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PROJECT MANAGEMENT PARTNER



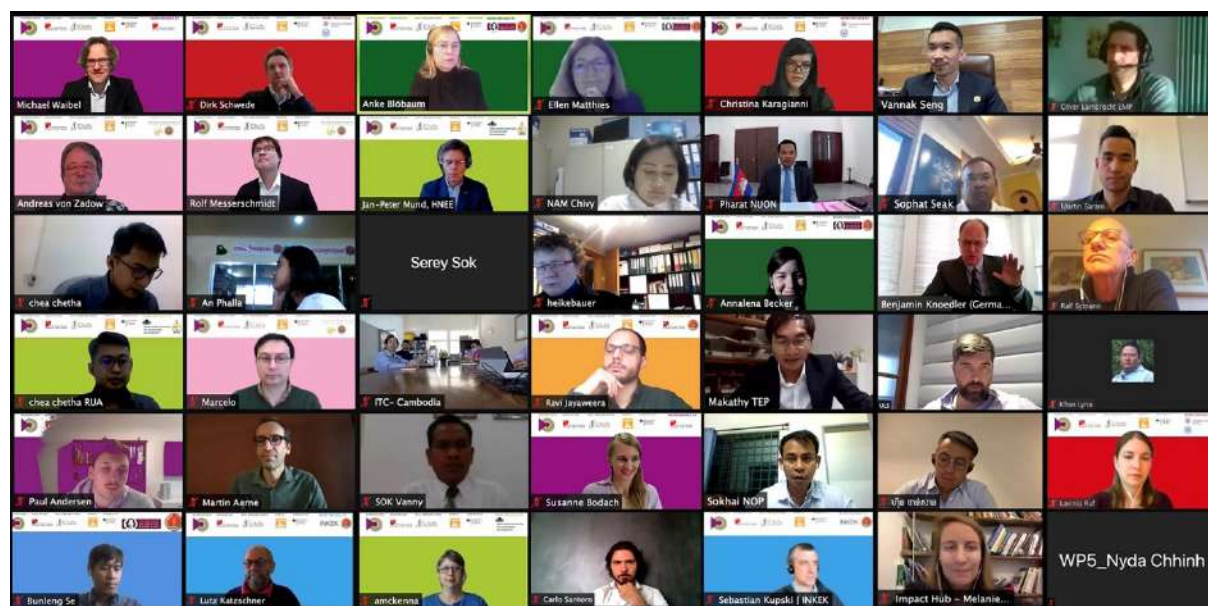
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REPORT

Build4People Status Conference

Virtual, 21 January 2021

On 21 January 2021, the Build4People Status Conference took place in the presence of H.E. Mr. Nuon Pharat, Vice Governor of Phnom Penh Capital Administration, Vannak Seng, General Director of Phnom Penh Capital Administration, Mr. Christian Berger, Ambassador of the Federal Republic of Germany in the Kingdom of Cambodia, Dr Heike Bauer, German Aerospace Center (DLR), representative of the German Federal Ministry of Education and Research (BMBF), Sokhai Nop, Deputy Director, Department of Green Economy, General Secretariat of National Council for Sustainable Development (NCSD), Dr Vanny Sok, Vice-Rector of Royal University of Phnom Penh (RUPP) and many other stakeholders in the field of sustainable urbanization. All in all, the online event was attended by about 100 participants.



The main aim of the Build4People Status Conference was to present preliminary research results at the end of the 18-month Definition Phase and to discuss the envisaged activities of the upcoming four-year Build4People Research and Development phase (RD phase) with the local research, implementation and dissemination partners and further colleagues (conference agenda, see annex).

The Build4People Status Conference was organized by Work Package #7 “Coordination, Communication and Dissemination” led by Hamburg University with support from the Build4People project management partner Cambodian Institute of Urban Studies (CIUS) and from all other Build4People Work Packages.





Welcoming Address

After an informal joint exchange and a short introduction to the agenda, Dr Michael Waibel, the Build4People project consortium representative, discussed the relevance of promoting building sustainability against the backdrop of global climate change in the context of the 2020 Global Status Report for Buildings and Construction recently published by UNEP and the Global Alliance for Buildings and Construction. He explained that Germany has been particularly successful in tackling this policy field and in achieving carbon emissions reduction targets. Consequently, it makes sense that the Build4People team is trying to chart and adapt innovative governance approaches to promote sustainable buildings and sustainable neighborhoods in Cambodia. Furthermore, Dr Michael Waibel introduced the aims, the importance of the project as well as the different work packages representing different scientific disciplines. In general, Dr Waibel outlined that the main objectives of the project are the promotion of sustainable buildings and sustainable urban development from a people-centered perspective in Cambodia, with the urban quality of life serving as the overarching scientific-conceptual, analytical and normative bracket.

His remarks were followed by words of greeting from Dr Heike Bauer, German Aerospace Center (DLR), on behalf of the German Federal Ministry of Education and Research (BMBF) as the funding institution of the Build4People project. She talked about the challenges in regards of the coronavirus pandemic and the particular relevance of the urban quality of life approach in this context.

Mr. Christian Berger, Ambassador of the Federal Republic of Germany to the Kingdom of Cambodia, then spoke to the participants and laid out some of his considerations.



He outlined his reasons for actively supporting the project, including the fact that it is highly relevant to the situation Phnom Penh is confronted with, and will continue to be confronted with; the well-chosen operational breakdown into different fields of action; and the combination of systematic research and subsequent implementation on the basis of the findings through mobilization of local ownership. He also highlighted that the envisaged long timeframe of up to seven years shows the inherent determination to tackle the essential challenges. Furthermore, he mentioned the fact that altogether 22 research, implementation and dissemination partners are involved in the Build4People project. As Ambassador Berger pointed out, this modern, innovative and inclusive approach is necessary for taking on such a complex task successfully. He also addressed the difficulties that this project and others are facing due to the COVID-19 pandemic. Furthermore, he outlined the position of the German government towards the



project: He stated that the Federal Ministry for Education and Research has classified the project as outstanding and approved further funding, and that the Federal Government is willing to mobilize manpower for the implementation of the project by seconding an expert to Phnom Penh City Hall. Additionally, based on his own experience, he pointed out that these decisions are indicators for the quality of the project.

He also praised the members of the Phnom Penh Capital Administration for their far-sighted approach and their willingness to adopt a more inclusive approach as well as to take up urban citizens' concerns. As an example, he mentioned the recent decree of Phnom Penh Capital Administration to take back the decision to cut down the 300-year-old trees in the city center, as well as some revisions of the land use plan to increase urban sustainability.

In conclusion, Ambassador Berger drew attention to the inclusive, citizen-oriented approach that has helped to establish common ground between Build4People and Phnom Penh Capital Administration.

The final speaker to address the participants was H.E. Mr. Nuon Pharat, Vice Governor of Phnom Penh Capital Administration. At first, he spoke about the general importance of urban quality of life and of sustainable buildings in regard of the overall sustainable development of the city of Phnom Penh. He expressed his firm conviction that the Build4People project will help tackle the current and potential future challenges the city is facing. He thanked the Federal Ministry of Education and Research of Germany, and in particular the Embassy of Germany in the Kingdom of Cambodia, for their kind support. He also addressed the issue of urban greenery and the commitment of the Phnom Penh Capital administration, and called attention to the planting of thousands of new trees and the recent decision to not cut down the old trees in the city center, which Ambassador Christian Berger had mentioned before. He expressed his gratitude for the general support and his desire to continue the cooperative work between Build4People and Phnom Penh Capital Administration.





Presentation of research results of Build4People Definition phase

The next point on the agenda was the presentation of the research results of the Build4People Definition phase by the Build4People Work Package (WP) leaders and by research associate Ravi Jayaweera, representing Work Package #6.

The first presentation was delivered by Dr. Anke Blöbaum of **WP#1** “Behaviour Change”. Among the key empirical research findings she mentioned was that people are more focused on local problems than on the causal relationship between one’s own individual behavior and global environmental problems.



Furthermore, the research activities of WP#1 identified relevant environmental behaviors, the modes and means of urban transportation, electricity consumption patterns (with a special focus on air conditioning) as well as waste management issues and the use of plastic.

In terms of relevant determinants of urban quality of life (UQoL), the citizens surveyed mentioned low walkability, low accessibility of public urban green spaces and the fact that personal safety seems to be important for the choice of dwellings and public recreational spaces. These are preliminary findings because due to the pandemic situation, the large-scale Build4People household survey had to be postponed.

Among the implications of WP#1’s research results in regard of the RD phase were the fact that the results of the household-survey support the development of a transdisciplinary measure for UQoL in Phnom Penh, the need for a closer look at possible contradictions between individual lifestyle preferences and sustainable lifestyles, as well as the need for further analysis of the mindset of people living in Phnom Penh in order to foster a social norm of sustainable lifestyles.

Finally, the development of a curriculum for environmental psychology at Royal University of Phnom Penh (RUPP) and the inclusion of a module on environmental psychology into a new trans-disciplinary master course at Paññāsāstra University of Cambodia will also be key components of WP#1 activities in the upcoming RD phase.

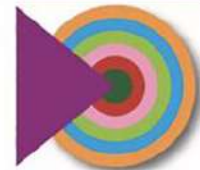


WP1 Behaviour Change

Responsible team: Dr Anke Blöbaum
Prof Dr Ellen Matthies
Annalena Becker

Dr Sok Serey
Kao Sovandara

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Research questions and main objectives



- Which constraints and motives determine **pro-environmental behaviour** in the daily life of the citizens of Phnom Penh?
- Which factors determine the perception and evaluation of **urban quality of life** in Phnom Penh?



- Objective 1: Gaining a deeper understanding of the mindset (value system, environmental worldview), and behaviour of citizens of Phnom Penh.
- Objective 2: Empirical basis for the development of tailored interventions to support pro-environmental behaviours in Phnom Penh.
- Objective 3: Empirical basis for the development of a transdisciplinary measure for urban quality of life in Phnom Penh.



For **WP#2** “Sustainable Building”, Dr. Dirk Schwede presented the key findings, stating that the urban housing profile in Phnom Penh consists of a mix of modern and traditional architectural styles, that the existing shophouses, while relatively low-cost, are not well designed with regards to energy efficiency and natural ventilation and that there is not only a lack of both standards and regulations, but that where they do exist, they are not implemented. Furthermore, research shows that the demand for air conditioning systems is constantly rising, that Cambodia does not have its own energy efficiency label in electric appliances and all products are imported from other countries, so that energy labels are dependent on the country from which the products are imported. The construction materials often have low performance (e.g., one-pane glazing) and are imported, there are no labels or performance regulations for designers and home buyers, and quality design, specification and compliance checking are obstructed. One of the main implications of the results is the design of the research plan for the future. This includes the analysis of user and building behavior, defining localized sustainable building dimensions and solutions, a technical roadmap towards a sustainable building in Phnom Penh and the development of localized IEQ metrics and sustainable building metrics. This topic will be studied in collaboration with the new academic partner, the Institute of Technology of Cambodia (ITC).



WP2 Sustainable Building

Responsible team: Dr Dirk Schwede
Christina Karagianni

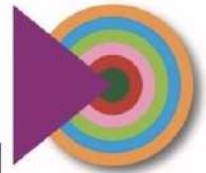
Key empirical research results

- The urban housing profile in Phnom Penh consists of a mix of modern and traditional architectural styles
- The existing shophouses, while relatively low-cost, are not well designed with regards to energy efficiency and natural ventilation.
- There is a lack both of standards and regulations, but also of their implementation where they exist.



GDH: Technical Standards (for private and public space).
Idea for housing for low- and middle-income households.

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University of Stuttgart
Germany



With regard to the **WP#3** “Sustainable Neighborhoods”, Rolf Messerschmitt, CEO of Eble Messerschmidt & Partner (EMP), laid out the key empirical research results, which comprise an enhanced understanding of urbanization processes in Phnom Penh and Cambodia considering the environmental, socio-cultural and institutional context, green spaces, flooding, transport etc. Another important part of the research was the analysis of the existing planning frameworks and instruments, particularly in relation to socio-economic development plans and spatial plans. A general need for capacity-building was identified, particularly at the lower administrative urban levels. Furthermore, it became obvious that contemporary design of sustainable buildings can also be derived from the rich local heritage of vernacular architecture and of urban patterns from the period of New Khmer Architecture.

WP#3 also curated the first edition of the Build4People poster exhibition “Green Buildings & Sustainable Neighborhoods”, including concepts, design strategies and a compilation of European best-practice examples as well as introductions to the research approaches of the different work packages of the Build4People project. The exhibition was opened at META House in Phnom Penh on 3 March 2020.

The most important trans-disciplinary activity of the whole Build4People project was managed by the WP##3 team, as well: Over a period of one week, the Build4People Ecocity Transition Lab took place as an interactive workshop and charette in Phnom Penh City in early March 2020. The charette format was used as a methodology for understanding local issues, promoting capacity-building and enhancing transdisciplinary collaboration. Finally, the participatory and collaborative planning process will lead to a land use plan and an urban structure plan that incorporates sustainability concepts for the identified case study area.

Rolf Messerschmitt continued by discussing the implications of the research results with respect to the RD phase: the extended application of an ecocity transition labs series as a transdisciplinary planning and participation methodology that is expected to deepen the






process of design and interaction with other Build4People processes. All this is ultimately intended to lead to the elaboration of an “integrative and collaborative masterplan framework” for an exemplar eco-town development as a transdisciplinary planning product, the creation of a “toolbox sustainable neighbourhood development” including strategies, guidelines and criteria, as well as implementation strategies. Furthermore, in cooperation with the German Council for Sustainable Building (DGNB), the project aims to elaborate a supplementary conceptualization for an assessment system for sustainable neighbourhoods, including criteria and indicators for early project stages.

WP3 Sustainable Neighbourhoods

Responsibles: Rolf Messerschmidt / Oliver Lambrecht / Marcelo Rivera



Key empirical research results


- **Profound understanding of urbanization processes** considering the environmental, socio-cultural and institutional context
- **Poster exhibition on “Sustainable Buildings & Neighbourhoods”** incl. concepts, design strategies and criteria
- **Build4People “Ecocity Transition Lab”** as an interactive workshop as a methodology for understanding local issues, capacity building and transdisciplinary collaboration
- **Participatory & collaborative planning process** lead to a land use plan and an urban structure plan with related sustainability concepts

Opening of B4P Exhibition | B4P Ecocity Transition Lab – Land Use Plan | B4P Ecocity Transition Lab – Hands-On-Planning
 Sustainable Buildings for People – Enhancing Urban Quality of Life in Cambodia: Status Conference, 21 January 2021 | www.build4people.org | Page 8

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With regard to **WP#4 “Urban Green”**, Prof Dr Jan-Peter Mund discussed the research results, which include an Input App Design as a citizen science addition to fieldwork and an PP urban green map. Moreover, a flexible modular system from land cover (structural UGS) and land use (functional UGS) classes has been conceptualized in order to observe and describe a specific ground cover. Furthermore, the implications of the research results with regard to the RD phase are an RD prerequisite of a regional research area.

Furthermore, Prof Dr Jan-Peter Mund explained that the WP#4 Team focusses on the urban green infrastructure in Phnom Penh with a threefold survey and research design at different spatial scales. Spatially explicit remote sensing survey results and thematic conceptual management guidelines will be offered to the decision making at the Phnom Penh Municipality.

In addition, WP#4 offers support as topical consultations in conjunction with the Build4People Ecocity Transition Lab series and capacity building efforts in curricula developments and implementation of higher education programs at RUPP, SAUP-PUC and at RUA.

Finally, the RD results of WP#4 are integrated into the redesign and strengthening of transdisciplinary joint research design in between WP#4 & WP#1, WP#5 for the “Urban Quality of Life Survey” UQoL. In this context, WP#4 generates transdisciplinary data processing and data management support to the B4P team e.g. in the context of the B4P UQoL-Workshop.

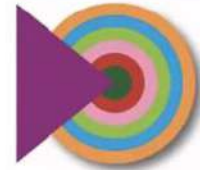


WP4 Urban Green

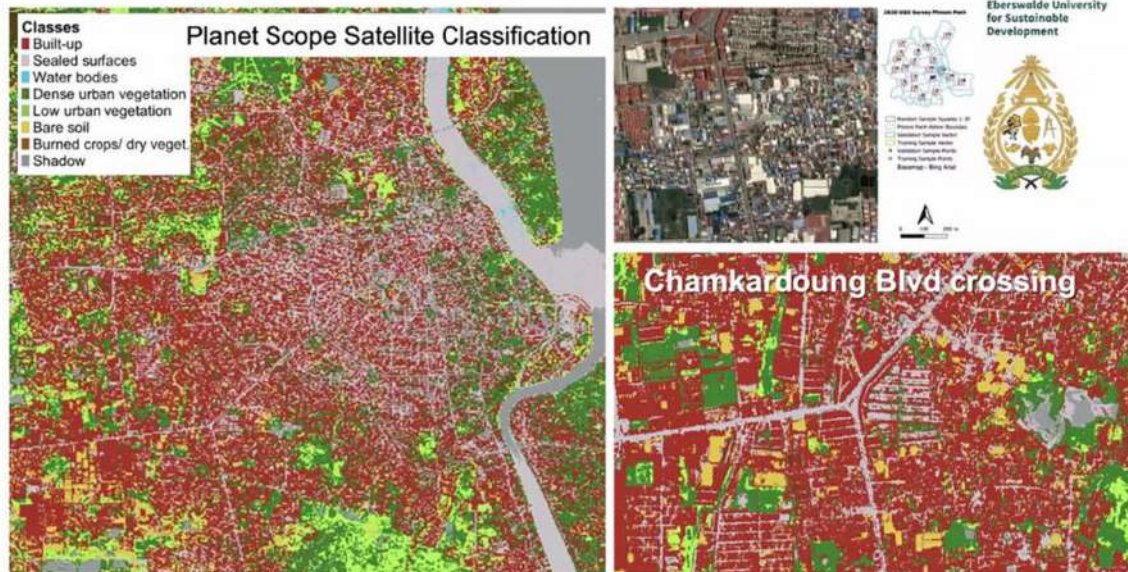
Responsible team: Prof Dr Jan-Peter Mund
Amelie McKenna

Dr Hor Sanara
Eun Sambath

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Research results (II): PP Urban green map 2019-2020



For **WP#5** “Urban Climate” Prof. Dr. Lutz Katzschner showed the main research results. For urban climate, the regional climatic conditions, such as wind pattern, precipitation and air temperatures, were studied in order to get correct input parameters for computer models. For Phnom Penh, climate conditions on a mesoscale dimension were derived and measured, including urban heat islands as well as wind patterns. These parameters show that Phnom Penh has a tropical and typical monsoonal climate with two characteristic seasons. The wet southeast and the dry northeast seasons will have different effects on an urban climate. Wind channeling within the city is especially important for urban design.

The urban climatic map for Phnom Penh in a mesoscale is currently being prepared. To this end, different calculation layers were defined and data recorded. Land use maps, building structures in density and height, and open spaces were evaluated in a spatial distribution for implementation into GIS.

Furthermore, the implications of research results for the RD phase include recommendation maps and guidelines, tools for climatological building design, adaptation measures for urban climate and heat stress. In the framework of the Eco Transition Lab, climatic recommendations were made. Their purpose was to guarantee ventilation for thermal comfort outside, but at the same time also to have natural ventilation inside buildings. In this way, energy for air conditioning can be saved and the concentration of air pollution is minimized. Beside the preparation work for the final urban climatic map and further on the recommendation map for Phnom Penh overall, measurements were carried out, and the existing urban heat island was recorded. This dimension is also included in the GIS calculations as well.

The precipitation pattern in the urban areas is influenced by local effects, but for Phnom Penh not fully understood. Increase of precipitation is observed and research is going on to quantify the precipitation in dependence of urban structure types.



own weather stations

investigation areas

more stations available?

seasonal winds



*Responsible team: Prof. Dr. Lutz Katzschner
Sebastian Kupski
Bunleng Se*

➤ **Urban heat island and precipitation from measured data**

- AWS recorded at: **Boeung Keng Kang I** (daytime):
On 09 Jan 2021
Max Temperature: 32°C (13:45 PM)
Min Temperature: 22.5°C (07:15 AM)

AWS recorded at Boeung Keng Kang I (nighttime):
On 09 Jan 2021
Max Temperature: 27.4°C (18:15 PM)
Min Temperature: 23°C (06:00 AM)





The presentation of **WP#6** on “Sustainable Urban Transformation” was delivered by research associate Ravi Jayaweera, who first introduced the research question and the methodology of this work package.

WP6 Sustainable Urban Transformation

Responsible team: Dr. Michael Waibel
Ravi Jayaweera

Dr Seak Sophat
Thy Naroeun

Research question and main objectives

- ✓ **How can people-oriented governance approaches be developed for a sustainable urban transformation of Phnom Penh which also increase the urban quality of life?**
- First conceptualisation of development pathways for a sustainable urban transformation
- Specific input for the transdisciplinary understanding of urban quality of life
- Baseline reports with key research results



Then he gave an overview of the preliminary research results. The findings included a lack of regulation and weak enforcement capabilities of the state, a lack of capacity and power of subnational administration, the profit-driven investment flows into the built environment with short-term investment outlook and little concern for sustainability considerations, the deterrent effect of perceived additional costs for sustainability aspects and increased corporate risks, the insufficient financial incentives for the implementation of sustainable practices, the disjointed market and governance landscape and finally the lack of a platform for exchange between sustainability-minded actors.

Furthermore, he laid out the transition barriers and drivers as well as potential transition pathways. The implications of the research results with regard to the RD phase included a better understanding of drivers, barriers, pathways and their interconnections, the need for a systemic approach to achieve sustainable urban transformation, the need to constantly adapt transformational interventions to research results, the need for local adaptation of Western models of sustainable urban transformation and the inclusion of a module on sustainable urban transformation into a new trans-disciplinary master course at Paññāsāstra University of Cambodia.

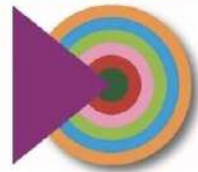


WP6 Sustainable Urban Transformation

Responsible team: Dr. Michael Waibel
Ravi Jayaweera

Dr Seak Sophat
Thy Naroeun

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Research results (II)

Transition Barriers

Lack of Political Support
High-tech products becoming more affordable/society richer
Political Conflict between actors
Market Readiness
Language Barriers
(Upfront) Costs of Sustainable Building
Lack of Enforcement capabilities
Vested Interests in the Status quo
Lack of Capacity



Transition Drivers

TNCs with Green Building Standards
Green Building Guidance
Value of real estate/Market differentiation
Green Lifestyle, feeling cool, mindset change
Green Building Regulation/Certification
Pilot/Demonstration/Experimental Projects
Recent building collapses in Cambodia
Incentives
Stakeholder Involvement/Cooperation
High Electricity prices/economic case
Long-term planning/Saving/Financial literacy

In conclusion, Dr Michael Waibel introduced the activities of **WP#7** “Coordination, Communication & Dissemination”. The consortium leader highlighted the general importance of the transdisciplinary integration of expertise and methods through joint activities and products. Furthermore, Dr Michael Waibel presented manifold dissemination efforts and activities to increase visibility such as the Build4People website and various social media channels such as the YouTube channel or the Facebook page.

A milestone of Build4People’s outreach was the first Build4People poster exhibition on green buildings and sustainable neighborhoods, published in English and Khmer language. Another key element of PR activities was Build4People’s financial support for the publication of the Architectural Guide to Phnom Penh, which has also been published in English and Khmer language. In the context of the Build4People project, 200 complimentary copies of the special edition of the Architectural Guide to Phnom Penh in Khmer language will be distributed among multipliers, professionals and staff from various administrative levels of the Phnom Penh Capital Administration.

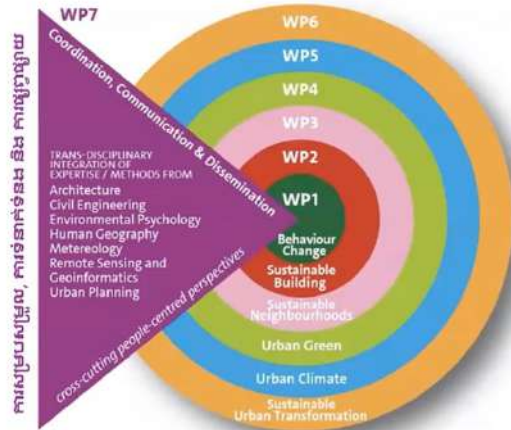
Furthermore, the management and organizational support for many transdisciplinary events such as the very successful Eco City Transition Lab in March 2020 were essential activities.

In addition, WP#7 channeled Build4People research results into the successful proposal for the four-year RD phase. Its work plan includes the implementation of manifold joint transdisciplinary activities and the inclusion of a convincing three-phase research design with an analytical phase, action research phase involving relevant stakeholders and a final phase of review and refinement of theory.



WP7 Coordination, Communication & Dissemination

Responsible Team: Dr Michael Waibel
Dr Tep Makathy
Dr Susanne Bodach



Approach of the Definition Phase

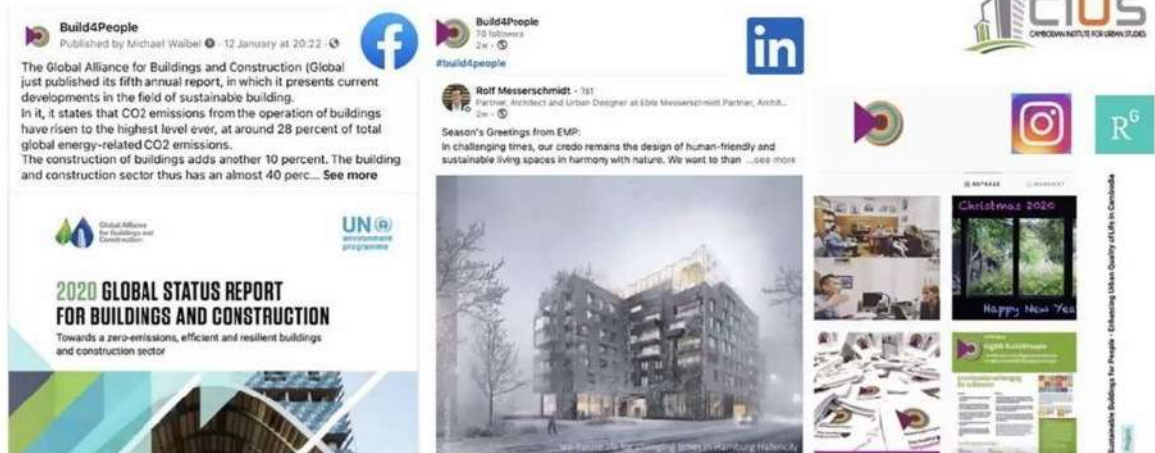
- Overall project management
- Build4People conferences / events
- Communication with all stakeholders
- **Trans-disciplinary integration of expertise and methods through joint activities and products**
- PR- and outreach activities to maximize visibility, outreach & impacts
- Ensuring successful RD phase proposal



Build4People Project

Sustainable Buildings for People – Enhancing Quality of Urban Life in Cambodia

Dissemination Activities of the Definition Phase *Build4People @ Social Media*





Build4People Project

Sustainable Buildings for People – Enhancing Quality of Urban Life in Cambodia

Dissemination Activities of the Definition Phase

Build4People Exhibition (1st edition) – ENG / KHMER



ផ្នែកទី ១ ផ្ទាំងសំណើស្វាគមន៍

ស្នើសុំសំណើស្វាគមន៍សម្រាប់ការងារស្រាវជ្រាវ និងការងារសាងសង់ស្ថាប័នស្របច្បាប់ និងមានគុណភាពខ្ពស់ ដែលនឹងជួយដល់ការអភិវឌ្ឍន៍ក្រុងភ្នំពេញ និងក្រុងប៉ោយប៉ែត ក្នុងរយៈពេល ១០ ឆ្នាំ។

ផ្នែកទី ២ ផ្ទាំងសំណើស្វាគមន៍

ការកំណត់បញ្ជី Build4People ឆ្នាំទី ១ និងការកំណត់បញ្ជីសមាសភាពសម្រាប់ការងារស្រាវជ្រាវ និងការងារសាងសង់ស្ថាប័នស្របច្បាប់ និងមានគុណភាពខ្ពស់ ដែលនឹងជួយដល់ការអភិវឌ្ឍន៍ក្រុងភ្នំពេញ និងក្រុងប៉ោយប៉ែត ក្នុងរយៈពេល ១០ ឆ្នាំ។

ផ្នែកទី ៣ កញ្ចប់សៀវភៅ DGNB

កញ្ចប់សៀវភៅ DGNB គឺជាកញ្ចប់សៀវភៅសម្រាប់ការងារស្រាវជ្រាវ និងការងារសាងសង់ស្ថាប័នស្របច្បាប់ និងមានគុណភាពខ្ពស់ ដែលនឹងជួយដល់ការអភិវឌ្ឍន៍ក្រុងភ្នំពេញ និងក្រុងប៉ោយប៉ែត ក្នុងរយៈពេល ១០ ឆ្នាំ។



Build4People Project

Sustainable Buildings for People – Enhancing Quality of Urban Life in Cambodia

Dissemination Activities of the Definition Phase

Architectural Guide Phnom Penh



Dr Waibel also emphasized the relevance of capacity development with a focus on curriculum development at different institutions of higher education. This will also serve to ensure that Build4People's research findings are integrated with a lasting impact, as well as to compile and connect results from all work packages in a transdisciplinary effort.

Finally, Dr Waibel highlighted the fact that the preparation of the subsequent two-year Build4People Implementation phase will involve workshops with potential cooperation partners from the global donor community, beginning as early as year 1 of the RD phase.



Brief introduction of interactive breakout sessions

In the following, the participants exchanged and discussed ideas in four different interactive breakout sessions.

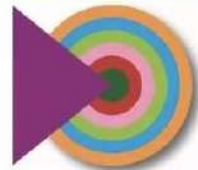
Breakout Session #1 – How to measure and promote Urban Quality of Life

First of all, an introduction round helped us get to know each other, our professional backgrounds and interests in our project, as well as the topics of urban quality of life and behavior change.



Session #1: Urban Quality of Life

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How to measure and to promote Urban Quality of Life



Household-survey (N=500)

→ assessment of objective factors:
the climate, public green,
the built environment, etc.



Our group was composed of social scientists, architects and employees in the waste management, energy efficiency and finance sectors.

We discussed the conceptualization of urban quality of life in our project and how the different disciplines add their perspective on relevant factors that determine the perceived quality of life within the city of Phnom Penh.

Insights from the local perspective helped us to capture the current situation in the city. The discussion partners underlined several issues that seem to pose the main challenges within the urban infrastructure – the lack of waste management and the issue of flooding.

Taking the current global pandemic into consideration, we discussed the changes within Phnom Penh that citizens have remarked upon during the past year. Visible changes were perceived within the mobility infrastructure, as there was less traffic, which changed the experience of one's own mobility habits. The feedback from our discussion round showed that daily life in the city was less noisy and less stressful. At the same time, there was an even greater need for generously proportioned open areas and green spaces where people can spend time outside.



Those insights from our discussion revealed two important aspects: On the one hand, there was a new appreciation of the importance of different factors and circumstances that can contribute to the general well-being of people and to the quality of life within the city.

On the other hand, it became clear that a city can change in a dynamic way and open up new possibilities of living and daily behaviors. Regarding the overall aim of the project to increase the urban quality of life along with the aim of sustainable lifestyles and sustainable infrastructures, this shows that urban transformation can start with new pathways and changing contexts.



Urban Quality of Life

Urban environment during the Covid-19 pandemic



We then looked at the understanding of quality of life from a psychological and social perspective in order to understand how individuals and groups interact with their urban environment. There is a physical (built) environment within the city – but the social environment and individual conditions also shape the quality of life. In this regard, the local perspective and the understanding of cultural aspects are highly important factors that enrich our research approach, as we consider social dynamics and social influence to be crucial when addressing the general public and bringing about behavioral change in favor of more sustainable lifestyles.

We discussed cultural and social aspects that shape the experiences within urban life. In a diverse and growing urban population, individual needs and interests are multifaceted. For life in the city, the ability to connect a community through cultural values and activities is especially important. For example, the Buddhist influences in spaces and customs can build up something that citizens of Phnom Penh have in common. Spaces of heritage and history can bring people together and create social cohesion and connectedness.

We believe that those psychological and social aspects are key elements for experiencing a good quality of life by interacting with the built environment and one's social environment in a way that contributes to one's well-being.

Breakout Session #2 - Implementation of Sustainability on Building



In Breakout Session 2 on Implementation of Sustainability on Building and Neighborhood Level, WP2 and WP3 welcomed the participants, and the structure was explained. As a warmup for the discussion, WP2 and WP3 gave a short presentation of the main research questions, key empirical results and planned activities for the next R&D phase of the Build4People project. The main concepts surrounding sustainability were introduced for consideration and discussion, and the participants were asked three main questions to initiate and guide the dialogue:

- Are the described issues essential for the development of sustainable building and neighborhoods in Phnom Penh and Cambodia, or what are the relevant issues?
- What could we do to make this happen, and what is needed for a successful implementation?
- Do you want to contribute to the B4P process, and what could you do to actively take part?

The answers from the participants were gathered by the team and presented in bullet points for an overview of the discussion. In red are the answers related to Sustainable Buildings, in pink the points related to Sustainable Neighborhoods and in purple the more general ones.

A flipchart-like board was prepared in “Concept Board” and shared on the screen to all participants. All input and contributions were integrated like post-it notes.

Input and comments from participants:

The comments were grouped according to the question and colored according to the relevance of the topic of each Working Package: WP#2 Sustainable Buildings (red), WP#3 Sustainable Neighborhoods (pink) or in general (purple).

What are the relevant issues?

Building level:

- Construction materials, indoor conditions, clear view for the people (Virak Han, ITC)
- Resilient infrastructure



- People go with what they know. There is a lack of knowledge/ know-how from workers in regard to new materials or techniques, so implementing them is hard. They know how to work with brick and there is no will for change.

Neighborhood level:

- Flooding, problems with sewage systems and waste management (Virak Han, ITC)
- Open space design with trees, water elements (natural canals) for cooling down the neighborhoods is needed: “let nature flow” (Tep Makathy, CIUS)
- How can collaboration take place? Methods like “Ecocity Transition Labs” need to be configured for addressing this

General:

- New terminology needs to be developed and disseminated. The term “sustainability” should be well disseminated and understood (Tep Makathy, CIUS)

WHAT COULD WE DO?

Building level:

- We should look at what is realistic cost-wise (Sven Adler, ULS)
- Collaborations should be established with developers, architects, designers and students
- Regulations and standards should be developed, along with a tool for calculating energy consumption

Neighborhood level:

- Partnership with private developers – regulation is needed
- Developing a model building/neighborhood for Phnom Penh?
- Education and information on the benefits of living in a sustainable building/neighborhood should be available for all; development of standards

General:

- Reach out for developers, architects and students

WHAT COULD YOU DO?

- Collaboration between different similar projects
- Cooperation with universities and students for capacity-building

The session ended with a short summing-up of the most important topics that came up, which were then presented to all of the conference participants.

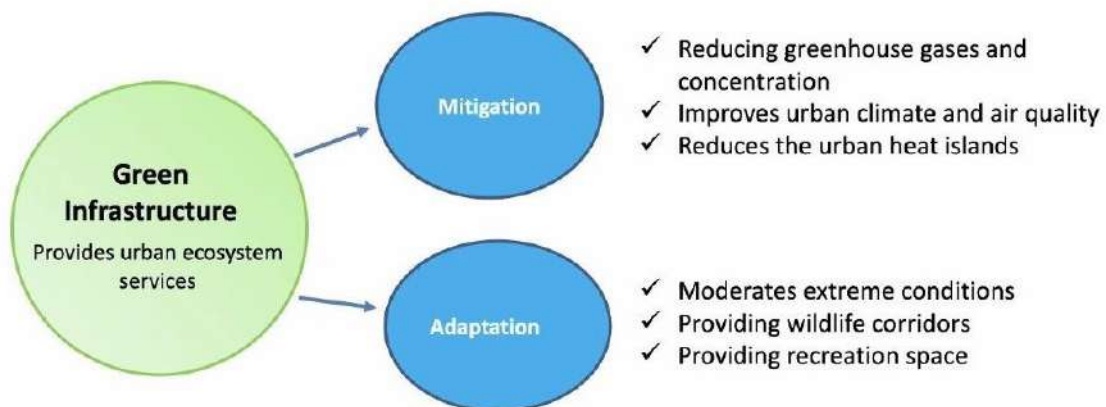
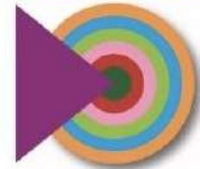


Session #3 Implementation of sustainability in the field of urban green infrastructures/urban climate



Session #3: Climate Change and Green Infrastructure

DEF 2019-2021



Two important aspects to enhance urban quality of life for people in Phnom Penh

Responsible team WP5 Urban Climate: Prof. Dr. Lutz Katzschner (INKEK); Sebastian Kupski (INKEK); Bunleng Se (RUPP)

Responsible team WP4 Urban Green: Prof Dr Jan-Peter Mundt (HNEE); Dr Hor Sanara (RUA); Amelie McKenna (HNEE); Eun Sambath (RUA)

The breakout session began with a welcome to participants, and the members of the individual work packages WP4 & WP5 introduced themselves. Afterwards, a presentation was held concerning the concept of green infrastructure and the linkage to climate implications. Both green infrastructure and urban climate are important aspects of improving the quality of life of the citizens in Phnom Penh. The presentation gave the attendees a general overview of the basic green space types and their impact on the micro urban climate conditions. A student of the RUA delivered an important presentation on fieldwork that had already been carried out for the collection of ground-truth points. The RUPP climatologist informed participants about the permanently installed weather stations and next steps. The presentation was followed by a question-and-answer session and an open discussion.

Main inputs:

- Green infrastructure is a promising framework for understanding multiple benefits delivered by green and blue spaces
- Green infrastructure includes environmental features in its design and delivers a wide range of urban ecosystem services, including for regulating local climate and air quality, and for moderation of extreme weather events

Goal 1: Consideration of ecological networks in urban planning



Fig. 1 Example of green infrastructure network in Phnom Penh

Discussion with participants concerning green infrastructure:

Participants acknowledged the importance of urban green space and inquired about implementation strategies. They mentioned that urban green space is linked to environmental justice, as it is mostly the low-income neighbourhoods that lack urban green and open spaces. In this context, participants expressed concerns about the recognition of urban greening concepts, especially by mid-sized, private urban developers. Existing ideas of greening concepts such as the green belt – described in the master plan – should be included in the upcoming study.

Main inputs:

- Description of the prevailing weather stations by research team from RUPP climatologists
- Analysing weather data revealed differences in temperature between 9.5° C during daytime and 4.4° C during night-time
- Such an analysis allows general conclusions about the urban heat island effect

Goal 2: Gain a wide range of weather data through preinstalled and own weather stations and relate the outcomes to urban heat islands and prevailing built-up and vegetation structures.

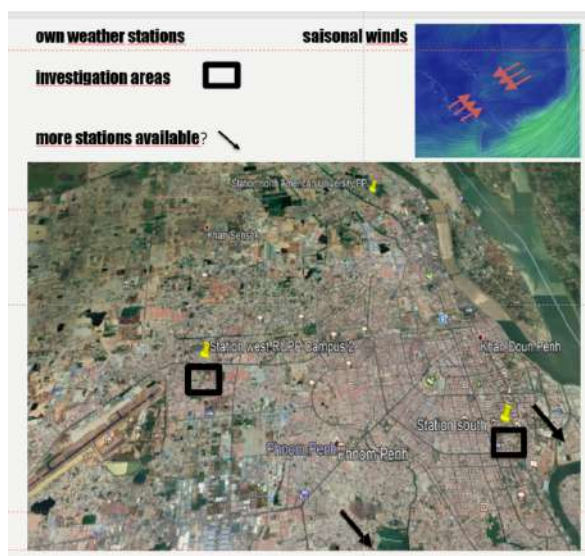


Fig. 2 Example of possible locations for own weather stations

Discussion:

The discussion was driven by the selection of investigation areas to establish own weather stations and to further develop existing stations. Importantly, stations need to be located in



different urban structures including dense built-up structures, peripheral structures and locations of future developments.

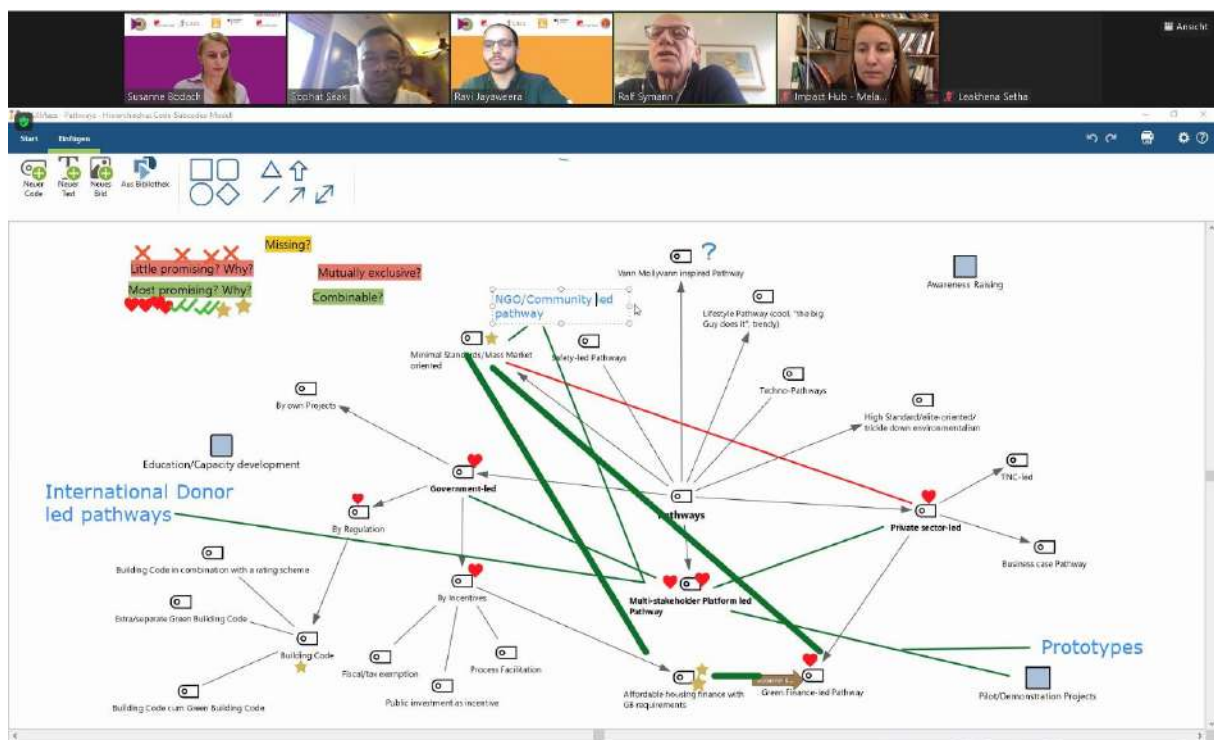
Suggestions were formulated for measurement methods with loggers and mobile systems.

At the same time, in newly planned neighbourhoods, investigations of urban design structures are required.

Session #4 How to promote sustainable urban transformation?

In Session #4, which was led by Ravi Jayaweera, the participants discussed different pathways on how to promote a sustainable transformation. In a short introduction, Ravi Jayaweera characterized the different approaches and their background in the qualitative data.

The pathways were then presented on an interactive mind-map and discussed with the participants. Besides verbal communication, the whole group was able to visually articulate support or disapproval, to draw connections between pathways and add comments as well as additional pathways, etc.



For the government-led pathways, a building code, promotion through own projects or incentives as well as affordable housing finance with green building requirements were favoured. The latter was deemed to be especially promising when aligned with a general green finance approach. Within the private sector-led pathways, the importance of minimal standards and the mass market was highlighted, but also critically received. The pathway that enjoyed the most support was the multi-stakeholder platform-led approach.

The Build4People team plans to follow up on this in the coming years, including through the management of a sustainable building arena. This process will support the co-development of a spatial-sectoral vision, a transition agenda, alternative discourses, social learning, network building and of evidence-based knowledge transfer.

The participants additionally identified pathways led by the community and pathways led by international donors as possible options for Cambodia. Dr Seak Sophat summarized the discussion and presented it to the plenum.



The participants were Mélanie Mossard (Impact Hub Phnom Penh), Leakhena Setha (Architect, Niron Studio), Ralf Syman (Build4People Scientific Advisory Board), Dr Susanne Bodach (B4P Local Coordinator), Dr Seat Sophat (Royal University of Phnom Penh, WP6), Paul Andersen (University of Hamburg) and Ravi Jayaweera (University of Hamburg).

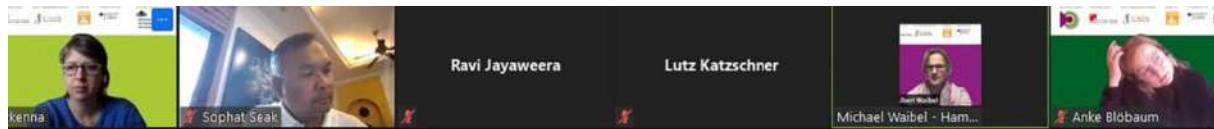


Brief outlook on Build4People Research and Development phase (Build4People RD phase)

Afterwards, Dr Michael Waibel gave a brief outlook on the Build4People Research and Development phase from 2021-2025. At first, he introduced the revised title of the project: “Build4People: Enhancing Quality of Life through Sustainable Urban Transformation”, which reflects the overall aim of supporting a transformative shift in Phnom Penh’s current business-as-usual urban development pathway towards a pathway with higher sustainability and livability levels, with the building sector as the entrance point of Build4People’s research. In this context, Build4People’s interventions and action research will support a more sustainable urban transformation pathway for Phnom Penh. All in all, the large and diverse consortium, consisting of multiple scientific disciplines including environmental psychology, reflects the systemic people-led approach as well as the various cross-cutting challenges and tasks of the Build4People project.

Furthermore, Dr Waibel highlighted Build4People’s research design, which consists of three overlapping spheres based on established transdisciplinary research approaches in sustainability science. The first phase, “societal and scientific problem-based research”, is mostly analytical in nature. The second phase of “transdisciplinary action research” is dedicated to joint research with urban development stakeholders such as the Build4People Ecocity Transition Lab together with the Phnom Penh Capital Administration. Finally, the third phase is dedicated to “reflection, refinement & re-integration of created knowledge”. This intricate research design is intended to evolve into many activities and products and ensure a lasting impact.

Responsibility for the key transdisciplinary Build4People research activities and events will be shared and/or alternate between WPs, which is regarded as a strategic strength of the Build4People project. Furthermore, Dr Waibel explained that the dissemination efforts will continue to comprise various types of communication and cooperation with various stakeholders to maximize Build4People’s outreach.



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Enhancing Quality of Urban Life through Sustainable Urban Transformation in Cambodia

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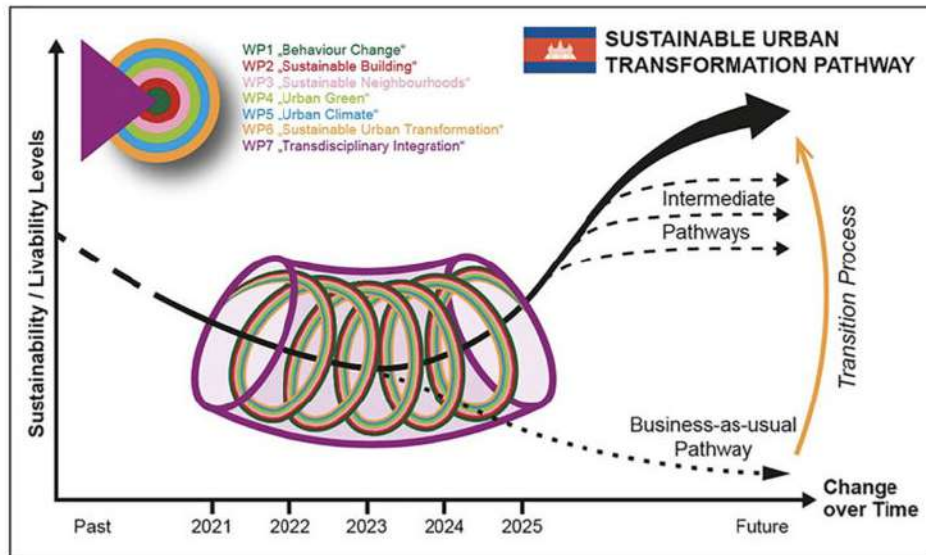
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➤ **B4P interventions and action research successfully support a more sustainable urban transformation pathway**

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Build4People consortium architecture during RD phase

German Research Partners	Cambodian Research Partners	Implementation Partners
WP1: Behaviour Change 	Royal University of Phnom Penh 	Phnom Penh Capital Administration
WP2: Sustainable Building 	Pannasastra University of Cambodia 	National Council for Sustainable Development
WP3: Sustainable Neighbourhoods 	Institute of Technology 	Dissemination Partners
WP4: Urban Green 	Royal University of Agriculture 	EUROCHAM CAMBODIA
WP5: Urban Climate 	Corporate Camb. Research Partners 	IMPACT HUB
WP6: Sustainable Urban Transformation WP7: Coordination, Communication & Dissemination 	Project Management Partner Cambodian Institute of Urban Studies 	Center for Khmer Studies



Build4People Project

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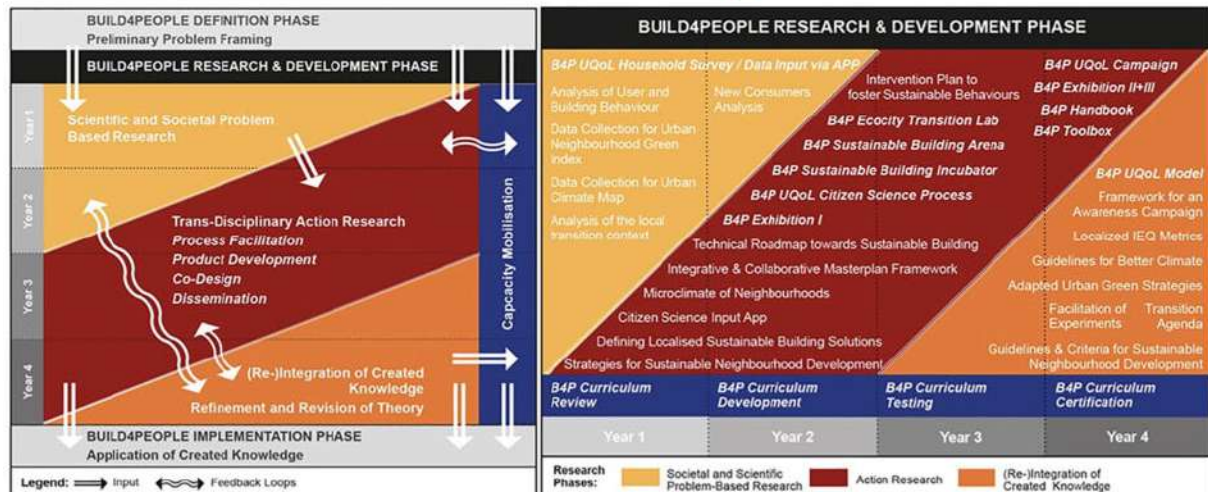
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Build4People RD-Phase Research Design



➤ Build4People main outputs related to 3 distinct research phases

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Build4People RD-Phase Worksteps

VII. Build4People Dissemination

VII.A Build4People Poster / Photo Exhibitions

VII.B Build4People Outreach Events

VII.C Build4People Toolbox including Build4People Handbook

VII.D Build4People Industrial Fair Representation

VII.E Awareness Campaign: UQoL & Sustainable Living

VII.F Build4People Social Media-Campaign

Dissemination Partners



➤ Dissemination efforts comprises various types of communication and cooperation with various stakeholders to maximise Build4People's outreach

Another important component of Build4People's upcoming RD phase will be capacity-building efforts. Capacity-building in general is intended to support the generation of actionable knowledge, which takes place intrinsically through regular communication and the management of joint activities. Capacity development, in particular, will mainly take place through joint curriculum development support at the institutions of the local research partners.



This is regarded as a unique opportunity to feed in Build4People's refined research findings with a lasting impact, and also as a key transdisciplinary instrument for compiling and connecting the results of all Build4People work packages. The key activity of capacity development will be the development of a new multi-disciplinary master course on "sustainable urban transformation planning" (working title) at the School of Architecture and Urban Planning at Paññāsāstra University (SAUP-PUC), led by Dr Tep Makathy. The new master course is to incorporate Build4People's specific cross-cutting, people-lead, transdisciplinary approach. Moreover, it will be accompanied by individual work package consultancies for curriculum development at other research partners (RUPP, RUA, ITC).

Build4People Project

Enhancing Quality of Urban Quality of Life through Sustainable Urban Transformation in Cambodia

Build4People RD-Phase Worksteps

VIII. Build4People Capacity Mobilisation
Build4People-Consortium

- Specific focus on new multi-disciplinary master course on "sustainable urban transformation" (working title) at the School of Architecture and Urban Planning at Paññāsāstra University, led by Prof. Makathy
- New master course shall incorporate B4P's specific cross-cutting, people-lead, transdisciplinary approach
- Further individual WP consultancies to curriculum development at other research partners (RUPP, RUA)

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Another important upcoming Build4People work step will be the successful involvement of donor organisations as a pre-condition for the continuation of Build4People funding during the two-year Implementation phase, because the donor organisations usually need two to three years to prepare for their implementation. Consequently, action is needed from year 1 of the Build4People RD phase.

Summarizing his presentation, Dr Waibel stated that the Build4People project analyses and supports a transformative shift of Phnom Penh's urban development pathway towards higher sustainability and liveability levels. In doing so, it follows a cross-cutting, systemic and transdisciplinary approach. This will be enabled by an intricate research design consisting of three distinct phases. In general, the joint research requires a lot of mutual inter- and transdisciplinary communication, and Build4People's research has to be actively communicated, disseminated and made visible to a wide public. Finally, one of the main challenges will be to balance efforts between achieving sustainability progress of a real urban space and the publication of academic papers in high-level scientific journals.



Panel discussion on how to strengthen implementation of Build4People activities and how to promote local ownership during the upcoming Build4People RD phase

This was followed by a panel discussion on how to strengthen the implementation of Build4People activities and how to promote local ownership during the upcoming Build4People RD phase.

The discussion was moderated by Dr Tep Makathy, the Director of the Cambodian Institute of Urban Studies (CIUS). The panel discussion participants included Vannak Seng, General Director of Phnom Penh Capital Administration (PPCA), Dr Vanny Sok, Vice-Rector of Royal University of Phnom Penh (RUPP), Sokhai Nop, Deputy Director, Department of Green Economy, General Secretariat of National Council for Sustainable Development (NCSD), Mélanie Mossard, Venture Support Director, Impact Hub Phnom Penh, Hun Chansan, registered architect, Re-Edge and Dr Seng Bunrith, wastewater engineer, B2G Co Ltd.

B4P: Panel Discussion

Sustainable Buildings for People – Enhancing Quality of Urban Life in Cambodia



The subjects discussed included critical comments on Build4People's objectives and the expected output, how to achieve and improve the UQoL and how to align Build4People with national policy.

The participants engaged in a fruitful discussion in which the significance of the different dimensions of UQoL for the city was highlighted.

At first, Vannak Seng, General Director of Phnom Penh Capital Administration (PPCA), praised the Build4People project:

"First of all, I like to congratulate the Build4People team that finally the project has been enlarged, prolonged and extended to a bigger scale, and we have also worked on defining the area of study, now I think we for the City Hall of Phnom Penh we are waiting just for the letter from the government to approve, to make agreement of the MoU, to sign together with Dr. Waibel, and then we will, the first work that we have to do now in term of administration procedure we need to sign the MOU and then start to create from the City Hall side the steering committee for the project. [...] So yeah, I am very excited to work on the project further and it is really important for the City Hall of Phnom Penh because the main course of our urban planning work in the City Hall is how to improve the urban quality of life of the population in Phnom Penh. And, its really, it's a big challenge today when the population increases considerably every day and we have to find many solutions for too, many many problems. So, yeah, I am really excited to look at, to work on this project further with all the specialists, and



all the professors from everywhere, from Germany, from Cambodia and Dr. Makathy also and everyone.”



With regard to urban quality of life, Sokhai Nop, the Deputy Director, Department of Green Economy, General Secretariat of National Council for Sustainable Development (NCSD), said:

“In my view in order to achieve quality of urban life I think we should focus mainly on three dimensions. First, I think about the social and cultural qualities, the second is the environmental qualities and the third is economic qualities. So what should we do to understand this, I think it is important to understand the issues, needs and visions of people surrounding the three dimensions.”



Dr Seng Bunrith added to this from the perspective of implementation of research results by relevant stakeholders:



“How to improve quality of life, actually, [...] the important thing is to define who is the lead of the implementation of the projects. For example, Build4People, once you develop the products, who will use those, is the Phnom Penh Capital Administration, is it the Royal Government of Cambodia, or is it the Ministry of Environment? This is the key, I think, a lot of regulations, a lot of master planning, a lot of research has been produced, but it has not come to reality. This is one of the important issues, it is easy to do research, to do analysis, but how to bring this to implementation in Cambodia?”



The importance of communication, cooperation and understanding among the stakeholders in tackling the problems that Phnom Penh and Cambodia are facing, such as rapid urbanization or climate change, was strongly emphasized. Further, the focus was laid on the integration of the private sector as an important part of stakeholders. In this context, Mr Sokhai Nop stated:

“[...] the most important thing is to engage the private sector [...] we need them to support the sustainable urban planning management.”

Additionally, the involvement of the citizens was identified as key to achieving urban quality of life for all. In this context, Mr Sokhai Nop emphasized:

“Another important thing we should have in mind is, as my previous speaker said, that of inclusiveness. I think the urban quality of life should be designed for all.”

In this context, Mr Vannak Seng mentioned organizational aspects, i.e., the significance of bringing institutions from different spheres together:

„Of course, we need to work together, the collaboration, the free collaboration between all of us is the key of success. Professional, public servant, population and private sector.“

Also, the importance of behaviour change as a strong element of Build4People was emphasized as Dr. Vanny Sok, Vice-Rector of the Royal University of Phnom Penh (RUPP), stated:

“The first and upmost for us to curb with a problem or to find a solution is to start with behaviour change.”



The renowned architect Mr. Hun Chansan, who came back to Cambodia to practice architecture in 2011 after having been raised and educated abroad, spoke in favor of shifting architecture's perspective away from pure design aspects:

"In Cambodia, people often misinterpret architecture being more art than science. They refer to buildings by just looking at their style [...] In the past years, we established some principle of design, instead we want to refer to ourselves as being fluid. Being fluid we want to focus more on aspects of time, space and light."



In terms of regulatory instruments, views on guidelines and certification for green buildings were exchanged. Finally, the question of how to make the research accessible and to apply findings in Cambodia was discussed in some depth.



For example, Mélanie Mossard, the Venture Support Director of Impact Hub Phnom Penh, highlighted the importance of a people-oriented approach and of science communication to the general public:

“It is important to always have in mind how this research we are doing can be used by people and to make it understandable.”



At the end of the panel discussion, the moderator Dr Tep Makathy thanked everyone for the active and engaged participation and gave a big applause.



In conclusion, the Build4People Status Conference brought together many different stakeholders in very productive discussions and laid a great deal of promising groundwork for the upcoming Build4People Research & Development Phase.



“I am sure that we will achieve something beautiful and fruitful for the city, especially for Phnom Penh’s development.” – Vannak Seng

Report Compilation: Michael Waibel & Paul Andersen, Department of Geography, Hamburg University.

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