

B4P TRANSFORMATION TOOLBOX

GOVERNANCE & PARTICIPATION

GUIDELINE

02.6

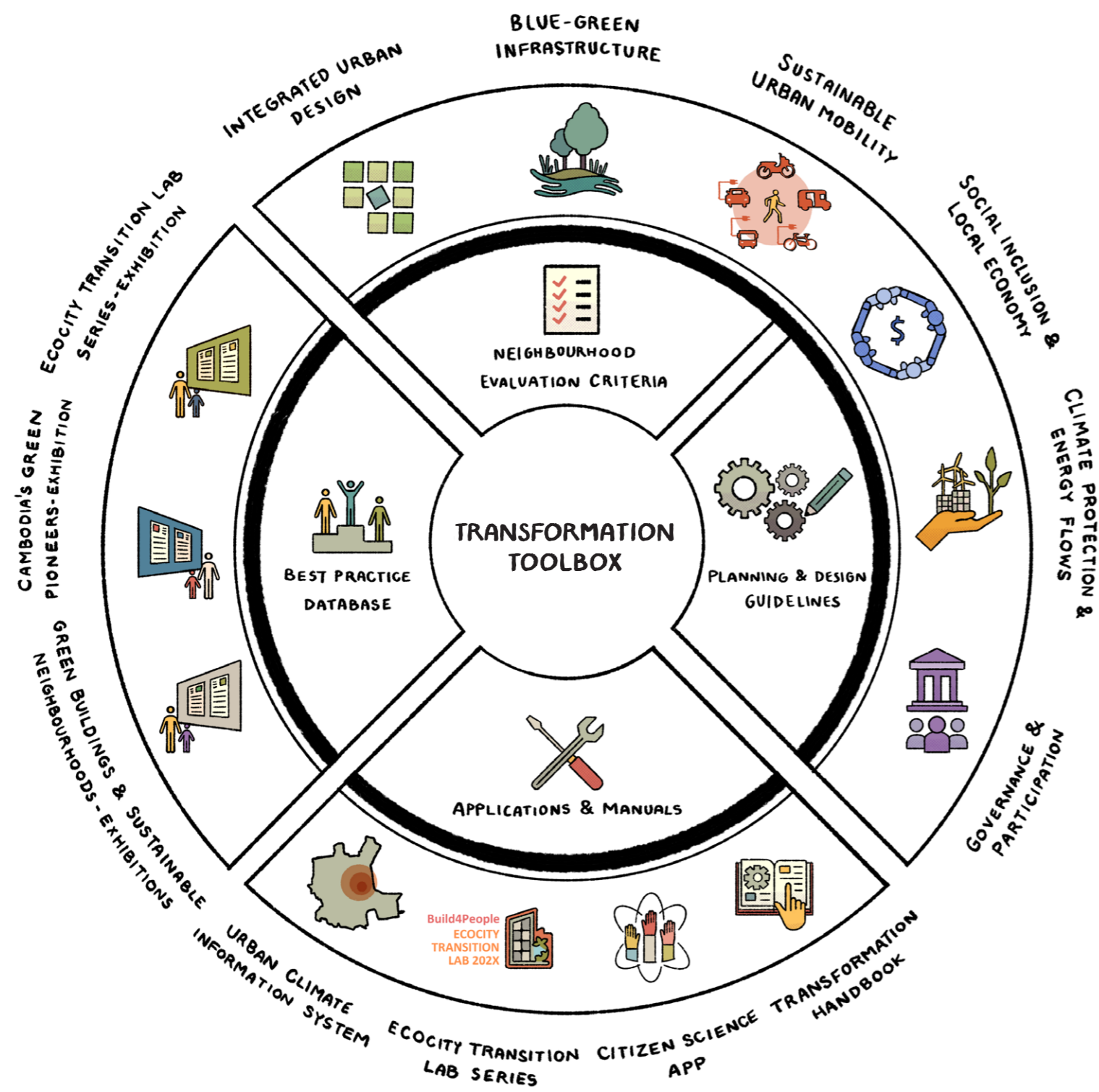


Figure 1. This guideline publication is part of the B4P Transformation Toolbox, a comprehensive learning platform developed by the Build4People project in cooperation with Phnom Penh City Hall to foster sustainable neighbourhood development in urban Cambodia.

02.6

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GOVERNANCE & PARTICIPATION

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INTRODUCTION

Urban planning, climate protection, and the way we treat nature and resources are all influenced by individual decisions and behaviours. At the same time, decisions made in this regard have an impact on each individual. Therefore, involving as many people as possible in developing and implementing appropriate objectives seems essential. This shift also marks a transition from regulatory governance to an approach that relies more on negotiation and civil society participation.

For 25 years, this has been increasingly promoted at the political level. As early as 1992, the Rio Declaration on Environment and Development called for greater civil society participation in addressing environmental issues. Since then, this trend has grown, with participatory processes becoming more widespread in planning

and environmental contexts. Their range of applications has expanded, particularly in urban planning, integrated urban design, transport planning, and urban densification.

The challenge is to implement co-creation and participation within a politically desired normative framework, aiming to enhance urban quality of life and ensure sustainable resource use. As participatory processes become more prevalent, the variety of methods continues to grow. However, perceptions of participation vary: How much influence should be granted? Who should be involved? And to what end?

The answers to these questions are crucial for designing participatory processes effectively and assessing their success. Clear objectives and structured participation help ensure meaningful involvement and effective urban governance.



Figure 2. Multiple facets of participation
Source of Graph: Own Design.
Source of Photo: Michael Waibel (2025).

ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS

The increased use of participatory methods in planning offers numerous economic, environmental and social benefits. It allows the interests of diverse stakeholder groups and population segments to be better considered and integrated into planning in a more community-driven and user-oriented manner. Systematically involving different stakeholders not only helps prevent misplanning but also strengthens residents' identification with their city and neighborhoods. Engaging citizens as everyday experts at an early stage enables developers and local authorities to create urban living spaces that are ecologically, socially, and economically sustainable.



ECONOMIC BENEFITS FOR PRIVATE DEVELOPERS

Co-creation and participation can offer private developers the following economic benefits:

- **Improved location attractiveness:** Participation processes help integrate projects better into the urban environment, making them more attractive to potential buyers or tenants.
- **More sustainable and market-oriented development:** Stakeholder involvement makes it possible to better understand the actual needs of future users and align supply accordingly. This can result in higher demand for the properties.
- **Long-term value enhancement:** Sustainable, socially integrated projects often have higher long-term value, as they blend more seamlessly into the cityscape and maintain consistent demand.



ECONOMIC BENEFITS FOR PUBLIC AUTHORITIES

Public authorities can gain several economic benefits from participatory processes and co-creation:

- **Encouragement of local entrepreneurship:** Co-creation fosters innovation by integrating local businesses, startups, and social enterprises into public projects.
- **Sustainable and resilient infrastructure:** Projects designed with local input tend to be more sustainable and adaptable, reducing the need for costly future modifications.
- **Lower maintenance costs:** When citizens are involved in designing and implementing projects, they tend to take better care of public assets, reducing maintenance expenses.



ENVIRONMENTAL BENEFITS

By integrating participatory processes, private developers can create environmentally responsible projects that are more resilient.

- **Energy-efficient solutions:** Engaging stakeholders can lead to innovative ideas for energy-saving technologies, and renewable energy integration.
- **Better integration with local ecosystems:** Community input can help developers design projects that align with natural landscapes, preserving green spaces and biodiversity.



SOCIAL BENEFITS

Public authorities and citizens can gain numerous social benefits from participatory processes and co-creation:

- **Improved urban quality of life and wellbeing:** user-oriented, community-driven projects can enhance urban livability, leading to healthier populations.
- **Strengthening social trust:** When citizens feel heard and included, they develop greater trust in public institutions.
- **Encouraging civic responsibility:** Participation fosters a sense of ownership, making people more invested in maintaining public spaces and services.
- **Enhanced accessibility:** Community input helps design spaces and services that are truly inclusive, such as barrier-free urban infrastructure.
- **Building resilience to crises:** Socially engaged populations respond better to challenges such as climate change, economic downturns, or health emergencies.

Source: Own compilation based on various sources.

SCIENTIFIC BACKGROUND AND KEY IDEAS

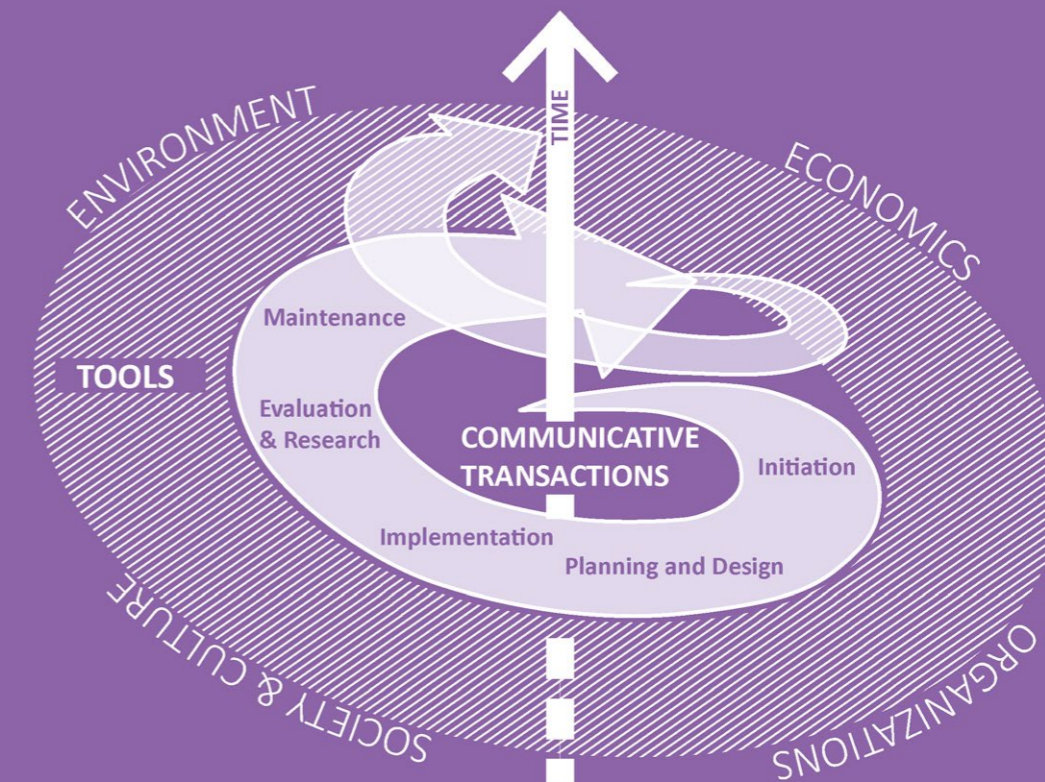
Participation generally refers to the involvement of stakeholders in topics, issues, processes, and/or the development of solutions. The intensity and scope of participation vary depending on the objective and the participation format. It can range from the provision of information to involvement in decision-making or organizing the participation process itself (Bell & Morse, 2012).

The selection of participants, methods, and the degree of influence are largely determined by the function or goal of the participation process. If the aim is to gather information and experiences from different target groups to support planning decisions, the focus is on methods that engage as many diverse groups and stakeholders as possible. This may include discussion events, citizen science tools, focus groups, or post-occupancy evaluations to collect ideas, experiences, and preferences. There is no one-size-fits-all method suitable for all target groups. It is important to select low-threshold methods that avoid reinforcing social inequality (through overly formal frameworks and overly academic discussion formats, but rather promote inclusion (Few, Brown & Tompkins, 2007).

If the aim is to increase acceptance of planning measures, strengthen trust in governance, and encourage civic responsibility for public spaces and services and civic resilience, a more intensive form of participation is required—one that grants participants influence, creative opportunities, and decision-making power (Arnstein, 1975). Participation is not an end in itself. Simply implementing it as a principle will not automatically achieve these goals. Rather than merely acknowledging concerns, ideas, and desires, the aim is to foster equal dialogue, provide opportunities for active involvement in the process, and value participants as everyday experts on their living environment.

In this context, Horelli (2002) proposes a five-phase participatory planning process (see figure 2). During the first phase, the initiation phase, the objectives of participation should be clarified, along with the time perspective, the degree of influence (informing, consulting, or co-creation), and the decision on which stakeholders should be involved.

The question arises in this phase of how to motivate people to participate in a participatory process if they do not expect any direct personal advantages or



disadvantages as a result of the planning. It seems important to show people that participation processes also offer the opportunity to meet others, build social connections, and strengthen their sense of self-efficacy (van Zomeren, 2015). This can only succeed if the participants in the process are taken seriously and their ideas are genuinely implemented. In practice, this will not always be possible. It is crucial to communicate the possibilities for influence transparently from the outset in order to maintain the trust of those involved – also for future procedures.

During the planning and design phase and implementation phase, the specific methods and tools can be selected. In addition to the ease of use of the methods, it is

important to understand how the procedural justice for participants can be increased, as this is a crucial prerequisite for the later acceptance of the planning results.

Tyler (2000) identifies four criteria for procedural justice: (1) neutrality of the decision-makers, (2) trust of those affected in the motives of the decision-makers, (3) respectful treatment of all those affected, and (4) the opportunities to get involved and make one's voice heard. The opportunity to express one's opinion (voice) appears to be particularly important, which also includes the appreciation of what is said (Conrad et al., 2011).

This can be particularly challenging when planning experts and

laypersons work together. In such cases, facilitating the process becomes essential to support expert-lay communication and ensure mutual respect. Finally, it is recommended to evaluate the participation process to better adapt participatory procedures to the respective contexts.

Figure 3. Five-phase participatory planning process.
Source: Modified after Horelli, 2002.

INCLUSIVE AND GENDER-SENSITIVE APPROACHES TO URBAN PLANNING



Figure 4. Good practise example of inclusive urban planning, Aeon Mall, Phnom Penh.
Source: Christina Karagianni (2024).



Figure 5. The sidewalk has been designed too narrow to allow for a mother with a stroller and a friend to walk next to each other, example from Phnom Penh.
Source: Michael Waibel (2022).

INTRODUCTION

Underrepresentation of women and of people with disabilities in architecture, construction and urban planning causes a lack of diversity in perspectives and needs. It can lead to designs that unintentionally disadvantage these people: such as buildings or public spaces that are less functional and comfortable for women or have physical barriers which hamper accessibility for people with reduced mobility or other disabilities.

There can be no inclusive city without inclusive processes. This means committing to the active, meaningful participation of women, girls, and sexual and gender minorities as well of people with impairments.

Urban design has the potential to be a catalyst for social equity. When approached thoughtfully, it can promote inclusivity, accessibility, safety, adaptability, cultural sensitivity, and stakeholder engagement.

Ultimately, gender inclusion is an opportunity that comes with many benefits. Thereby, it's crucial to create platforms for diverse voices to participate. Their needs, desires, knowledge, and skills are untapped resources for architects, urban planners and designers and cities as a whole.

PRINCIPLES

- Inclusivity:** Create spaces that accommodate diverse genders, ensuring everyone feels welcome and considered.
- Accessibility:** Ensure ease of access for all individuals, considering physical abilities and diverse needs.
- Safety:** Prioritize safety by addressing concerns such as lighting, visibility, and security measures that benefit all users.
- Flexibility:** Design spaces that can adapt to various purposes or changing needs, providing versatility and functionality.
- Engagement:** Involve diverse stakeholders in neighbourhood development, considering their input and perspectives to create more inclusive spaces.
- Equity:** Ensure fair and equal access to resources, amenities, and facilities, regardless of gender identity or background. Including equal pay for all men and women for equal work.
- Representation:** Reflect cultural perspectives and norms related to gender identity, acknowledging and respecting diverse backgrounds and experiences.
- Collaborative Design:** Involve women and men equally in the decision making and design process.



Having changing tables in women's restrooms only but not in men's reinforces norms and stereotypes and make redistribution of care work virtually impossible.



Lack of accessibility is a particular challenge for people who perform care work.



For some pedestrians, garbage disposal can be a real mobility challenge.

Figure 6. Graphs illustrating deficiencies in regard of inclusive building design and urban design.
Source: © Mary Dellenbaugh-Losse, urban. policy.

MAKING PUBLIC SPACES MORE INCLUSIVE POST-OCCUPANCY EVALUATION

Men, women, gender minorities and people of different abilities tend to use the public space in different ways. To support more inclusive planning, Build4Peope is advocating for using the method of post-occupancy-evaluation (POE). POE is a process which allows to assess the performance and effectiveness of a built environment, such as a public space. A critical cornerstone of this approach is obtaining the perspective of the environment's users. This way, it can be explored to what extent the

environment meets the users' needs and supports their activities on site, allowing to move beyond a purely design-oriented evaluation lens.

POEs can vary in scope and detail. They are generally categorized into three main types based on depth and complexity (see Figure 7): 1. Indicative POE (1-2 days), 2. Investigative POE (160-240 hours), and 3. Diagnostic POE (years). The indicative POE provides a quick and cost-effective initial assessment, while the investigative POE goes deeper with

structured interviews and targeted measurements. The diagnostic POE is the most comprehensive one. The core method of all POE types is the walk-through interview. It is based on the concept that asking users about their needs and experiences during a walk-through of a specific built environment can provide valuable feedback on how well the space meets their requirements. Bridging planning and user expertise can inform future projects and support the development of more user-centered, efficient, and sustainable environments.

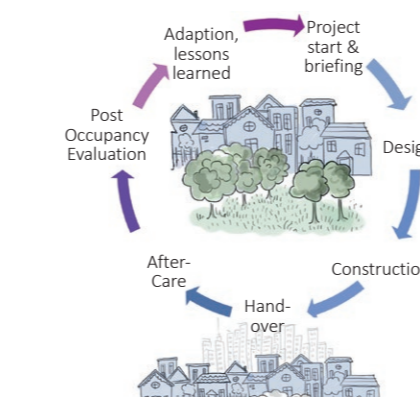
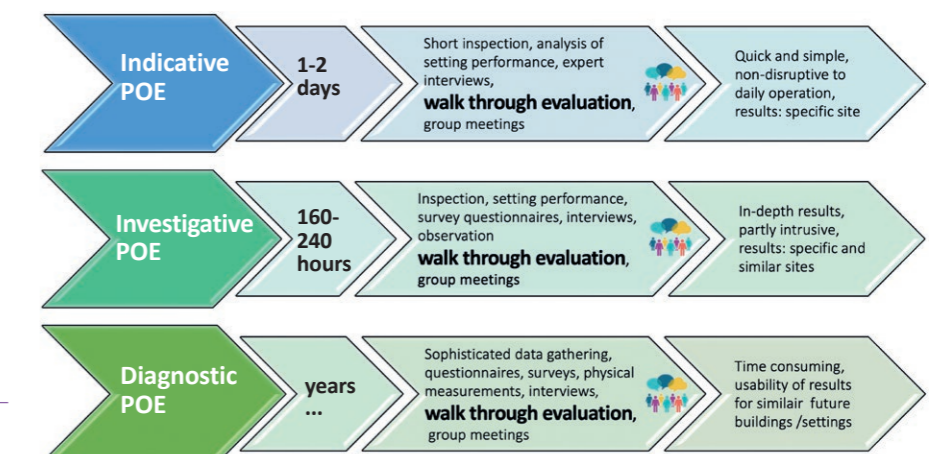


Figure 7. and Figure 8. Examples of POE Types.
Source: Own Design (drawings by A. Hütte).



SUSTAINABLE LIFESTYLES

INTRODUCTION

Sustainable urban transformation requires the engagement of a wide range of stakeholders, including policy makers, planners, architects, and technicians. Likewise, city residents can contribute to this process by sharing their perspective in planning processes. However, it is often overlooked that residents can also participate to the transformation by adopting sustainable lifestyles and performing pro-environmental behaviors in the private-sphere. These behaviors can take many forms: individuals can adopt pro-environmental everyday behaviors (such as cycling or avoiding waste), make investments in green technology (e.g., residential photovoltaics, see Deuß et al., 2025), and spread climate awareness and norms in their local communities, e.g., among their friends and families (Nielsen et al., 2024). All of the behaviors share a common foundation: individuals holding ecological values, having an awareness of environmental problems (i.e., recognizing that climate change negatively affects the quality of life for everyone), and feeling capable and responsible to counteract these problems (Steg & Nordlund, 2012). Moreover, if people around us perform pro-environmental behaviors, this can inspire us to adopt sustainable

lifestyles ourselves. Importantly, the relevance of these aspects can vary among different behaviors. This said, if one wishes to support individuals in adopting sustainable lifestyles, it is crucial to tailor one's efforts to the specificity of the behavior one wishes to promote. This can be reached by means of so-called social marketing campaigns (Lee & Kotler, 2015). Moreover, even though problem awareness is essential for pro-environmental behavior, simply imparting knowledge and raising awareness of individuals will not be sufficient to drive meaningful change: even if people know about the ecological problems caused by societal practices, that doesn't mean they will automatically change their behavior. They need supportive structural conditions that enable them to adopt the sustainable behaviors. Such aspects need to be considered when trying to foster sustainable lifestyles among city residents.

QR code to
Build4People
Online Exhibition

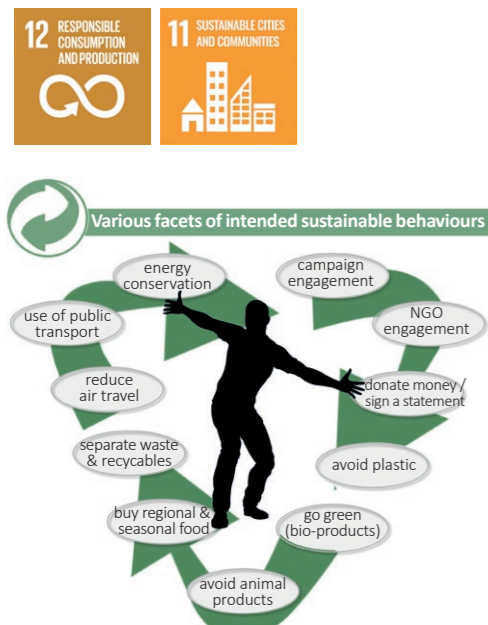


Figure 9. Various forms of sustainable behaviors.
Source: Own Design.



Figure 10. Social marketing campaigns reflect the diversity of behaviors.
Source: Own Design.



Figure 11. Example of Cambodian Green Pioneers from the Build4People YouTube Channel.
Source: Build4People.

GREEN PIONEERS IN CAMBODIA A PRACTICE EXAMPLE OF A SOCIAL CAMPAIGN

The downside of growing prosperity in Phnom Penh is an expanding ecological footprint and increasing environmental degradation. This is evident in the ongoing loss of green spaces and water bodies, rising air pollution, frequent traffic congestion, and mounting waste issues among others.

Against this backdrop, raising awareness of these problems among the public becomes particularly important. However, social dynamics and influences play a crucial role in reaching the broader population and encouraging behavior change toward more sustainable lifestyles, too

(Griskevicius, Cialdini, & Goldstein, 2008). In particular, showcasing positive examples of sustainable behavior can help activate these social mechanisms. Leveraging social norms in this way makes sustainable behavior more attractive and attainable for a wider audience.

There are already some pioneers of pro-environmental behavior in Cambodia today. By giving these individuals visibility and public recognition, they can serve as role models, motivating the urban population to adopt more sustainable behaviors.

As part of a broader campaigning

strategy, the Build4People project has developed and launched an online exhibition published through the Build4People YouTube channel. It leverages social influence through descriptive social norms embodied by role models: the "Cambodia's Green Pioneers" campaign.

This campaign aims to increase the public visibility of a diverse group of sustainability pioneers, encouraging others in urban areas to emulate their environmentally friendly lifestyles. By highlighting these role models, the campaign contributes to a shift in mindset among Cambodia's urban population and helps establish sustainable living as a shared social norm.



INITIATION



Figure 12. ECTL-logos over time showing increasing involvement of local stakeholders.
Source: Build4People.



Figure 13. Impressions from thematic group work during the ECTL 2024.
Source: Build4People.

URBAN LIVING LABS THE B4P ECOCITY TRANSITION LAB SERIES

OBJECTIVE & PROCESS

The Build4People Ecocity Transition Lab (ECTL) supports sustainable urban transformation through participatory, community-based, and transdisciplinary methods. Responding to Phnom Penh's rapid urban growth, ECTL offers a collaborative platform where diverse stakeholders identify challenges, co-develop visions, and design actionable strategies aligned with sustainable neighbourhood development.

Each ECTL functions as an intensive one-week "charrette," structured into five phases: (1) site visits, (2) a Kick-off Conference, (3) participatory workshops to define key issues and co-create visions, (4) thematic group work to explore solutions, and (5) a final Presentation Conference. Central to this approach are "perspective workshops" (Perspektivenwerkstätten), participatory and consensus-oriented methods for integrative planning. First introduced in Germany in 1995 by Andreas von Zadow and based on U.S. "urban design assistance teams" (1967), this method encourages dialogue among diverse stakeholders including citizens, planners, investors, politicians, and associations.

ECTL 2020

Held during the project's definition phase, ECTL-2020 initiated stakeholder engagement and built trust with local actors. It addressed urban issues such as limited green space, inefficient public transport, and social segregation caused by gated communities ("boreys"). The lab produced a partial masterplan titled Let the Nature Flow, introducing the "Blue-Green City" concept that integrates stormwater management, mobility, and ecological infrastructure, marking the start of a new transdisciplinary planning approach in Phnom Penh.

ECTL 2022

ECTL-2022 expanded participation to national and city-level stakeholders, refining the 2020 vision through five core themes: traffic, water, legal frameworks, urban development, and spatial integration. The "Integrated City District" concept emerged, focusing on connecting boreys with surrounding urban and ecological systems to promote cohesion and local vitality.

ECTL 2023

This edition marked a shift toward private-sector collaboration,

partnering with Borey Peng Huoth Group. The lab assessed borey designs, proposed micro-interventions, and aimed to align private development with inclusive, sustainable design standards.

ECTL 2024

Partnering with OCIC Group, the ECTL-2024 explored waterfront development, focusing on ecological corridors, flood resilience, and public space. It advanced the practical application of ECTL methods across diverse urban contexts in Phnom Penh's dynamic periphery.

CONCLUSION

Across its four editions, the B4P ECTL-series has evolved into a dynamic planning platform that fosters inter- and transdisciplinary collaboration, builds local capacity, and operationalizes sustainability principles through participatory design. By applying a consistent yet adaptable methodology, the ECTL has demonstrated how theoretical frameworks can be translated into site-specific solutions across a variety of urban contexts, transforming Chbar Ampov into a living case study of integrative urban transformation as well as providing an alternative vision of sustainable urban development.



Figure 15. Impression from the B4P ECTL Kick-off Conference 2023.
Source: Build4People.

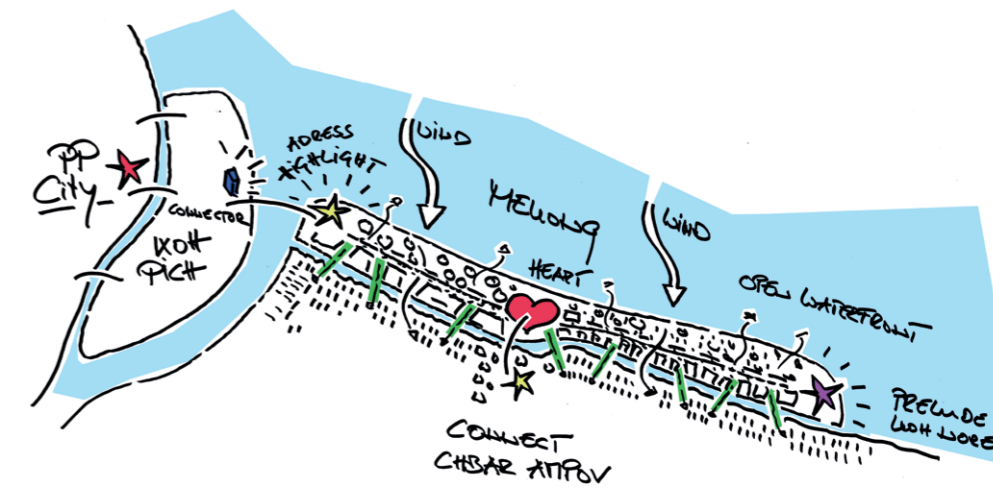
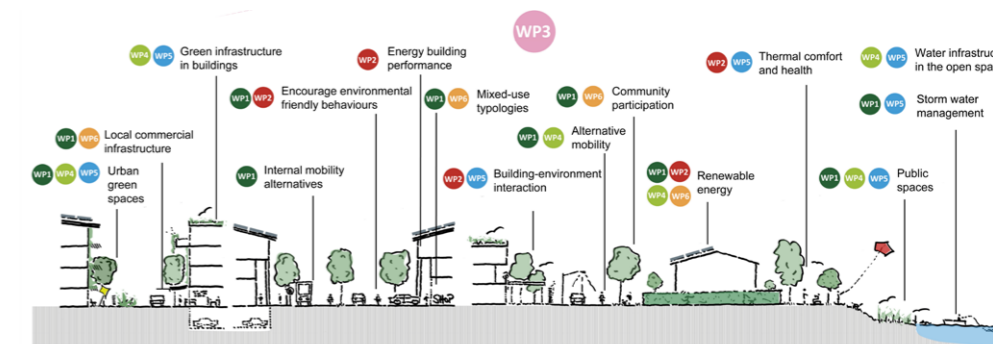


Figure 14. Examples of summarizing illustrations from various ECTL processes.
Source: Build4People.



Figure 16. Impressions from the first Build4People Sustainable Building in 2022. Source: Michael Waibel (2022).

TRANSITION GOVERNANCE INTERVENTIONS THE B4P BUILDING ARENA

OBJECTIVE

The objective of the Build4People Sustainable Building Arena (SBA) has been the co-development of visions and strategies with local sustainability frontrunners from the building sector in Phnom Penh. Previous research showed that no institutionalized platform of exchange exists for local frontrunners. Bringing these individuals together in a co-creation process to strengthen their networks and collaborative potential was thus considered as a promising entry point.

PROCESS

Following an adapted form of transition management that was specifically developed by the Build4People Project for the context of Phnom Penh (Jayaweera et al., 2023; Jayaweera et al., 2022), the SBA followed a three step approach that focussed on the following questions (Jayaweera & Waibel, 2024):

What is wrong with the current building and urban development sector in Phnom Penh? How do we want buildings and neighbourhoods to be designed, built and operated in Phnom Penh by 2040? How can we get to our desired future(s)?

SBA WORKSHOP PHASE 1: TRANSITION CHALLENGE/ PROBLEM FRAMING

The first SBA phase aimed at the co-development of a framing of the transition challenge. The guiding question of this phase thus asked: What is wrong with the current building and urban development sector in Phnom Penh? The framing of the transition challenge involved the identification, articulation, hierarchization and integration of problems in thematic groups. In the small teams, participants brainstormed individually, before sharing their ideas to all participants.

SBA WORKSHOP PHASE 2: COLLABORATIVE VISIONING

In the second phase, the participants co-developed and expressed their key priorities and principles for their envisioned futures of the local building and urban development system as well as images and narratives of desirable futures in a common vision. The guiding question was: How do we want buildings and neighbourhoods to be designed, built and operated in Phnom Penh by 2040?. As in the previous phase, the participants brainstormed individually, before discussing their ideas within their breakout groups, and lastly in the plenary.

SBA WORKSHOP PHASE 3: DEVELOPMENT OF A TRANSITION AGENDA

During the third SBA phase, back-casting methodologies were used to connect future scenarios and narratives to the problematized present, in order to develop concrete transition pathways and strategies. Hereby, a first sketch of a “Transition Agenda” was created. The guiding questions for this step were: “How can we get to our desired future(s)? What steps must be taken in the short-, medium-, and long-term?”.

CONCLUSION

Overall, the first Build4People SBA was a successful urban transition lab in Cambodia. It brought together a wide range of frontrunners and change agents from the fields of sustainable building and urban development. As an informal institution and co-creative and protected space, the SBA supported the establishment of new links between individuals, strengthened networks and initiated fruitful discussions at the science-policy-business-civil society interface. Whereas participants widely agreed that a transition towards urban sustainability is necessary, and that the SBA can generate meaningful impact, it also became clear that this can only be achieved in a longer engagement process (Jayaweera & Waibel, 2024).



Figure 17. Summarizing Illustration of SBA Phase 1: Transition Challenge/ Problem Framing with the aim to create system knowledge. Source: Uddam Pen (2022).



Figure 18. Summarizing Illustration of SBA Phase 2: Collaborative Visioning with the aim to create target knowledge. Source: Uddam Pen (2022).



Figure 19. Summarizing Illustration of SBA Phase 3: Development of a Transition Agenda with the aim to create transformative knowledge. Source: Uddam Pen (2022).



Figure 20. Public participation snap shots at the pop-up kiosk in Norea City.
Source: Michael Waibel (2024).

DEFINING A SHARED VISION & GOALS

THE B4P-SMMR POP-UP KIOSK

VISION

A vision defines the future a community wants, based on its core values and public input. Key Elements of Visioning:

- Considers community assets and needs
- Involves early and continuous public participation
- Can be a stand-alone process or part of comprehensive planning

VISIONING PROCESS IN CAMBODIA

Visioning is new in Cambodian urban planning, requiring a phased approach:

- **Phase 1:** A pop-up kiosk at Norea City Riverfront gathered input from 1,000+ residents and visitors. Organized by Build4People, SMMR, and Impact-Hub, this initiative identified community aspirations.
- **Phase 2:** The Ecocity Transition Lab, facilitated by Build4People, brought key decision-makers together. OCIC envisioned transforming Norea City into a vibrant, high-demand neighborhood.

GOALS

Specific and measurable goals indicate precisely how the vision can be achieved.

They should be:

- Developed collaboratively
- Revised based on community input and data analysis (e.g., Pop-up Kiosk, sustainability criteria)
- Supported by measurable metrics (e.g., Build4People Sustainability Criteria)

GOAL SETTING FOR TRANSIT ORIENTED DEVELOPMENT (TOD) IN PHNOM PENH

TOD goals vary depending on the area—mixed-use, business districts, industrial zones, or residential neighborhoods. In Koh Norea, the Ecocity Transition Lab Process helped define key issues and opportunities, forming the foundation for TOD goal setting. Planners translate broad TOD principles into specific, actionable goals, aligning with the city’s master plan and government priorities.



Figure 21. Pop-up kiosk in Norea City.
Source: Sovan Sieng (2024).

NOREA CITY POP-UP KIOSK
A GOOD PRACTICE EXAMPLE OF NEIGHBOURHOOD VISIONING

With support from SMMR and Build4People, Impact Hub Phnom Penh (IHPP) launched a pop-up kiosk at Norea City to engage the community and gather insights on transforming the area into a vibrant destination. The project’s guiding question was:

- » What are the public needs and preferences around how to transform Norea City into a vibrant and desirable destination?

Over eight days (Feb 28 – Mar 10, 2024), IHPP surveyed 1,041 residents of all ages through interactive activities along the riverside. The findings highlight public priorities for urban livability, offering valuable input for demand-driven development in Koh Norea and beyond.

POP-UP KIOSK VISIONING RESULTS

- **High Priority:**
 - » Green spaces & public greenery
 - » Effective waste management
- **Medium Priority:**
 - » Communal public spaces
 - » Inclusivity & accessibility
 - » Safety & orderliness
- **Medium-Low Priority:**
 - » Transportation & accessibility
 - » Aesthetics & functional qualities
 - » Recreational & social activities

This qualitative visioning complements quantitative site data collection. While no formal inventory was conducted for Koh Norea, these insights inform future neighborhood planning.

POP-UP KIOSK DERIVED PRIORITY GOALS

- 1. Ensure Convenient Access to Non-Motorised Transport**
Prioritize walking and cycling infrastructure for a more sustainable urban environment
- 2. Foster Neighbourhood Vibrancy**
Create dynamic spaces that encourage social interaction and local business growth.
- 3. Promote a Sense of Community**
Design inclusive spaces that meet diverse social needs.

IV PLANNING

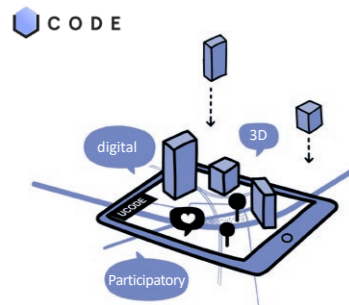


Figure 22. Digital planning graphic
Source: TUD WA.



Figure 23. U_CODE in Use – Pupils in Dresden design their School Environment.
Source: TUD WA.



Figure 24. U_CODE in Use – neighborhood park, PCMC, India. Collaboration with PULSE (India Smart Cities Fellowship).
Source: TUD WA.

DIGITAL PLANNING TOOLS UCODE

OVERVIEW

U_CODE is a method and digital tool designed to enable wide participation in urban and architectural planning. It supports massive-scale input, ensures citizens needs are meaningfully included, continuous data flow from idea to realization, and empowers thousands to co-design their future cities collaboratively. To lower barriers to participation, it enables anytime access and inclusive engagement across diverse stakeholder groups.

U_CODE is an innovative 3D participation platform for urban and transportation planning that allows you to easily engage a broad public. It helps identify meaningful needs for new developments, communicate planning ideas and decisions clearly, and collect concrete public feedback.

UCODE was developed between 2016 and 2019 as part of the Horizon 2020-funded EU project led by the WISSENSARCHITEKTUR Laboratory of Knowledge Architecture at TU Dresden. Project partners included TU Delft, the industry association Silicon Saxony, the IT company Oracle and the architectural firm gmp Architekten von Gerkan, Marg und

Partner. Within this collaboration, both the method and digital tools were conceptually developed, tested, and transferred into practice.

KEY FEATURES

U_CODE offers a web-based participation application that fosters acceptance of urban planning projects and supports consensus-building throughout the planning process. For the conception and planning of these urban spaces, it connects citizens, experts, and public administration in a digital 3D co-design environment, enabling a structured and results-oriented dialogue: Urban Co-Design.

Using a digital toolbox, thousands of citizens can contribute information, suggestions, and their own ideas. These inputs are analyzed and structured by U_CODE for further use by professional planners and public authorities.

The developed solution was tested and further developed in various Pilot Projects worldwide (Germany, Kenya, Japan, India).



Figure 25. U_CODE Toolset in Use.
Source: WA_TUD.



Figure 26. Nakuru – Kenya. In Cooperation with FES (Friedrich Ebert Stiftung) Just City initiative.
Source: TUD WA

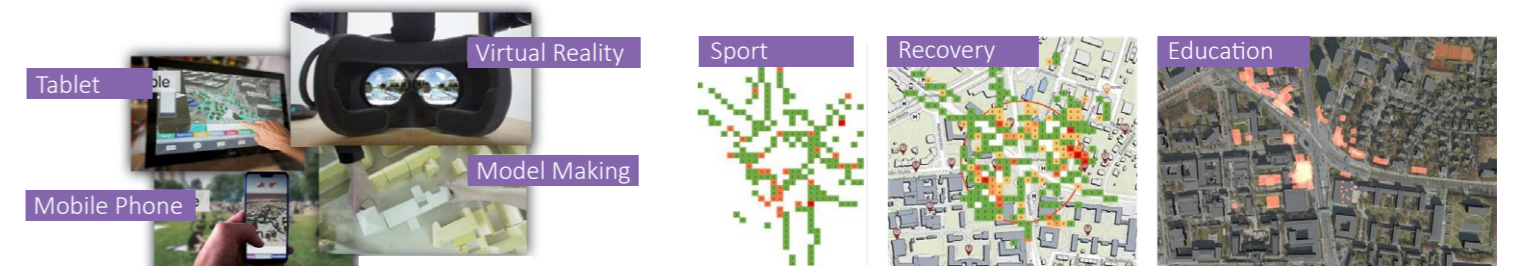


Figure 27. Analysis of participation results, Dresden Fritz Försterplatz, in Cooperation with the Urban Planning Department of Dresden Municipality
Source: TUD WA

Local co-design workshop at Fritz-Foester-Platz



QR code to the WISSENSARCHITEKTUR – Laboratory of Knowledge Architecture
<https://tu-dresden.de/bu/architektur-landschaft/wa>

V EVALUATION & RESEARCH

CITIZEN SCIENCE THE B4P CITIZEN SCIENCE APP

INTRODUCTION

Citizen Science offers numerous advantages for sustainable urban planning, particularly by enhancing citizen participation. By actively involving many people, large volumes of data about the urban environment can be collected. This data creates a detailed database that integrates residents' perspectives as everyday experts of their living spaces. This approach not only increases the quantity of data but also improves its quality by incorporating local knowledge that traditional data collection methods often overlook. Beyond data collection, citizen science creates a genuine space for involvement where citizens can actively participate in shaping their city. This participatory process raises awareness of urban challenges and strengthens individuals' sense of ownership and connection to their environment. Through engaging residents in monitoring and evaluating urban spaces, they become important advocates for inclusive and sustainable urban transformation. Modern technologies, such as user-friendly apps and online platforms, facilitate this participatory process by enabling data submission,

communication, and transparency. These tools establish feedback loops between citizens and city planners, making decision-making more transparent and building trust in local government. A key benefit of citizen science is its ability to promote social inclusion. Actively involving diverse societal groups, particularly marginalized and often underrepresented populations, ensures that urban development reflects the needs of all residents. This expands participation not only quantitatively but also qualitatively. By combining scientific methods with broad citizen engagement, citizen science enables participatory, adaptive, and equitable urban planning that fosters long-term sustainable and livable cities.

THE BUILD4PEOPLE CITIZEN SCIENCE APP

Citizen Science offers many advantages for sustainable urban planning. By involving many people, large amounts of data about the urban environment can be collected. This data can be used to create a detailed database that incorporates citizens' perspectives as everyday experts on their living environments.

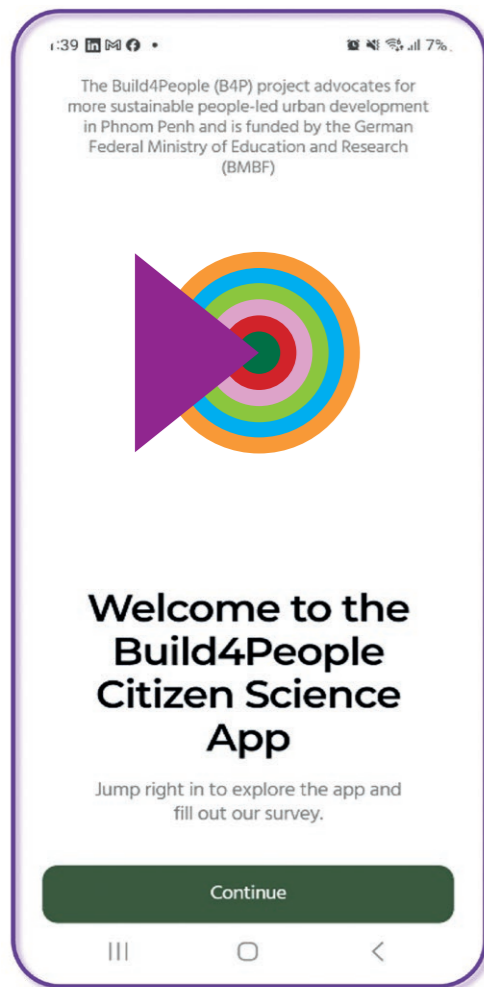
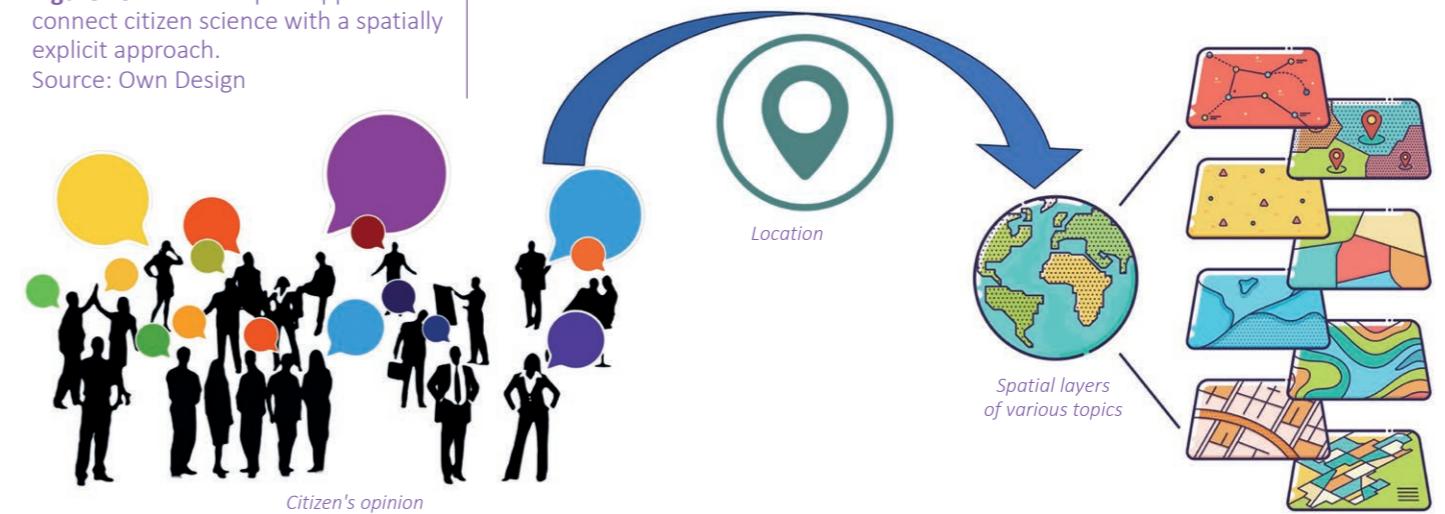


Figure 28. Screenshot of the B4P Citizen Science App.
Source: Build4People

Figure 29. Build4People's approach to connect citizen science with a spatially explicit approach.
Source: Own Design



Citizen Science via a mobile app is particularly low-threshold, allowing diverse and even marginalized groups of the population to contribute their specific needs and perspectives, thereby influencing planning processes.

The Build4People Citizen Science App (B4P CS App) can thus promote more inclusive urban design. Planners receive valuable planning information through the B4P CS App, which can complement expert analyses while simultaneously strengthening the identification of Phnom Penh residents with their city.

The B4P CS App serves as a flexible participatory tool that allows urban residents to use their smartphones to assess the built environment based on various quality of life factors, while also tracking the results on an online map dashboard.

By doing so, the app provides the

opportunity to collect targeted evaluations of different urban areas and incorporate these insights into urban planning processes. Functioning as an instrument for comprehensive, data-driven participation the App can further evolve into a PPCH-CS-App (Phnom Penh City Hall Citizen Science App), an interactive communication platform connecting city administration with Phnom Penh's residents.

Designed to promote inclusive urban development, the app enables specific groups, such as people with disabilities, children, the elderly, or women, to systematically evaluate designated urban spaces. This approach makes it possible to identify locations where inclusion can be enhanced through construction and urban design measures as well as to develop an action plan aimed at fostering more inclusive urban planning.



Figure 30. Field testing of B4P CS APP with students of the Royal University of Phnom Penh at RUPP campus in December 2024.
Source: Build4People.



Figure 31. Shaping the city together - the aim of "Kiezlabor" is to enable as many people as possible to actively create their neighbourhood.
Source: CityLAB Berlin

CO-CREATING URBAN TRANSFORMATION EXAMPLES FROM CITYLAB BERLIN'S STRATEGIES

INTRODUCTION

CityLAB Berlin, operated by Technologiestiftung Berlin and funded by the Berlin Senate Chancellery, is a public innovation lab that brings together public administration, civil society, and digital innovation to co-create the city of the future. CityLAB Berlin offers tested approaches, tools, and methods to help drive a successful Twin Transformation, toward sustainability and purposeful digitalization.

BERLIN'S CIVIC TECH IN ACTION

CityLAB is more than a think tank; it's a platform for action. Its projects illustrate how digital tools and community engagement can directly shape urban development:

- **Kiezlabor:** A mobile lab that visits neighborhoods, facilitating hands-on participation and local dialogue.
- **Climate Dashboard Xhain:** A live dashboard visualizing climate and environmental data to inform both policy and public behavior.

- **Parla:** A participation platform that tracks civic feedback across city districts, increasing transparency and trust.
- **Energy Checkpoint:** A resource hub for tracking neighborhood energy data and fostering energy awareness.

These tools demonstrate how digital innovation can serve democratic urban transformation by informing and enabling people.

EMPOWERING A SMART CITY ECOSYSTEM

CityLAB plays a key role in the implementation of Berlin's smart city strategy "Gemeinsam Digital: Berlin" (Together Digital: Berlin), which centers on public value, impact, and co-creation. The lab facilitates collaboration between government, tech communities, and residents; exactly the kind of integrated ecosystem that Phnom Penh Smart City Hub may develop into.

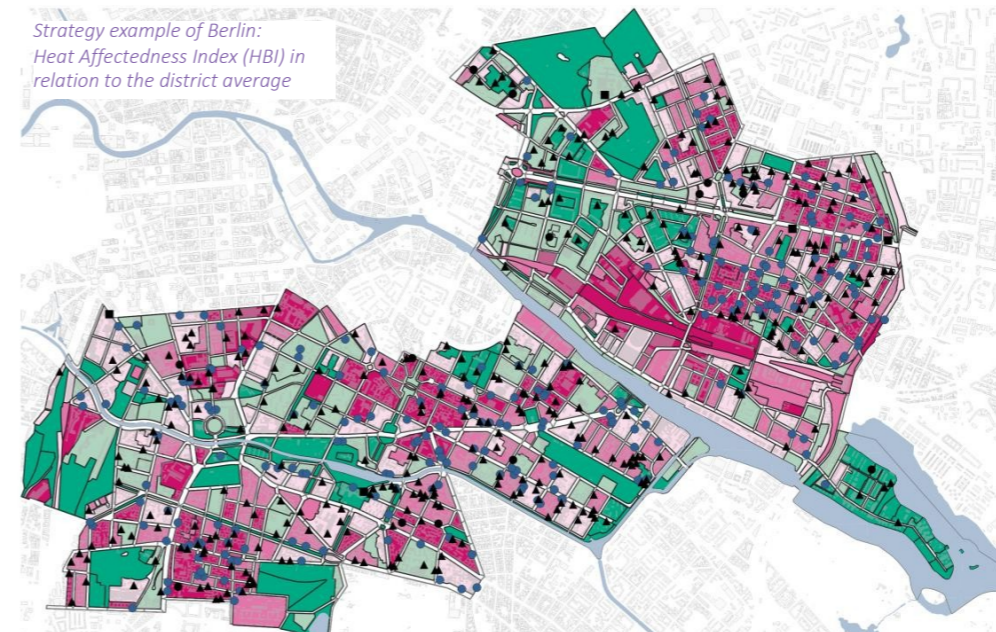


Figure 32. The Heat Affectedness Index (HBI) shows where the district of Berlin Friedrichshain-Kreuzberg is particularly affected by heat - so-called hotspots. It comprises a combination of surface temperature, environmental sensitivity (green volume, degree of sealing), human sensitivity (population density, people over 65 and under 10 years of age, status index, employees)
Source: CityLAB Berlin

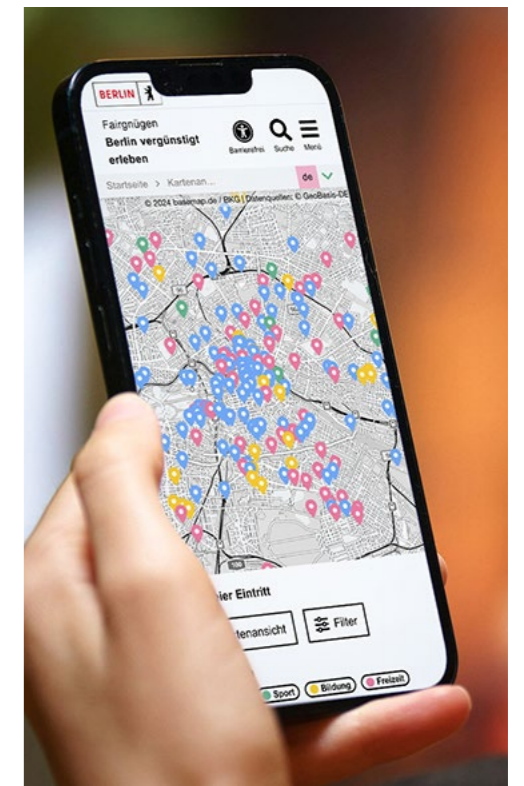


Figure 33. Online platform 'Fairnügen' as a user-friendly web application with search functions, filters and geo-referencing to make offers accessible according to life situation and interests
Source: CityLAB Berlin

QR code to the CityLAB Berlin
citylab-berlin.org/en/



STRATEGIC AVENUES FOR COLLABORATION

CityLAB's experience can directly support four Twin Transformation pathways in urban Cambodia:

- **Establishing a Local Innovation Hub:** A CityLAB-inspired civic lab in Phnom Penh, co-created with partners like e.g. universities, Impact Hub or Factory Phnom Penh, can host co-design workshops, digital tool testing, and stakeholder engagement.
- **Applying Data Tools for Transparency:** Tools like Climate Dashboard or Parla could be adapted to Phnom Penh using local data from the B4P Citizen Science App, fostering a culture of feedback and openness.
- **Advising Smart City Governance:** CityLAB's experience in Berlin's digital strategy can inform Phnom Penh's efforts to align green and smart city goals through multi-stakeholder policy dialogues.

- **Train-the-Trainer for Participation:** CityLAB's methods can enrich training formats, equipping local partners with the tools to lead inclusive planning processes.

CONCLUSION: A TRANSLOCAL ALLIANCE FOR URBAN TRANSFORMATION

CityLAB Berlin offers more than tools, it offers a mindset. It proves that digital transformation can be participatory, low-threshold, and people-centered.

As a sparring partner in the B4P Implementation phase, CityLAB can help Phnom Penh transform not only how it plans, but how it listens, includes, and innovates.

Together, we can shape a translocal learning partnership, where Berlin and Phnom Penh co-create better urban futures, driven by shared values and collective action.

VI WAY FORWARD

TO BE FURTHER DISCUSSED WITH LOCAL STAKEHOLDERS
DURING B4P IMPLEMENTATION PHASE 2025-2027

In order to support Phnom Penh on its transformative journey toward greater sustainability and a higher urban quality of life, there are great opportunities for the joint development and establishment of participatory processes in planning.

The development and implementation of participatory planning is a dynamic process that involves the active engagement of multiple stakeholders (e.g., private developer companies, public authorities, and urban citizens) and requires mutual trust among all parties.

Not every participatory process is equally suitable for every purpose, location, or target group. Therefore, participation instruments must be developed in a context-sensitive manner: participation does not begin with the mere application of participatory planning instruments but rather with their development.

A great opportunity lies in the use of digital planning tools and digital participation methods, such as those incorporated into the project through the CityLAB Berlin (e.g., Climate Dashboard Xhain) and the Laboratory of Knowledge Architecture (e.g., U_CODE) at Technical University of Dresden.

Ideally, digital participation tools can provide greater flexibility, increased transparency, fewer barriers, and much broader accessibility. At the same time, digital tools do not automatically guarantee successful participation and should therefore be considered as part of a comprehensive participation concept.

It is therefore highly recommended to test all the methods presented here (both analog and digital methods and tools) in different contexts, involving various stakeholders, to adapt them accordingly, and to evaluate them continuously throughout the process. In the spirit of a transformative and transdisciplinary approach, in-process evaluation should not be limited to examining abstract success criteria. Instead, these criteria should be developed collaboratively with representatives of the city administration and relevant stakeholders. The ongoing evaluation process should be understood as a continuous support mechanism rather than a mere assessment tool, helping the city administration to optimize the process toward greater participation in a future-oriented manner.

To foster acceptance of participation processes and to encourage both the public and relevant stakeholders to engage, the Build4People team recommends using accompanying social marketing tools. The development of these campaigns should include stakeholder analyses to gain a better understanding of the needs and perspectives of the various relevant target groups, as well as the collaborative design of potential incentives that combine targeted information dissemination through diverse media channels with appropriate incentive structures. Such an approach can strengthen support for participation efforts in the medium term and, indirectly, enhance trust in the local administration.

Ultimately, improving urban quality of life in Phnom Penh is also a social endeavor: Participation plays a key role in this transformation process, not least to achieve better governance structures.

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