

WP4 Research Associate, Gulam Mohiuddin, presented immediate results from a study on Built-up area detection from satellite images in Phnom Penh.

Gulam Mohiuddin mentioned that in the case of unsupervised classification, radar images produced better accuracy compared to similar spatial resolution multispectral images in extracting the built-up area. Hence after further prior investigation, radar data can be a good data source for Phnom Penh, where it is difficult to obtain cloud-free data all over the year to attain a good temporal resolution. Dr Lutz Katzschner asked if the streets are considered as a built-up area too. Gulam Mohiuddin responded that according to the working definition of built-up area for this study, streets were considered built-up areas because they are artificial surfaces. Dr Jan-Peter Mund highlighted that in future, we are expecting to identify road infrastructure, possibly through the data provided from the Phnom Penh Municipality, so that we can focus on only the buildings instead of the entire artificial infrastructures.
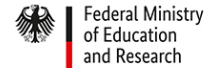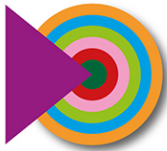
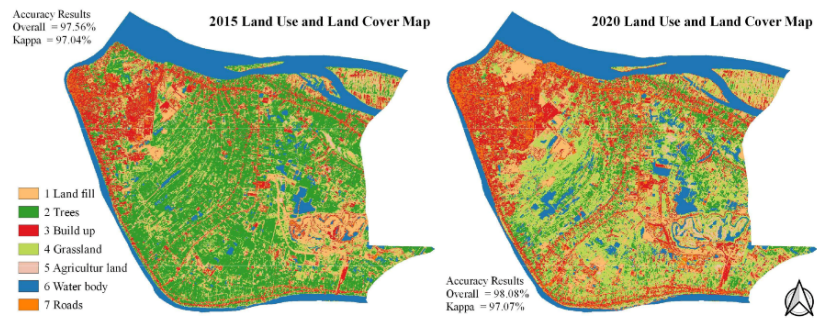Dr Sanara Hor presented another study on Urban Land Use and Land Cover Map Using Sentinel Dataset and Random Forest. The study was conducted in the Chbar Ampov District.
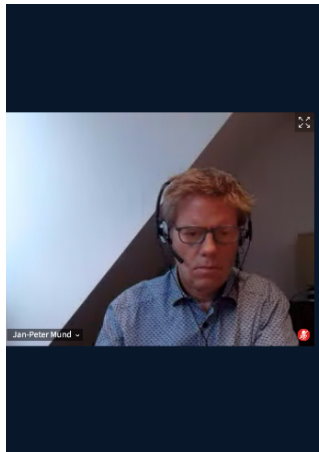


Land Use and Land Cover Map in 2015 and 2020

Dr Sanara Hor shared that according to the study findings, both the land cover and land use of the district transformed significantly. The tree cover has a 20% decrease just in five years. He pointed out that future research interests in this context are land surface temperature, eco-city planning and urban green development. Dr Michael Waibel mentioned that the project has purchased a professional drone with a thermal sensor to assist in terms of study on land surface temperature. Dr Jan-Peter Mund explained further how the drone with the thermal sensor can be useful to study further. Dr Michael Waibel requested some fly-cam videos as outreach material from RUA. Dr Jan-Peter Mund further mentioned that this study finding and previous study findings on land surface temperature can be combined for the district and investigate the interconnection between land cover change and land surface temperature.

Dr Jan-Peter Mund and Gulam Mohiuddin presented the Research plan and milestones of WP4 during the RD phase.

Special attention was given to the first-year research plan and milestones. The session ended with a collaborative research proposal titled "Implication of Urban Green Infrastructure (UGI) on Urban Quality of Life (UQoL): A Research Review (Proposed)". The research seeks collaboration from the other work packages from B4P, and Dr Michel Waibel advised that this idea should be shared with the entire team after the workshop. WP4 confirmed that a common email will be sent to the entire B4P team for collaboration and transparency.
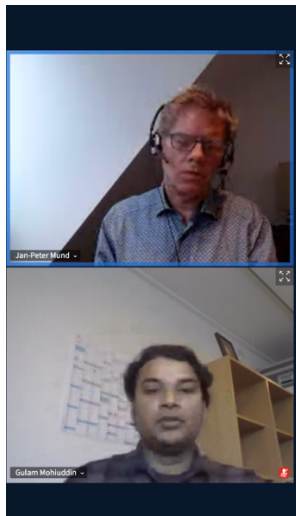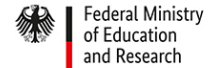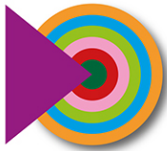
Research plan and milestones of WP4 during RD phase

WP4 Science Workshop 2021

14 October 2021

Jan-Peter Mund₁ & Gulam Mohiuddin₁

₁Eberswalde University for Sustainable Development

The workshop ended with an open discussion and in that discussion Dr Tep Makathy expressed his support towards the collaborative research efforts on the urban green. He mentioned that the research notion about urban green from the B4P project is also aligned with the Cambodian Government's interest in urban green for the capital city as part of the smart city approach. He found the technical assessment presented by Dr Sanara Hor to be quite interesting and can be useful in the idea of the smart city approach. He also said that the School of Architecture and Urban Planning is ready to cooperate with the Royal University of Agriculture in future research and curriculum development. In this context, Dr Jan-Peter Mund mentioned that especially on the curriculum development part the cooperation and collaboration between Dr Sanara Hor and Dr Tep Makathy will benefit all the parties involved, and the next Ecocity transition lab can be a good platform to take this cooperation further. He also mentioned that from past experience it is observed that the local authority are more likely to approve and accept a curriculum when it is developed by the extensive cooperation of the local institutions along with the support from external experts. Hence, collaborative work between Dr Sanara Hor and Dr Tep Makathy can give this task advantage in the final approval by the government. At the end of the discussion, both Dr Makathy and Dr Sanara agreed to meet to take this collaboration further.

The WP4 Science Workshop was concluded by Dr Jan-Peter Mund saying thanks to all participants, and he pointed out the specific outcomes of the workshop such as initiation of a collaboration between RUA and School of Architecture and Urban Planning at Paññāsāstra University of Cambodia, agreement on further collaborative research between RUA and HNEE and the possible review publication from the B4P team. He also assured that WP4 will always support the collaborative efforts as they have been since the start of this project.

Report Compilation: Gulam Mohiuddin (21 October 2021)