

# Build4People Project

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

DEF 2019-2021

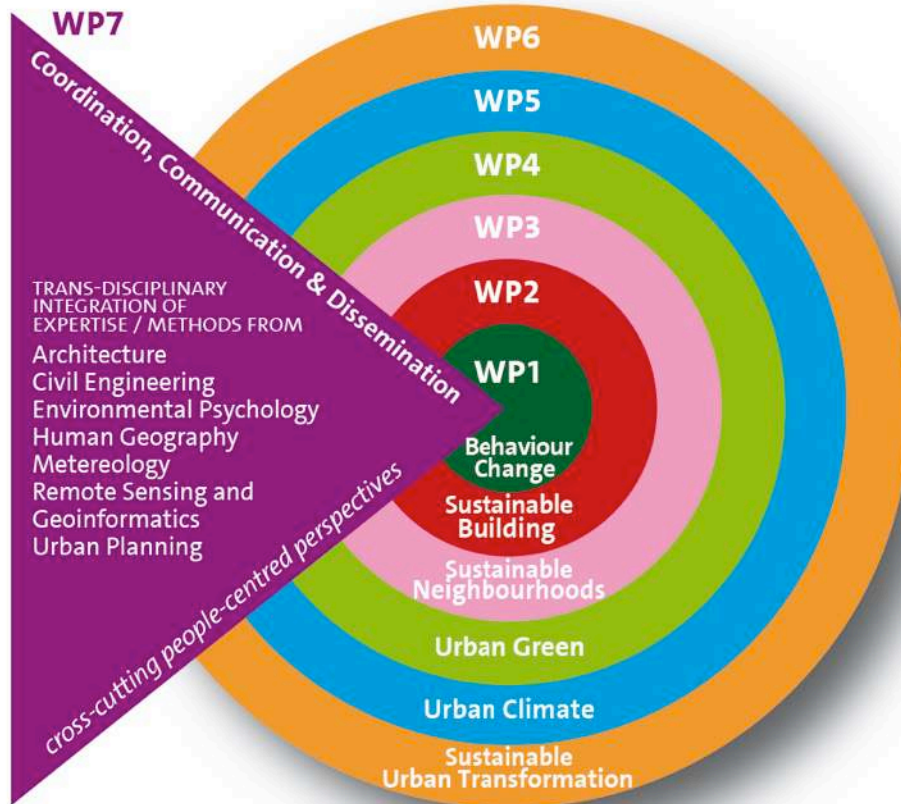
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## B4P STATUS CONFERENCE

*Virtual, 21 January 2021*

### Build4People Consortium



### Research Partners



### Implementation Partners



### Dissemination Partners



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## Current News: UNEP-Report 2020 about emissions in the building sector



### 2020 GLOBAL STATUS REPORT FOR BUILDINGS AND CONSTRUCTION

Towards a zero-emissions, efficient and resilient buildings  
and construction sector



- ✓ **Building sector in total:  
38% of global carbon emissions**
- Sector is currently moving away from the targets set in the Paris Agreement to keep average global warming well below two degrees Celsius
- Operation of buildings is particularly problematic, e.g. in the case of mechanical cooling (use of AC)



- ✓ **Promoting sustainability in the building sector  
is Germany's most successful policy field!**



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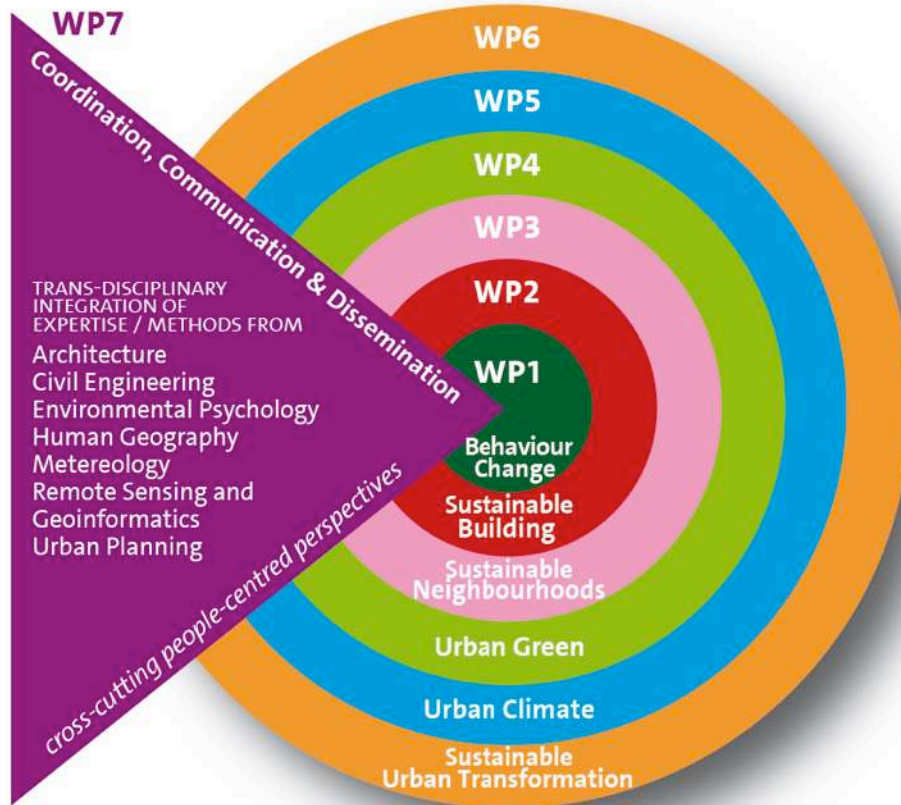
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## Main Objectives

Our project promotes **sustainable buildings** and **sustainable urban development** from a **people-centred perspective** in Cambodia.

Thereby, the connecting scientific-conceptual, analytical and superior normative bracket is always the **urban quality of life**.

*„The battle for a more sustainable future will be won or lost in cities“*

2012 Manifesto for Cities, Global Mayors' Forum





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## Work Packages កញ្ចប់ការងារ

**WP#1: Behaviour Change**  
ការផ្លាស់ប្តូរឥរិយាបថ



**WP#2: Sustainable Building**  
អគារដែលមាននិរន្តរភាព



**WP#3: Sust. Neighbourhoods**  
សហគមន៍ដែលមានជីវភាព



**WP#4: Urban Green**  
ទីក្រុងបៃតង



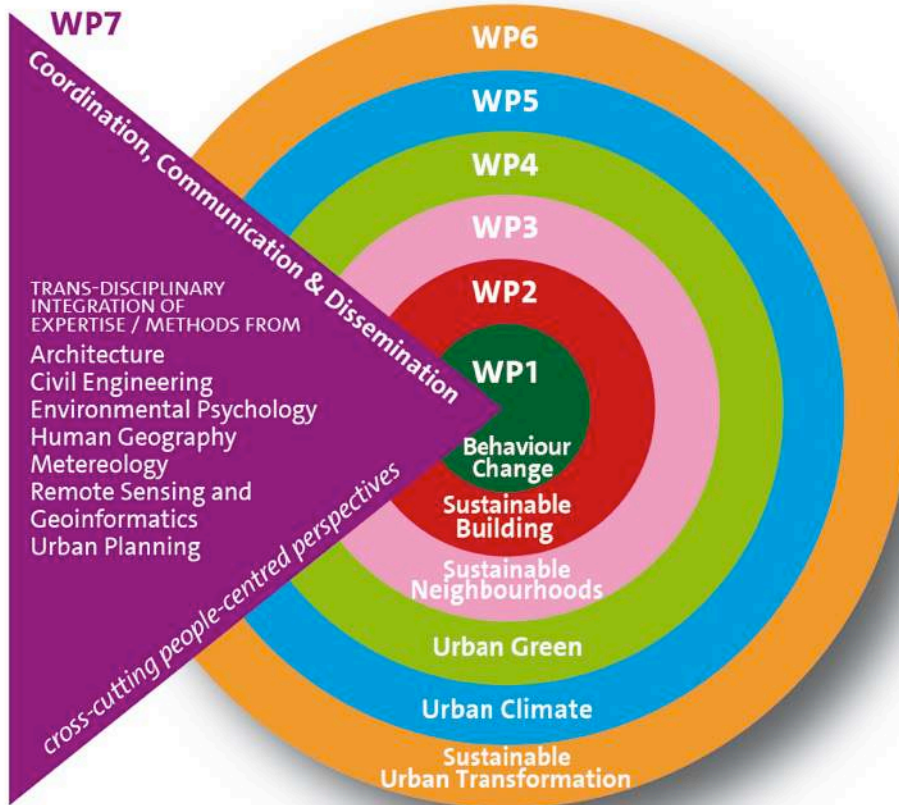
**WP#5: Urban Climate**  
អាកាសធាតុទីក្រុង



**WP#6: Sust. Urb. Transformation**  
ការផ្លាស់ប្តូរទីក្រុងដោយនិរន្តរភាព



ការសម្របសម្រួល, ការទំនាក់ទំនង និង ការផ្សព្វផ្សាយ



## Research Partners



## Implementation Partners



## Dissemination Partners



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## Aims of the Build4People Status Conference

- Implementation as part of the work plan
- Increase of visibility of the Build4People project in times of the global corona pandemic
- Outreach to a wide public beyond the Build4People research team
- Dissemination of research results of the Definition phase (WP-related and trans-disciplinary)
- Communication of research strategies of the upcoming Research and Development Phase

### Research Partners



### Implementation Partners



### Dissemination Partners



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## Tentative Agenda of the Build4People Status Conference

*Virtual, 21 January 2021*

14:30-15:00 p.m. (08:30-09:00 a.m. German time): **Informal joint exchange**

15:00-15:30: **Greeting Words**

- Dr Michael Waibel, Build4People project consortium representative
- Dr Heike Bauer, DLR, representative of German funding agency
- Mr. Christian Berger, Ambassador of the Federal Republic of Germany
- H.E. Mr. Nuon Pharat, Vice Governor of Phnom Penh Capital Administration

15:30-16:10: **Presentation of research results of Build4People Definition phase**

16:10-16:20: **Brief introduction of inter-active break-out sessions**

- ✓ Session #1 How to promote urban quality of life
- ✓ Session #2 Implementation of sustainability on building and neighbourhood level
- ✓ Session #3 Implementation of sustainability in the field of urban green infrastructures / urban climate
- ✓ Session #4 How to promote sustainable urban transformation

16:20-16:30: Tea / Coffee break

16:30-17:00: **Inter-active break-out sessions**

17:00-17:20: **Presentation of discussion results of inter-active break-out sessions**



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## Tentative Agenda of the Build4People Status Conference

*Virtual, 21 January 2021*

17:20-17:30 (11:20-11:30 a.m. German time):

### Brief outlook on Build4People Research and Development phase (B4P RD phase)

- Dr. Michael Waibel

### 17:30-18:00: Panel discussion on questions how to strengthen implementation of B4P activities and how to promote local ownership during the upcoming B4P RD phase

*moderated by Dr Tep Makathy, Director of Cambodian Institute of Urban Studies (CIUS)*

#### Panel discussion participants

- 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, National Council for Sustainable Development (NCSD)
- Mélanie Mossard, Venture Support Director, Impact Hub Phnom Penh
- Mr. Hun Chansan, registered architect, Re-Edge
- Dr Seng Bunrith, wastewater engineer, B2G Co Ltd.

18:00-18:20 p.m. (12:00-12:20 p.m. German time):

### Open discussion and official ending of the Build4People Status Conference





# Build4People Project

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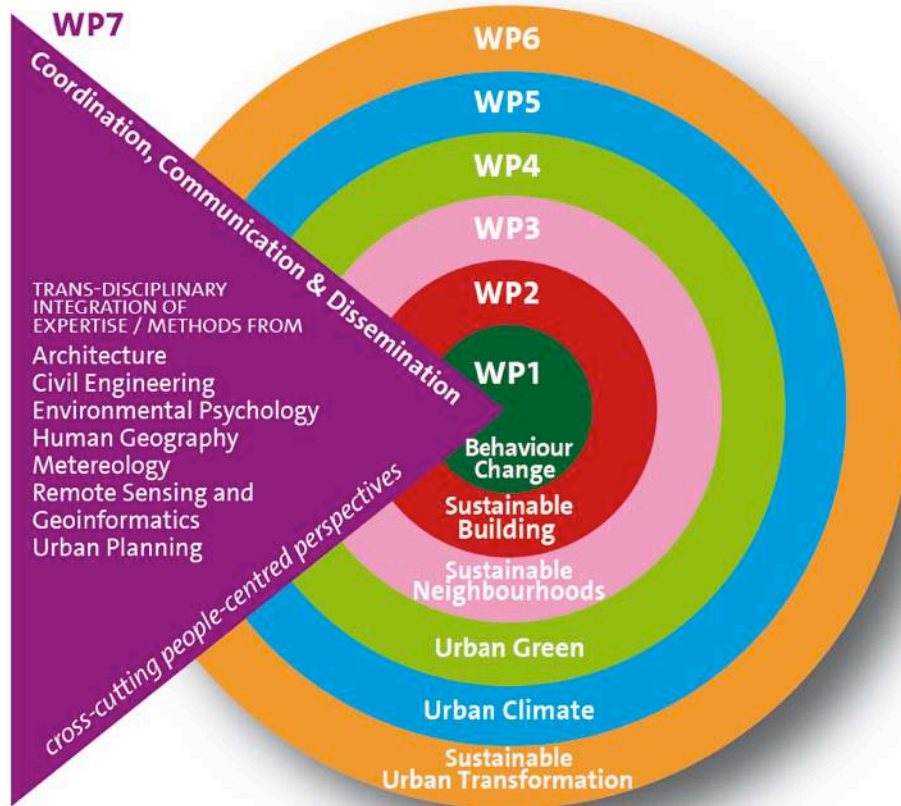
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## Presentation of Definition Phase research results

### CONTENTS

- (1) Research question and main objectives
- (2) Research methodology
- (3) Key empirical research results
- (4) Implications of research results in regard of RD phase

#### Research Partners



#### Implementation Partners



#### Dissemination Partners

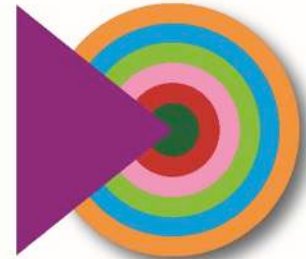




# WP1 Behaviour Change

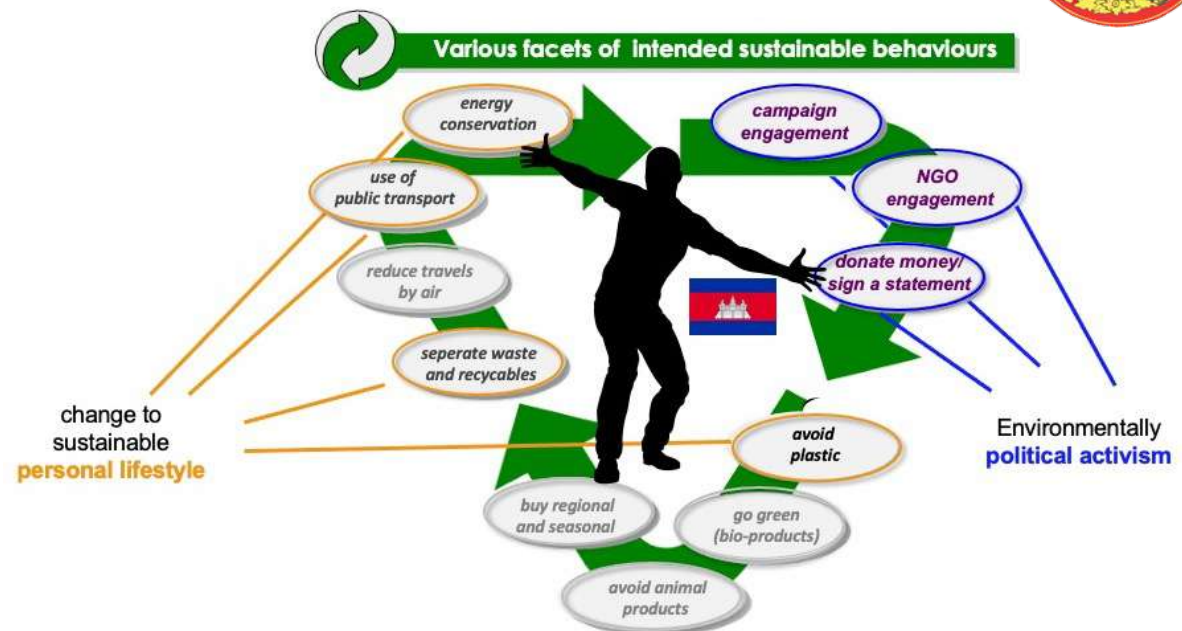
Responsible team: Dr Anke Blöbaum  
Prof Dr Ellen Matthies  
Annalena Becker

Dr Sok Serey  
Kao Sovandara



## Research questions and main objectives

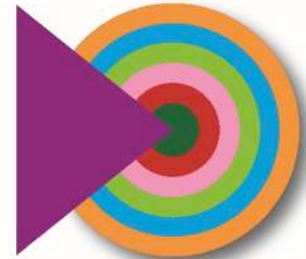
- Which constraints and motives determine **pro-environmental behaviour** in the daily life of the citizens of Phnom Penh?



# WP1 Behaviour Change

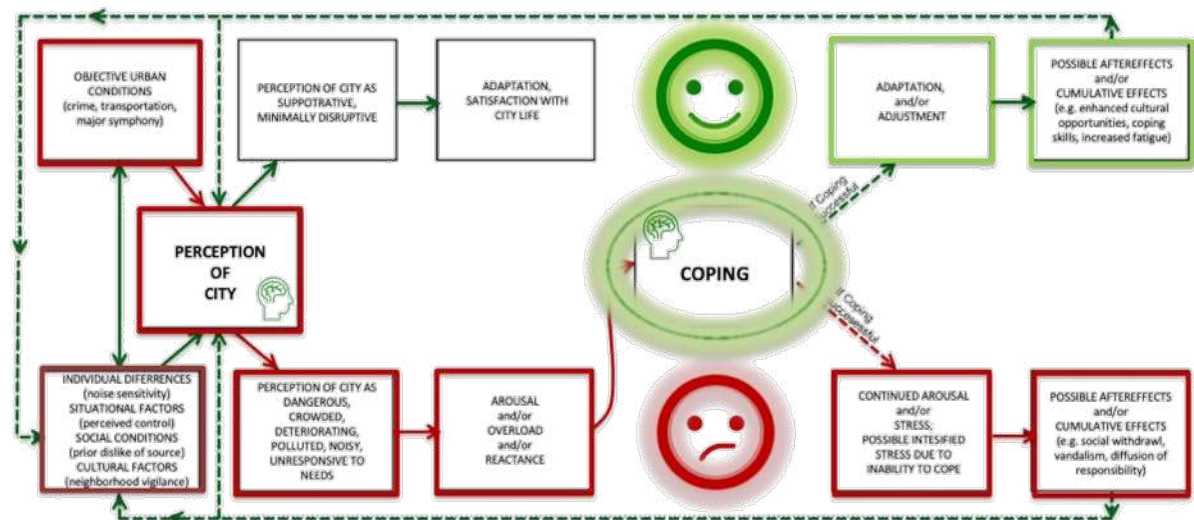
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## Research questions and main objectives

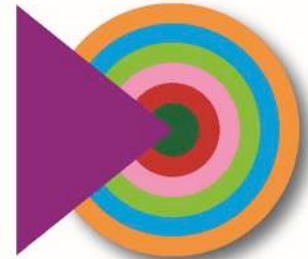
- Which constraints and motives determine **pro-environmental behaviour** in the daily life of the citizens of Phnom Penh?
- Which factors determine the perception and evaluation of **urban quality of life** in Phnom Penh?



# WP1 Behaviour Change

*Responsible team: Dr Anke Blöbaum  
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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.

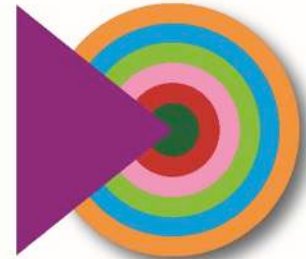




# WP1 Behaviour Change

*Responsible team: Dr Anke Blöbaum  
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Annalena Becker*

*Dr Sok Serey  
Kao Sovandara*



## Research methodology

- Household survey (standardized questionnaires)
- face-to-face interviews

### Pre-test household-survey (N=30)

### Household-survey (N=500)

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



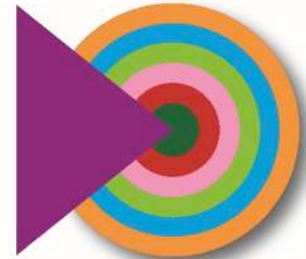
- self-reported environmental behaviours
- perceived urban quality of life
- demands for housing
- mindset  
(norms, values, constraints)
- internal versus external locus of control



# WP1 Behaviour Change

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

*Dr Sok Serey  
Kao Sovandara*



## Key empirical research results (I)

### ➤ Pro-environmental behaviours / sustainable lifestyles:

#### ✓ Problem awareness

The causal relationship between one's own individual behaviour and global environmental problems seems to be not considered

→ stronger focus on local problems like air pollution and the lack of waste management

#### ✓ Relevant environmental behaviours

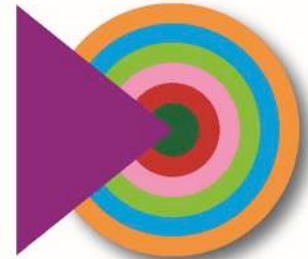
- modes and means of transportation,
- electricity consumption (with a special focus on air conditioning),
- waste management and the use of plastic.



# WP1 Behaviour Change

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

*Dr Sok Serey  
Kao Sovandara*



## Key empirical research results (II)

- Urban quality of life (UQoL):
  - ✓ **Evaluation of relevant determinants of UQoL**
    - quite low walkability
    - low accessibility of public urban green spaces
    - personal safety seems to be important for the choice of dwellings, and public spaces to rest outside
- Due to the pandemic situation, the Build4People household survey had to be postponed!  
**HOUSEHOLD-SURVEY (N=500) is STILL ONGOING**



Impression from interviewer training

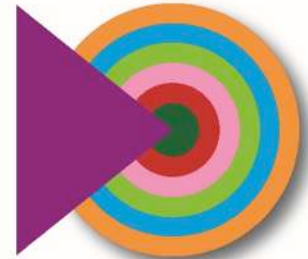




# WP1 Behaviour Change

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

*Dr Sok Serey*



## Implications of research results in regard of RD phase

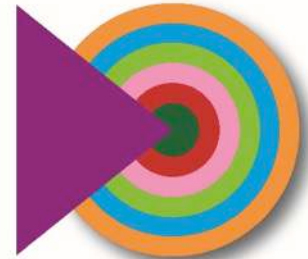


- ✓ Results of the household-survey support the development of a transdisciplinary measure for UQoL in Phnom Penh.
- ✓ Need for a closer look at possible contradictions between individual lifestyle preferences and sustainable lifestyles.
- ✓ Further analysis of the mindset of people living in Phnom Penh in order to foster a social norm of sustainable lifestyles  
→ tailored, theory-driven, and data-based intervention techniques.
- ✓ Joint development of a curriculum for environmental psychology at RUPP, and inclusion of a module on environmental psychology into a new trans-disciplinary master course at Paññāsāstra University of Cambodia.



# WP2 Sustainable Building

*Responsible team: Dr Dirk Schwede  
Christina Karagianni*



## Research question and main objectives

- **How can sustainable building practice (design, construction and operation) contribute to urban quality of life without increasing the use of resources beyond the sustainable limits?**
- ✓ Consolidate the research cooperation with our academic partners
- ✓ Achieve a first conceptualization of what is “sustainable built environment” in the context of Cambodia today and how it could be in future
- ✓ Review of the current situation, definition of the necessary scope of sustainable building assessment and initial development of modelling approaches as well as evaluation models



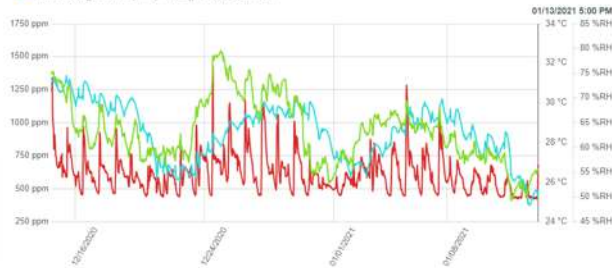
# WP2 Sustainable Building

Responsible team: Dr Dirk Schwede  
Christina Karagianni

## Research methodology



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**Building Audit**  
- Invitation of H&M team member

Build4People Project "Sustainable Buildings for People - Enhancing Urban Quality of Life in Cambodia"

**Notes to audit team member**

**Floor plan**  
Try to get the floor plan of each apartment (or you can ask the householder first before you go)

1) If some householders don't have their management or real estate developers  
2) If the floor plan is not available, its orientation and specify the ceiling height

A floor plan should be dimensioned and its windows, openings. Detailed dimensions are determined during the audit and marked on the WD1, see details in Question 8.)

The interviewer must indicate the use of the codes below. You can add new codes if required.

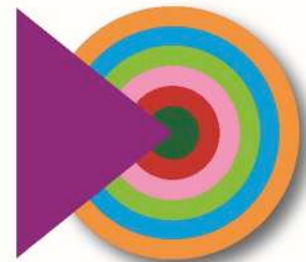
Room abbreviation codes:

Room	Abbreviation
LIVING ROOM	LIR
KITCHEN	KIR
BATHROOM AND TOILET	BIR
Bedroom	BIR
...	...

Based on the plan, you can carry out the built

Room	Glazing (code)	Type (code)	Width (code)	Height (code)	Location (code)
W1	W1	W1	W1	W1	W1
W2	W2	W2	W2	W2	W2
W3	W3	W3	W3	W3	W3
W4	W4	W4	W4	W4	W4
W5	W5	W5	W5	W5	W5
W6	W6	W6	W6	W6	W6
W7	W7	W7	W7	W7	W7
W8	W8	W8	W8	W8	W8
W9	W9	W9	W9	W9	W9

Room	Glazing (code)	Type (code)	Width (code)	Height (code)	Location (code)
W1	W1	W1	W1	W1	W1
W2	W2	W2	W2	W2	W2
W3	W3	W3	W3	W3	W3
W4	W4	W4	W4	W4	W4
W5	W5	W5	W5	W5	W5
W6	W6	W6	W6	W6	W6
W7	W7	W7	W7	W7	W7
W8	W8	W8	W8	W8	W8
W9	W9	W9	W9	W9	W9



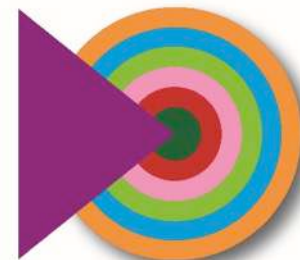
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# WP2 Sustainable Building

Responsible team: Dr Dirk Schwede  
Christina Karagianni



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

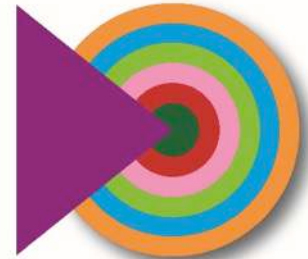
## Key empirical research results

- 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.



# WP2 Sustainable Building

Responsible team: *Dr Dirk Schwede*  
*Christina Karagianni*



## Key empirical research results

- Demand for air conditioning systems is constantly rising.
- Cambodia does not have its own energy efficiency label in electric appliances and all products are imported from other countries, so energy labels are depended on the country where the products are imported from.
- Construction materials often have low performance (e.g. one-pane glazing) and are imported. There is no labelling or performance regulations for orientation of designers and home buyers.
- Quality design, specification and compliance checking is hindered.

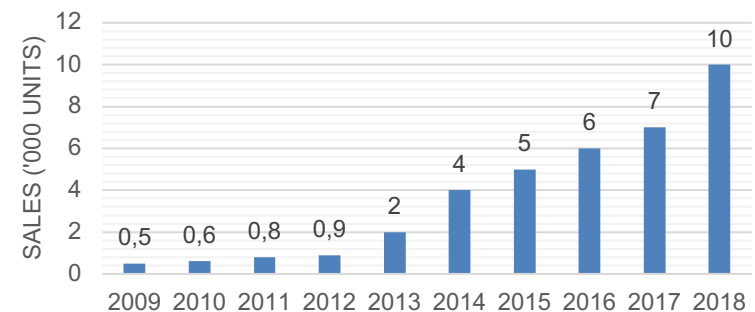


Cambodia Construction Expo 2019

University of Stuttgart  
Germany



## AC-Sales in Cambodia

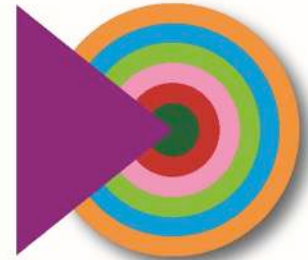


Source: Regional Policy Roadmap for harmonization of AC standards in ASEAN economies & World Air Conditioner Demand by Region



# WP2 Sustainable Building

Responsible team: *Dr Dirk Schwede*  
*Christina Karagianni*



## Implications of research results in regard of RD phase

### New Academic Partner

**Institute of Technology  
of Cambodia (ITC)**



- Civil Engineering
- Mechanical Engineering
- Architecture

Detailed analysis of the residential use and the building physics behaviour of the inhabited apartments.

Scope for sustainable building (building, near-surrounding level) in the context of Phnom Penh

**Analysis of  
User &  
Building  
Behavior**

**Defining  
Localised  
Sustainable  
Building  
Dimensions  
& Solutions**

**Development  
of localised  
IEQ-metrics /  
sustainable  
building  
metrics**

**Technical  
Roadmap  
towards  
Sustainable  
Building in  
Phnom Penh**

Analysis of the interaction between use, functionality, energy consumption and Quality of Life perception

Document the current context and draft the desired future performance. A pathway towards this desired performance is developed, focusing on technology fields.

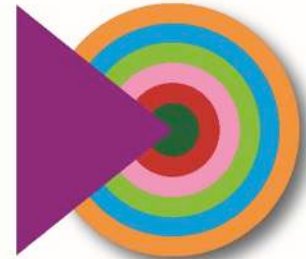




# WP3 Sustainable Neighbourhoods

*Responsible team: Rolf Messerschmidt  
Oliver Lambrecht*

*Marcelo Rivera*



EBLE MESSERSCHMIDT PARTNER  
Architekten und Stadtplaner PartGmbH



## Research question and main objectives

- ✓ **How can sustainable neighbourhoods (design, construction, operation and management) contribute to the urban quality of life in Cambodia?**

Main Objectives:

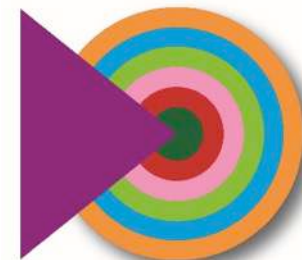
- Addressing the **cultural heritage of Cambodia**, changing **socio-cultural conditions** and the need for an **increased public space** area with a **high quality of sojourn and liveability** for new and existing developments
- **Climate protection** by **energy-efficient buildings**, employing **smart energy supply** systems and using **RE** on the neighbourhood level
- **Climate adaptation** by **climate responsive urban design** for buildings and open spaces supporting comfort and health
- **Circular economy** including **sustainable resource management**, **material flows** and **water cycles** in a blue-green infrastructure



# WP3 Sustainable Neighbourhoods

Responsible team: Rolf Messerschmidt  
Oliver Lambrecht

Marcelo Rivera

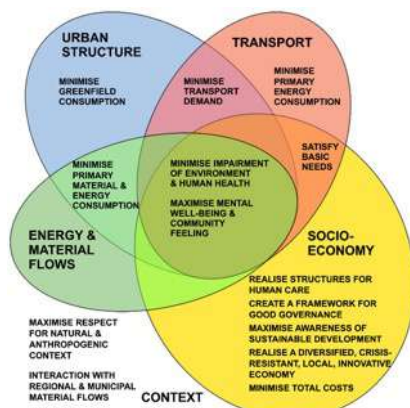


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## Research methodology

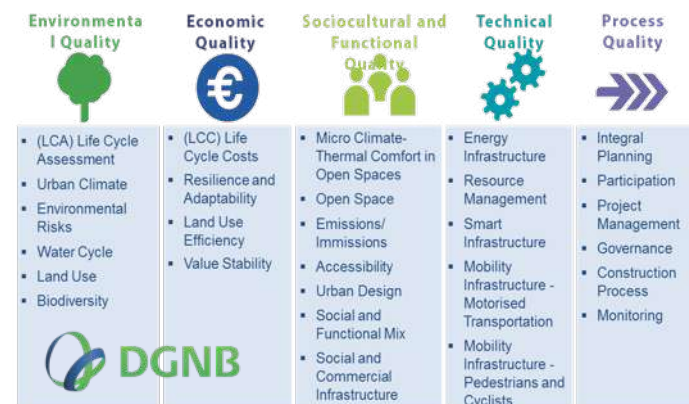
- Introduction of **integrative, collaborative and participatory masterplanning strategies** to Cambodia in order to foster the sustainability performance of neighbourhoods
- Application of **multi-layered neighborhood development** based on involved WPs of the transdisciplinary B4P-project approach
- Transfer and adaptation of **assessment criteria for sustainable urban districts** from the international rating system of the DGNB



Source: EU Project Ecocity



Source: Integration Plan – UMore Park Minneapolis, EMP



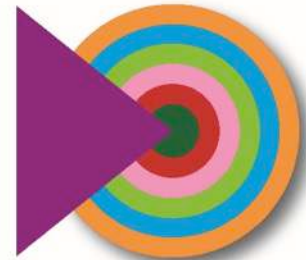
Source: DGNB



# WP3 Sustainable Neighbourhoods

Responsible team: *Rolf Messerschmidt*  
*Oliver Lambrecht*

*Marcelo Rivera*

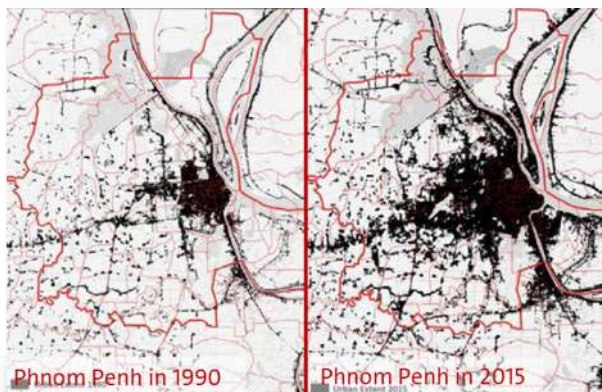


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Architekten und Stadtplaner PartGmbH



## Key empirical research results (I)

- **Profound understanding of urbanization processes** in Phnom Penh and Cambodia considering the environmental, socio-cultural and institutional context – growth, green space, flooding, transport, etc.
- Analysis of the **planning frameworks and instruments** - relation of socio-economic development plans and spatial plans, need for capacity building, etc.
- Sustainable approaches can be derived from **vernacular architecture and urban patterns** - from cultural heritage to contemporary design



Source: Urban extension, World Bank Group 2017



Source: Sustainable city development PP, GGGI



Source: EMP

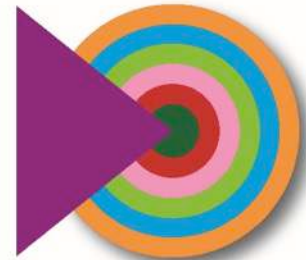




# WP3 Sustainable Neighbourhoods

Responsible team: *Rolf Messerschmidt*  
*Oliver Lambrecht*

*Marcelo Rivera*



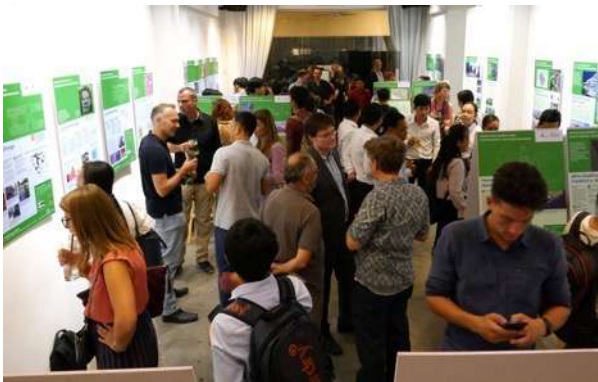
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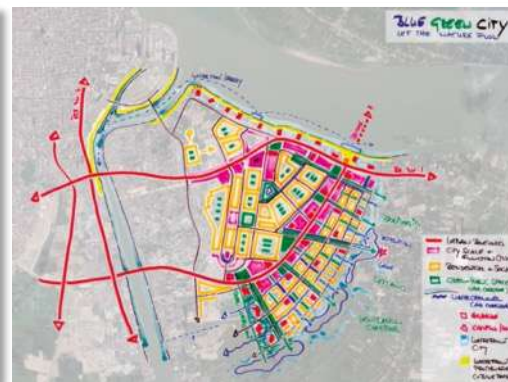
VON ZADOW INTERNATIONAL

## Key empirical research results (II)

- **1<sup>st</sup> edition of Build4People Poster exhibition “Green Buildings & Sustainable Neighbourhoods”** incl. concepts, design strategies and compilation of European best practices examples
- **Build4People Ecocity Transition Lab** as an interactive workshop and Charette is a methodology for understanding local issues, capacity building and transdisciplinary collaboration
- **Participatory & collaborative planning process** leads to a land use plan and an urban structure plan with related sustainability concepts for the identified case study area



Opening of B4P Exhibition – March 2020



B4P Ecocity Transition Lab – Land Use Plan



B4P Ecocity Transition Lab – Hands-On-Planning

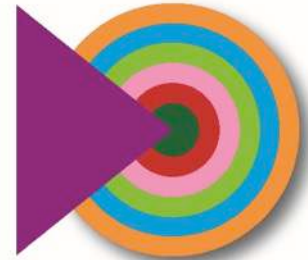




# WP3 Sustainable Neighbourhoods

Responsible team: Rolf Messerschmidt  
Oliver Lambrecht

Marcelo Rivera

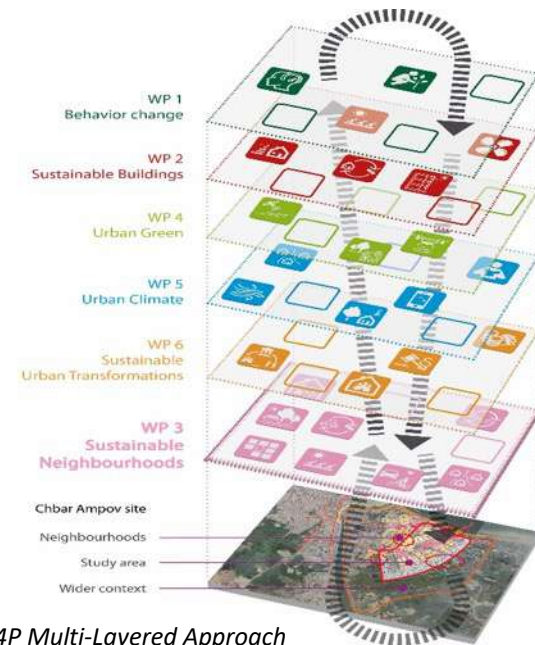


EBLE MESSERSCHMIDT PARTNER  
Architekten und Stadtplaner PartGmbH



## Implications of research results in regard of RD phase

- Extended application of “**Ecocity Transition Labs**” as a trans-disciplinary planning and participation methodology, deepening of process design and interaction with other B4P processes (*>> cooperation with von Zadow International*)
- Elaboration of an “**Integrative & Collaborative Masterplan Framework**” for an exemplar eco-town development as a transdisciplinary planning product
- Creating of a “**Toolbox Sustainable Neighbourhood Development**” including strategies, guidelines and criteria, as well as implementation strategies
- Further conceptualization of an **assessment system for sustainable neighborhoods incl. criteria and indicators for early project stages** (*>> cooperation with DGNB*)



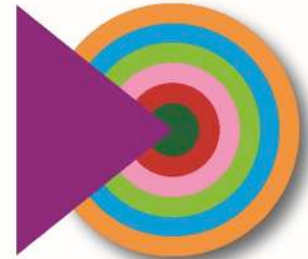
B4P Multi-Layered Approach



# WP4 Urban Green

*Responsible team: Prof Dr Jan-Peter Mund  
Amelie McKenna*

*Dr Hor Sanara  
Eun Sambath*



  
Eberswalde University  
for Sustainable  
Development



## Main research question and main objectives

**What types of UGS exists in Phnom Penh and how they can be categorized?**

- What is the spatial distribution, density and topology of UGS in Phnom Penh in 2019?

## Main research objectives

**The objective of this research is to develop, test and apply four different products about UGS in Phnom Penh.**

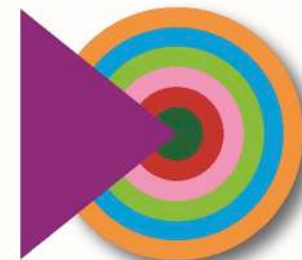
- ✓ 1. Typology of Urban Green Space and **Urban Green Infrastructure**
- ✓ 2. Map of urban green space in 2019 and UGI



# WP4 Urban Green

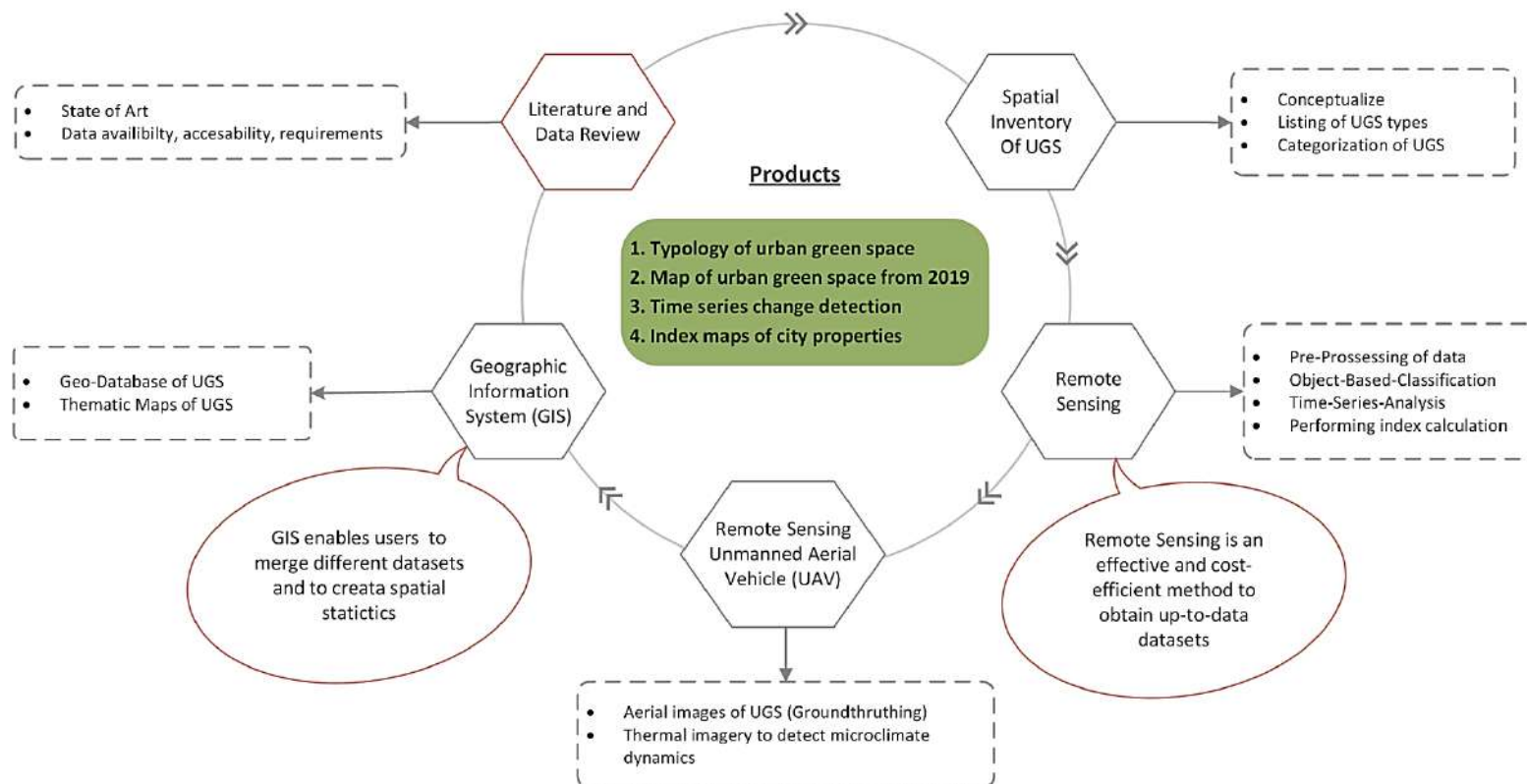
Responsible team: Prof Dr Jan-Peter Mund  
Amelie McKenna

Dr Hor Sanara  
Eun Sambath



## Research methodology

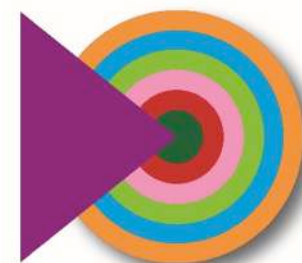
  
Eberswalde University  
for Sustainable  
Development



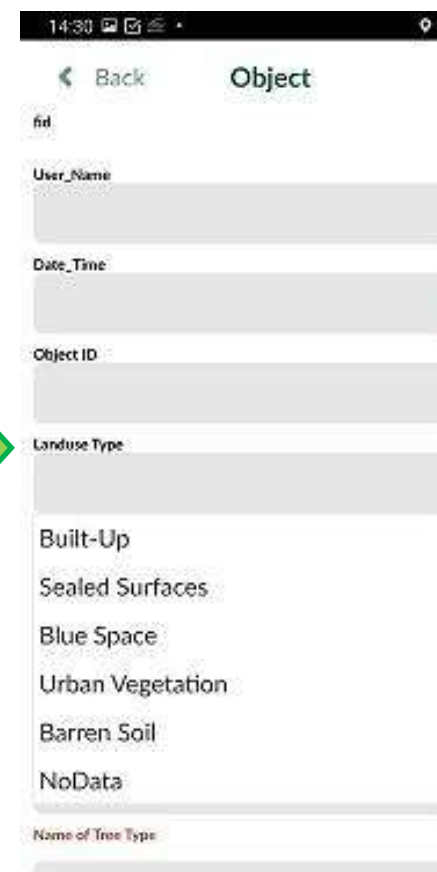
# WP4 Urban Green

Responsible team: Prof Dr Jan-Peter Mund  
Amelie McKenna

Dr Hor Sanara  
Eun Sambath



## Research results (I): Input App Design and field work



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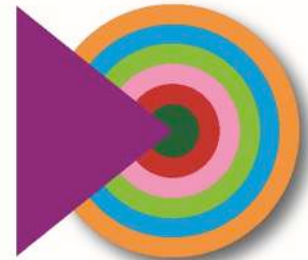




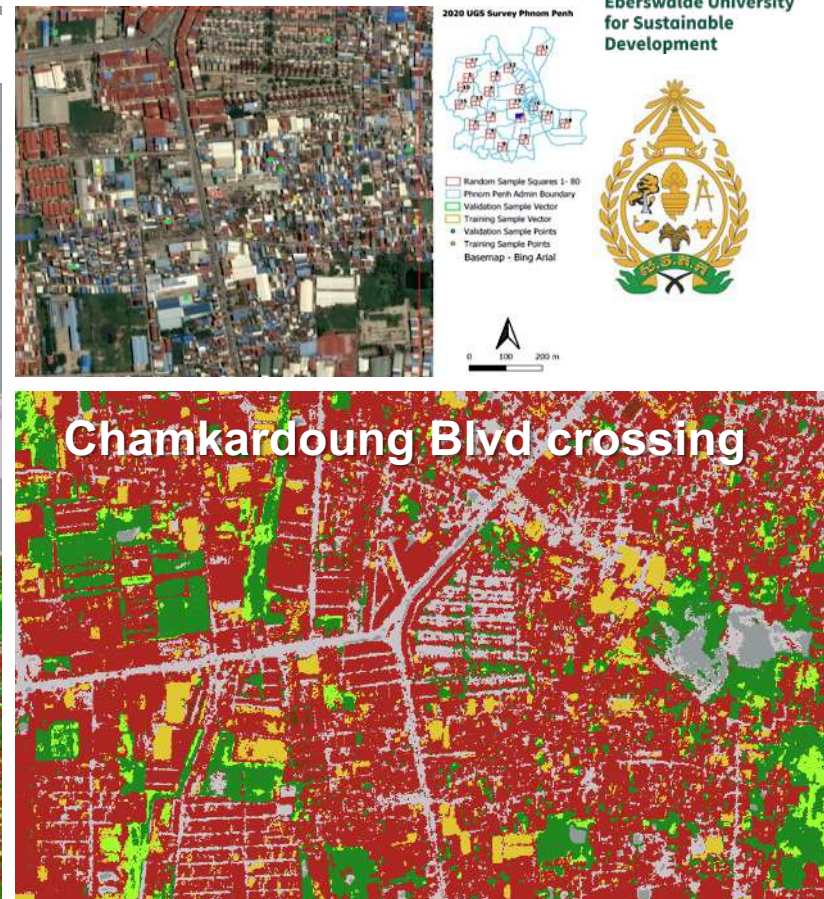
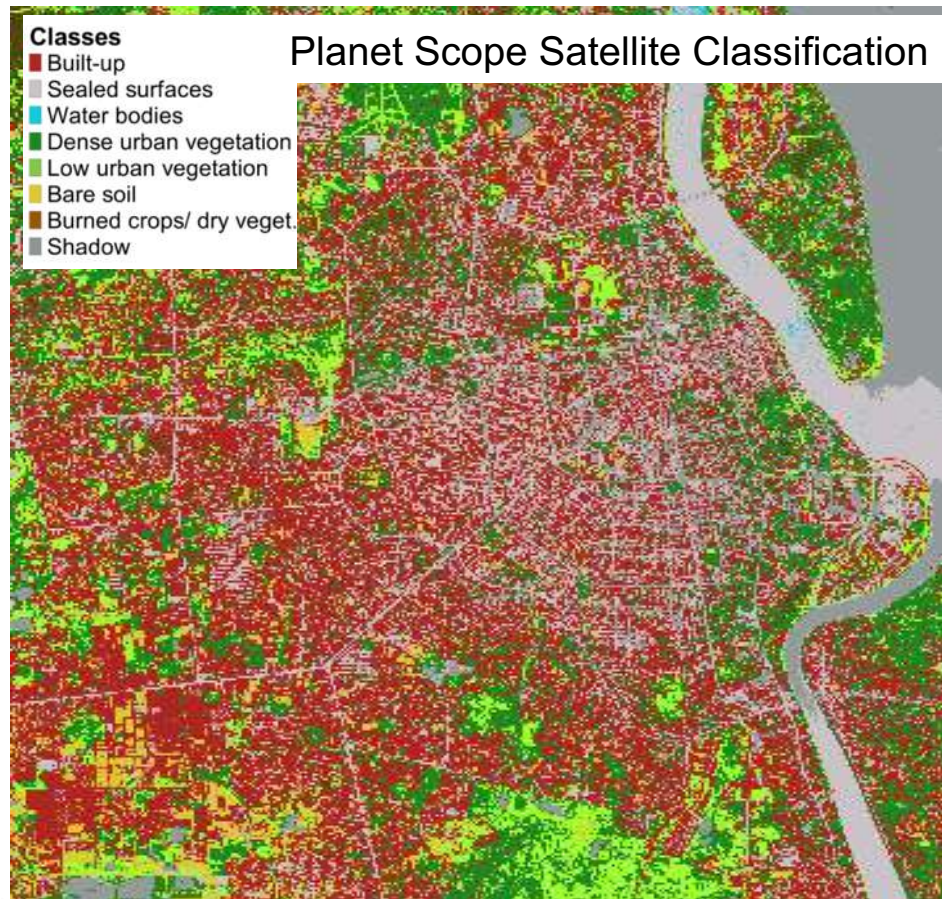
# WP4 Urban Green

Responsible team: Prof Dr Jan-Peter Mund  
Amelie McKenna

Dr Hor Sanara  
Eun Sambath



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

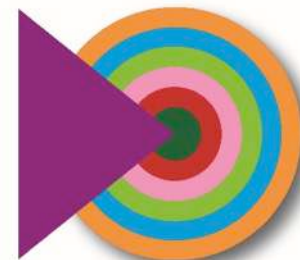




# WP4 Urban Green

*Responsible team: Prof Dr Jan-Peter Mund  
Amelie McKenna*

*Dr Hor Sanara  
Eun Sambath*





## Research results (III) - Urban Green Typology

A flexible modular system from land cover (structural UGS) and land use (functional UGS) classes is conceptualized in order to observe and describe a specific ground cover.

### 40 different of UGS – Types in PP – Examples:

  
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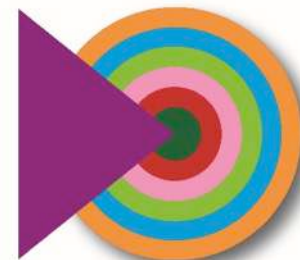
2	Public Playgrounds	Green areas intended for outdoor activities, playing and outdoor learning	
8	Road side trees, Alley and Hedges	Trees planted along roads and paths either solitary or in rows. Hedges along roads or paths	



# WP4 Urban Green

*Responsible team: Prof Dr Jan-Peter Mund  
Amelie McKenna*

*Dr Hor Sanara  
Eun Sambath*



## Implications of research results in regard of RD phase

  
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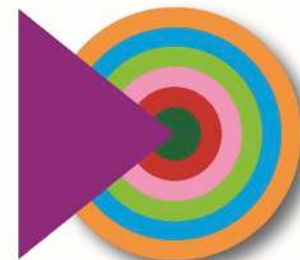


- ✓ **Implication I:** RD Prerequisite of a regional research area  
Threefold survey design using different scales
- ✓ **Implication II:** Integration of RD results into spatial decision making at the Phnom Penh Municipality  
e.g. via the B4P Ecocity Transition Lab series
- ✓ **Implication III:** Redesign and strengthening of transdisciplinary joint research design in between WP4 & WP1, WP5  
“Urban Quality of Life Survey”  
UQoL data processing support – B4P UQoL-Workshop
- ✓ **Implication IV:** Capacity building in curricula developments and implementation of higher education programs at RUPP, SAUP-PUC and RUA



# WP5 Urban Climate

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



## Research question and main objectives

**INKEK** institute for  
climate and  
energy strategies



- How can city development, the urban climate, particularly the urban heat island, can be considered in order to compensate global climate warming?
- How can urban climate recommendations lead to more sustainable development and sustainable buildings?

### Objectives:

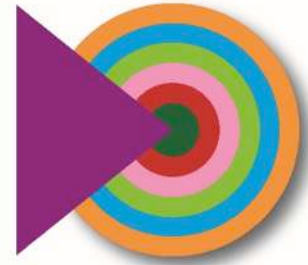
- To create climatological knowledge for planning recommendations and urban design.
- Tool for adaptation to global climate change in cities based on urban climate maps





# WP5 Urban Climate

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

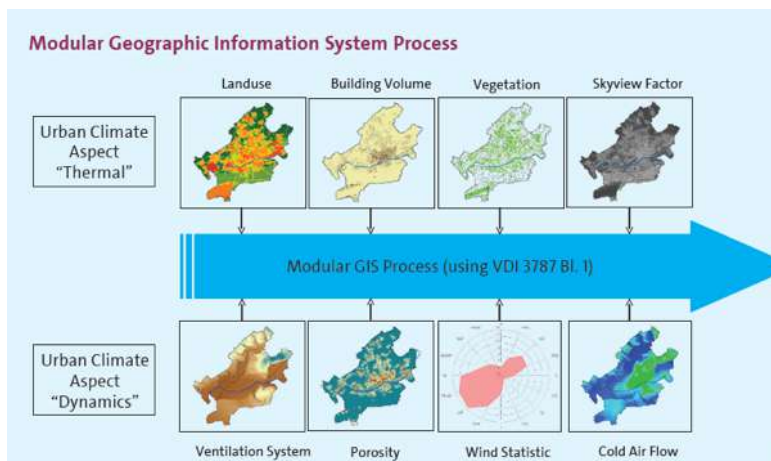


INKEK institute for  
climate and  
energy strategies



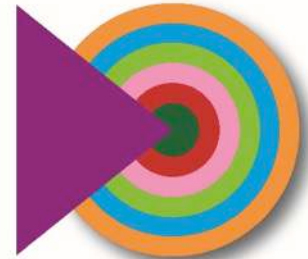
## Research methodology

- calculation of an urban climatic map and urban heat islands
- calibration of results by fixed and mobile measurements
- numerical simulation of neighbourhoods



# WP5 Urban Climate

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



## Research results (I)

### ➤ Phnom Penh Climate Conditions

- PP has a tropical climate, with distinctive wet and dry seasons, which is hot year-round with only minor variations.
- PP experiences the heaviest precipitation from September to October with the driest period in January and February.
- Precipitation in the city comes with southerly or southwesterly monsoon circulation.
- PP experiences seasonal monsoon floods and sometimes river overflows its banks leading to bank erosion as well.

regional wind pattern.



urban wind pattern

Incoming winds  
(main wind direction)

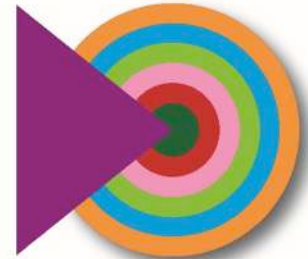
predominate direction  
weaker incoming wind

thermal induced pattern



# WP5 Urban Climate

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



INKEK institute for  
climate and  
energy strategies



## Research results (II)

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

- PP has a typical monsoonal climate with precipitation of about 1400~1500 mm per year and average temperature of around 30°C .
- The maximum temperature *difference* in PP during daytime was 9.5°C and 4.4°C during the nighttime (*i.e.* urban heat island intensity).

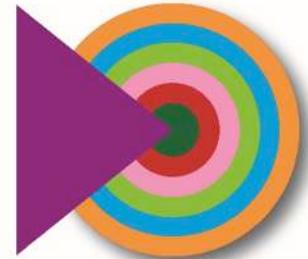
AWS recorded at Boeung Keng Kang I (daytime):  
On 09 Jan 2021  
Max Temperature: 32°C (13:45 PM)  
Min Temperature: 22.5°C (07:15 AM)

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)



# WP5 Urban Climate

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



INKEK institute for  
climate and  
energy strategies



## Implications of research results in regard of RD phase

- ✓ Recommendation maps and guidelines
- ✓ Tools for climatological building design
- ✓ Adaptation measures for urban climate and heat stress
- ✓ Capacity building in supporting joint curricula developments at RUPP, SAUP-PUC and RUA



Source: Results from Build4People Ecocity Transition Lab in Phnom Penh 3/2020

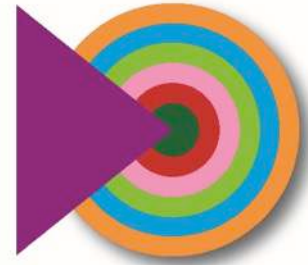




# WP6 Sustainable Urban Transformation

*Responsible team: Dr. Michael Waibel  
Ravi Jayaweera*

*Dr Seak Sophat  
Thy Naroeun*



## Research question and main objectives

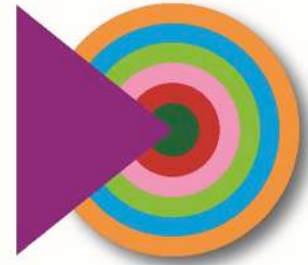
- ✓ **How can people-oriented governance approaches be developed for a sustainable urban transformation of Phnom Penh which also increase the urban quality of life?**
- First conceptualisation of development pathways for a sustainable urban transformation
- Specific input for the transdisciplinary understanding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



# WP6 Sustainable Urban Transformation

*Responsible team: Dr. Michael Waibel  
Ravi Jayaweera*

*Dr Seak Sophat  
Thy Naroeun*



## Research methodology

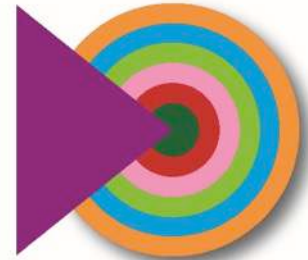
- Literature review
- Document analysis
- Semi-structured expert interviews (N = 21)
- Qualitative data analysis



# WP6 Sustainable Urban Transformation

*Responsible team: Dr. Michael Waibel  
Ravi Jayaweera*

*Dr Seak Sophat  
Thy Naroeun*



## Research results (I)

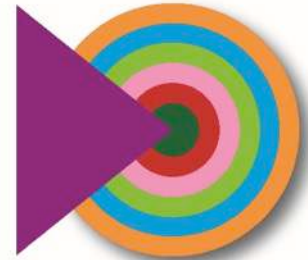
- Lack of regulation, weak enforcement (capabilities) of the state,
- Lack of capacity and power of subnational administration,
- Profit-driven investment flows into the built environment with short term investment outlook and little concern for sustainability considerations,
- Deterrent effect of (perceived) additional costs for sustainability aspects and increased corporate risks,
- Insufficient (financial) incentives for the implementation of sustainable practices,
- Disjointed market and governance landscape
- Lack of platform for exchange between sustainability-minded actors.



# WP6 Sustainable Urban Transformation

Responsible team: Dr. Michael Waibel  
Ravi Jayaweera

Dr Seak Sophat  
Thy Naroeun



## Research results (II)

### Transition Barriers

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

### Transition Drivers

**Pilot/Demonstration/Experimental Projects**  
 TNCs with Green Building Standards  
 Green Building Guidance  
 Transition Drivers/Triggers  
 Value of real estate/Market differentiation  
 Green Lifestyle, feeling cool, mindset change  
 Green Building Regulation/Certification  
 Fiscal/tax exemption  
 Recent building collapses in Cambodia  
 Incentives  
 Stakeholder Involvement/Cooperation  
 Public investment as incentive  
 High Electricity prices/economic case  
 Long-term planning/Saving/Financial literacy  
 Supportive Infrastructure  
 Green Buildings and health

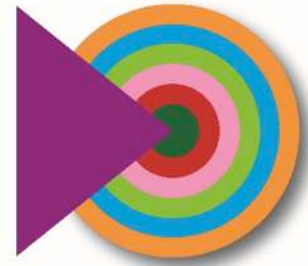




# WP6 Sustainable Urban Transformation

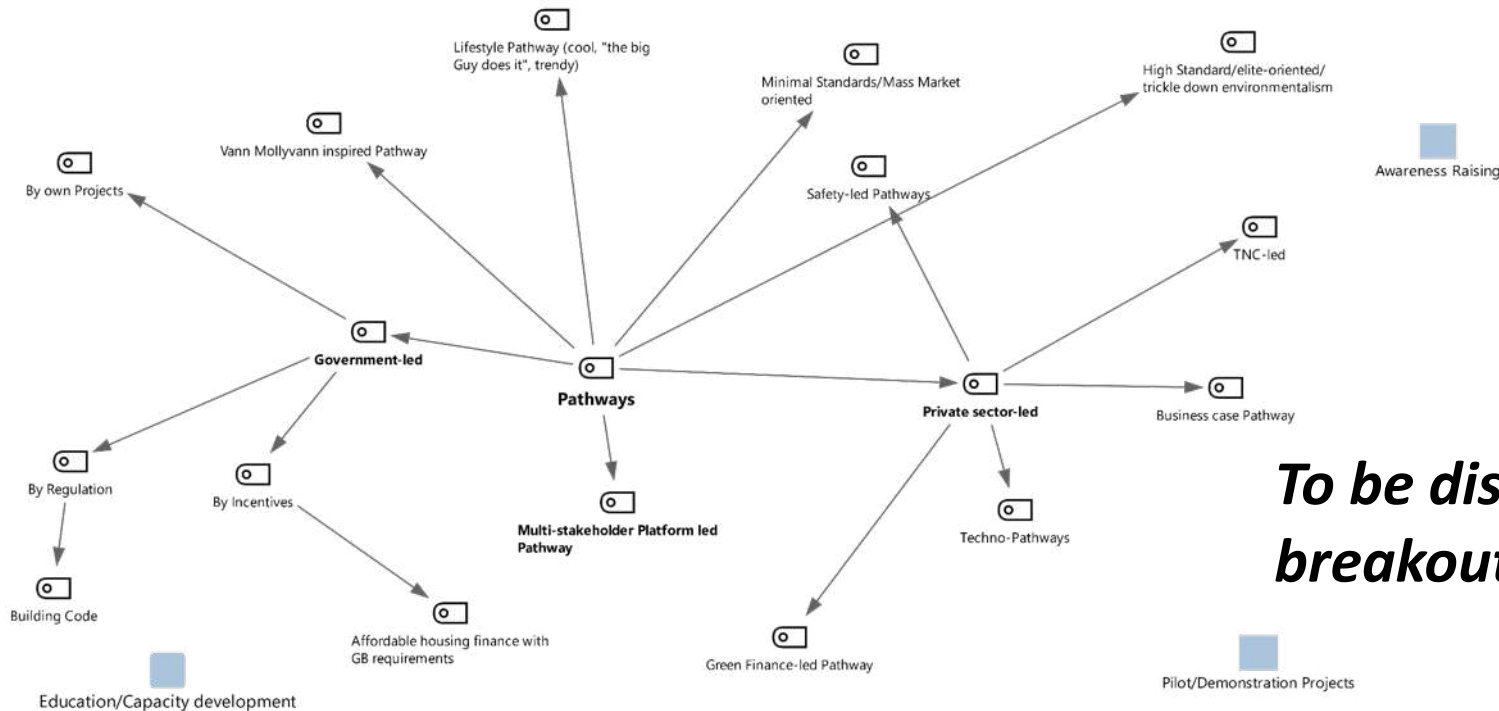
Responsible team: Dr. Michael Waibel  
Ravi Jayaweera

Dr Seak Sophat  
Thy Naroeun



## Research results (III)

### Potential Transition Pathways



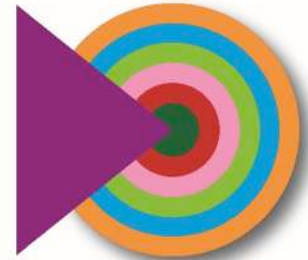
***To be discussed in  
breakout group #4!***



# WP6 Sustainable Urban Transformation

*Responsible team: Dr. Michael Waibel  
Ravi Jayaweera*

*Dr Seak Sophat  
Thy Naroeun*



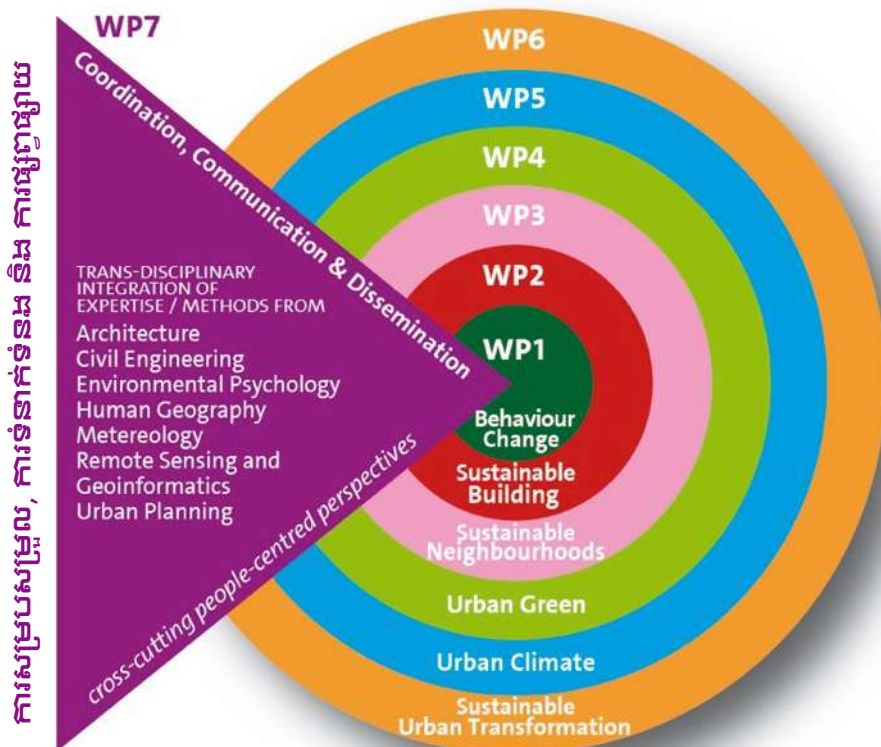
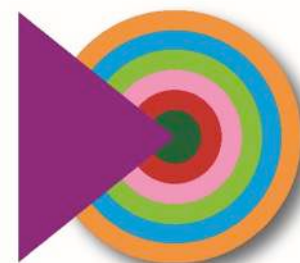
## Implications of research results in regard of RD phase

- ✓ Better understanding of drivers, barriers, pathways and their interconnections
- ✓ Need of systemic approach to achieve sustainable urban transformation
- ✓ Constantly adapt transformational interventions to research results
- ✓ Local adaptation of western models of sustainable urban transformation needed
- ✓ Inclusion of a module on sustainable urban transformation into a new trans-disciplinary master course at Paññāsāstra University of Cambodia.



# WP7 Coordination, Communication & Dissemination

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



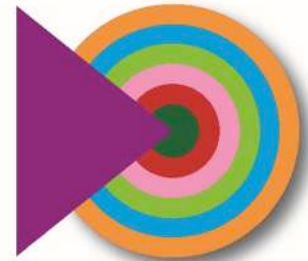
## Approach of the Definition Phase

- 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



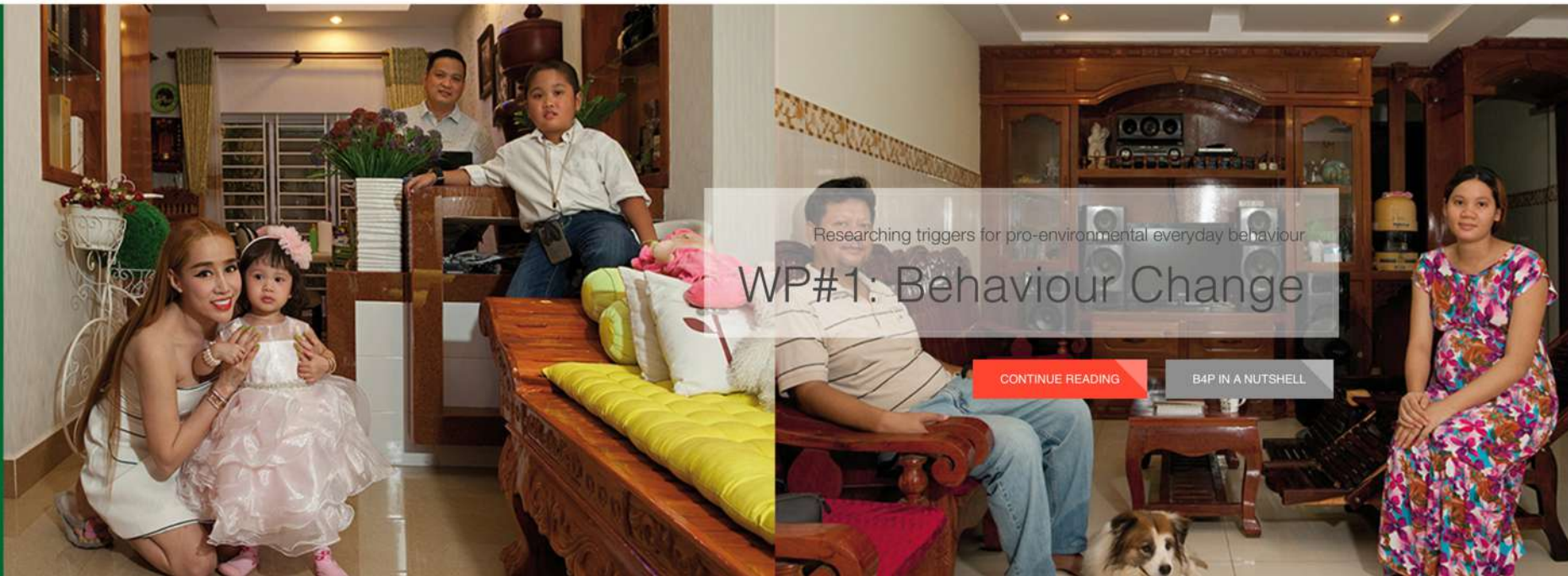
## Dissemination Activities of the Definition Phase

### *Build4People Homepage*



SPONSORED BY THE  
Federal Ministry  
of Education  
and Research  
**Build4People**  
RESEARCH FOR BETTER QUALITY OF URBAN LIFE

[HOME](#) [NEWS](#) [PROJECT OUTLINE](#) [WORK PACKAGES](#) [EVENTS](#) [PRESS MEDIA](#) [PUBLICATIONS](#) [CONTACT](#)



Researching triggers for pro-environmental everyday behaviour

## WP#1: Behaviour Change

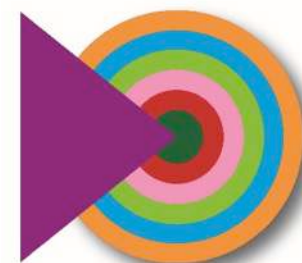
[CONTINUE READING](#)

[B4P IN A NUTSHELL](#)



# Build4People Project

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



## Dissemination Activities of the Definition Phase

### *Build4People @ Social Media*

**Build4People**  
Published by Michael Waibel · 12 January at 20:22 ·

The Global Alliance for Buildings and Construction (Global) just published its fifth annual report, in which it presents current developments in the field of sustainable building. In it, it states that CO2 emissions from the operation of buildings have risen to the highest level ever, at around 28 percent of total global energy-related CO2 emissions. The construction of buildings adds another 10 percent. The building and construction sector thus has an almost 40 perc... [See more](#)

**2020 GLOBAL STATUS REPORT FOR BUILDINGS AND CONSTRUCTION**  
Towards a zero-emissions, efficient and resilient buildings and construction sector




**Build4People**  
70 followers  
2w ·

[#build4people](#)



**Rolf Messerschmidt** · 1st  
Partner, Architect and Urban Designer at Eble Messerschmidt Partner, Archit...  
2w ·

Season's Greetings from EMP:  
In challenging times, our credo remains the design of human-friendly and sustainable living spaces in harmony with nature. We want to than ...see more





we-house life for changing times in Hamburg Hafencity





**Christmas 2020**  
Happy New Year

**Build4People**  
Sustainable Buildings for People - Enhancing Urban Quality of Life in Cambodia

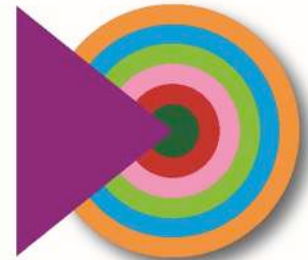
 

**Project**



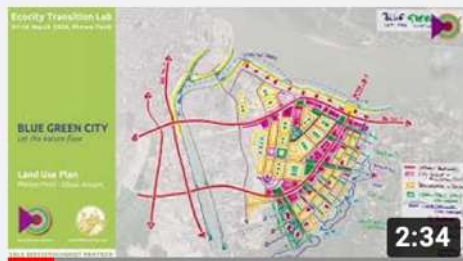
# Build4People Project

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



## Dissemination Activities of the Definition Phase

### *Build4People Video Clip Series – YouTube Channel*



**Build4People Project: Ecocity Transition Lab at Phnom...**

2.8K views • 9 months ago



**Build4People Project: Exhibition Opening "Green..."**

1.4K views • 9 months ago



**Build4People Project Launch & Conference, 26 November...**

1.3K views • 10 months ago



**Build4People Project: Research for Better Quality ...**

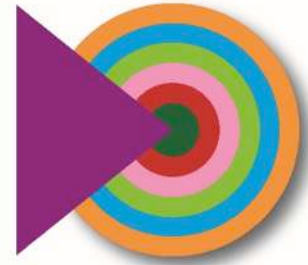
4.5K views • 1 year ago





# Build4People Project

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



## Dissemination Activities of the Definition Phase

### Build4People Exhibition (1<sup>st</sup> edition) – ENG / KHMER



#### ផ្នែកទី ១ ផ្ទាំងបណ្តាញឡាសាស្ត្រ

ណែនាំគោលការណ៍ទូទៅនៃនិរន្តរភាពព័ត៌មានបរិស័យដែលផ្អែកលើវិស័យគោលនយោបាយផ្សេងៗគ្នាដូចជា ទីក្រុងបៃតង អាកាសធាតុទីក្រុង អគារ ការអភិវឌ្ឍសហគមន៍ឬការផ្លាស់ប្តូរទីក្រុង។

#### ផ្នែកទី ២ ផ្ទាំងបណ្តាញឡាសាស្ត្រ

ការតាំងបង្ហាញ Build4People លើកទី ១ ណែនាំអំពីករណីសិក្សាដែលមានការអនុវត្តល្អបំផុតពីប្រទេសអាល្លឺម៉ង់និងអឺរ៉ុប។

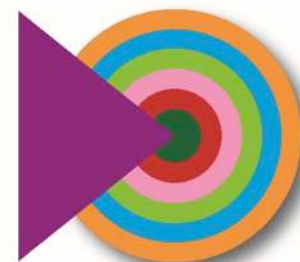
#### ផ្នែកទី ៣ ការណែនាំពី DGNB

ទំនាក់ទំនងដ៏បំផុតរបស់សហភាពអឺរ៉ុបសម្រាប់អគារដែលប្រកបដោយនិរន្តរភាព

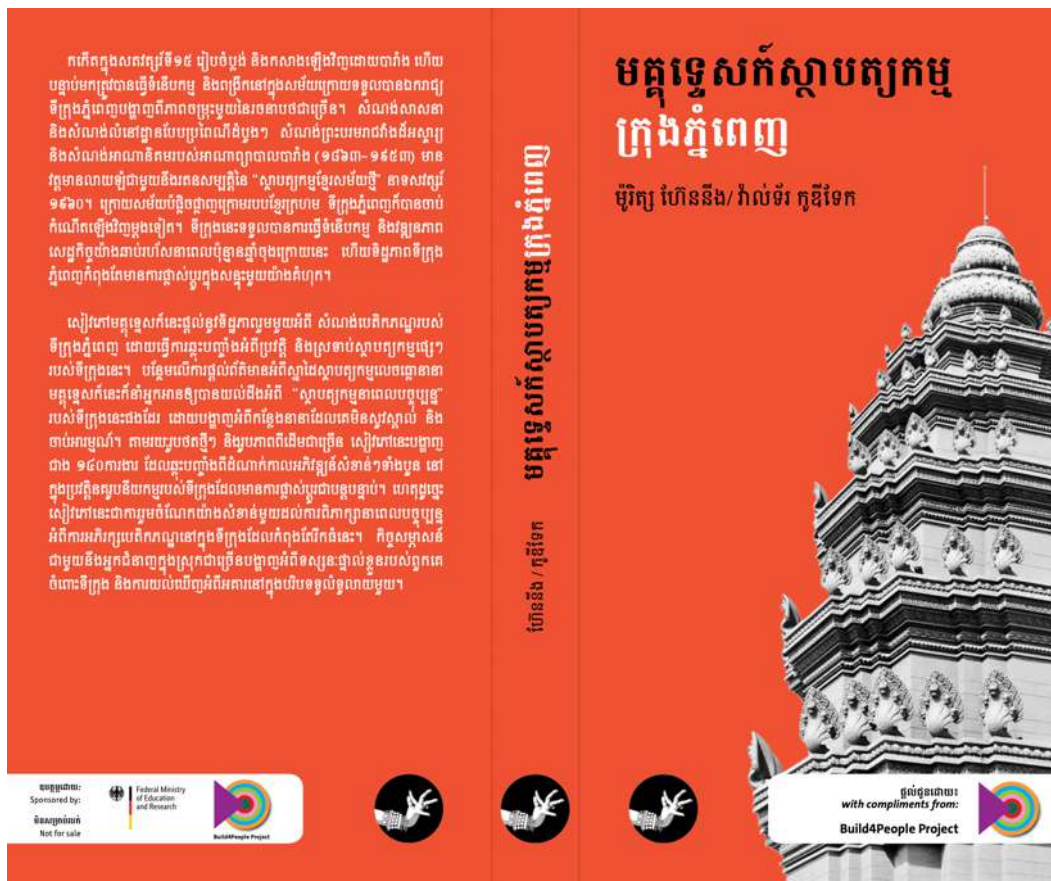


# Build4People Project

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



## Dissemination Activities of the Definition Phase *Architectural Guide Phnom Penh*

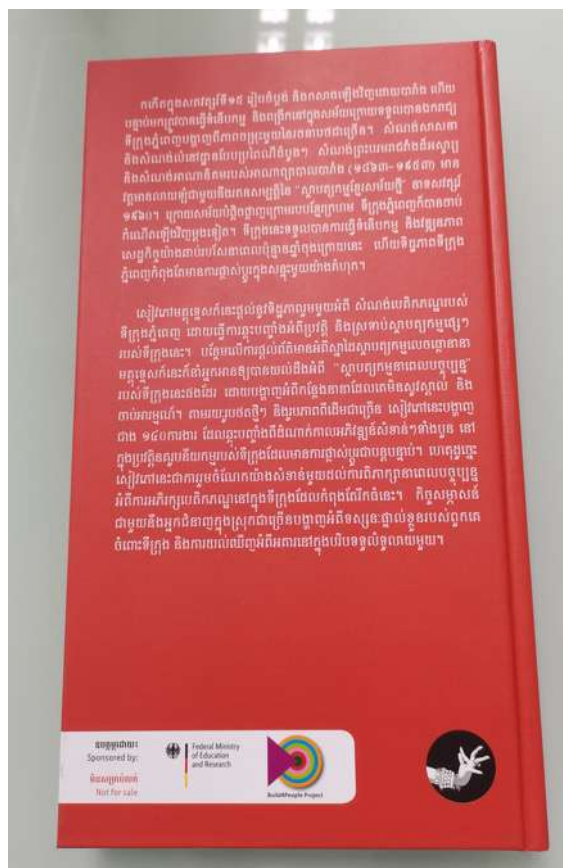
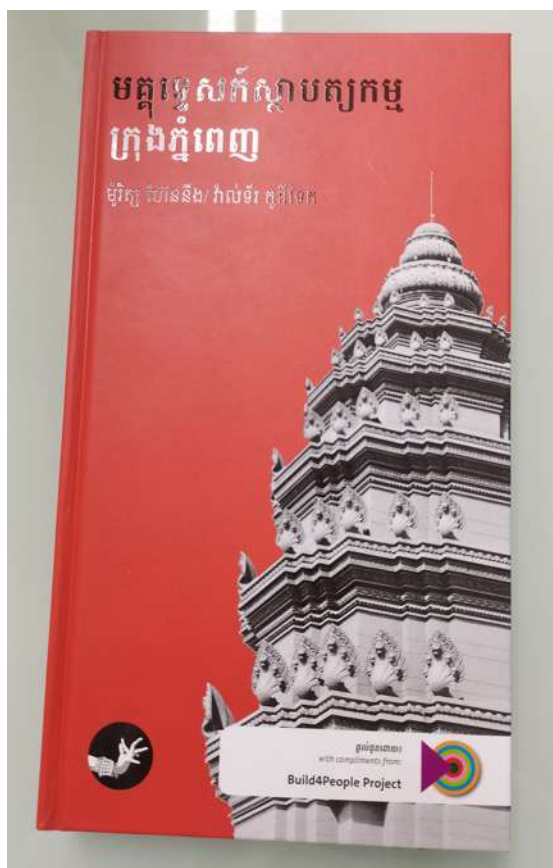
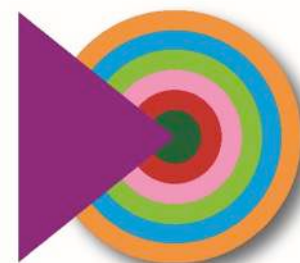




# Build4People Project

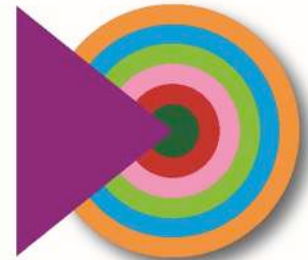
Sustainable Buildings for People – Enhancing Quality of Urban Life in Cambodia

## Dissemination Activities of the Definition Phase *Architectural Guide Phnom Penh*



# Build4People Project

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



## Activities of the Definition Phase

### *Event Management / Organisational Support*



#### WP#3 “Sustainable Neighbourhoods” Roundtable Workshop

- **Date:** 27 November 2019
- **Venue:** Phnom Penh City Hall (PPCH), Phnom Penh
- **Time:** 9:00-12:30

#### **PROJECT LAUNCH & CONFERENCE** Phnom Penh, 26 November 2019 Tentative Agenda



Venue: Sunway Hotel Phnom Penh, No. 1, Street 92, Sangkat Wat Phnom, Phnom Penh 12202, Kingdom of Cambodia

#### Build4People Project Launch & Conference

- **Date:** 26 November 2019
- **Venue:** Phnom Penh, Sunway Hotel
- **Time:** 8:30-16:30

All German and Cambodian partners introduce the Build4People project to the general public.





# ទីក្រុងបៃតង ខៀវប្រកបដោយចីរភាព

A BLUE GREEN CITY



គំរោង ច្បាប់អំពៅ ការសិក្សាការផ្លាស់ប្តូរឆ្ពោះទៅទីក្រុងអេកូឡូស៊ី

PHNOM PENH-CHBAR AMPOV • BUILD4PEOPLE • ECOCITY TRANSITION LAB • MARCH 2020



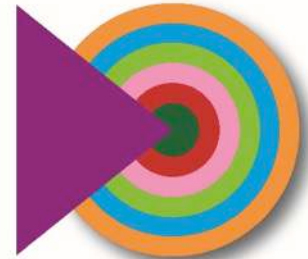
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# Build4People Project

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



## Overall implications of Build4People research results in regard of RD phase from WP7 perspective

- ✓ Ensuring implementation of joint transdisciplinary approach
- ✓ Research design of three distinct phases (analysis, action research, review/refine)
- ✓ Systemic approach towards gradual sustainable urban transformation
- ✓ Capacity mobilisation with focus on curriculum development at different schools, also to feed in our research findings with a lasting impact and to transdisciplinarily compile and connect results from all Work Packages
- ✓ Preparation of subsequent B4P IMPLEMENTATION PHASE from year 1





# Build4People Project

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## B4P STATUS CONFERENCE

Thanks so much for your  
attention!

អរគុណសម្រាប់ការយក  
ចិត្តទុកដាក់!

Your support is warmly  
welcome!

### Research Partners



### Implementation Partners



### Dissemination Partners



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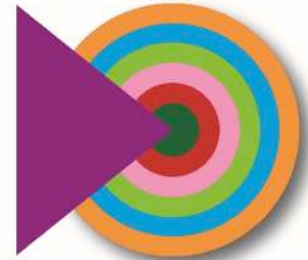
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## Brief introduction of interactive break-out sessions

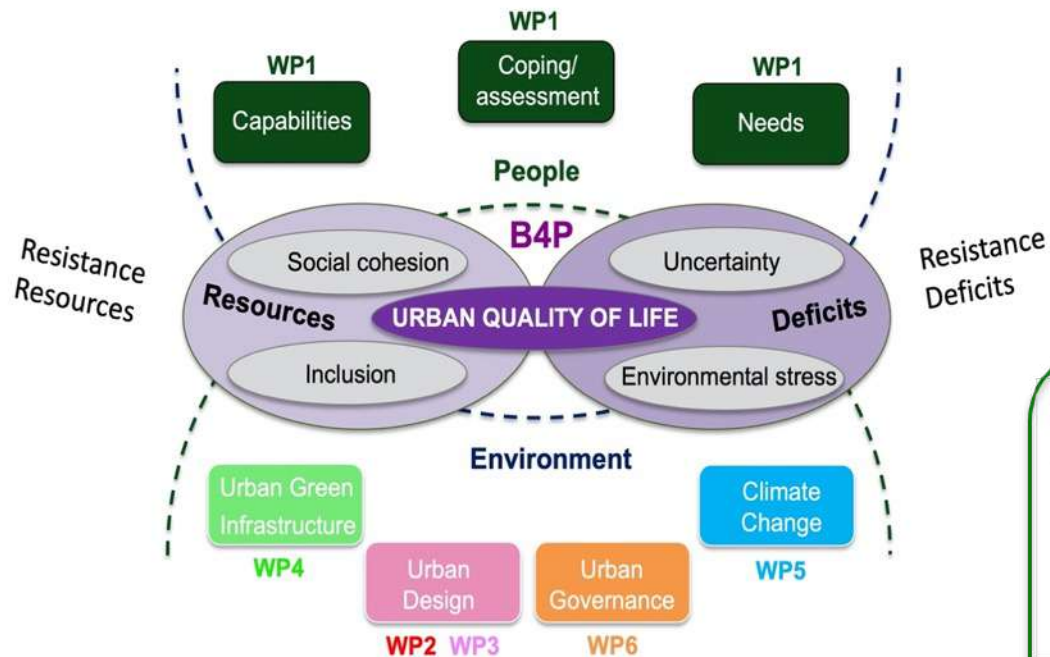
- **Session #1** How to promote urban quality of life
- **Session #2** Implementation of sustainability on building and neighbourhood level
- **Session #3** Implementation of sustainability in the field of urban green infrastructures / urban climate
- **Session #4** How to promote sustainable urban transformation



# Session #1: Urban Quality of Life



## How to measure and to promote Urban Quality of Life

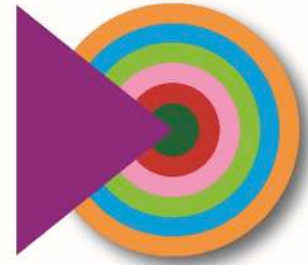


### Household-survey (N=500)

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



# Session #2: Implementation of sustainability on building and neighbourhood level



## WP#2: Sustainable Building អគារដែលមាននិរន្តរភាព



University of Stuttgart  
Germany

## WP#3: Sustainable Neighbourhoods សហគមន៍ដែលមានជីវភាព

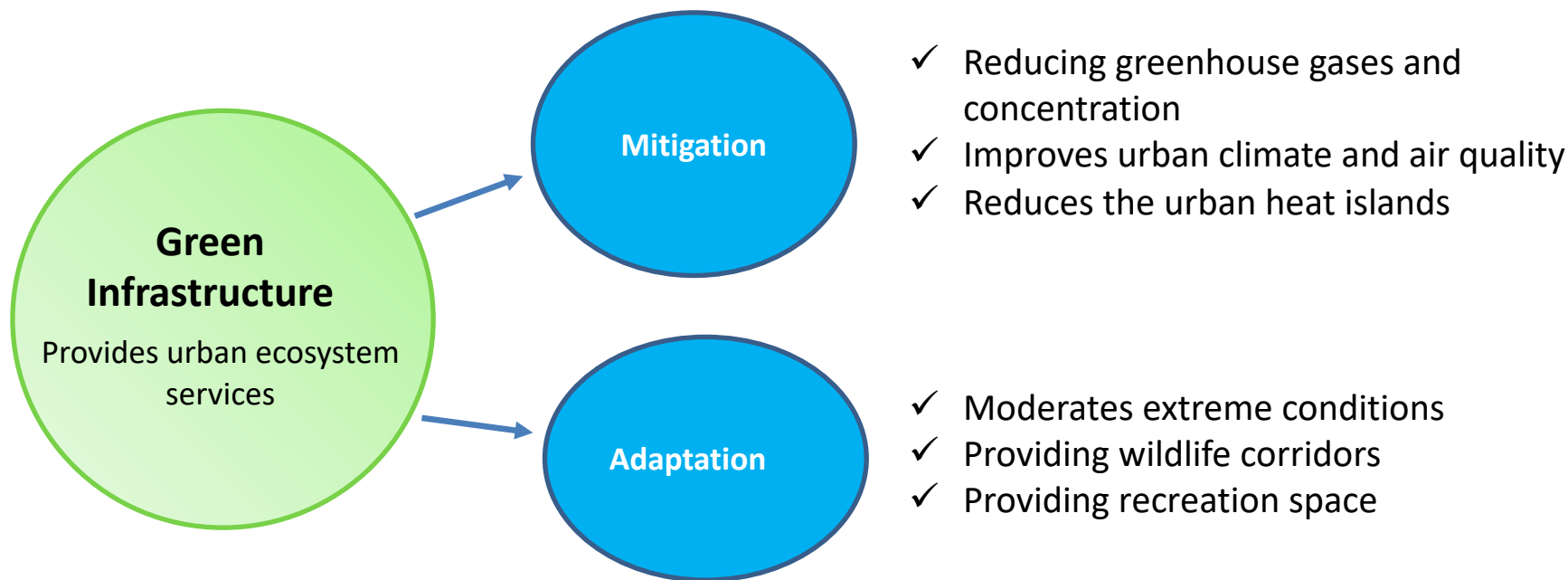
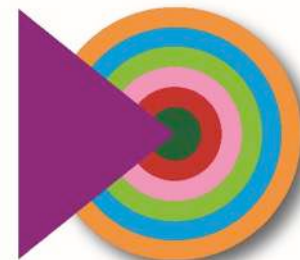


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# Session #3: Climate Change and Green Infrastructure



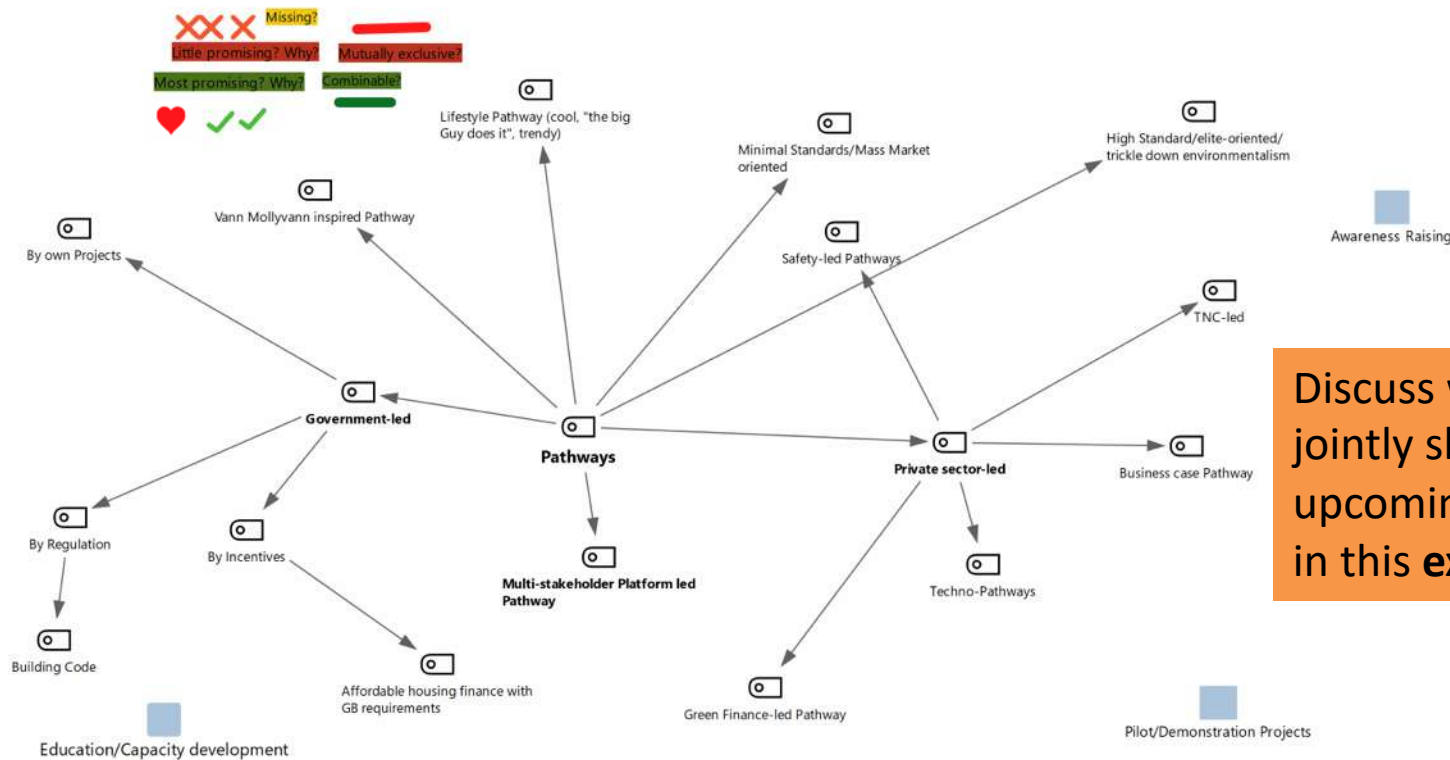
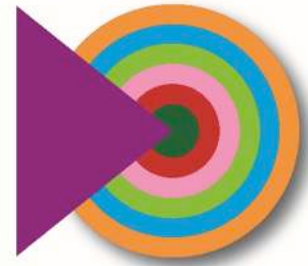
**Two important aspects to enhance urban quality of life for people in Phnom Penh**

*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 Mund (HNEE); Dr Hor Sanara (RUA); Amelie McKenna (HNEE); Eun Sambath (RUA)



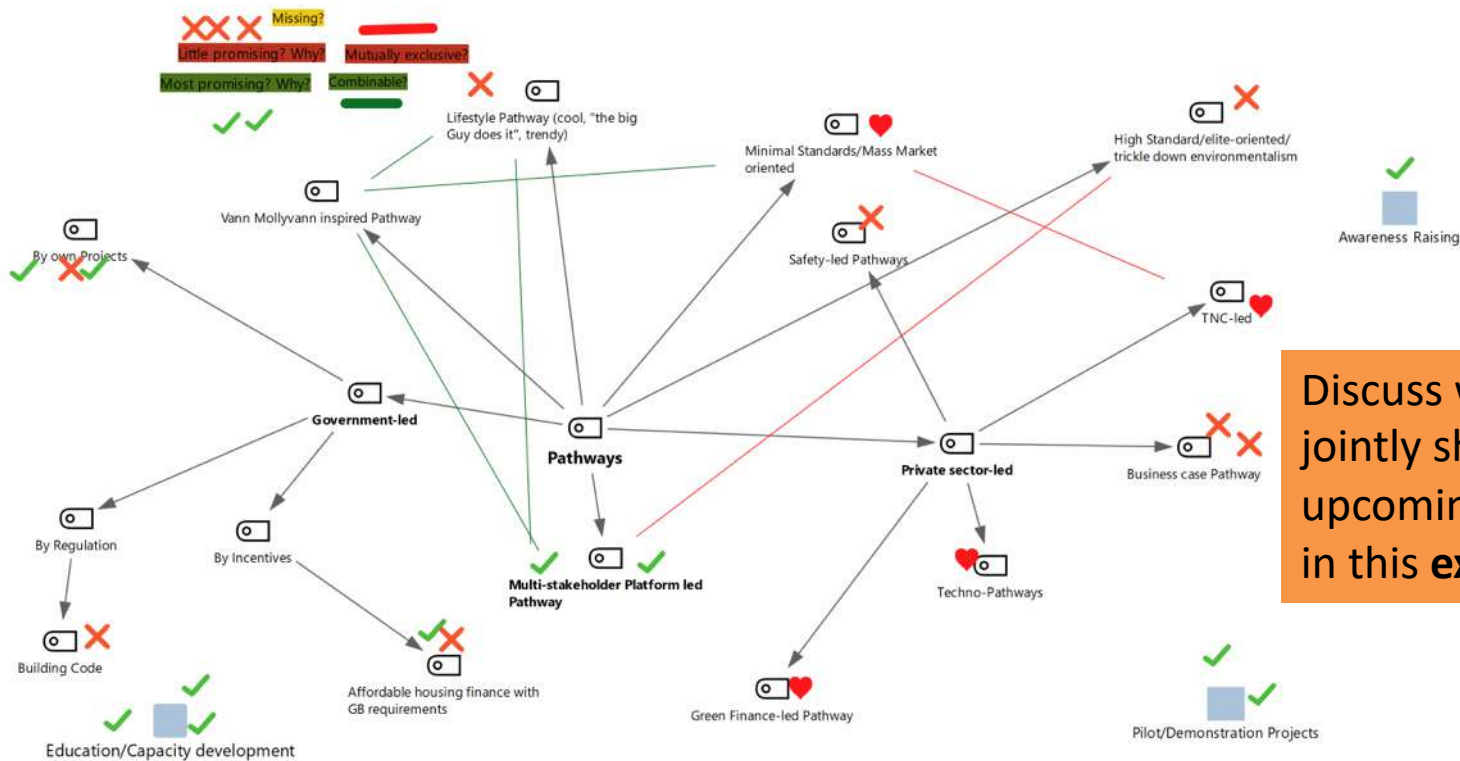
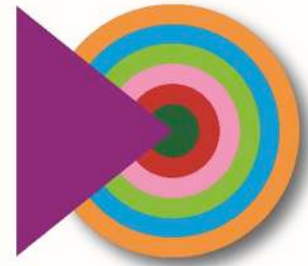
# Session #4: How to promote a sustainable urban transformation in Phnom Penh?



Discuss with us and jointly shape the upcoming B4P research in this **exciting** session!



# Session #4: How to promote a sustainable urban transformation in Phnom Penh?



Discuss with us and jointly shape the upcoming B4P research in this **exciting** session!



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## Results of inter-active break-out sessions

- ✓ **Session #1** How to promote urban quality of life
- ✓ **Session #2** Implementation of sustainability on building and neighbourhood level
- ✓ **Session #3** Implementation of sustainability in the field of urban green infrastructures / urban climate
- ✓ **Session #4** How to promote sustainable urban transformation





# Build4People Project

Enhancing Quality of Urban Life through  
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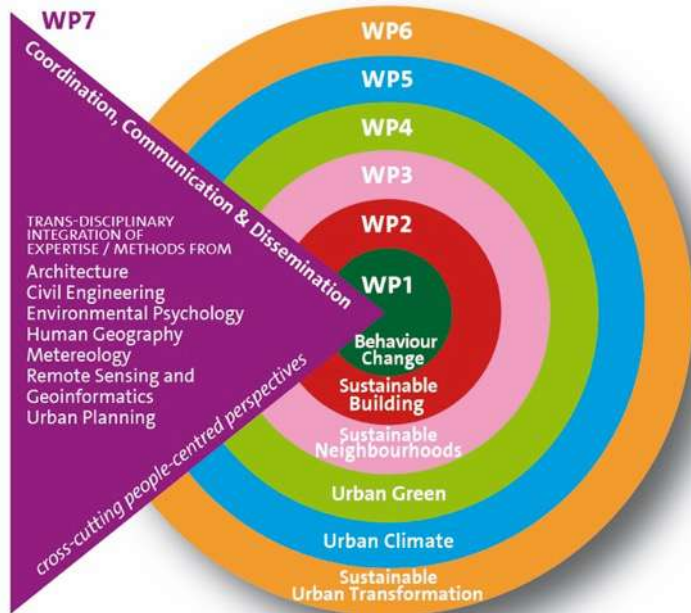
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## Brief outlook on Build4People Research and Development phase (B4P RD phase)

*Michael Waibel, Build4People Consortium Representative*



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## SURE Sustainable Development of Urban Regions

**SEA2-010 Emplement**  
Empowering Urban Regions for  
cooperative, synergistic and  
practical implementation of  
sustainability

**SEA2-035 GreenCityLabHue**  
Strengthening Climate  
Resilience of Urban Regions in  
Central Vietnam

**CHN-012 IMECOGIP**  
Green Infrastructure planning  
for resilient urban  
development

**CHN-031 URA**  
Transformation to  
sustainable urban-rural  
economies

**SEA2-006 CHARMS**  
Sustainable urban development in  
Chiang Mai's historic quarters

**SEA2-014 LIRLAP**  
Linking disaster risk governance  
and landuse planning

**SEA2-004 FloodAdaptVN**  
Ecosystem-based approaches to  
flood risk management

**SEA2-029 MyRisk**  
Management of  
risks during extreme  
events

**SEA2-018 PolyUrbWater**  
Polycentric Approaches to the  
Management of Urban Water  
Resources

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**SEA2-012 Build4People**  
Sustainable buildings for  
people



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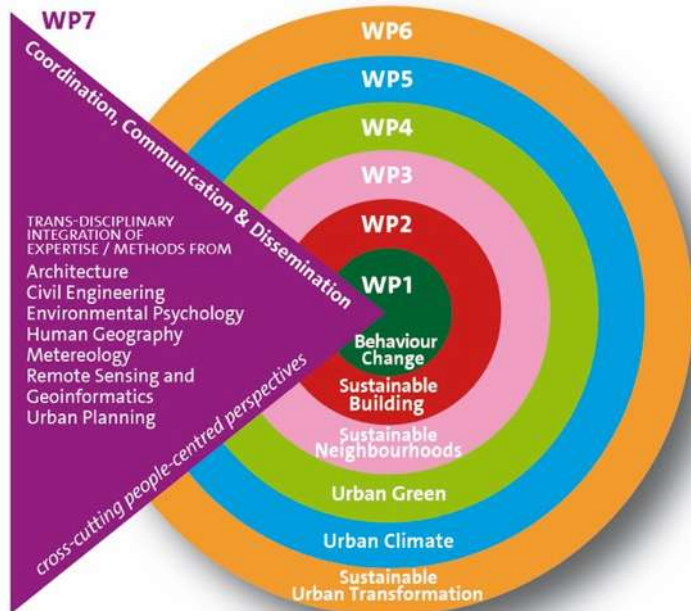
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## Research Proposal Build4People RD-Phase

<b>Project title:</b>	Build4People: Enhancing Quality of Life through Sustainable Urban Transformation
<b>Acronym:</b>	Build4People
<b>Topics:</b>	Energy- and resource-efficient buildings Integrated urban development Urban quality of life Sustainable urban development pathways Pro-environmental behaviour and sustainable living
<b>Country:</b>	Cambodia
<b>Total expenses:</b>	3.419.502 Euro (Research & Development Phase)
<b>Funding request:</b>	3.186.277 Euro

- The overall aim is to support a **transformative shift** in Phnom Penh's current business-as-usual urban development pathway towards a **pathway with higher sustainability and liveability levels**, with the **building sector as the entrance point of our research**.





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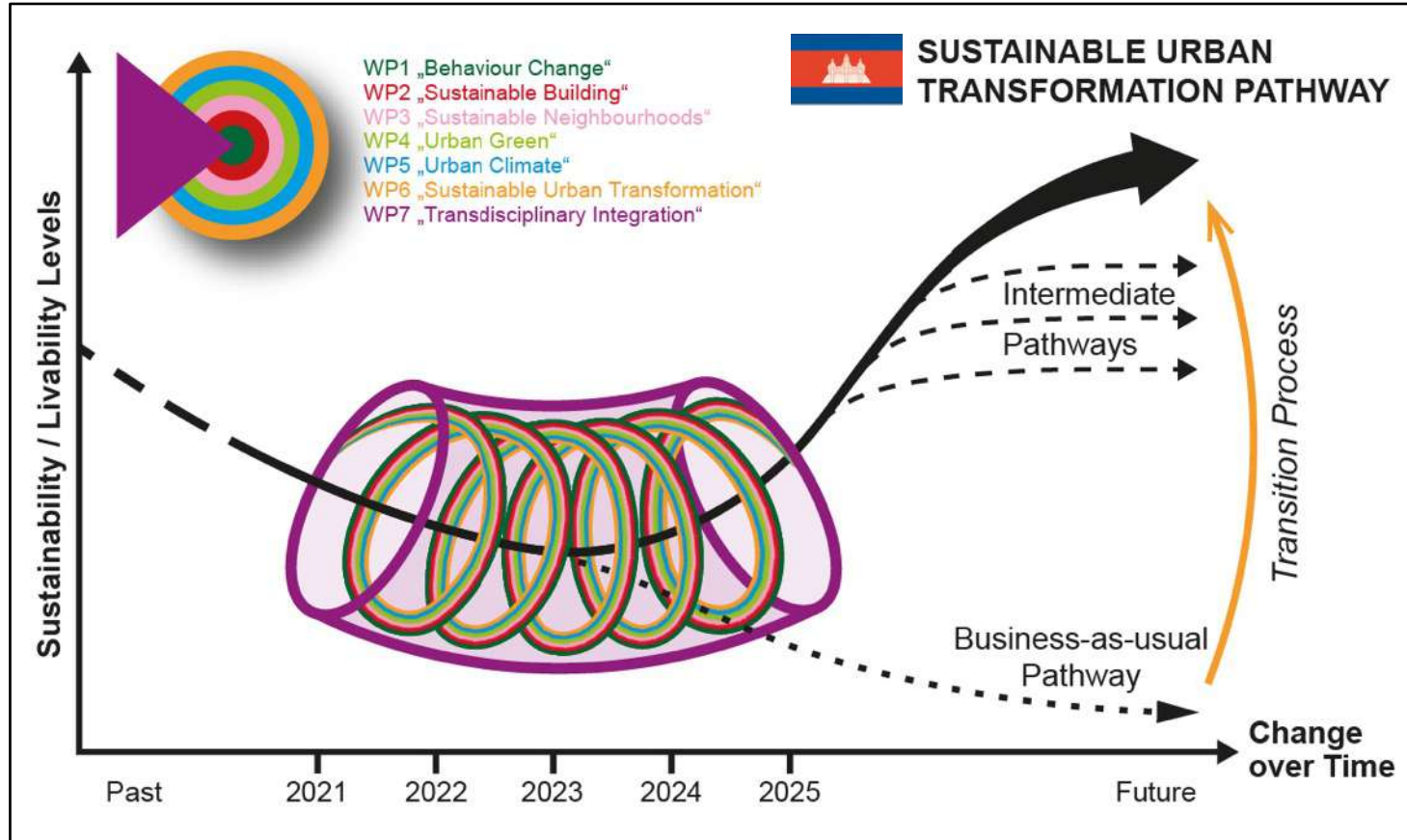
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➤ **B4P interventions and action research successfully support a more sustainable urban transformation pathway**



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## Build4People consortium architecture during RD phase

### German Research Partners

WP1: Behaviour Change



WP2: Sustainable Building



WP3: Sustainable Neighbourhoods



WP4: Urban Green



WP5: Urban Climate



WP6: Sustainable Urban Transformation

WP7: Coordination, Communication & Dissemination



### Cambodian Research Partners

Royal University of Phnom Penh



Pannasastra University of Cambodia



Institute of Technology



Royal University of Agriculture



### Corporate Camb. Research Partner



### Project Management Partner



### Implementation Partners

Phnom Penh Capital Administration



National Council for Sustainable Development



### Dissemination Partners



Global Alliance for Buildings and Construction



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[illegible]

- Extension of DEF-Phase by 2 months till 31 March 2021
- RD phase project start from 01 April 2021
- Only one Build4People team trip in 2021 / one in 2025





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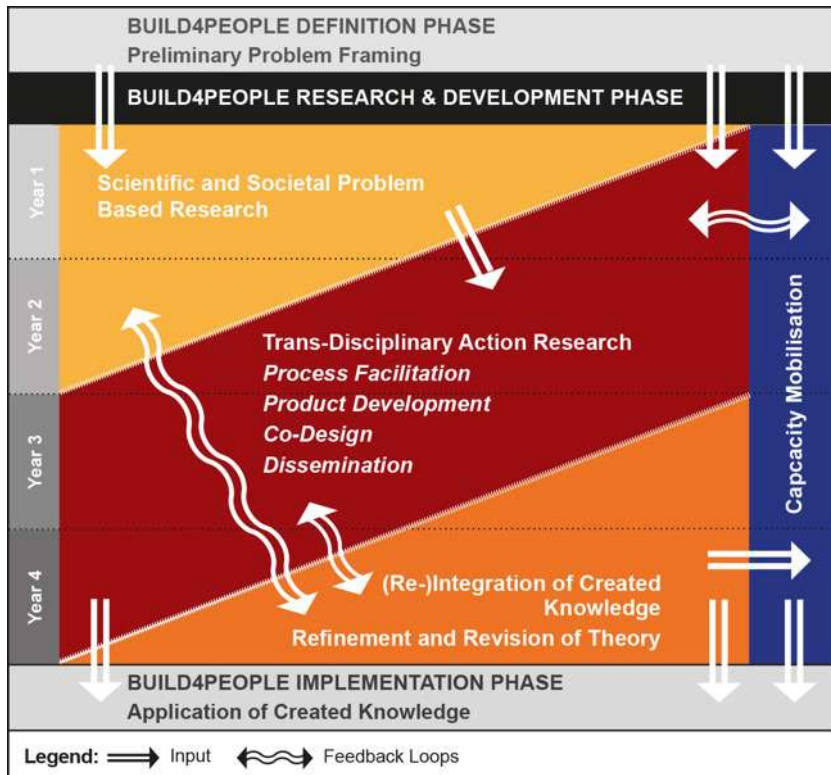
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## Build4People RD-Phase Research Design

The design of the B4P RD phase consists of three overlapping spheres based on renowned trans-disciplinary research approaches in sustainability science (Lang et al. 2012; Noboa 2019):

- 1) Societal and scientific problem-based research,
- 2) Transdisciplinary action research, and
- 3) Reflection, refinement & re-integration of created knowledge.



➤ **Build4People main outputs related to 3 distinct research phases**





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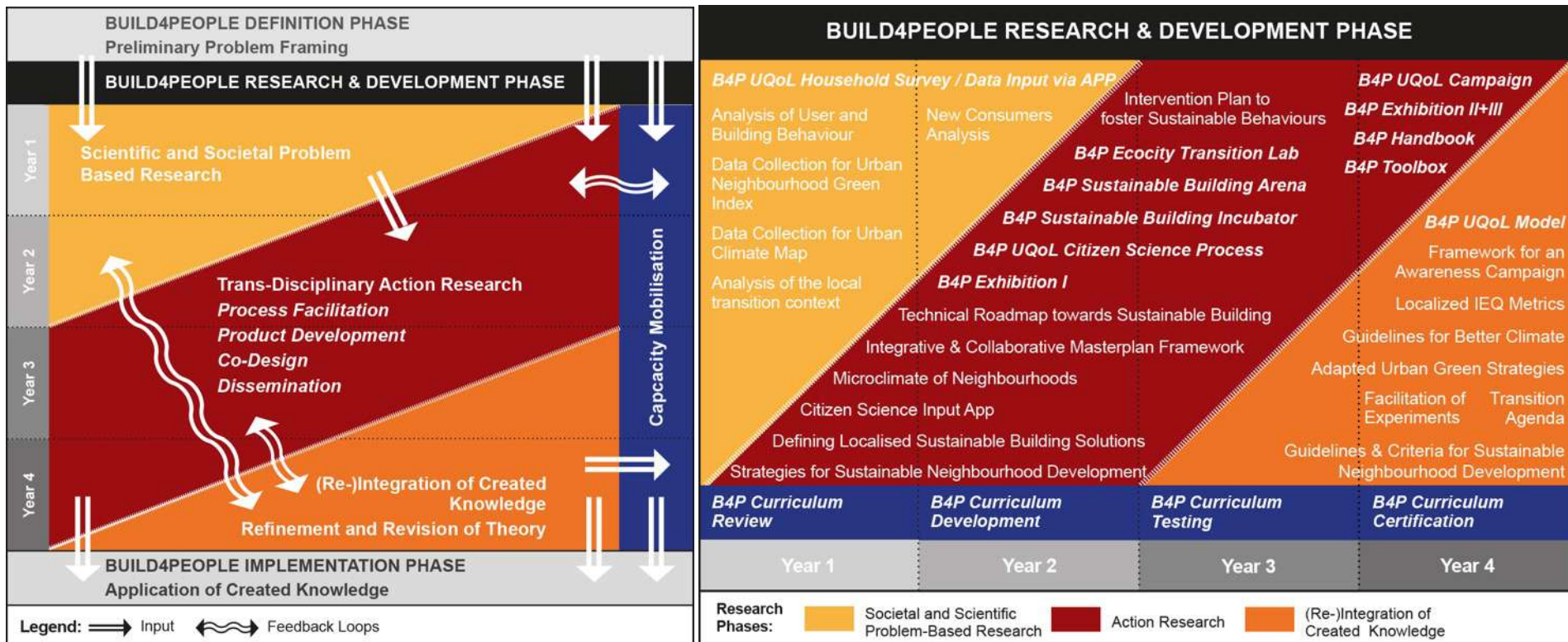
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## Build4People RD-Phase Research Design



➤ Build4People main outputs related to 3 distinct research phases



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## Build4People RD-Phase Worksteps

### IV. Problem Based Research: Data Collection and Analysis

IV.A *Each WP*

▶▶ IV.B *Build4People UQoL Household Survey / Data Input via APP* ◀

### V. Trans-Disciplinary Action Research

◀ V.A *Build4People EcoCity Transition Lab Process* ◀

▶▶ V.B *Build4People Sustainable Building Arena Process* ◀

▶▶ V.C *Build4People Sustainable Building Business Incubator Process* ◀

▶▶ V.D *Build4People UQoL Citizen Science Process* ◀

### VI. (Re-)Integration of Created Knowledge Refinement of Theory

VI.A *Each WP*

▶▶ VI.B *Build4People UQoL-Model Development / Data Modelling* ◀

➤ **Key transdisciplinary Build4People research activities and events**



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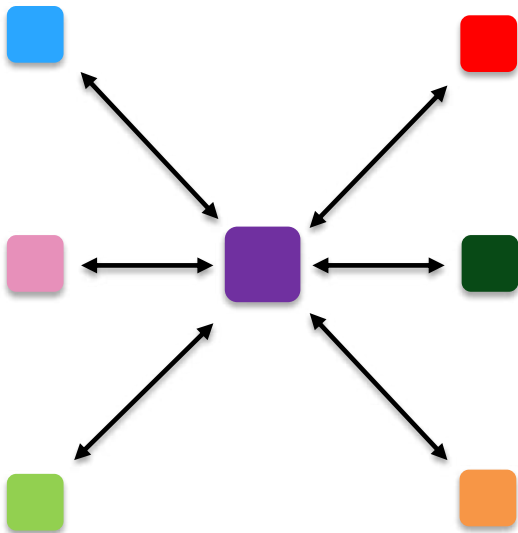
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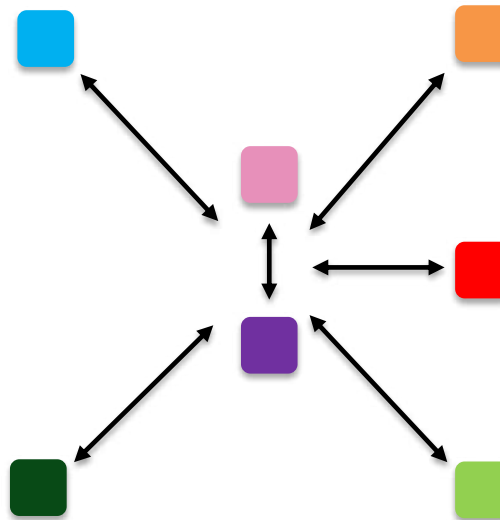
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## Build4People RD-Phase Worksteps

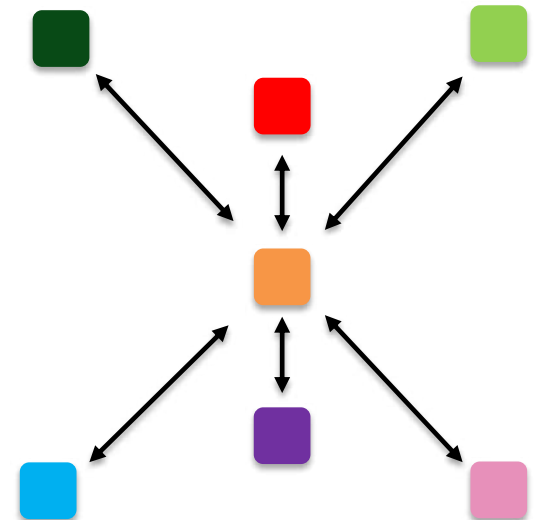
### Classic Centralised Lead Approach



### B4P ECTL



### B4P SBA



- Examples for shared / altering responsibilities of WPs
- Strategic strength of Build4People project



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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



Global Alliance  
for Buildings and  
Construction



**DGNB**



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





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## Build4People RD-Phase Worksteps

### VIII. Build4People Capacity Mobilisation

Build4People-Consortium



- Capacity building to generate actionable knowledge takes place intrinsically through the regular communication and joint activities
- Curriculum development opportunity to feed in our refined research findings with a lasting impact
- Curriculum development transdisciplinary instrument to compile and connect results from all Work Packages



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## 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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## Build4People RD-Phase Worksteps

### IX. Build4People Donor Implementation Workshops

Build4People-Consortium

- Successful involvement of donor organisations pre-condition for continuation of B4P funding during 2-year Implementation phase
- Donor organisations need 2-3 years (!) to prepare for their implementation: Action needed from year 1 of RD-phase!
- German SME probably won't get BMBF funding anymore during IMP phase – rely on third party funding (?)



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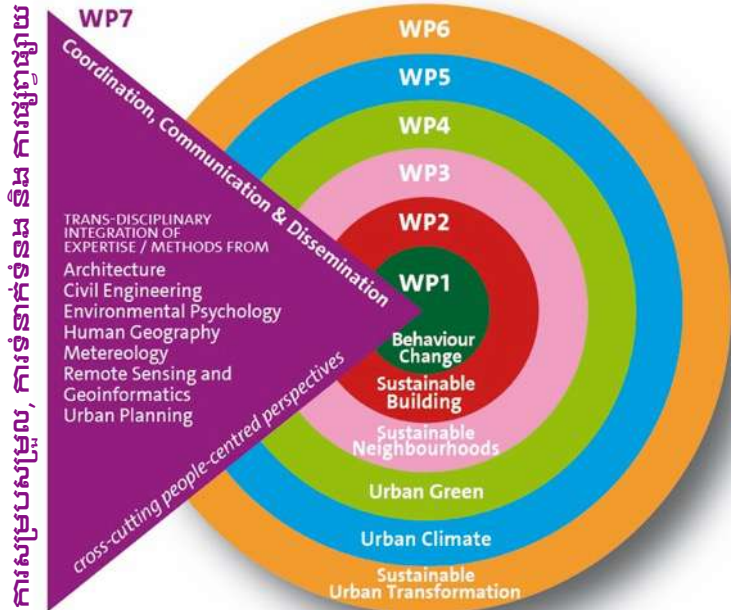
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## Conclusions

- ✓ Build4People analyses and supports a transformative shift of Phnom Penh's urban development pathway towards higher sustainability and liveability levels by a research design consisting of three distinct phases
- ✓ The joint research requires a lot of mutual inter- and transdisciplinary communication
- ✓ Our research has to be actively communicated, disseminated and made visible
- ✓ Challenge: Achieving real progress in urban sustainability going hand in hand with publication of high-level academic papers

➤ **Successful transdisciplinary research is a matter of intensive exchange and personal dedication of all of you!**





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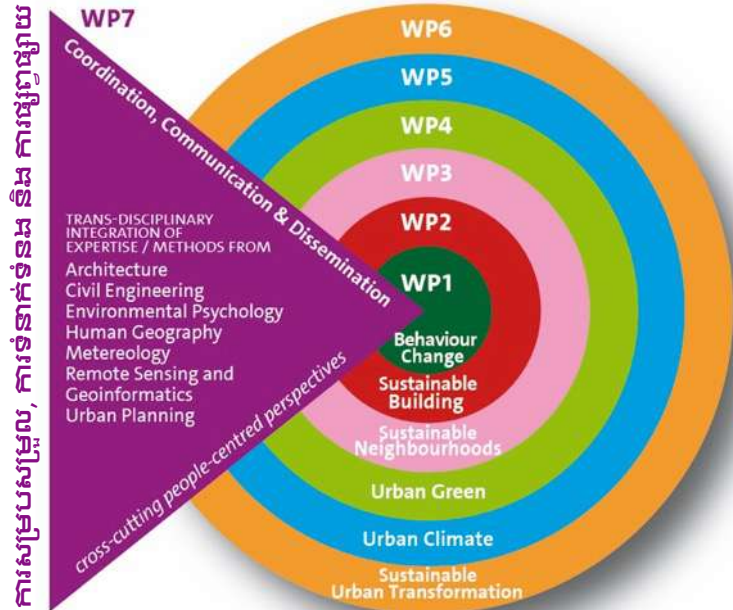
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**Time for discussion**

**Thanks a lot for your attention!**



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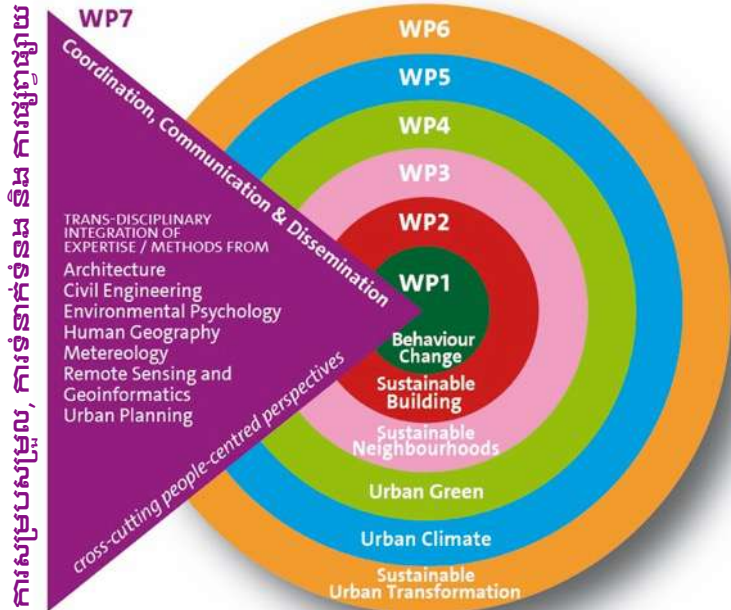
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**កិច្ចពិភាក្សា**

**អរគុណសម្រាប់ការយកចិត្តទុកដាក់!**



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**Brief Panel discussion on questions how to strengthen implementation of B4P activities and how to promote local ownership during the upcoming B4P RD phase**

## B4P: Panel Discussion

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



Mss. Mélanie Mossard, Impact Hub



Mr. Vannak SENG, PPCA



Dr. Vanny SOK, RUPP



Mr. Chansan HUN, Re-Edge



Mr. Sokhai NOP, MoE



Dr. Bunrith SENG, B2G Co Ltd.,

*moderated by Dr Tep Makathy,  
Director of Cambodian  
Institute of Urban Studies  
(CIUS)*



Sustainable Buildings for People – Enhancing Urban Quality of Life in Cambodia: Status Conference, 21 January 2021 [www.build4people.org](http://www.build4people.org) Page 1

