



## OPEN ACCESS

## EDITED BY

Sarbeswar Praharaj,  
Arizona State University, United States

## REVIEWED BY

Alysha Helmrich,  
University of Georgia, United States  
Jesús M. Siqueiros,  
National Autonomous University of  
Mexico, Mexico

## \*CORRESPONDENCE

Fiona Lord  
✉ fiona.n.lord@student.uts.edu.au

RECEIVED 22 November 2023

ACCEPTED 29 January 2024

PUBLISHED 14 February 2024

## CITATION

Lord F and Prior J (2024) How do governance visions, institutions and practices enable urban sustainability transformations? A study of Battambang and Sihanoukville, Cambodia. *Front. Sustain. Cities* 6:1342524. doi: 10.3389/frsc.2024.1342524

## COPYRIGHT

© 2024 Lord and Prior. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

# How do governance visions, institutions and practices enable urban sustainability transformations? A study of Battambang and Sihanoukville, Cambodia

Fiona Lord\* and Jason Prior

Institute for Sustainable Futures, University of Technology Sydney, Sydney, NSW, Australia

Whilst research has highlighted the challenges of rapid urbanization in Cambodia, few studies have focused on increased interest within Cambodia on how reforming urban governance can support urban sustainability transformations. Addressing this research gap, this study explores how urban governance might enable sustainability transformations in two second-tier cities—Battambang and Sihanoukville—in Cambodia, based on the analysis of open-ended interviews with fifty-five representatives involved in the development and implementation of urban sustainability plans and policies for these cities. The findings identify how urban governance visions, institutions and practices can be strengthened to enable sustainability transformations within these cities. The study highlights that alignment between the three tiers of governance—meta-governance (visions and worldviews), second-tier (structural and institutional) and third-tier (day-to-day interactions) is needed for urban sustainability transformations.

## KEYWORDS

sustainable cities, urban governance, urban sustainability plans, Cambodia, second-tier cities, urban sustainability transformations

## 1 Introduction

Urbanization is one of the most significant transformations of modern times, impacting the local, regional, and global environments (Bai et al., 2017). Cities are now the source of 75% of natural resource consumption and are responsible for 60–80% of global greenhouse gas emissions (UN-ESCAP, 2017). Recognizing the link between urbanization and environmental crises, such as climate change and biodiversity loss, scholars and policymakers are increasingly focused on urban sustainability transformations. Whilst a growing body of research has explored urban sustainability transformations in high-income economies, little attention has been given to the expanding cities in low-income and emerging economies, including cities in Southeast Asia (de Jong et al., 2015; Bai et al., 2017; Koch et al., 2018).

There are two reasons to address this research gap. Firstly, the challenges of urbanization are particularly evident in Southeast Asia, where the urban population has grown faster than the global average and is continuing to grow at a fast pace. In 2018, Southeast Asia's urban population reached 320 million out of 655 million, or around 49% of the region's population (UN-DESA, 2018). Southeast Asia's population is projected to increase to 730 million by 2030 (Arfanuzzaman and Dahiya, 2019), with growth occurring mainly in second-tier cities (Dahiya, 2014). In Southeast Asia, rapid urban development, an under-investment in infrastructure, and increasing levels of resource consumption have

resulted in the declining liveability of cities and cities having a rising contribution to climate change (Dahiya, 2014; Lehmann, 2018; Arfanuzzaman and Dahiya, 2019). These trends have also increased the exposure of urban residents to environmental contaminants and increased their vulnerability to climate change and disasters (Fuchs et al., 2011; Daudey and Matsumoto, 2017). Secondly, policymakers and planners are increasingly focused on how cities can switch to a sustainable transformational model of urban growth in Southeast Asia, especially in emerging second-tier cities (OECD, 2016). There are increasing arguments that urban sustainability policies and plans need to be supported by transformative urban governance to enable their implementation (Webb et al., 2017; Hölscher et al., 2019a; Shahani et al., 2021).

Addressing the gap in current research into the urban sustainability transformations in emerging economies, and in particular second-tier cities in Southeast Asia, this study uses qualitative coding analysis of documents and open-ended interviews with 55 representatives of government agencies, international development organizations, civil society organizations, universities and businesses involved in the development and implementation of urban sustainability policies and plans, to explore the extent to which urban governance is supporting their implementation and might enable sustainability transformations in two second-tier cities—Battambang and Sihanoukville—in Cambodia. Drawing on the literature, we have developed a model of transformative urban governance to guide the study, focusing on three tiers: meta-governance, including changing worldviews and visions; structural governance settings; and day-to-day governance for sustainability transformations. The study draws from the framing of social-political governance as an interactive and collaborative process underpinned by worldviews at a meta-governance level (Kooiman, 1999; Kooiman and Jentoft, 2009; Emerson et al., 2012; Axinte et al., 2019).

The paper first discusses our conceptual model of transformative urban governance and our methodology, then provides the results on how governance is perceived to be changing in Battambang and Sihanoukville. We conclude by discussing the areas in which governance visions, institutions and practices can be strengthened to enable sustainability transformations in these two cities, and the implications of our findings in the context of broader research.

## 2 Conceptual model—transformative urban governance

Sustainability transformations sets an agenda for transformative changes across multiple levels of society, seeking to go beyond the triple-bottom-line approach of sustainable development, as it has been traditionally defined in sustainability scholarship and global discourse (Hamman, 2017). Sustainability transformations are underpinned and driven by concern about global ecological limits and the carrying capacity of the earth system (Loorbach et al., 2017). Sustainability transformations involve large-scale societal changes to address significant societal and ecological challenges. A transformation is a profound and sustained, non-linear systemic change involving cultural, political, technological, economic, social and/or environmental processes

(Linnér and Wibeck, 2020). Transformation implies fundamental changes in a social-technical-ecological system's structural, functional, relational and cognitive aspects that lead to new patterns of interactions and outcomes (Scoones et al., 2020). Some scholars suggest that transformations evolve through multiple phases (preparing, navigating, and stabilizing) and multiple levels (niche, regime to landscape; Herrfahrdt-Pähle et al., 2020), while others suggest that they do not have prototypical patterns (Stirling, 2015).

Scholars have argued that sustainability transformation can result from incremental, carefully planned interventions made by actors (a systemic approach) or emerge through large-scale political-economic forces and social mobilization (an enabling approach), or alternatively be driven by deeper structural changes in politics, the economy and society (a structural approach; Fazey et al., 2017; Scoones et al., 2020). These approaches are not mutually exclusive (Scoones et al., 2020). Some scholars emphasize that a diversity of perspectives is critical to identifying pathways toward sustainability transformations (Pereira et al., 2020), while others emphasize that transformations occur across three spheres—practical, political and personal (including beliefs, values, worldviews, and paradigms; O'Brien and Sygna, 2013).

When sustainability transformations are driven by deliberate social change and technical innovation (a systemic approach), they are often supported by governance and policy reform (Loorbach, 2010; Loorbach et al., 2017). Social innovations, such as new governance modes and business models, can play an important role in transformations (Olsson et al., 2014). Promising social and technical innovations need to be nurtured and connected to broad institutional responses and resources (Westley et al., 2011). As broader societal contexts change and new radical alternatives develop and emerge, regimes inevitably will enter a process of increased stress, internal crises, destabilization and shock-wise systematic reconfiguration as part of the transformation process (Loorbach et al., 2017). Policies can play a crucial role in driving social-technical innovation leading to transformations, for example, through incentives, investments and other policy initiatives led by the state, but often in collaboration with other groups, including the private sector and civil society organizations (Scoones et al., 2020).

Power and agency can also play a role in driving sustainability transformations, particularly through social mobilization. Sustainability transformations can emerge from the less powerful in society through networks of civic movements and grassroots activity that, in often unruly ways, construct a wider change (Scoones et al., 2020). Bottom-up approaches to transformations often harness community innovation through fostering human agency, values and the capacities necessary to manage uncertainty, collaborate, and identify and enact pathways to desired futures (Scoones et al., 2020).

Cities are a central focus of policymakers and practitioners focusing on sustainability transformations, and actions at a city level will have a global impact (Newton, 2012; Wolfram et al., 2016; Webb et al., 2017). Cities provide a platform to engage various actors across multiple scales directly (local, regional, national, and international) to mobilize their support and influence their behavior toward transformations (Frantzeskaki et al., 2018). Many cities are experimenting toward sustainability transformations and

they provide a hotspot for various actors to develop interesting and potentially transformative ideas for urban sustainability, resilience, and liveability (de Jong et al., 2015; Hassan and Lee, 2015).

Our research uses a “transformative urban governance” conceptual model, drawing from the literature on urban sustainability transformations and urban transformative capacities (Wolfram, 2016, 2019; Borgström, 2019; Hölscher et al., 2019a; Hölscher and Frantzeskaki, 2021; Rogers et al., 2023). Transformative governance and decision-making in the context of urban sustainability transformations aim to re-direct urban development pathways toward sustainability and resilience (Fazey et al., 2017; Hölscher et al., 2019a). Governance reform is represented in all of the different transformative capacity conceptual frameworks/models in the literature (Wolfram, 2016; Ziervogel et al., 2016; Webb et al., 2023). Most often cited is Wolfram’s “transformative capacities” for urban sustainability transformation, of which three of the 10 capacities focus on governance reform: (1) “inclusive and multiform governance;” (2) “transformative leadership;” and (3) “empowered and autonomous communities of practice” (Wolfram, 2016, 2019).

Our model of “transformative urban governance” draws on Kooiman (1999, p. 70), who defines governance as a social-political and interactive process, entailing “all those interactive arrangements in which public as well as private actors participate aimed at solving societal problems, or creating societal opportunities, and attending to the institutions within which these governing activities take place.” Social-political governing takes place at three tiers conceptualized by Kooiman (1999) and Kooiman and Jentoft (2009):

- *Third-tier (meta)*: governing activities aimed at the broad principles that concern the way governance itself takes place and the normative framework in which governance activities evolve, including the system’s values, norms and principles;
- *Second-tier*: influencing of the structural level and the conditions of the first-tier governing, including through agreements, rules, rights, laws, roles and procedures; and
- *First-tier*: the day-to-day activity of public and private actors, solving concrete societal problems or more future-oriented social-political opportunities.

Our model introduces these three governance tiers in the context of urban sustainability transformations (Figure 1), as discussed below. We envisage that reforms are needed at all three governance tiers for urban sustainability transformations.

## 2.1 Third tier (meta) governance—worldviews and shared visions

Values, norms, principles, and worldviews shape society at a meta-governance level and all other governance and policy/planning levels, such as the structural and institutional settings and day-to-day decision-making processes of organizations (Kooiman, 1999; Kooiman and Jentoft, 2009). For urban sustainability transformations, short-term approaches to governance and planning need to be avoided (Patterson et al., 2017), as deep and sustained transformative change will

be underpinned by long-term approaches and the alignment of stakeholder values (or worldviews) oriented to sustainability (Webb et al., 2017). In preparing for urban sustainability transformations, it is crucial to develop a long-term vision and direction for the governance of transformations, particularly to envisage the desired future for and by the city dwellers (Frantzeskaki et al., 2018). Urban visions can take advantage of a plurality of perspectives on what is desirable and should be renegotiated as actors and stakeholders change, and the context changes (Pereira et al., 2020). Sustainability and resilience can serve as complementary goals for orienting urban sustainability transformations (Hölscher et al., 2019b) while also prioritizing social justice, fairness and equity and paying special attention in policy and governance processes toward the poorest and marginalized people (Biermann et al., 2012; Fazey et al., 2017).

## 2.2 Second-tier governance—structural and institutional governance

Structural and institutional settings shape governance at the second-tier, including the institutions (e.g., rules, laws, standards, roles, and procedures), which frame the behavior of organizations, including the private sector, governments, universities and civil society. These institutions have a key role in enabling sustainability transformations when supported by transparency, inclusion, accountability, and decentralized power structures. Procedures supporting transparent and inclusive discussions and democratic decision-making processes are considered essential to the transformative urban governance (Westley et al., 2011; Webb et al., 2017; Schurig and Turan, 2022). Some scholars emphasize that collaborative and inclusive governance processes underpin transformative urban governance, whereby diverse urban stakeholders jointly develop solutions to collective problems that could not otherwise be accomplished (Emerson et al., 2012; Wolfram, 2016; Axinte et al., 2019). Accountability is strengthened when stakeholders have participation rights enshrined in agreements and charters, such as access to information and decision-making processes (Biermann et al., 2012). Decentralization of governance enables the devolution of management rights and power-sharing, enabling more flexible and collaborative management forms and contributing to the long-term resilience of social-ecological systems (Olsson et al., 2014).

Formal and informal institutions and networks play a role in the governance of urban sustainability transformations. Informal institutions and networks can lead in the experimentation and knowledge integration (Herrfahrtd-Pähle et al., 2020; Shahani et al., 2021). Intermediaries or bridging organizations often have a role in bringing diverse stakeholders together from formal and informal settings in transformative governance to solve problems and steer transformations, working across scales and human agency levels (Burch et al., 2016; Wolfram, 2016).

## 2.3 First-tier—day-to-day interactions

First-tier governance is the day-to-day activity of public and private actors, solving concrete societal problems or generating

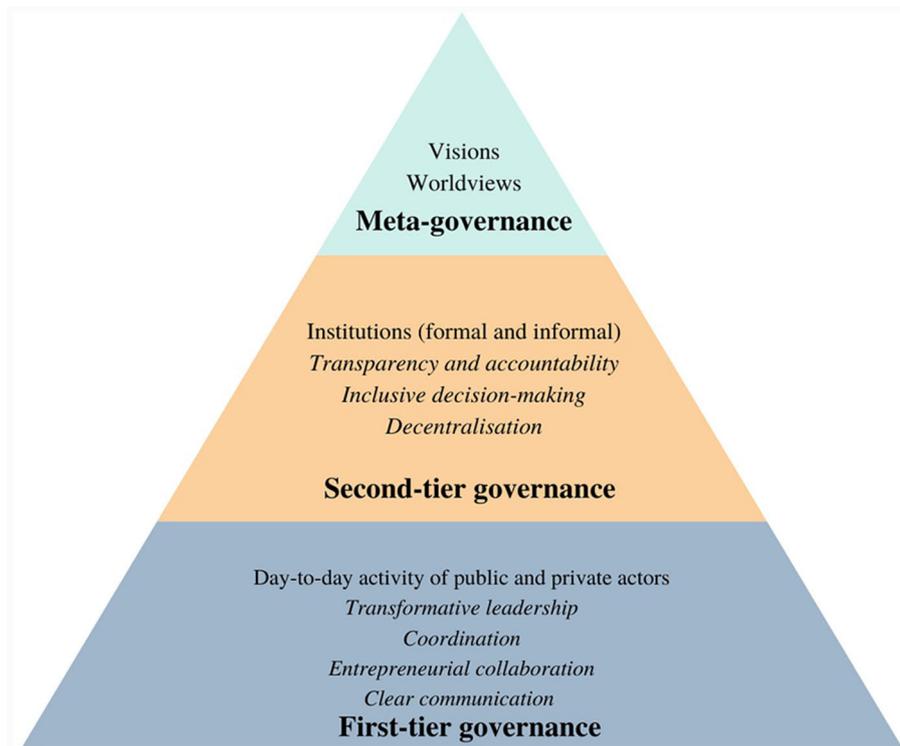


FIGURE 1

Transformative urban governance model (source: authors based on the literature). This Figure is from an existing publication EAC news (<https://eacnews.asia/home/details/7965>).

future-oriented opportunities. First-tier governance for urban sustainability transformations requires transformative leadership and coordination across different political levels and sectors (Schurig and Turan, 2022). Transformative leadership can shape cities by inspiring communities to build collaborations across scales and actions and connect shared values and visions (Wolfram, 2016; Herrfahrdt-Pähle et al., 2020; Shahani et al., 2021).

First-tier transformative urban governance also depends on social relations and the extent of trust, confidence and empowerment built as relational capital (Herrfahrdt-Pähle et al., 2020). The ability to negotiate and resolve differences between diverse stakeholders to achieve collaborative outcomes contributes to building relational capital, supported by clear and transparent communication (Burch et al., 2016). The co-design and co-production of knowledge can also strengthen relational capital, enabling knowledge production to influence cultural and procedural changes directly (Webb et al., 2017).

Building on this model, this study poses the question: to what extent do urban stakeholders from the public sector, international development organizations, civil society, universities and businesses perceive that transformative changes in governance are occurring in Battambang and Sihanoukville at the three tiers: (a) third (meta), (b) second, and (c) first?

### 3 Research method

We used a case study approach with semi-structured interviews supported by document analysis to answer the research question.

A case study enables the investigation of a contemporary phenomenon within its real-life context (Yin, 2009). The two second-tier cities in Cambodia were selected as case studies as they are rapidly urbanizing, and both cities have urban sustainability plans, as outlined below.

#### 3.1 Case study context

In Southeast Asia, Cambodia is at an early stage of urbanization. Cambodia has only around 24% of the population living in urban areas, but its urban spatial growth has been the second fastest in Southeast Asia since 1990 (UN-DESA, 2018). Since its civil war, Cambodia's urbanization has occurred in parallel with rebuilding its political and economic institutions. Under the Khmer Rouge in the 1970's and 1980's, the civil war resulted in the near-total depopulation of urban centers and the genocide of more than 3 million (Simone, 2008). Since the signing of the Paris Peace Agreement in 1991, Cambodia has been through a period of redevelopment, including rebuilding its urban infrastructure, institutions, and human capital (Khemro, 2006). Since then, Cambodia's cities and towns have been rapidly repopulated, with a very high urban growth (Khemro, 2006). Cambodia now has 28 cities, including the capital, Phnom Penh (Chan, 2020).

As a post-conflict developmental state, Cambodia's governance system is one of a state-directed economy, with interlocking state-economic-social systems and elites playing an important role in governance processes (Un and Hughes, 2011; Jamil et al., 2013). National and provincial governments dominate governance, rooted

in the colonial past, resulting in a focus on administrative structures and processes, regulations, and standards for municipal services (Dahiya, 2014). Cambodia has initiated the decentralization of authority from national to municipal authorities, aimed at improving infrastructure and services (Khemro, 2006).

Cambodia's cities are facing complex sustainability challenges. Cambodia's cities have inadequate urban infrastructure (transport, drainage and sewerage, water supply, energy, and solid waste), increased exposure to pollution and traffic congestion, inequity in access to affordable housing, vulnerability to disasters, and shrinking urban green spaces (Yen et al., 2016; Kitamura et al., 2018; OECD, 2018; World Bank, 2018). Climate change is causing additional pressure on urban systems, exposing the poorest and most vulnerable urban residents to climatic risks, such as heat, floods, and storm surges (Fuchs et al., 2011).

Cambodia has established spatial planning laws, policies, and plans for sustainable city development, green growth, and a circular economy. Royal Government of Cambodia (2011) provides a tiered system for land-use planning under the Royal Government of Cambodia (1994). Under this law, all cities must design master plans for land use. Recognizing the sustainability challenges of rapid urbanization, Cambodia has established a *Sustainable City Strategic Plan for Seven Secondary Cities (2020–2030)* and the *Phnom Penh Sustainable City Plan (2018–2030)*. These plans identify strategic goals and actions to guide urban sustainability transformations. Cambodia's urban sustainability plans were initiated under Cambodia's *National Green Growth Policy and Strategic Plan (2013–2030)* and its membership of the Global Green Growth Institute (GGGI). Royal Government of Cambodia (2021) also promotes actions to support sustainable urban development and a green economy.

Battambang and Sihanoukville are rapidly urbanizing cities of economic importance among the second-tier cities in Cambodia. Both cities were selected as a strategic focus for urban sustainability planning under Cambodia's *Sustainable City Strategic Plan for Secondary Cities (2020–2030)* (Figure 2). Battambang is the third-largest city in Cambodia (after Phnom Penh and Siem Reap), with over 150,000 people in 2016. Sihanoukville city had an official population of 78,000 people in 2016, but in reality, it has a higher population due to the high number of migrant workers in the city for construction and tourism work (NCSD et al., 2020). Both cities are tourist destinations. Battambang is situated near the Tonle Sap Lake and has cultural and natural heritage, and Sihanoukville is a popular destination for coastal resorts and casinos. Sihanoukville is Cambodia's only port city and is an industrial center with significant foreign direct investment. Both cities have been vulnerable to floods, droughts and contamination from wastewater and solid waste.

## 3.2 Participants

We interviewed 55 participants, including government officials (national, provincial and municipal), international development agencies, civil society organizations, universities and businesses, between July 2021 and February 2022. To select the organizations interviewed, we categorized stakeholders with a strategic role

in urban governance in the two cities as a decision-making authority, a partner to the authorities, or an influencing agency. The interviewees matched at least one of the following criteria: (1) be assigned a role under Cambodian law in urban administration, (2) be directly involved in managing urban land, infrastructure provision and service delivery, and/or (3) be an advocate for sustainable urban development. We partnered with Cambodia's National Council for Sustainable Development (NCSD)—an inter-ministerial platform—to organize interviews with government officials, enabling access to high-ranking officials. We also used a snowball sampling approach to identify other key stakeholders.

## 3.3 Data collection

Semi-structured interviews were held online due to COVID-19-related travel restrictions. We asked the interviewees to respond to the following questions: (a) what are the urban policy and planning reforms underway to promote sustainable and liveable city transformations? (b) what have been their main successes in these reforms? (c) what do they attribute their success so far toward? (d) what are their main challenges and capacity constraints in achieving their city vision? A translator supported most interviews for Khmer-to-English translation. We transcribed and audio-recorded the interviews, except for the interviews with the government officials, due to potential sensitivities. We reviewed relevant government documents guiding urban development, identified through interviews and online searching.

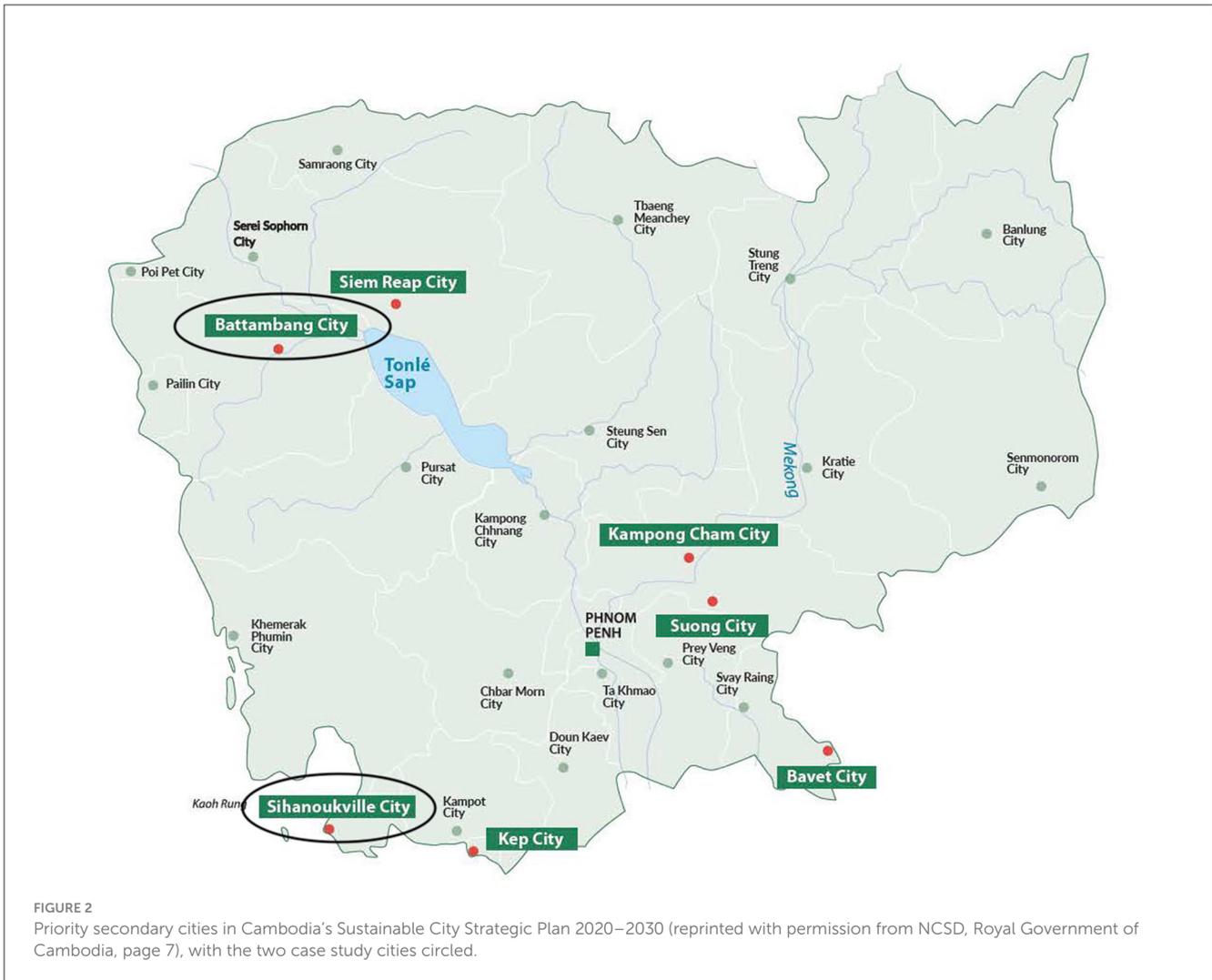
## 3.4 Analysis

We de-identified the interview transcripts to protect the privacy of the research participants. We categorized the participants into groups based on their organization: national government, provincial government, municipalities, international development organizations, civil society, universities, and businesses. We qualitatively analyzed the interview transcripts and documents using Nvivo. Our coding was both emergent and theory-based, coding for emerging themes and alignment with our conceptual model. To ensure qualitative rigor, we used data triangulation, comparing multiple sources of evidence, including documents and interview transcripts. Our framing and analysis of the case study draw on perspectives from research into urban sustainability transformations and social-political governance.

In the following section, we outline the extent of changes occurring at the three levels of governance in Battambang and Sihanoukville, as perceived by urban stakeholders interviewed. We then discuss our key findings, including how governance reforms can be targeted to further the Cambodian government's urban sustainability transformation goals.

## 4 Results

Changes were occurring at all three levels of transformative urban governance in both cities, with the changes being more extensive and longer-term in Battambang. The alignment



of worldviews and city visions with urban sustainability transformations agendas was considered more prominent in Battambang and emerging in Sihanoukville due to recent leadership changes. Battambang's second-tier and first-tier governance institutions and practices supporting sustainability transformations included a stronger focus on accountability and transparency and more experience with inclusive decision-making. Sihanoukville has recently triggered transformational changes through proactive leadership at the first-tier and inclusive urban planning at the second-tier. Both cities are challenged by the top-down bureaucracies, inhibiting decentralization and clear power-sharing arrangements. We discuss these results further below using our model of transformative urban governance.

### 4.1 Meta-governance: shaping worldviews and city visions

This section outlines how changing worldviews and city visions at a meta-governance level in Battambang and Sihanoukville are perceived to be influencing urban transformations.

#### 4.1.1 Shifting worldviews

Interviewees perceived that the worldviews held in Battambang were more aligned with sustainability transformation goals. In contrast, in Sihanoukville, the worldviews were perceived as more diverse but recently shifted toward a sustainability paradigm.

The world views of urban stakeholders that shaped each of the city visions and which had triggered urban transformations were contrasting in each city, as perceived by interviewees. These worldviews are summarized in Figure 3, and discussed below.

Battambang's sustainability transformation goals were defined in the cities' master plan vision for 2030 (Figure 4), developed through a decade-long planning process led by Battambang municipality, and supported by Cambodia's national and provincial governments and international development agencies.

Sihanoukville's sustainability transformation goals were defined more recently through a policy process directed by Cambodia's national government, under its "Land Management and Land Use Policy for Developing Preah Sihanouk Province as a Multi-Purpose Special Economic Zone 2022–2038" and reiterated in its city land use plan (see Table 1).



FIGURE 3  
Contrasting world views shaping urban visions in Battambang and Sihanoukville (source: authors).

Stakeholders interviewed perceived that a shift in worldviews toward valuing ecological assets, social inclusion and cultural heritage was an important driver for long-term urban transformations in Battambang. Interviewees also perceived that a social-cultural worldview of Battambang being held up as a “model city” had become a norm that inspired citizen engagement in urban sustainability transformations. One official reflected:

*For the Battambang case, I have observed overall that their performance was stable, even though there is a change in the position of governor; there has been good practice over year over time; good performance in solid waste management is the norm of the citizen already.*

Government official—National government

In Sihanoukville, interviewees mostly had a negative perception of the city due to its recent rapid urbanization, which triggered a collective worldview that the city should be more liveable and environmentally sustainable. Many interviewees considered the recent development in Sihanoukville was a “mistake” that needed fixing, as it compromised the city’s environmental and aesthetic value. Interviewees noted that this worldview shift triggered the repositioning of the city’s development strategy. One interviewee highlighted:

*[Sihanoukville] transformed quite a lot... [with rapid unregulated development], and that really triggered dissatisfaction and unhappiness among Cambodian people about it. So, they [the government] needed to do something.*

International development agency

Interviewees from both cities emphasized that worldviews (and their associated values, norms and principles) underpin

behavior change and that the government has a role in educating and raising awareness about urban sustainability. A planner noted:

*A small amount of families that think about benefits for themselves, rather than the future benefits of the city. The most important work for us is to make them understand the objective of development and how it can provide benefits for all.*

Government official—Municipality

Other interviewees emphasized that while there had been a shift in worldviews toward sustainability in both cities, some residents felt powerless and unable to prevent urban deterioration. Some highlighted that the values and interests of powerful people within business and government steer urban changes. One interviewee noted:

*The young generation is really concerned, because the city has been developed very fast, but there is no space to meet together... people are aware, but do not have any window to address to the policymaker.*

International development agency

In both cities, shifts toward sustainability-oriented worldviews were either becoming the social norm, such as in Battambang, or emerging, such as in Sihanoukville, and were perceived as key to behavior change and implementation of urban sustainability plans.

#### 4.1.2 Long-term visions

Establishing and communicating a clear long-term vision was perceived as a driver behind urban sustainability transformations in both cities. Cambodia’s *Sustainable City Strategic Plan for*

TABLE 1 Sihanoukville’s urban sustainability transformation goals.

Sihanoukville’s goals for sustainable and inclusive city development	
1	Ensure that all urban development and conservation will get inclusion in economic, social, environmental, cultural, food security, and peaceful protection
2	Promote and encourage green development and use of energy norms for buildings and structures, as well as solar, wind energy and energy generated from solid waste processing in order to minimize energy consumption which use from natural resources
3	Promote and encourage the design, preparation and implementation of construction projects and urban development and conservation projects in accordance with the principles of sustainable development
4	Promote water supply, management and rebuild water recycling system
5	Ensure that all urban development and conservation are for all people to receive equitable benefits, including the disabled and vulnerable.
6	Improve the urban environment for safety from various disasters through the use of smart disaster prevention systems, construction of roads and emergency space for disaster evacuation
7	Promote effective urban management and participation through the establishment of operational centers for the integration of urban functions.

Seven Secondary Cities (2020–2030) sets the transformative vision, “by 2030, the seven secondary cities in Cambodia will be more resilient, resource-efficient, and able to provide their citizens with a good quality of life and social harmony through sustainable development” (NCS D et al., 2020, p. 3). This vision aligns with and supports Cambodia’s commitment to achieving the *Cambodian Sustainable Development Goals (2016–2030)* and its *National Green Growth Policy (2013–2030)*.

Battambang officials considered that their master plan vision (Figure 4, above) motivates community participation in the plan and that they needed to promote it. Sihanoukville officials also perceived that their master plan vision inspired cooperation. One official noted:

*All sectors appreciate the new development plan, the new vision, and cooperate with us, and they participate in the discussion in developing the future plan for the city. They share their data and their knowledge, and ongoing discussions for a big shift from old to new city.*

Government official—Sihanoukville province

Sihanoukville’s city vision was set by the political leaders, in contrast to Battambang’s city vision, which was designed through a more deliberative process. One official noted:

*Everyone knows that the government wants Sihanoukville to become a high-income province for economic growth. The government has oriented the master plan for Sihanoukville province into a multi-purpose model special economic zone, an industrial center for science, modern technology, and green innovation.*

Government official—Sihanoukville province.

## 4.2 Second-tier governance: institutions

This section outlines how urban stakeholders perceived second-tier governance in both cities influenced urban transformations. Battambang’s governance institutions were perceived as more aligned in supporting sustainability transformations, demonstrated through more inclusive decision-making, transparency and accountability, and decentralization. Sihanoukville’s governance institutions were somewhat aligned with increased inclusiveness in planning.

### 4.2.1 Inclusive decision-making

A lack of inclusive engagement in spatial planning was perceived as a constraint on governance at an institutional level in both cities. Cambodia’s spatial planning policy supports inclusive planning but is yet to be fully implemented. One interviewee noted:

*I was aware that the master plan has been prepared by experts... but there is no chance to look at it, and no access to the consultation... The government has their own consultation with technical departments... but it has not allowed consultation with different stakeholders.*

International development agency

On the other hand, interviewees considered inclusive decision-making processes in Battambang led to transformative urban waste reforms. One official noted:

*In short... it is all about the participation, about the inclusive leadership of the city government; they are like one organization (community, government, and private sector) that are working together throughout the processes of solid waste management.*

Government official—National government

Battambang municipality partnered with civil society to facilitate engagement in waste reforms, including with vulnerable communities. One interviewee noted:

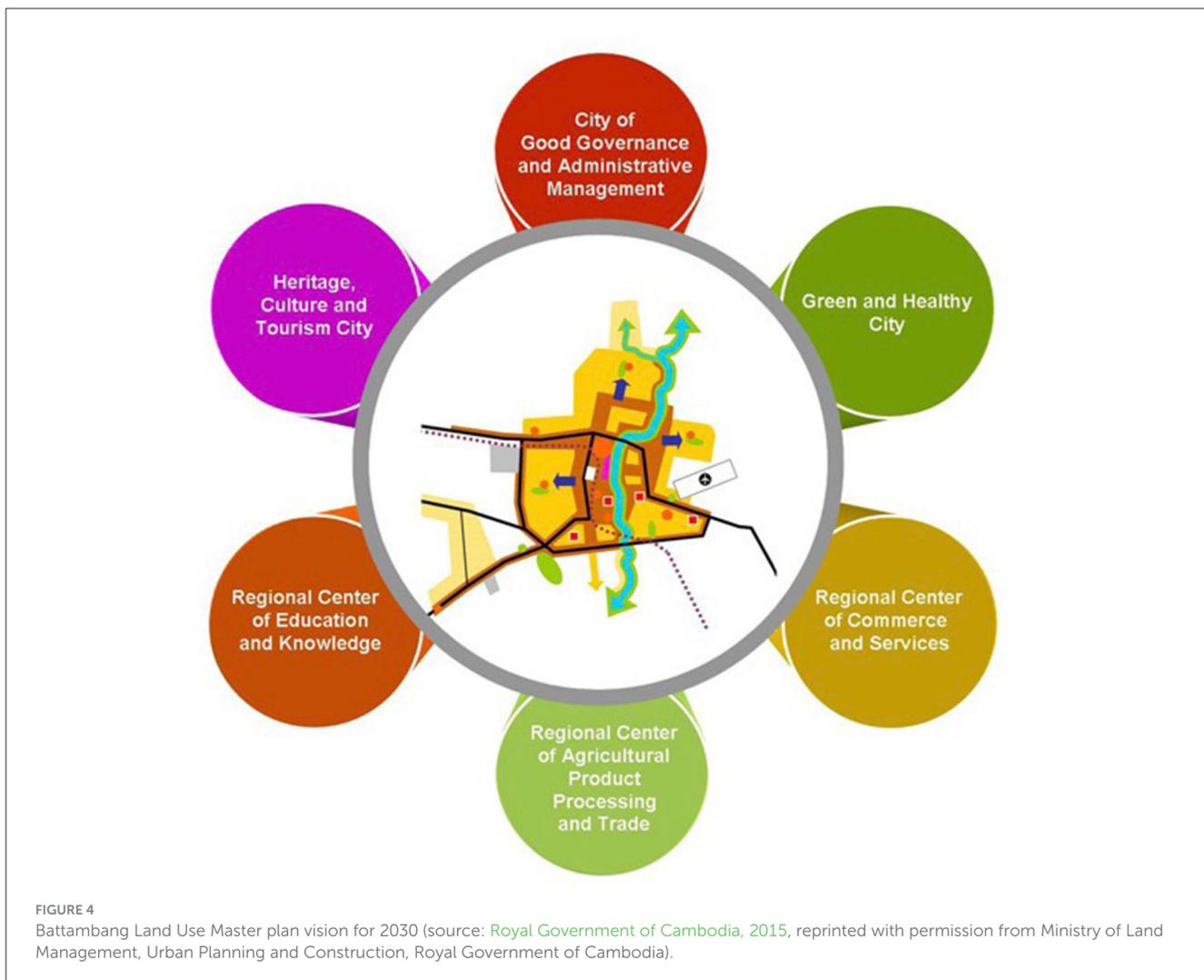
*We have a public forum, so the residents can talk about their feedback and their perspectives on waste management... we bring these issues together and talk between the key actors, the resident, the company, and the authority, and we find the solution. It works. And we can develop more effective ways to hit the right issue.*

Civil society organization

Sihanoukville introduced inclusive planning for its smart city roadmap, organizing separate consultations with stakeholder groups, rather than a public forum. However, this process was superseded by government directives. One interviewee noted:

*Despite us attempting to do a reasonable degree of stakeholder engagement and community engagement to inform this, the ultimate decision was certainly made from the top.*

International development agency



Overall, increased inclusiveness in decision-making was perceived as important for urban sustainability transformations in both cities but was challenging to implement. Experience in government with participatory planning approaches was mixed and required support from intermediaries or bridging organizations.

#### 4.2.2 Accountability and transparency

Many interviewees noted that Battambang municipality had demonstrated more accountability and transparency in its engagement with citizens and urban stakeholders compared with other cities, leading to transformations. One interviewee highlighted:

*From an openness and transparency point of view, they [Battambang municipality] put everything on the table and did not really have a bureaucratic system in place, which meant that everyone is happy to work and coordinate with them.*

International development agency

Municipal officials emphasized that higher government levels need increased accountability to enforce urban planning regulations. One municipality gave the example that provincial authorities had approved construction projects contravening their city master plan. Other interviewees were concerned with a lack of transparency in the public procurement of urban services. One interviewee reflected:

*I don't see any kind of more transparency or accountability with the private investment. For example, solid waste management there are many private companies, but during the bidding process, they are maybe not fully transparent... Then the people complain.*

International development agency

Overall, transparency and accountability in the governance of both cities were perceived as improving by stakeholders both in and outside of government, with Battambang setting an example for other cities. However, the transparent implementation of urban sustainability policies and plans through uncompromised procurement and project approval processes will be necessary to realize their potential.

### 4.2.3 Decentralization

In both cities, unclear roles and responsibilities in governance were perceived as inhibiting sustainability transformations. Decentralizing responsibilities for urban services to municipalities was perceived as a long-term process, requiring capacity building and political commitment from all levels of government. Interviewees perceived national and provincial agencies as reluctant to delegate their budgets to municipalities to fulfill their delegated mandates, including in Sihanoukville. Municipalities were often perceived as lacking in capacity to fulfill their new responsibilities. One interviewee noted:

*According to all the decentralization rules, everything is supposed to be decentralized to the municipality, except that in real life they don't have much power and they have a very tiny budget. They are not even allowed to manage the budget they receive.*

International development agency

To support the decentralization of waste services, Battambang municipality enacted a new local regulation in 2017, which clarified responsibilities and enabled it to become the first Cambodian city to issue penalties for contravening the national waste law. Similarly, in Battambang, a clear demarcation of responsibilities for land-use planning enabled the cities' master plan to be realized. One official noted:

*When we initiated the plan, we assigned a long-term working group to be responsible for the Master plan. This group had a clear responsibility for the Master plan; they are like the good institutional memory for the whole story of developing the Master plan.*

Government official—municipality

Overall, most interviewees considered the ongoing decentralization reforms for the Cambodian public sector to be a key enabler for urban sustainability transformations.

## 4.3 First-tier governance: day-to-day practices

This section discusses how interviewees perceived first-tier governance in Battambang and Sihanoukville to be influencing urban transformations. Both cities demonstrated local leadership aligned to sustainability transformations agendas and coordination across sectors and government levels. Relational capital was more evident in Battambang's urban planning processes, built over a longer timeframe and achieved through co-design processes. Access to information and clear communication was becoming apparent in both cities, alongside opportunities for entrepreneurial collaborations between the public and private sectors to resolve complex sustainability challenges.

### 4.3.1 Transformative leadership

Local leadership in both cities was perceived as strengthening each city's sustainability transformation potential. Battambang

municipality highlighted their collaborative leadership style as key to their progress. One Battambang official noted:

*Our success... is because of our leadership and collaboration. Firstly, our collaboration internally is good, within the city—the Council, Board of Governors, and all divisions under the Board of Governors are good—internally we are strong. We also have good collaboration with sectoral ministries... Thirdly... we have good relationship with the Provincial Governor.*

Government official—municipality

Proactive leaders were perceived as enabling sustainability transformations, particularly in ensuring the implementation of urban sustainability policies and plans. One interviewee highlighted the leadership qualities in Sihanoukville:

*Once you have a good figurehead that drives the process, a proactive Governor, for example, you can make decisions quicker, so leveraging that is a key factor... essentially, the Governor right now is very proactive, and he is a very forward thinking.*

International development agency

While different leadership styles were evident in the two cities—both local leadership styles were perceived as advantageous for sustainability transformations.

### 4.3.2 Coordination

Interviewees often perceived government agencies in both cities as having limited capacity to coordinate their work effectively across sectors due to inter-ministerial competition. While coordination had improved through urban master plans and integrated infrastructure plans, implementation of these plans remained challenging as sector ministries were perceived as operating in silos. Interviewees considered that coordination could be improved by strengthening the facilitation capacity of municipalities. One interviewee noted:

*[Coordination] depends on the smart facilitator; the one who plays the key role to combine ideas among all the members; it is difficult but generally we can move ahead and resolve the problem.*

Government official—Battambang province

Some interviewees expressed concern with the number of committees set up by different ministries with similar objectives, including promoting “smart,” “liveable,” “sustainable,” and “clean” cities. One official noted:

*There are overlapping committees and responsibilities;... there are multiple coordination platforms for different sectors;... they should come together in one platform; to share their experience of working in different sectors.*

Government official—National government

Overall, improving cross-sector coordination was perceived as an ongoing priority, which could be strengthened when sector ministries share a common vision for the city and commitment

to align their work with its master plan. Consolidation of proliferating committees and coordination platforms was also perceived as necessary.

### 4.3.3 Entrepreneurial collaboration

Entrepreneurial collaborations in both cities enabled new ways of working and technologies to promote sustainability transformations. Battambang had deployed a smart mobile application, “Go Green Cambodia,” with over 5,000 users, facilitating information exchange on waste collection and recycling (US-AID, 2022). Interviewees perceived this application as enhancing accountability and transparency. One official noted:

*You can report in the app about burning, waste collection, and illegal dumping, and everyone can go in and report. So, the company can see it, and they can see the complaints and reports. And we, the authority, and the government, we can see it, and then we can solve it.*

Government official—municipality

In both cities, smart city approaches were perceived as providing opportunities for sustainability transformations. In Sihanoukville, the use of smart technology was aimed at enhancing urban governance and services, and increasing citizen engagement, for example, through innovative citizen laboratories and civic platforms and providing e-services (UN-Habitat, 2021; UN-ESCAP, 2023).

Interviewees in both cities considered entrepreneurial collaborations an important driver of sustainability transformations and that multi-stakeholder partnerships facilitated the transfer and uptake of entrepreneurial knowledge.

### 4.3.4 Clear communication

Clear communication on transformative policies and plans was perceived as necessary for their implementation in both cities. Government officials emphasized that the desired result of these policies and plans would not be achieved without community behavior changes, for example, in adhering to planning regulations. One official noted:

*Currently our dissemination of urban planning is still limited, and the level of awareness and understanding of the people of urban planning is quite low, so just like marketing, we need to get our people to know more about sustainable city development and our master plan.*

Government official—Battambang province

While government-led awareness-raising campaigns were considered necessary, some interviewees noted they had limited effectiveness without systemic reform. In Battambang, for example, the impact of awareness raising on waste separation did not last due to a lack of enforcement and recycling infrastructure. Some interviewees perceived that community-based engagement was more effective in inspiring behavior change. One interviewee noted:

*The urban poor receive technical training and knowledge on urban planning, technologies, participation and monitoring. This is the knowledge implanted through the communities.*

Civil society organization

Overall, both cities cited examples of how clear communication is perceived as necessary for gaining knowledge and informing worldviews, governance, and policies.

## 5 Discussion

Through research into urban stakeholders’ perceptions of transformative changes in governance in Battambang and Sihanoukville, we have identified ways urban governance can be further strengthened at the meta-level, institutional level, and day-to-day level in these two cities. These areas to strengthen could also provide guidance for other cities undertaking governance reform for sustainability transformations, particularly in cities with similar contexts of the global south. We summarize these areas below, and reflect on our research approach and its replicability for studies of transformations in other cities.

### 5.1 Strengthening governance for sustainable city transformations

#### 5.1.1 The need for alignment of all governance levels

Transformative urban governance underpins urban sustainability transformations; it is the foundation of all other transformative capacities that enable urban sustainability transformations (Wolfram, 2016; Hölscher et al., 2019b). However, we lack a clear understanding of what makes governance transformative, and how governance systems can be transformed to enable sustainability transformations. Our research shows that cities need all three levels of governance—meta, second and first—to be adjusted and reformed to enable urban sustainability transformations. The transformation processes may stagnate if one level is not aligned with an urban sustainability transformation agenda.

#### 5.1.2 Importance of worldviews in driving changes

In line with O’Brien and Sygna (2013), we consider that worldviews (alongside beliefs, values, and paradigms) shape transformations, and in the context of governance systems, the collective viewpoints of actors and stakeholders comprise the meta-governance system alongside city visions. In Battambang, urban stakeholders were perceived as having a positive collective worldview of their city (green, model city), whereas in Sihanoukville, most people interviewed perceived the city negatively, as a city that needed to be fixed due to over-development and a lack of urban planning. The positive worldview underpinned a motivating vision for Battambang, which was perceived as driving reforms at the institutional and day-to-day

levels of governance. In Sihanoukville, there was limited reform in day-to-day governance and a lack of transparency, which was perceived as hampering transformation processes and the implementation of sustainability plans and policies.

### 5.1.3 The need for responsive institutions engaging with diverse actors

Multi-level governance that facilitates engagement with diverse actors and promotes connectivity and collaboration, is more effective in supporting knowledge transfer and scaling-up sustainability initiatives (Biermann et al., 2012; Borgström, 2019). In our research, where the municipality was perceived as open and responsive to the needs of community, and collaborative with international agencies and the private sector, new multi-stakeholder partnerships were formed, which helped to overcome otherwise intractable urban sustainability challenges (e.g., waste management reform in Battambang). Aligned with the findings of Long et al. (2023), we found that a key area of focus for transformative governance strengthening is the capability building of public institutions, which need to promote facilitative leadership to enable multi-level engagement that steers reforms. Aligned to the research of Segales et al. (2023), we also found that public institutions needed to develop new practices of engagement with diverse actors, and implement these practices across the full lifecycle of a transformation, for transformative interventions to be durable.

### 5.1.4 Importance of institutional accountability in regulating urban planning

We found that particular emphasis needs to be placed on the institutional capacity for transparent enforcement of planning regulations and procurement policies to enable transformed urban governance. Both cities reviewed had only recently developed their urban master plans, but the value of these plans was undermined by stalled implementation. Similar to Yasmin et al. (2020), we found that in cases of the global south, urban sustainability transformations require a significant focus on compliance with legislation, investment in local institutions for policy and planning implementation, and an increased focus on initiatives and incentives by governments to drive effective participation of communities and businesses in reforms. Part of the problem with the stalled implementation of plans in the two cities was power struggles across relevant agencies. A critical part of institutional strengthening is an ongoing focus on well-resourced decentralization of government services to local authorities, whereby budgets and technical support are devolved to local authorities alongside responsibilities.

### 5.1.5 Benefits of agile governance practices and entrepreneurship

In line with Rogers et al. (2023), we found that urban transformations do not just depend on policies and strategies, but on the willingness of key urban stakeholders to be agile and adjust to changing contexts and emerging technologies. Both case study cities were seeking to take advantage of smart city

technologies to achieve their sustainability goals, particularly in waste management reforms. In both cities, initiatives were in the pilot phase, and stakeholders interviewed perceived that further capacity strengthening is needed to ensure the entrepreneurial business models deliver their desired outcomes and lead to systemic reform.

## 5.2 Reflections on our research approach

Sustainability transformations research requires both the formal and informal rules of governance to be identified and analyzed, and for research to help identify how changes in systems of governance can support sustainability transformations (Yasmin et al., 2020; Rogers et al., 2023). Our conceptual model and research method provided a practical framework for analyzing stakeholder perceptions of urban governance across three levels of governance conceptualized by Kooiman (1999). This approach enabled us to distinguish areas that were perceived by interviewees as governance strengths, and identify how urban governance visions, institutions and practices could be strengthened to support urban sustainability transformations. Our conceptual framework is potentially universally applicable and could be replicated by stakeholder perception studies in other cities.

Our conceptual model could be further developed through research into how these levels of governance could be transformed. In particular how the meta-governance level—the broader set of urban values, beliefs, worldviews and paradigms—can be shaped toward a sustainability transformations agenda (i.e., what social design processes or tools can help to align the worldviews of urban actors and stakeholders to a sustainability transformations agenda?). Understanding the interior dimensions of transformative sustainability is a key part of this, which our research did not cover in any detail, including understanding human values and internal meaning-making systems (Wamsler et al., 2023). Furthermore, another key focus could be on the institutional level and how the power and political aspects of institutional governance affect transformation processes (Sierhuis et al., 2023). While our method enabled the identification of power struggles, it did not yet enable the evaluation of how these power imbalances could be addressed, for example, through strengthening decision-making processes and political negotiation processes of urban sustainability transformations.

## 6 Conclusion

A sustained focus on understanding transformative urban governance is needed to realize the full potential of sustainability-oriented urban plans and policies, particularly in the global south, where the implementation of plans and policies may be stalled. Our research identified a range of transformative urban governance strengths in the two case study cities, and areas to strengthen across three governance tiers—meta-, institutional-, and day-to-day governance practices. Our research provides valuable knowledge for triggering and sustaining transformations of urban governance within

the two cities studied, and a methodological approach that could be replicated in other cities to support their transformation journeys.

## Data availability statement

The datasets presented in this article are not readily available because, full interview transcripts were obtained confidentially by the researchers. Requests to access the datasets should be directed to [fiona.n.lord@student.uts.edu.au](mailto:fiona.n.lord@student.uts.edu.au).

## Ethics statement

The studies involving humans were approved by UTS Human Research Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their informed consent to participate in this study.

## Author contributions

FL: Conceptualization, Investigation, Methodology, Data curation, Writing – original draft, Formal analysis, Writing –

review & editing. JP: Conceptualization, Supervision, Writing – review & editing.

## Funding

The author(s) declare financial support was received for the research, authorship, and/or publication of this article. This study was supported by UTS Research Excellence Ph.D. Scholarship.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

## References

- Arfanuzzaman, M., and Dahiya, B. (2019). Sustainable urbanization in Southeast Asia and beyond: challenges of population growth, land use change, and environmental health. *Growth Change* 50, 725–744. doi: 10.1111/grow.12297
- Axinte, L. F., Mehmood, A., Marsden, T., and Roep, D. (2019). Regenerative city-regions: a new conceptual framework. *Region. Stud. Region. Sci.* 6, 117–129. doi: 10.1080/21681376.2019.1584542
- Bai, X., McPhearson, T., Cleugh, H., Nagendra, H., Tong, X., Zhu, T., et al. (2017). Linking urbanization and the environment: conceptual and empirical advances. *Ann. Rev. Environ. Resour.* 42, 215–240. doi: 10.1146/annurev-environ-102016-061128
- Biermann, F., Abbott, K., Andresen, S., Bäckstrand, K., Bernstein, S., Betsill, M. M., et al. (2012). Transforming governance and institutions for global sustainability: key insights from the Earth System Governance Project. *Curr. Opin. Environ. Sustainabil.* 4, 51–60. doi: 10.1016/j.cosust.2012.01.014
- Borgström, S. (2019). Balancing diversity and connectivity in multi-level governance settings for urban transformative capacity. *AMBIO* 48, 463–477. doi: 10.1007/s13280-018-01142-1
- Burch, S., Andrachuk, M., Carey, D., Frantzeskaki, N., Schroeder, H., Mischkowski, N., et al. (2016). Governing and accelerating transformative entrepreneurship: exploring the potential for small business innovation on urban sustainability transitions. *Curr. Opin. Environ. Sustainabil.* 22, 26–32. doi: 10.1016/j.cosust.2017.04.002
- Chan, P. (2020). Assessing sustainability of the capital and emerging secondary cities of Cambodia based on the 2018 commune database. *Data* 5:79. doi: 10.3390/data5030079
- Dahiya, B. (2014). Southeast Asia and sustainable urbanization. *Glob. Asia* 9, 84–91.
- Daudey, L., and Matsumoto, T. (2017). Integrating urban resilience and resource efficiency into local green growth strategies: the case of fast-growing cities in Southeast Asia. *Int. J. Urb. Sustain. Dev.* 9, 226–241. doi: 10.1080/19463138.2017.1339278
- de Jong, M., Joss, S., Schraven, D., Zhan, C., and Weijnen, M. (2015). Sustainable-smart-resilient-low carbon-eco-knowledge cities: making sense of a multitude of concepts promoting sustainable urbanization. *J. Clean. Prod.* 109, 25–38. doi: 10.1016/j.jclepro.2015.02.004
- Emerson, K., Nabatchi, T., and Balogh, S. (2012). An integrative framework for collaborative governance. *J. Publ. Admin. Res. Theory* 22, 1–29. doi: 10.1093/jopart/mur011
- Fazey, I., Moug, P., Allen, S., Beckmann, K., Blackwood, D., Bonaventura, M., et al. (2017). Transformation in a changing climate: a research agenda. *Clim. Dev.* 10, 191–217. doi: 10.1080/17565529.2017.1301864
- Frantzeskaki, N., Bach, M., Holscher, K., and Avelino, F. (2018). "Introducing sustainability transitions' thinking in urban contexts," in *Co-creating Sustainable Urban Futures: A Primer on Applying Transition Management in Cities. 1st Edn*, eds. N. Frantzeskaki, K. Holscher, M. Bach, and F. Avelino (Cham: Springer International Publishing), 63–80.
- Fuchs, R., Conran, M., and Louis, E. (2011). Climate change and Asia's coastal urban cities: can they meet the challenge? *Environ. Urban. Asia* 2, 13–28. doi: 10.1177/097542531000200103
- Hamman, P. (2017). Definitions and redefinitions of urban sustainability: a bibliometric approach. *Urb. Environ.* 2017:1050496ar. doi: 10.7202/1050496ar
- Hassan, A. M., and Lee, H. (2015). The paradox of the sustainable city: definitions and examples. *Environ. Dev. Sustainabil.* 17, 1267–1285. doi: 10.1007/s10668-014-9604-z
- Herrfahrdt-Pähle, E., Schlüter, M., Olsson, P., Folke, C., Gelcich, S., and Pahl-Wostl, C. (2020). Sustainability transformations: socio-political shocks as opportunities for governance transitions. *Glob. Environ. Change* 63:102097. doi: 10.1016/j.gloenvcha.2020.102097
- Hölscher, K., and Frantzeskaki, N. (2021). Perspectives on urban transformation research: transformations in, of, and by cities. *Urb. Transformat.* 3, 1–14. doi: 10.1186/s42854-021-00019-z
- Hölscher, K., Frantzeskaki, N., McPhearson, T., and Loorbach, D. (2019a). Capacities for urban transformations governance and the case of New York City. *Cities* 94, 186–199. doi: 10.1016/j.cities.2019.05.037
- Hölscher, K., Frantzeskaki, N., McPhearson, T., and Loorbach, D. (2019b). Tales of transforming cities: Transformative climate governance capacities in New York City, U.S. and Rotterdam, Netherlands. *J. Environ. Manag.* 231, 843–857. doi: 10.1016/j.jenvman.2018.10.043
- Jamil, I., Aminuzzaman, S., and Haque, S. (2013). Introduction: governance in South, Southeast, and East Asia. *Publ. Org. Rev.* 13, 341–347. doi: 10.1007/s11115-013-0256-5

- Khemro, B. H. S. (2006). "Cambodia (chapter 4)" in *Urbanization and sustainability in Asia: case studies in good practice*, eds B. Roberts and T. Kanaley (Asian Development Bank), 71–100.
- Kitamura, Y., Hayashi, M., and Yagi, E. (2018). Traffic problems in Southeast Asia featuring the case of Cambodia's traffic accidents involving motorcycles. *IATSS Res.* 42, 163–170. doi: 10.1016/j.iatssr.2018.11.001
- Koch, F., Kabisch, S., and Krellenberg, K. (2018). A transformative turn towards sustainability in the context of urban-related studies? A systematic review from 1957 to 2016. *Sustainability* 10:58. doi: 10.3390/su10010058
- Kooiman, J. (1999). Social-Political Governance: overview, reflections and design. *Publ. Manag.* 1, 67–92. doi: 10.1080/14719037800000005
- Kooiman, J., and Jentoft, S. (2009). Meta-governance: values, norms and principles, and the making of hard choices. *Publ. Admin.* 87, 818–836. doi: 10.1111/j.1467-9299.2009.01780.x
- Lehmann, S. (2018). Implementing the Urban Nexus approach for improved resource-efficiency of developing cities in Southeast-Asia. *City Cult. Soc.* 13, 46–56. doi: 10.1016/j.ccs.2017.10.003
- Linnér, B.-O., and Wibeck, V. (2020). Conceptualising variations in societal transformations towards sustainability. *Environ. Sci. Pol.* 106, 221–227. doi: 10.1016/j.envsci.2020.01.007
- Long, L. A. N., Krause, R. M., Arnold, G., Swanson, R., and Fatemi S. M. (2023). The networked micro-decision context: a new lens on transformative urban governance. *Urban Transform.* 5, 9. doi: 10.1186/s42854-023-00054-y
- Loorbach, D. (2010). Transition management for sustainable development: a prescriptive, complexity-based governance framework. *Governance* 23, 161–183. doi: 10.1111/j.1468-0491.2009.01471.x
- Loorbach, D., Frantzeskaki, N., and Avelino, F. (2017). Sustainability transitions research: transforming science and practice for societal change. *Ann. Rev. Environ. Resour.* 42, 599–626. doi: 10.1146/annurev-environ-102014-021340
- NCSO, MoI, and GGGL (2020). *Sustainable City Strategic Plan 2020-2030 for Seven Secondary Cities*. Phnom Penh, Cambodia: Royal Government of Cambodia.
- Newton, P. W. (2012). Liveable and sustainable? Socio-technical challenges for twenty-first-century cities. *J. Urb. Technol.* 19, 81–102. doi: 10.1080/10630732.2012.626703
- O'Brien, K., and Sygna, L. (2013). "Responding to climate change: the three spheres of transformation," in *Proceedings of the Conference Transformation in a Changing Climate* (Oslo: University of Oslo), 16–23.
- OECD (2018). *OECD Investment Policy Reviews: Cambodia 2018*. Paris.
- OECD (2016). *Urban Green Growth in Dynamic Asia*. Paris.
- Olsson, P., Galaz, V., and Boonstra, W. J. (2014). Sustainability transformations a resilience perspective. *Ecol. Soc.* 19:401. doi: 10.5751/ES-06799-190401
- Patterson, J., Schulz, K., Vervoort, J., van Der Hel, S., Widerberg, O., Adler, C., et al. (2017). Exploring the governance and politics of transformations towards sustainability. *Environ. Innov. Societ. Transit.* 24, 1–16. doi: 10.1016/j.eist.2016.09.001
- Pereira, L. M., Davies, K. K., den Belder, E., Ferrier, S., Karlsson-Vinkhuyzen, S., Kim, H., et al. (2020). Developing multiscale and integrative nature-people scenarios using the Nature Futures Framework. *People Nat.* 2, 1172–1195. doi: 10.1002/pan3.10146
- Rogers, C. D. F., Grayson, N., Sadler, J. P., Chapman, L., Bouch, C. J., Cavada, M., et al. (2023). Delivering sustainable, resilient and liveable cities via transformed governance. *Front. Sustain. Cit.* 5:1171996. doi: 10.3389/frsc.2023.1171996
- Royal Government of Cambodia (1994). *Law on Land Use Planning, Urbanization and Construction*. Preah Reach Kram/04NS94/10Aug94. Royal Government of Cambodia.
- Royal Government of Cambodia (2011). *National Policy on Spatial Planning of the Kingdom of Cambodia*. Council of Minister.
- Royal Government of Cambodia (2015). *Land Use Master Plan of Battambang City, 2030*. Royal Government of Cambodia.
- Royal Government of Cambodia (2021). *National Circular Economy Strategy and Action Plan*. Available online at: <https://www.undp.org/cambodia/publications/circular-economy-ce-strategy-and-action-plan>
- Schurig, S., and Turan, K. (2022). The concept of a 'regenerative city': how to turn cities into regenerative systems. *J. Urb. Regener. Renew.* 15, 161–175.
- Scoones, I., Stirling, A., Abrol, D., Atela, J., Charli-Joseph, L., Eakin, H., et al. (2020). Transformations to sustainability: combining structural, systemic and enabling approaches. *Curr. Opin. Environ. Sustainabil.* 12:4. doi: 10.1016/j.cosust.2019.12.004
- Segales, M., Hewitt, R. J., and Slee, B. (2023). Social innovation and global citizenship: guiding principles for sustainable, just and democratic energy transition in cities. *Energy Res. Soc. Sci.* 106:103295. doi: 10.1016/j.erss.2023.103295
- Shahani, F., Pineda-Pinto, M., and Frantzeskaki, N. (2021). Transformative low-carbon urban innovations: operationalizing transformative capacity for urban planning. *AMBIO* 21:4. doi: 10.1007/s13280-021-01653-4
- Sierhuis, D., Bertolini, L., and Van Winden, W. (2023). "Recovering" the political: unpacking the implications of (de)politicization for the transformative capacities of urban experiments. *Environ. Plan. C Polit. Space* 2023:23996544231205256. doi: 10.1177/23996544231205256
- Simone, A. (2008). The politics of the possible: making urban life in Phnom Penh. *Singap. J. Trop. Geogr.* 29, 186–204. doi: 10.1111/j.1467-9493.2008.00328.x
- Stirling, A. (2015). "Emancipating transformations: from controlling 'the transition' to culturing plural radical progress," in *The Politics of Green Transformations: Pathways to Sustainability, 1 Edn, Vol. 1*, eds I. Scoones, M. Leach, and P. Newell (London: Routledge), 1.
- Un, K., and Hughes, C. (2011). "The political economy of "good governance" reform," in *Cambodia's Economic Transformation*, eds C. Hughes and K. Un (Copenhagen: NIAS Press), 199–218.
- UN-DESA (2018). *2018 Revision of World Urbanization Prospects, United Nations, Department of Economic and Social Affairs*. New York, NY.
- UN-ESCAP (2017). *Urbanisation and Sustainable Development in Asia and the Pacific: Linkages and Policy Implications, Note by the Secretariat (15-19 May 2017) 73rd Session*. Bangkok.
- UN-ESCAP (2023). *Sihanoukville Smart City Innovation Lab*. Available online at: <https://www.unescap.org/projects/smart-cities-innovation-lab/cities/s-ville> (accessed February 01, 2024).
- UN-Habitat (2021). *Sihanoukville for all: Promoting Smart, Sustainable, and Inclusive City*. Available online at: [https://unhabitat.org/sites/default/files/2021/12/smart\\_city\\_summary\\_en\\_v8\\_final\\_30\\_nov.pdf](https://unhabitat.org/sites/default/files/2021/12/smart_city_summary_en_v8_final_30_nov.pdf) (accessed February 01, 2024).
- US-AID (2022). *Tech for Green Cities: Annual Report*. Available online at: [https://pdf.usaid.gov/pdf\\_docs/PA02128Q.pdf](https://pdf.usaid.gov/pdf_docs/PA02128Q.pdf) (accessed February 01, 2024).
- Wamsler, C., Mulligan, J., Bukachi, V., and Mumbi, C. (2023). Activating transformation: integrating interior dimensions of climate change in adaptation planning. *Clim. Dev.* 15, 366–378. doi: 10.1080/17565529.2022.2089089
- Webb, R., Bai, X., Smith, M. S., Costanza, R., Griggs, D., Moglia, M., et al. (2017). Sustainable urban systems: co-design and framing for transformation. *AMBIO* 47, 57–77. doi: 10.1007/s13280-017-0934-6
- Webb, R., O'Donnell, T., Auty, K., Bai, X., Barnett, G., Costanza, R., et al. (2023). Enabling urban systems transformations: co-developing national and local strategies. *Urb. Transformat.* 5:5. doi: 10.1186/s42854-023-00049-9
- Westley, F., Olsson, P., Folke, C., Homer-Dixon, T., Vredenburg, H., Loorbach, D., et al. (2011). Tipping toward sustainability: emerging pathways of transformation. *AMBIO* 40, 762–780. doi: 10.1007/s13280-011-0186-9
- Wolfram, M. (2016). Conceptualizing urban transformative capacity: a framework for research and policy. *Cities* 51, 121–130. doi: 10.1016/j.cities.2015.11.011
- Wolfram, M. (2019). Assessing transformative capacity for sustainable urban regeneration: a comparative study of three South Korean cities. *AMBIO* 48, 478–493. doi: 10.1007/s13280-018-1111-2
- Wolfram, M., Frantzeskaki, N., and Maschmeyer, S. (2016). Cities, systems and sustainability: status and perspectives of research on urban transformations. *Curr. Opin. Environ. Sustainabil.* 22:18. doi: 10.1016/j.cosust.2017.01.014
- World Bank, G. (2018). *Cambodia: Achieving the Potential of Urbanization*. Phnom Penh: World Bank.
- Yasmin, T., Farrelly, M., and Rogers, B. C. (2020). Adaptive governance: a catalyst for advancing sustainable urban transformation in the global South. *Int. J. Water Resour. Dev.* 36, 818–838. doi: 10.1080/07900627.2019.1611548
- Yen, Y., Wang, Z., Shi, Y., and Soeung, B. (2016). An assessment of the knowledge and demand of young residents regarding the ecological services of urban green spaces in Phnom Penh, Cambodia. *Sustainability* 8:523. doi: 10.3390/su8060523
- Yin, R. K. (2009). *Case Study Research: Design and Methods, 4th Edn*. Thousand Oaks, CA: Sage Publications.
- Ziervogel, G., Cowen, A., and Ziniades, J. (2016). Moving from adaptive to transformative capacity: building foundations for inclusive, thriving, and regenerative urban settlements. *Sustainability* 8:955. doi: 10.3390/su8090955