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Diagnosing the scope of action for governing sustainable transformation in developing cities

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Abstract

Conventional infrastructure investment trends in developing regions are typically driven by an aspiration to emulate large-scale and resource-intensive solutions found in most advanced western societies. However, sustainability science increasingly cautions against overly relying on those conventional solutions, which—despite their proven benefits for fulfilling basic societal needs—are not necessarily well-equipped to respond to uncertainties and vulnerabilities associated with changing climate and population pressures. Current service gaps in most developing regions suggest fewer entrenchments in legacy infrastructures, and therefore potentially fewer barriers to adoption of more sustainable solutions.

The challenge of how to exploit such opportunities to direct investment towards accelerated implementation of sustainable solutions is what motivates this thesis. Specifically, this research is underpinned by the hypothesis that strategic actions can be taken to exploit windows of opportunity to realise sustainable transformations. This subject is considered from agency and practice angles to clarify the specific mechanisms that can influence infrastructure initiatives. While existing transitions scholarship offers advanced understanding of change mechanisms in developed contexts, transformation dynamics in other contexts remain underexplored. In this light, this thesis aims to examine the role of agency in transforming diverse institutional contexts, and to translate this understanding into heuristics that can probe local interaction dynamics and detect the scope of actions for facilitating transformations in developing cities.

First, this research develops a theoretical explanation of how agency can strategically enact changes to institutional structures, drawing on the scholarship of socio-institutional and practice theories. This provides an analytical framework to examine reproduction and transformation processes at the micro-level. Second, this framework was applied in two empirical urban infrastructure initiatives in Indonesia: the case of successful green transformations in Surabaya and the case of incremental adaptation in the water sector in Jakarta. Examination of these contrasting dynamics enable the respective roles of transformative agency and the degree of institutional constraints to be revealed.

The findings show variations in the role of actors in responding to and shaping change dynamics—more accurately detected by focusing on how actors monitor contexts and exert power differently to exploit crises and social tensions. This insight provided the basis for the development of heuristics for examining the scope of actions for facilitating transformation across diverse contexts. Empirical material from the case studies was utilised to illustrate the utility of the heuristics for mapping ongoing interaction patterns and identifying the suitability of specific governance mechanisms for facilitating transformation in a given context.

This thesis presents key scholarly contributions situated at the new frontier of transitions research, by extending the debate on how an agent- and practice-based perspective can be employed to uncover rich insights into micro-level interaction dynamics that shape change initiatives in different contexts, while balancing the accounts with critical reflection on the macro-level influences. This debate is especially underexplored in developing urban contexts. Finally, this research brings governance theory a step closer to empirical applications by enabling iterative diagnostics of practice sequences, transformative agency, structural mutability, and governance mechanisms from case studies.

Publications during enrolment

Journal articles:

Novalia, W., Brown, R. R., Rogers, B. C., and Bos, J. J. (2018) A diagnostic framework of strategic agency: Operationalising complex interrelationships of agency and institutions in urban infrastructure sector. *Environmental Science and Policy*, 83, May, 11–21. https://doi.org/10.1016/j.envsci.2018.02.004.

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Thesis including published works declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes one original paper published in a peer reviewed journal and one publication submitted to a peer reviewed journal. The core theme of the thesis is the governance of sustainable transformations in developing cities. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the candidate, working within the School of Social Sciences under the supervision of Dr Briony Rogers, Dr Annette Bos, and Professor Rebekah Brown. Additionally, one of the publications presented in chapter 4 includes two other co-authors, Dr. Eddy S. Soedjono from Department of Enviromental Engineering in Surabaya's Sepuluh Nopember Institute of Technology and Miss Vanessa Copa a PhD student from the School of Social Sciences, with whom the candidate collaborated in collecting and interpreting the empirical material presented. The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input from team-based research.

In the case of the publications presented in chapters 3 and 4 my contribution involved the following:

Thesis chapter	Publication Title	Status	Nature and % of student contribution	Co-author name(s) and % of Co-author's contribution	Co-author(s), Monash student
3	A diagnostic framework of strategic agency: Operationalising complex interrelationships of agency and institutions in urban infrastructure sector	Published	Formulation of the research problem, research design, data collection and analysis, interpretation of results, writing the paper (90%)	1) Rebekah R. Brown (5%) 2) Briony C. Rogers (3%) 3) Joannette J. Bos (2%)	No No No
4	Discerning the role of transformative agency for sustainable development: Surabaya's journey towards green city	Submitted	Formulation of the research problem, research design, data collection and analysis, interpretation of results, writing the paper (80%)	1) Briony C. Rogers (6%) 2) Joanette J. Bos (5%) 3) Rebekah R. Brown (2%) 4) Eddy S. Soedjono (2%) 5) Vanessa Copa (5%)	No No No No Yes

I have not renumbered sections of submitted or published papers in order to present the publications in their original format, in accordance with Monash University Faculty of Arts guidelines for theses including published works.

Student signature: [redacted] **Date:** 3 January 2019

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student's and co-authors' contributions to this work. In instances where I am not the responsible author I have consulted with the responsible author to agree on the respective contributions of the authors.

Main Supervisor signature: [redacted] **Date:** 3 January 2019

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Chapter 1

Introduction

1.1 Research agenda: avoiding 'lock-in' in developing cities

Today the world has reached a tipping point whereby more people now live in cities than ever recorded before in history—in about three decades around 66 per cent of the world's population will become entirely urbanised (UNDESA, 2014). Given this trend, the United Nations Department of Economic and Social Affairs (UNDESA, 2014, p. 3) characterises 'rapid and unplanned urban growth'—especially as the consequences of inequitable access to quality urban services—as a threat to sustainable development. Echoing high level concerns from various developmental agencies and stakeholders (Castán Broto, 2017; Romero-Lankao et al., 2018; UN-Habitat, 2016), the report recognises cities as holding the key to accelerating or halting global efforts to achieve sustainability targets. Holding back many cities—especially developing cities—from providing quality urban services that simultaneously fulfil basic needs and meet sustainability considerations are poor capacity for policy implementation and infrastructure development. The challenge of delivering basic infrastructure services for the future—on top of the existing infrastructure deficit—is even more compounded when considering that the bulk of the urban growth is projected to occur in developing regions, particularly Asia and Africa[1]. In the Asia Pacific region, for example, currently only half of the average infrastructure needed to deliver critical services is being met annually with widely varying regional deficits (Asian Development Bank, 2017).

Traditionally infrastructure solutions in developing regions are influenced by an aspiration to achieve quality of services on par with what is commonly found in advanced modern cities by adopting large-scale infrastructure solutions. Yet research has shown that 'the world's most liveable cities are, to date, acquiring and retaining their status as a result of participating in a level of resource consumption … that is environmentally unsustainable' (Newton, 2012, p. 82). In a business-as-usual sense, cities' capacity to service their population is characterised by the types of infrastructure services that process and transport natural resources from beyond cities' boundaries, to be used in cities, before eventually discharging streams of waste products outside cities' boundaries. Hence, broadly speaking, the quality of life found in cities is generally proportional to the degree of exploitation of natural resources; the higher the service quality the more resource-intensive the infrastructure systems become (Newton, 2012). Research in developed contexts has also clearly indicated that sunk investments made to deliver large-scale solutions have restricted opportunities for those cities to transition towards more adaptive and resilient infrastructure solutions (Brown & Farrelly, 2009). Despite the proliferation of alternative urban development and infrastructure delivery approaches in literature and research environments (Joss et al., 2013; Romero-Lankao et al., 2016; Wong & Brown, 2009), adoption rates in practice are far from catching up (Finewood & Holifield, 2015; Gupta et al., 2013; Pahl-Wostl et al., 2013). Under such circumstances, institutional inertia effectively dictates a path-dependent

[1] Of the 2.5 billion additional urban population by 2050, nearly 90 per cent is expected to concentrate in Asia and Africa (UNDESA, 2014).

development trajectory, which could cost society a setback of a few generations in realising sustainability goals.

In this light, building future cities with the capacity to provide equal access to quality of life while respecting environmental operating conditions has become a contemporary societal puzzle, earning it a special spot—goal 11—in the Sustainable Development Goals (SDGs) framework. In less-developed cities, key decision-makers and development stakeholders need to rethink conventional wisdom that drives their investment priorities in order to avoid committing the same technological lock-in[2] as their counterparts in developed cities. With the SDGs at the forefront of many of these countries' political agendas (Moreno & Warah, 2006), an active period for deliberation over development policies and investment decisions can be expected. A recent report indicates that by 2025 around 60 per cent of global infrastructure investments is projected to take place in the Asia Pacific alone (Rathvon, 2015). Current service gaps suggest fewer entrenchments in legacy infrastructure and therefore fewer barriers for wider adoption of more sustainable solutions. Theoretically, these conditions can be understood as 'windows of opportunity' (Olsson et al., 2006; Orlikowski & Yates, 2002; Yap & Truffer, 2018) for strategic actions to shift infrastructure delivery and development agendas in developing regions towards a more sustainable trajectory. The practical challenge of how such opportunities can be exploited in practice towards accelerated implementation is what motivates this research. In other words, this research is underpinned by the hypothesis that *strategic actions can be taken to exploit windows of opportunity to realise sustainable urban transformations in developing cities*.

The problem is considered from governance and institutional angles, whereby the goal is to provide insight into the specific mechanisms that influence infrastructure commitment and investments made in developing cities. This is in keeping with established research which has shown that when it comes to solving complex environmental problems, missed opportunities are not only associated with one-size-fits-all technological solutions conceived by technocrats and engineers, but also that social scientists are prone to recommending institutional 'panaceas' (Ostrom & Cox, 2010). In development literature, strong criticism has been levelled at international aid programs over 'institutional monocropping' in the global South that resulted in numerous instances of policy failures (Evans, 2004). To stand a chance in shifting investments and development agendas, urban strategists must seriously take into account the deep-seated institutional structures and interaction dynamics that constitute existing regimes and governance contexts in these cities. This means the spectrum of creative mechanisms and avenues for expediting transformation has to be examined in conjunction with diverse institutional arrangements and contexts (e.g. political environments, cultural frames, legal and regulatory arrangements) that bind and legitimise local developmental processes. As will be revealed in the literature overview below, going beyond prescriptive institutional guidelines requires an 'intermediate

[2] The phenomenon of technological lock-in was proposed in economics to explain the persistence of sub-performing technologies due to path-dependency (Arthur, 1994).

approach' (Young, 2002) that is diagnostic (Cox, 2011; Ostrom, 2007) to unpack locally relevant transformation dynamics in developing cities.

1.2 Research perspective: Realising transformation in complex systems

This section contains a literature overview on the mainstream theories of complex societal transformation dynamics developed in sustainability transitions and governance scholarship. It is provided to situate the relevance of the research agenda identified earlier in broader studies. This overview aims to scope critically how change is being conceptualised and studied in two major fields: transitions and adaptive governance scholarships. These scholarships deal with a similar question of how design of transition and governance processes can help policymakers to deal with complex societal challenges (Voß & Bornemann 2011). Transitions literature looks at how transformation of complex social-technical systems can be achieved through innovation management. Adaptive governance is a strand of resource management scholarship that broadly examines transformation in socio-ecological systems. Essentially, both approaches begin with the same premise that complexity requires new ways of managing socio-technical and socio-ecological systems, and that learning and innovation are critical means for transforming existing approaches.

1.2.1 Transformation from the perspective of transitions

When it comes to examining complex transformation of socio-technical systems, transitions scholarship provides useful starting points. The field predominantly explores the question through the lenses of innovation management and the history of technology, and draws insights from in-depth case studies of energy, water and transport systems found in modern developed societies (Loorbach et al., 2017; Markard et al., 2012). This literature has gained prominence through its insightful retrospective descriptions and explanations of socio-technical transition journeys in many developed countries. Transitions scholars draw from complex system theory to arrive at a theoretical model of adaptive societal systems that has a capacity to learn and change through iterative feedback mechanisms (Rotmans & Loorbach, 2009).

The complex dynamics are built around three basic concepts: niches, regimes and landscapes, constituting the few core transition frameworks, such as the multi-level perspective (MLP) (Geels, 2002) and the strategic niche management (SNM) (Kemp et al., 1998). It is theorised that regime equilibrium prevails for a long period of time—in the order of 50 to 100 years—and is only punctuated by changes when enough external landscape pressure coincides with the adequate diffusive capacity of niches. From this standpoint, incumbent technical systems operate as regimes that impose a certain logic and development trajectory (Kemp et al., 1998; Markard et al., 2012). Under the strong regime arrangements (or what is known as 'deep regime'), system-wide transformation is understood in terms of successful innovation activities by niches that take advantage of the opening of 'windows of opportunity' (Geels 2011, p. 28). Viewed as external to regimes, niches are said to have emerged and developed within 'protected spaces' (p. 27).

Meanwhile, the landscape with its deeper structural arrangements—compared to regimes—can be understood as various macro socio-economic forces that are immutable to agents such as wars, economic growth, high-level politics, and cultural values (Geels, 2002). Agents can enact changes on regime (socio-technical) arrangements but not on landscape contexts. For steering such changes, a transition management framework has been prescribed (Loorbach, 2010). The term 'management' is understood as reflexive and evolutionary governance processes (Voss et al., 2009). The framework prescribes cyclical management strategies around transition arenas, which include problem restructuring and vision-making, building coalitions, mobilising actors and experimentation, and evaluation and monitoring (Kemp et al., 2007). At its heart, learning and experimentation coupled with heterogeneous networking are the key processes that allow niche-innovations to gain momentum (Geels & Raven, 2006).

While transitions literature acknowledges the messiness of transition processes, the key focus of earlier conceptual development is on understanding change dynamics in terms of meso-level interactions between strong regime structures and weaker niche arrangements. The examination of actor interactions at the micro-level tends to be limited to the domain of knowledge production, focusing on the socio-cognitive processes. There has been less attention paid to exploring transition in terms of political processes that may influence how network and resources are being mobilised; or how coalition and power relations are being shaped around the socio-cognitive processes. Some prominent critics go as far as suggesting that transitions literature largely circumvents politics in attributing outcomes as the result of relatively neutral knowledge transfer among actors (Coenen et al., 2012; Daniell et al., 2014; Voß & Bornemann, 2011). Indeed, while politics is seen as functionally relevant to the conceptualisation of transition arena there remains a gap in understanding how micro-level power and political dynamics influence the degree of socio-cognitive convergence that may be achieved through collaborative efforts among actors (Markard et al., 2012; Smith & Stirling, 2010; Voß & Bornemann, 2011). The existing gap can, therefore, benefits from a greater emphasis on examining how interactions are being shaped by politics and power on the micro-level through further theoretical and empirical developments. As discussed below, some progress has been made to enrich the literature with developments of novel micro-level perspectives. The particular contribution proposed in this thesis is further clarified in reference to the new developments.

An additional key point to underline is the geographical roots of prominent transitions studies, which are overrepresented by studies of transition dynamics in western European contexts (Loorbach et al., 2017) with their specific collaborative political cultures (Meuleman, 2010), and where existing socio-technical arrangements tend to be highly stable. Furthermore, the spatial distinction of the three core concepts (of niches, regimes and landscapes) is not necessarily well articulated in existing research, leading to a conflation with interactions at sub-national level (for niches), national level (for regimes) and international level (for landscapes) (Raven et al., 2012). These main lines of inquiry underpinning early transitions scholarship reveal biases in studying interactions at the national level, emphasising regimes' long-term stability, and highlighting gradual adjustments through technological innovations, thus downplaying other possible transformation dynamics associated with alternative societal activities and processes.

This thesis argued that the earlier system-level perspective can be extended with micro-level analysis of how agents interact with institutional arrangements in practice. A number of authors have called for a shift in the core unit of analysis from pre-defined 'spaces of innovation' to tracing down the networks and relationships across scales, in other words taking a geographical approach to extend transition theories (Coenen et al., 2012; Raven et al., 2012, p. 69; Truffer et al., 2015). A few recent studies have begun to focus on micro-level interactions between innovation phases and actors' strategies (see Bettini et al., 2014; Brown et al., 2013; Ferguson et al., 2013; Fuenfschilling & Truffer, 2016) by adopting an institutional work typology (Lawrence & Suddaby, 2006). Some theoretical and empirical attempts to examine actors and power explicitly within transition literature have also emerged (Avelino, 2017; Avelino & Rotmans, 2011; de Haan & Rotmans, 2018; Hoffman, 2013; Smith et al., 2005). Avelino and Rotmans (p. 799) offer a theoretical framework that distinguishes power into *innovative, constitutive,* and *transformative*, which correspond broadly with actors' capabilities to create, maintain, and disrupt institutional structures. De Haan and Rotmans (p. 279) propose a theoretically-derived typology that distinguishes four role types: frontrunners, connectors, topplers, and supporters, which are based on actors' capabilities to bring diversity, networks, coherency, and legitimacy to new solutions. Hoffman's approach is underpinned by a practice perspective, highlighting the way in which actors manifest their powers through social relations and through their awareness of temporal contexts. Smith and colleagues emphasise how power is exercised through the use of resources to negotiate membership arrangements. These contributions represent a relatively new stream of socio-institutional perspective in transitions literature, advancing the debate on how actors navigate transitions dynamics on the micro-level.

In terms of balancing country-oriented research, another important research stream on urban transition is also on the rise as noted by other authors (Frantzeskaki et al., 2016b; Wolfram et al., 2016). This body of work is concerned with generating fine-grained understanding of how agency is manifested differently in urban contexts, particularly by accounting for the diversity of actors, such as local governments (Barnes et al., 2018), civil society (Frantzeskaki et al., 2016a), and grassroots movements (Wolfram, 2018). In parallel, transitions research in developing countries is budding (Berkhout et al., 2009; Hansen et al., 2018; Wieczorek, 2018) where the assertion and relevance of clarifying geographical distinction and transferability of existing transitions concepts become more pronounced, and would require critical engagement with empirical data as well as careful refinement of existing theories. This research project, which sets about understanding the role of agency in transforming developing cities, is situated at a crossroads where these advancing sub-streams of transitions research converge.

1.2.2 Transformation from the perspective of adaptive governance

For more than a decade, adaptive governance scholarship has spawned critical engagement with complexity and uncertainty associated with contemporary environmental problems (Chaffin et al., 2014). Chaffin et al. (2014) synthesised the broad scholarship and define it as 'a range of interactions between actors, networks, organizations, and institutions emerging in pursuit of a desired state for social-ecological systems'. The core theoretical underpinning of adaptive management is co-evolutionary theory, which depicts socio-ecological

systems as operating through self-organisation and feedback mechanisms (Berkes, 2002; Folke et al., 2005). The role of social learning, experimentation and collaboration in enabling complex transformations is central to this management framework (Folke et al., 2005; Olsson et al., 2006; Pahl-Wostl, 2007). Those concepts are developed as specific governance strategies to overcome complexity and uncertainty.

Scholars in this field conceive actors as 'rationally bound' with a tendency to resort to familiar options or past experiences in dealing with difficult problems, thus, limiting options for institutional change (McCay, 2002). Departing from this 'satisficing' model, scholars regard knowledge co-production as a key process for successful adaptation (Cash et al., 2006, 2003). The implicit argument is that greater collaboration, that is, wider social interaction, can open up possibilities for actors to think differently. Ideally, knowledge co-creation would include a wide range of stakeholders, interacting across levels and scales, turning social systems into autonomous, intelligent and resilient communities that are prepared to tap into the networks and respond to context-specific problems. These lines of argument, to a degree, also underpin mainstream transitions literature as described earlier (Olsson et al., 2014).

Indeed, the argument here is that complexity requires non-reductive, adaptive thinking to be accomplished through multi-actor decision-making arrangements designed to diversify inputs and strategies. This recommendation is closely related to an influential line of inquiry established in the common-pool-resources (CPR) literature, where polycentric[3] arrangements are strongly advocated (Ostrom, 2010). McCay (2002, p. 383) and considers intra- and inter-group 'deliberative forums' or 'spaces for learning'—arenas for sharing ideas and experiences and 'get[ting] out of the box'—as a critical design principle for common institutions that cannot be taken for granted[4]. In river basin management, for example, it is suggested that adaptive capacity can be fostered through polycentricity, participation, experimentation and a bioregional approach (Huitema et al., 2009). Hence, as the traditional 'command and control' approach in resource management eludes many, governance theories have been populated with 'a plethora of different schemes of self-government, public–private partnerships, collaborative efforts, policy entrepreneurs, and participatory initiatives' (Duit & Galaz, 2008, pp. 328–9).

Curiously, while the scholarship is underpinned by a concern for 'radical, systemic shifts in values and beliefs, patterns of social behaviour, and multilevel governance and management regimes', the core concept of adaptive capacity is arguably more developed and suitable for analysing 'how to maintain a certain regime and stay on the same trajectory in the face of uncertainty and change' (Olsson et al., 2014). The distinction made

[3] Ostrom (2010, p. 552) characterises polycentric systems as consisting of 'multiple governing authorities at differing scales'—each unit with a degree of autonomy to enact rules and norms within a specific domain. Ostrom suggests that polycentric arrangements 'enhance innovation, learning, adaptation, trustworthiness, levels of cooperation of participants' as participants in the system 'have the advantage of using local knowledge and learning from others'.

[4] Yet McCay (2002, p. 383) recognises the difficulty in designing 'truly open and constructive deliberation … [and] decision-making structures that are able to overcome free-rider and other perverse incentives that plague situations involving the provision of public goods'.

by the authors between the concepts of 'adaptability' and 'transformability' is relevant to understanding what remains under-operationalised in this scholarship with regards to studying transformation. According to Olsson et al. (2014), 'transformability refers to the social-ecological capacities that enable shifts from one regime to another, and adaptability refers to the capacities to deal with change and stay within a regime'.

This distinction resonated with other authors such as Hordijk et al. (2014, pp. 131–2), who consider adaptation as a focus on 'improving existing practices without questioning underlying assumptions' in contrast with transformation as requiring 'a regime change, in which underlying values are questioned from the level of individual behaviour to the mechanisms and structures of global political economy'. Hordijk and colleagues (p. 132) even argue that such a fundamental shift is ultimately expressed in internalising environmental crisis as a matter of 'distorted relations' between nature and the social world, and 'our role in the political processes that shape our socio-ecological relations'. Transformation is more difficult to accomplish than incremental adaptation (O'Brien, 2012), although from the perspective of interactions at different scales, the two processes are not necessarily exclusive since transformation at a specific level (or sector) may well facilitate or hinder adaptation at another level, or vice versa (Olsson et al., 2014; Pelling & Manuel-Navarrete, 2011).

It is clear that transformation requires a great deal more than the prescription of adaptive thinking and multi-actor arrangements, and that it should acknowledge the 'social, political and cultural roots' (O'Brien, 2012, p. 671) that shape ongoing socio-ecological processes and outcomes. Particularly when transformation towards sustainable practices requires the creation of new institutions, the process of regime building is better understood as political—in which bargaining has a central role—rather than an 'apolitical' design approach (Young, 2002, p.108). In this regard, critiques of earlier adaptive management concepts have raised a number of concerns that reflect the lack of consideration of power and politics in adopting adaptive management approaches. Cash and Moser (2000) suggest that the implementation of adaptive management strategies in practice is hindered by two key factors: unstable political priorities and historically problematic relationships among organisations.

Other empirical works have shown that political and administrative factors such as centralisation, rigid bureaucracy, poor access to information, and lack of transparency tend to inhibit social learning (Mostert et al., 2007 in Pahl-Wostl et al., 2010). Voß and Bornemann (2011) observe that social learning is assumed to occur through collaborative interactions based on trust, yet it remains unclear how such interactions can be achieved. Recent research testing social learning conditions for facilitating transitions in the Australian water sector by Bos et al. (2013) confirms the complex nature of interactions observed in reality and the need to diversify learning processes depending on the types of stakeholders involved. While Bakker and Morinville (2013) appreciate the inclusion of informal actors in social learning situations, they question whether power relations between *legitimate* actors remain underexplored in the scholarship. Moreover, Young (2002) asserts that uncertainty in dealing with complex environmental problems gives rise to interest-based steering and

content-based negotiation that influence the framing of problems. Thus the examination of societal processes cannot be reduced to the notion of conflict-free, unbiased interactions among reasonable actors.

It is generally contended that without sufficient critical engagement, indiscriminate application of those earlier approaches might even risk muting dissent and controversies in important public decisions by legitimising certain rationality through so-called representative pluralistic arrangements (Bakker & Morinville, 2013; Brugnach & Ingram, 2012; Finewood & Holifield, 2015; Pahl-Wostl et al., 2013). In this light, the assertion that more explicit considerations of power and politics in pluralistic decision-making arrangements (Lindblom 1979; Voß & Bornemann 2011; Huitema et al. 2009; Bakker & Morinville 2013) needs to be heeded more carefully if the scholarship is to advance understanding on how transformation can be enacted strategically (Patterson et al., 2015).

This resonates closely with the gap identified in transitions scholarship. In this regard, a similar move towards finer-grained understanding institutional dynamics by employing institutional work typology and agent-based perspective has also recently emerged in the adaptive governance literature (Beunen et al., 2017; Beunen & Patterson, 2016; Westley et al., 2013). They represent a relatively new stream of research that aims to extend current approaches in studying sustainability transformation dynamics by identifying different strategies enacted by various actors in respond to dynamic opportunity contexts. This perspective is also taken up in this research project, which specifically focuses on understanding the role of transformative agency in developing urban contexts.

1.3 Research focus: Diagnosing transformative agency

In the identified mainstream scholarship, the role of agency for transformation remains largely underexplored. Earlier perspectives on agency in tend to focus on the role of policy entrepreneurs (Huitema & Meijerink, 2010; Meijerink & Huitema, 2010) and technological actors (Grin et al., 2011)—disproportionately emphasising the influence of elite actors in driving innovation and facilitating sustainability transitions (Lawhon & Murphy, 2012). These elites are presumed, at the outset, to be representative power holders, potentially obscuring the roles of other institutional actors. There is a growing interest in understanding the different roles of local governments (Barnes et al., 2018; Bulkeley & Kern, 2006), civil society (Frantzeskaki et al., 2016a), and grassroots actors (Hossain, 2016; Wolfram, 2018), as the scholarship expands its scope beyond examining interactions at the national level (Hodson & Marvin, 2010). This underscores the need to consider a greater spectrum of actors with varying transformative capabilities in a given complex system. The interdependent relationships among those diverse actors and the different activities they engage in to facilitate or hinder sustainable transformations within a real-world context are an area of study still at its infancy. To date, the study of this complex interplay from a governance lens has generally focused on prescribing a plethora of socialisation processes and multi-actor arrangements that support a relatively smooth convergence of collective cognitive arrangements (Bodin, 2017; Castán Broto, 2017; Coenen et al., 2012; Voss & Bornemann, 2011). However, this prescriptive governance lens downplays power dynamics and obscures

the question of *who* should be involved and *how* collaboration can be conducted effectively (Bakker & Morinville, 2013; Porter & Birdi, 2018).

In this regard, recent conceptual works have emerged utilising an agent-based perspective and an institutional lens to study micro-level interaction dynamics. A recent contribution by Westley et al. (2013) in the adaptive governance literature shows how actors can employ different strategies in response to changing opportunity contexts—a contribution that represents a step towards understanding how agency is manifested differently in a complex system. In parallel to Westley and colleagues, Hoffman's (2013) study which take a practice perspective to study power in transitions literature also emphasises the need to account for how actors situationally manifest their powers with regards to temporal contexts. There is also an emerging interest to apply institutional work typology to study the governance of socio-ecological systems (Beunen et al., 2017; Beunen & Patterson, 2016). The institutional work perspective provides a conceptual lens for studying the different ways in which actors can enact changes to institutional structures. In a similar vein, the institutional work perspective has also been applied in transitions literature (Brown et al., 2013; Fuenfschilling & Truffer, 2016; Rogers et al., 2015). Taken together, these approaches represent a shift towards a finer grained examination of actors' capabilities to reproduce and transform institutional structures. To date, current empirical applications are, however, limited to developed contexts and have primarily focused on identifying actors' strategies in facilitating technological breakthrough under stable regime arrangements.

As a consequence, there remains a gap in understanding how actors' strategies may vary across contexts. Importantly, regime arrangements are not necessarily as stable and uniform as suggested in the literature (Fuenfschilling & Truffer, 2014). Scholars have shown that in developing contexts regimes tend to be far less uniform and more likely to exhibit social tensions (Ramos-Mejía et al., 2018; Wieczorek, 2018). This means that the degree to which structures may be considered stable and uniform in a given context needs to be determined empirically. Furthermore, the diversity of actors and interdependent social relationships that constitute a complex system needs to be better accounted for, beyond the usual emphasis on elite groups and their related technocratic activities in influencing formal policymaking and innovation.

Arguably, whether repertoires for promoting and institutionalising technological innovation are indeed instrumental for sustainable transformations in other contexts should remain open to debate and empirical testing, rather than be assumed. The same can be said for the prescriptive governance approaches—concentrating on elite-led transition arenas and multi-actor arrangements—which may be problematic if applied to other contexts without clearly acknowledging its potential cultural and geographical limits (Meuleman, 2010; Truffer et al., 2015). As already indicated earlier, the tendency to prescribe an institutional blueprint (Ostrom & Cox, 2010) in proposing resource governance interventions in developing contexts, for instance, has led to significant policy failures. This is because the current approaches tend to obscure the instrumentality of other forms of relevant activities distinct to the particular governance contexts under consideration. A salient example is how, for instance, formal policymaking activities for urban planning have

considerably limited reach and legitimacy in developing cities given the increasing dominance of informal ways of living (Watson, 2009).

In this sense, a more empirically driven inquiry to identify locally relevant interaction patterns, processes and places to intervene is needed to extend what current scholarship prescribes in terms of transition and adaptive management frameworks. Scholars clearly indicate that existing governance theory needs to move beyond characterising 'new patterns of governance'—conceptual development of some variants of non-traditional decision-making arrangements—towards analytically and critically questioning the 'limits and possibilities' of governing complex systems (Duit & Galaz, 2008, p. 329). Returning to the rising interest in studying diverse forms of agency across contexts, it is argued that the literature needs to advance towards a diagnostic approach that can better reveal the varying scope of actions for diverse contextually-embedded institutional actors and, therefore, indicate the limits and possibilities of governing transformation in a given complex system.

In view of the hypothesis set out in section 1.1, which is that transformation can be strategically realised by exploiting windows of opportunities, the literature review indicates the need to extend the functionalist explanation of change dynamics on the system-level with an agency- and practice-based perspective that reveals interactions on the micro-level. This focus rests upon an inquiry into the range of strategies enacted using different forms of power under different structural arrangements (from those that are deeply coherent to ones that are more easily alterable) that facilitate or hinder particular outcomes. These outcomes may range from incremental adjustments to fundamental societal shifts, or a blend of both. Considering those literature gaps, the research focus of this thesis can be distilled into the following overarching question: *how do different actors play their strategic roles in governing transformations in developing cities?*

This thesis drew on strands of practice theories and new institutionalist studies that conceptualise micro-dynamics (or the modalities of interaction) and actors' capabilities as embedded in multiple overlapping institutional structures (Giddens, 1984, 1979; Jepperson, 1991; Lawrence et al., 2013; Sewell, 1992). These theories provide perspectives on how agency can be distinguished based on the way capabilities (power and reflexivity) are effectively fine-tuned to reproduce and transform structures. From this sociological lens, a broad definition of institutions as a range of regularised practices that exhibit the most extensive temporal and spatial presence as put forward by Giddens (1984) is adopted. Chapter 3 offers more detailed discussions with regards to the perspective adopted to study agency and institutions, which extends the brief literature review presented here. The chapter also presents a development of a conceptual framework that addresses the question of what role agency plays in enacting changes. The mutually dependent relationships between agency and institutions were analysed separately in chapters 4 and 5 by temporarily 'bracketing' them apart following a methodological approach suggested by Giddens (1984). In chapter 4, the concept of transformative agency was further refined, whereas the question of how contradictions emerge within institutions was tackled in chapter 5.

To advance the examination of interplay among actors as embedded across diverse contexts, the agency- and practice-based perspective proposed in this thesis was also positioned within the broader governance literature in chapter 6. Conceptually, a process-orientation is useful in this regard and many scholars see governance as a process geared towards collective actions (Lange et al., 2013; Olsen et al., 2014; Termeer et al., 2010). This orientation emphasises the interplay among actors, processes, and structures (Kjaer, 2004). More specifically understood as a *purposive process*, governance is also viewed as the exercise of power for guiding, steering, controlling, or managing societies (Kooiman, 1993; Olsen et al., 2014; Torfing et al., 2012). Considering the different strands of literature, this thesis adopted the following working definition for governance: *a purposive interplay between actors and structures in enacting diverse forms of control and influence to achieve collective outcomes*.

Responding to the practical call to clarify how developing cities may avoid 'lock-in' and the scholarly call to extend understanding of the spectrum of strategic agency, this thesis also incorporates empirical case studies of urban initiatives in developing Indonesian cities. The selected case contexts represent the particular societal units that constitute urban infrastructure sectors in developing cities exhibiting the practical infrastructure challenges described earlier, and variations of transformative capacities in terms of how different agents and a mixture of activities are interacting to achieve specific outcomes. The rationale for selecting the cases is further fleshed out in chapter 2, Research Design. Two contrasting cases that exhibit incremental adaptation and more systemic transformation were selected in Jakarta and Surabaya, respectively. Indicators for transformation were developed in selecting the two cases and reported in chapter 2 (see Table 2.4 for the summary). To briefly recap, the Surabaya case was considered to represent systemic transformation given clear indications of changes in cognitive, normative, and regulative frameworks across societal levels as well as in governance processes through which infrastructure decisions were being enacted (e.g. enactment of formal policy and laws that supported green initiatives, broadening of participation through solid formal-informal networks, a widely shared identity as green and engaged citizens, etc.). By contrast, the Jakarta case can be considered as an outcome of incremental planning and technical improvements through routine interplay between state actors and elite policy advisors.

Finally, it is important to note that while this study was grounded upon (and thereby limited) by the scope of the selected empirical cases of developing urban contexts, the implications and applicability of the research contributions that emerge from this thesis are likely to extend beyond those specific contexts, and are thus discussed more fully in chapter 7, Contributions and Outlook. To outline the research contributions presented across the rest of the thesis chapters, the research focus is translated into more specific objectives in the next section.

1.4 Research aims and objectives

Reformulated in terms of an overarching research question, the hypothesis that motivates this project can be stated as:

> "How can institutional change be conceived and enacted strategically towards realising more sustainable urban transformations in developing cities?"

Against this background, **this thesis aims to examine theoretically and empirically the role of agency in strategically transforming diverse institutional contexts, and to translate this understanding into heuristics that can more accurately probe local interaction dynamics and detect the current scope of actions employed by agents** for facilitating sustainable transformations in developing cities. Broadly speaking, this thesis can be considered a contribution towards theoretically extending transitions scholarship and practically enhancing governance strategies in the context of sustainable development in developing cities.

In order to achieve these aims, three research objectives have been formulated:

Objective 1: to develop a theoretical explanation of the role of strategic agency in enacting changes under diverse institutional contexts, drawing on the scholarship of socio-institutional and practice theories.

Objective 2: to examine the influence of variations in contexts and capabilities for change on local transformation dynamics in contrasting empirical cases of developing Indonesian cities.

Objective 3: to develop heuristics for diagnosing the scope of actions and determining locally relevant governance mechanisms that facilitate transformations in diverse contexts.

1.5 Thesis structure

This thesis includes one stand-alone published scientific manuscript (in Chapter 3), a stand-alone manuscript submitted for publication (in Chapter 4), and traditional thesis chapters that form the core thesis contributions. The research design guiding the empirical case studies is presented in chapter 2. The core findings of this research are presented across chapters 3, 4, 5 and 6, each of which present both theoretical development and empirical insight from the one or both of the case studies. Altogether the research implications and contributions are discussed in an integrative manner in chapter 7.

The Monash University Faculty of Arts guidelines for theses including published works has been consulted in preparing this thesis. The guidelines define 'publication' as: (i) 'an unpublished manuscript that has been accepted for review by a reputable publisher'; or (ii) 'a monograph, book chapter, or journal article published by a reputable publisher'. A student's contribution as the first author of multi-authored papers submitted in the thesis should be substantial, amounting to at least 50 per cent.

Following these guidelines, linking introductory texts are placed between the scientific manuscripts (chapters 3 and 4) to situate the individual contribution of the papers within the overarching research aims. In place of a traditional chapter on literature review, chapter 3 extends the introductory review presented in sections 1.2 and 1.3 with a literature synthesis that results in a conceptual framework corresponding with objective 1 (reported in the form of a journal publication). Chapter 4 presents a manuscript submitted for publication, which reports parts of the empirical findings corresponding with objective 2. Given that the scientific manuscripts are stand-alone pieces, some overlap may be found across these thesis chapters, particularly within the introductory texts and research methodology sections. Chapters 5 and 6 are written in the form of traditional thesis chapters reporting and discussing key results corresponding with objectives 2 and 3. Both chapters include additional literature reviews to extend the conceptual development proposed in chapter 3 and frame the data analysis. The relationship between the research objectives and result chapters are summarised in Table 1.1.

Table 1.1 Relationship between research objectives and result chapters

Research objective	Chapter & publication
Objective 1	Chapter 3, publication 1 *A diagnostic framework of strategic agency: Operationalising complex interrelationships of agency and institutions in the urban infrastructure sector*
Objective 2	Chapter 4, publication 2 *Discerning the role of transformative agency for sustainable development: Surabaya's journey towards green city* Chapter 5 *Reflecting on the role of institutional contradictions in Jakarta's urban water sector*
Objectives 2 & 3	Chapter 6 *Diagnosing governance of transformations across diverse contexts*

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Chapter 2

Research design

2.1 Introduction

This chapter details procedures developed for undertaking this research, including the overall strategy for data collection and analysis, the research questions that guided the scope of the study, the rationales for employing the a multiple-case studies approach and the justification for the selected research contexts. In practice, the research design was an iterative process. This means that the design and conceptual development evolves throughout most of the study phases as the researcher reflected on collected data and adapted to contingent circumstances. First, a research design was developed (section 2.2) systematically to guide approaches in data collection and data analysis in relation to the research objectives. Then, for each research objective a set of methods for developing theories from the literature and analysing empirical material was proposed. For the empirical component of this research, two case studies were selected to distinguish transformative actions from incremental adaptations following the multiple-case design approach (Yin, 2009), which will be discussed in more detail in section 2.4. Finally, the section on data collection campaigns summarises how the research design was carried out in terms of specific activities to gather relevant empirical material. Specific accounts of the research methods utilised are also reported throughout the relevant stand-alone publications in chapters 3 and 4, hence there is some repetition may be found.

2.2 Research philosophy and design

Underpinning the design of this research was the pragmatist school of philosophy. In adopting pragmatism, the design of this research was driven by the 'search for novel and innovative approaches … that may help serve human purposes' (Wicks & Freeman, 1998, p. 124)—in this case the real-world problem of how developing cities can avoid technical lock-in by strategically shifting investments towards more sustainable infrastructure solutions. As an ontology, pragmatism orients the researcher towards an inquiry of a world in which human beings need to act (Putnam, 1994). According to the pragmatist philosophy, an inquiry into an empirical phenomenon is underpinned by retroductive / abductive reasoning (Pietarinen & Bellucci, 2014). Retroduction begins with a recognition of the surprising state of some things in the real world, which leads the researcher to form an inferable hypothesis to account for that phenomenon (Martela, 2015; Pietarinen & Bellucci, 2014). In this case, the hypothesis put forward in this research was that *strategic actions can be taken to exploit windows of opportunity to realise sustainability transformations* (chapter 1).

In terms of the research design, this meant developing qualitative methodologies that linked theories with empirical investigations for examining the strategic roles of different actors involved in shaping infrastructure investments in developing cities. This entailed literature-based research to develop conceptual models that were then tested and validated using empirical data. According to Blaikie (2009, p. 180) such conceptual models can provide 'abstract descriptions of the regularities or episodes under consideration and … to construct "images" of mechanisms'. They can also be used to organise empirical findings and observations. Subsequently, those models go through refinements as new empirical data emerge in an iterative way. This plays out as a recursive process whereby the researcher is immersed in the relevant real-world contexts for a

period of time, followed by alternating periods of withdrawal for reflection and analysis (Blaikie, 2009, p. 181). To support the aim of this research, a qualitative case study approach (Yin, 2009) was also adopted. According to Yin, case study approach lends itself to generating description and explanation of 'how' and 'why' a particular event occurred within its contemporary social contexts. To this end, two empirical cases of urban initiatives in Indonesian cities were selected. Justifications for the case selection and design were addressed in more detail in section 2.4.

It should be noted that testing of a hypothesis through retroductive reasoning does not lead to definitive causal explanations. In Martela's words (2015, p. 548), retroduction is 'a creative process' for working through 'one's observations, one's pre-understanding, and any other material available such as pervious theoretical explanations about the phenomenon'. Therefore, the logical validity of retroductive hypothesis rests on its *testability* (Pietarinen & Bellucci, 2014). Yet, the result of such reasoning is 'not the final truth about the matter', which 'nevertheless would best explain the evidence and has the most potential to provide practical results' (Martela, 2015, p. 549).

In view of each research objective formulated in chapter 1, an overall research design was drawn in Figure 2.1 following the retroductive reasoning. To address objective 1, a theoretical model was developed drawing on literature, which was then applied across the two empirical case studies of urban initiatives in Indonesian cities to address objective 2. Findings from objective 2 were then reflected upon to refine the theoretical model in objective 1. To facilitate this iterative refinement, gathering of empirical data for the two cases was alternated with a period of data analysis (see detail in section 2.4.3). This allowed the researcher to utilise the analysis of the first case study to refine the data collection and analysis strategy employed in the second case study. The outcomes of research activities conducted under objectives 1 and 2 were then reflected on collectively and extended with additional theoretical insights from literature to inform the development of heuristics for revealing governance mechanisms under objective 3. These heuristics were, thus, developed through iterative reflections of theories and empirical material. The insights drawn from the empirical applications demonstrated their value for diagnosing strategic agency and transformative capacity in diverse governance contexts. To further explain the research design in terms of specific activities, the next sections present the specific research methodologies formulated for each objective.

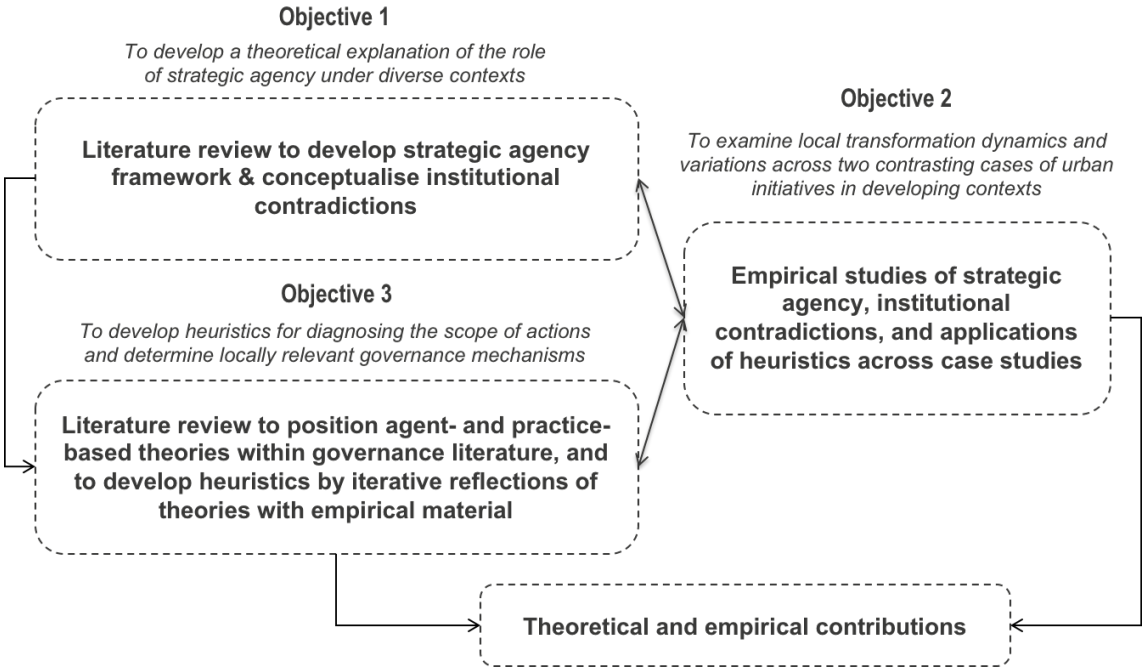

Figure 2.1 Outline of research design

2.3 Research methods

This section provides more detailed descriptions of and justifications for the particular research methods outlined under each objective in the research design (Figure 2.1). Approaches taken to implement the research methods are presented. This ensures that the different elements of the research design are consistent with each other, while making the research decisions explicit (Blaikie, 2000). In this way, this section helps clarify the scope and procedures that underpinned this research project. A summary of the research approaches adopted for achieving each research objective is also presented across Tables 2.1 to 2.3.

Objective 1: to develop a theoretical explanation of the role of strategic agency in enacting changes under diverse institutional contexts, drawing on the scholarship of socio-institutional and practice theories.

This objective was formulated to scope the latest theoretical developments relating to agent- and practice-based mechanisms for institutional change. The literature overview presented in chapter 1 laid out the core of the debates across transitions and adaptive governance scholarship, and established the mainstream understanding and scholarly gap, that is, the need to extend existing knowledge with a conceptual development on what agency entails in the processes of institutional reproduction and transformation. In other words, there appears to be a salient debate around how best to conceptualise agency and transformation in the existing literature. Based on the critical understanding of the scholarship, the next research approach was formulated.

In order to address the scholarly gap, practice and institutional theories were scoped to develop a conceptual framework of strategic agency that can enhance understanding of change processes from an agency

perspective. Key to the practice and institutional theories is the argument that agency and structure presuppose one another analytically. Classical debates on structure–agency relationships in new institutional studies and structuration theory were reviewed to develop a conceptual understanding of how institutions operate to enable or constrain action. This understanding became the basis for diagrammatically synthesising a framework that organises agents' capabilities (reflexivity and power), enabling and constraining aspects of institutions, types of institutional work (maintaining, creating and disrupting institutions), and modes of dynamic practice (signification, legitimation and domination) in relation to one another.

The framework, in turn, guided the development of interview questions for the case study component of the research, and was applied to analyse collected empirical data (Objective 2). The theory development is reported in chapter 3 (Publication 1). In summary, the development of the theoretical explanation was primarily based on data collected from key literature. Several strands of major scholarship that deal with transitions, adaptive governance, institutional and practice theories were consulted. The validation of the literature review and framework development was achieved through an external audit process (Creswell, 2007, p. 208), namely by publishing the research findings as a journal article. A summary of the methods utilised for this objective is presented in Table 2.1 below.

Table 2.1 Summary of research approaches for objective 1

Research objective	Research method	Source of data	Data analysis	Validation method
To develop a theoretical explanation of the role of strategic agency under diverse contexts	Literature review and framework development	The literature on socio-technical transitions and adaptive governance	Synthesising key change theories, processes and mechanisms in the literature, and specifying salient scholarly gaps	External audit
		The literature on practice theory and institutional studies	Synthesising the operational aspects of strategic agency and institutional contexts from practice theory and institutional work typology; synthesising key concepts of power and capacities in the literature.	

Objective 2: to examine the influence of variations in contexts and capabilities for change on local transformation dynamics in contrasting empirical cases of developing Indonesian cities.

The purpose of this objective was to guide the selection of case studies and subsequently the analysis of the empirical datasets in a critical manner. This question also sought to validate and refine the preliminary framework, and generate new understanding of the reality based on critical engagement and analysis of empirical evidence collected from the two selected Indonesian cities. This fulfils the iterative nature of the research design, whereby the hypothetical model (developed in Objective 1) was further refined as empirical data emerged. The analytically recursive relationship between agency and structure also informs the

subsequent methodological framings of the empirical studies, where the concepts of transformative agency and institutional contradictions were respectively examined and refined in chapters 4 and 5.

With respect to clarifying variations across cases, this objective is underpinned by a hypothesis that some forms of strategic action may be more viable than others under particular institutional contexts. In other words, agents exercise their capacities differently with respect to specific institutional contexts. To test this proposition, the strategy employed was a multiple-case design with contrasting cases (Yin, 2009). Two cases of urban initiatives developed in two different cities in Indonesia, Jakarta and Surabaya, were selected (more detail on and justification for the case design is provided in section 2.4). The initiative in Jakarta provided the context for examining more incremental adjustments of institutional arrangements, whereas the Surabaya case provided the context for examining a systemic transformation.

As will be demonstrated in chapters 4 and 5, the deliberate selection of the two contrasting cases allowed for broader exploration of diverse forms of strategic agency with respect to different institutional arrangements. The empirical material of the Jakarta case was utilised partially in chapter 3 (Publication 1) to illustrate the application of the framework. More in-depth reporting of the Jakarta case findings, particularly in relation to unpacking the structural properties that give rise to enabling and constraining conditions, is provided in chapter 5. In chapter 4 (Publication 2), in-depth examination of transformative agency utilising Surabaya case material is reported in Publication 2.

The multiple-case design called for extensive data collection from various primary and secondary data sources, including in-depth interviews, site visits, field observations, biophysical data, policy documents, organisational materials, project and industry reports, media coverage, books and scientific literature (detail on the data collection campaigns conducted is provided in section 2.4). The use of multiple data sources follows the logic of triangulation to corroborate evidence (Creswell 2007, p. 208). A purposeful sampling strategy was used to recruit interviewees (Creswell, 2007, p. 125). In total 39 in-depth interviews were conducted across the two cases to capture perspectives from governments, international organisations, academic communities, technical consultants, urban experts and activists, community leaders and the media.

Identification of research participants followed a subset of the purposive sampling technique (Patton, 1990), which is the snowballing method where key informants were initially approached to extend the list of potential participants. An in-depth interview technique (Rice & Ezzy, 1999) was utilised to gather primary data, as it allowed the researcher to collect detailed qualitative accounts on actors' perspectives and behaviours regarding specific issues. The flexibility and narrative style (Rice & Ezzy, 1999) also tended to open up space for interviewees to define their roles in institutional change processes in their own terms. A general interview procedure and indicative lines of questioning were developed to guide the interview process.

Interviews were recorded and transcribed, supplemented with notetaking of observations and reflections during and after each interview session. In Jakarta to gain additional understanding into the opposition's perspective, extensive field notes from participation in a seminar run by the groups were also utilised. In

Surabaya, the city's masterplans were compared to gain understanding of changing policy priorities over time, and field visits to local parks and green *kampungs* were conducted to experience and observe on-ground changes. Furthermore, the visits were made in the company of key activists who were working to drive on-ground activities. A more detailed account of the data collection activities conducted across the cities is presented in section 2.4.3.

Collected empirical data were analysed with a number of widely used qualitative techniques, namely coding, categorical aggregation, interpretation and generalisations (Bryman, 2012). These were common approaches to qualitative study where raw data were first reduced with coding and subsequently aggregated to establish common themes or patterns. The coding of the raw data was guided by the preliminary conceptualisation of strategic agency developed in Publication 1. The coding of raw data was performed using NVivo Pro 11. A node was generated for each conceptual element of the framework. Statements were then categorised into these nodes and aggregated into common themes. This follows the axial coding paradigm (Strauss & Corbin, 1998) to group responses into themes, before analysing them in terms of key strategies and opportunities that shape the transformation processes; and interpreting the relative capabilities of different actors. Established themes were then interpreted and generalised for reporting in narrative formats focusing on the chronology of events as well as on strategies enacted by different actors at various development stages of the urban initiatives.

To limit subjectivity, the findings were iteratively reviewed. The narrative accounts were also sent back to key participants for validation. In this sense, validation of research findings was performed through member checking. This is a type of qualitative validation approach, whereby participants are solicited to weigh in on the credibility of the interpretation (Creswell, 2007). Key individuals with extensive involvements in the initiatives were selected to provide feedback on the research findings through electronic means and online communications. Publishing of the research findings in scientific journals also provided another level of external validation. The research approaches employed for objective 2 are summarised in Table 2.2.

Table 2.2 Summary of research approaches for objective 2

Research objective	Research method	Source of data	Data analysis	Validation method
To examine local transformation dynamics and variations across two contrasting cases of urban initiatives in developing contexts	Empirical case analyses of two urban initiatives in Jakarta and Surabaya	Current development policies, infrastructure investment portfolios, regulatory frameworks, organisational material, public announcements, media reports, cultural and social contexts collected through desktop research, field visits, and interviews with a range of representative stakeholders involved in the selected initiatives	Coding, categorical aggregation, interpretation, narrative and visual mapping, temporal bracketing to develop generalised understanding	Member checking and external audits

Objective 3: to develop heuristics for diagnosing the scope of actions and determining locally relevant governance mechanisms that facilitate transformations in diverse contexts.

This objective was formulated to address the practical challenge of developing more specific governance recommendations for institutional reforms across varying social systems. It is commonly agreed that current prescriptive guidelines for managing transition and adaptation tend to overlook variations in local contexts, leading to what is broadly termed 'institutional panacea' (Ostrom & Cox, 2010). In order to improve on current approaches, this research contends that the gap between normative and empirical debates in governance literature may be bridged with the development of heuristics that can guide more accurate empirical inquiry into the unfolding of governance processes in practice across contexts.

For this research objective, a combination of conceptual development and empirical reflection was employed (reported in chapter 6). The development of the heuristics was largely undertaken by extending the core concept of strategic agency (objective 1) with additional theoretical underpinnings from governance and development theories. The proposed heuristics were also developed by iteratively reflecting on the empirical material through a comparative analysis across the two case studies in Indonesia. In this way the development of the heuristics was linked with objective 2. The two cases offered 'contrasting situations' (Yin, 2009, p. 61) in order to test the sensitivity of the heuristics in detecting various interaction patterns as well as locally relevant limitations or possibilities of governance. A summary of the research approaches employed is presented in Table 2.3.

As described under objective 2, data collection entailed extensive gathering of primary and secondary material to construct case narratives that detail the enactment of practices that led to the conception and implementation of the urban initiatives in the two cities. More detail on the data collection activities is presented in section 2.4.3. The primary data analysis employed an axial coding paradigm (Strauss & Corbin, 1998) iteratively to aggregate and interpret the data according to the proposed heuristics. This entailed grouping practices enacted by different actors into various interplay patterns. Following pattern matching and explanation building principles (Yin, 2009), a number of possible configurations of the emerging patterns were explored and organised to infer, interpret and distinguish the different spheres of activity and key governance mechanisms from the empirical data. This step ensured the internal validity of the findings. The replication logic through the multiple-case design provided external validity to the findings (Yin, 2009). To limit subjectivity, case reports were sent to key informants in each city for feedback and the findings were also subjected to member checking (Creswell, 2007).

Table 2.3 Summary of research approaches for objective 3

Research objective	Research method	Source of data	Data analysis	Validation method
To develop heuristics for diagnosing the scope of actions and determining locally relevant governance mechanisms that facilitate transformations in diverse contexts	Development of heuristics based on refinement of strategic agency framework and additional literature review, combined with empirical applications in the two contrasting case studies in Jakarta and Surabaya	Literature on practice, governance, and development theories	Positioning of agent- and practice- based theories within governance literature to synthesise heuristics for how interaction dynamics unfold in practice, and how the scope of actions can be revealed	Member/interviewee checking
		Empirical material from the two case studies (see Table 2.2)	Empirical material was coded, aggregated, pattern matched and interpreted to develop generalised understanding of governance mechanisms across contexts	

2.4 Multiple-case design

In this section the justification for the case study approach is presented in greater depth. Yin (2009) considers case studies appropriate for studying contemporary events in relation to their social contexts. In this research a multiple-case design was employed. Instead of providing direct replication, the two cases selected offered 'contrasting situations', which can be deliberately selected when there are 'anticipatable reasons' based on theories (Yin, 2009, p. 61). The theoretical basis for this research is the proposition that institutional change may be differentiated as (i) systemic shifts through transformative action and (ii) incremental adjustments through adaptation (as discussed in section 1.2.2).

Additionally, in relation to the research agenda laid out in chapter 1 and pragmatist philosophy, the focus of this thesis is to advance research on sustainable transformation towards better understanding of how developing cities can avoid technological 'lock-in', while opportunities for making significant infrastructure investments are potentially greater than before. Indonesian cities were selected on the basis of a number of key considerations presented below. In keeping with the theoretical angle, two cases of infrastructure initiatives representing transformative action in Surabaya and incremental adaptation in Jakarta were selected. Specific rationales and considerations that justify the case selection are discussed next.

2.4.1 Research contexts

In the Asian region Indonesia experienced the 'second-highest increase in urban land between 2000 and 2010' (World Bank, 2015). At the same time the country has faced serious bottlenecks in infrastructure spending for more than a decade in the aftermath of the 1997 Asian financial crisis (Negara, 2016). In 2011 a high-level policy agenda and roadmap for boosting infrastructure investments across the country was revived, and political commitment has remained high under the current administration. This context provides a pertinent

background for studying processes of transformation, and for scrutinising investment made in recent times that can potentially lock urban development patterns for many generations to come. The case selection was further narrowed to two specific urban areas, Jakarta and Surabaya.

Jakarta has some 10.2 million inhabitants (BPS DKI Jakarta, 2017), making it a megacity and the largest urban centre in the country. Surabaya, the second-largest city, is estimated to have 3 million inhabitants (City Government of Surabaya, 2015), constituting a medium-sized urban area.[1] There were several key considerations in selecting the two cities. Generally speaking, developing nations tend to concentrate resources disproportionately on megacities (UN-Habitat, 2016). This means greater potential for locking in their development trajectory when a large sum of money is spent on suboptimal infrastructure solutions. At stake are multi-generational impacts and the burden of correcting the development course once such solutions are in place. Hence it is pertinent to scrutinise the forces and practices that shape major investment decisions in Jakarta, especially for gaining insight into how investments can be directed towards facilitating more sustainable solutions.

Furthermore, the comparison with Surabaya provided an empirical basis for uncovering greater variations of change processes that might be enacted differently given a relatively smaller proportion of resources channelled by the national government to this medium-sized city, along with other relevant geopolitical and socio-cultural variables that can influence transformative capacities. One practical implication of this research design is that by elucidating pathways for transformation in these two prominent cities, lessons and strategies can be imparted and modified to guide other Indonesian cities, or other cities in the developing regions facing similar challenges in governing their infrastructure development. Finally, from a pragmatic standpoint, conducting the study in Indonesia contexts meant that as an Indonesian citizen, the research could take advantage of her familiarity with and capacity to comprehend local languages, cultures and broader institutional contexts. In the next section, a more detailed overview of the selected infrastructure initiatives is presented.

2.4.2 Selected initiatives

The selection of the cases followed a semi-systematic approach. While selection criteria were developed based on theoretical and empirical considerations, pragmatic considerations—such as access to key informants—were also taken into account in selecting the case studies. Initially, a handful of potential Indonesian cities, namely Jakarta, Bogor, Makassar, and Surabaya, were identified in consultation with the research supervisory panel. Following desktop research and field visits to Jakarta and Bogor in August 2015 and scoping interviews with local stakeholders, it was decided to focus on Jakarta and Surabaya for a number of reasons. In terms of size, Bogor fell under the mid-size city category. Jakarta and Surabaya were, in contrast, two of the country's

[1] According to UNDESA (2014), megacities are defined as having 10 million or more inhabitants; large cities as having 5 to 10 million inhabitants; medium cities as having 1 to 5 million inhabitants; and small cities as having 500,000 to one million inhabitants.

largest urban centres. Makassar presented relatively comparable urban contexts to Surabaya. However, considering the stronger local partnerships with universities in the other two cities, Makassar was ruled out.

The two case studies were identified as suitable for the purpose of this research through initial desktop research and scoping interviews with a few local stakeholders (two government officials from the Jakarta Regional Planning Agency, a water expert from a local engineering firm who was an advisor for the government, and an expert in the Indonesian development sector) in August 2015. The initial desktop research included a range of sources, such as government-issued policy documents, organisational websites and publications, public announcements, as well as relevant media coverage. The scope was limited to ongoing public infrastructure initiatives. As starting points, the following key policy documents were reviewed: (i) the 2015–19 Strategic Plan of the Ministry of Public Works (*Renstra Kementerian Pekerjaan Umum dan Perumahan Rakyat*); (ii) the 2015 National Work Plan (*Rencana Kerja Pemerintah*); (iii) the 2013–17 Jakarta mid-term planning document (*RPJMD Jakarta*); and (iv) the 2010–15 Surabaya mid-term planning document (*RPJMD Surabaya*).

Data collected from these policy documents were triangulated with those found through online searches. Emerging from this scoping activity were the National Capital Integrated Coastal Development (NCICD) initiative in Jakarta and the green city initiatives in Surabaya. The two initiatives can be considered as relatively complex and large infrastructure investments—the NCICD was a national program whereas the green city initiatives were a city-wide program. Both initiatives entailed some degrees of changes to the socio-technical-ecological dimensions of the urban contexts. Furthermore, the two initiatives involved multiple actors from national to local governments, international organisations, foreign investors, local academics, civil society groups, private sectors, to the media.

While the cases shared some common features—which allows a comparative analysis to be performed—the focus of this research was to identify contrasting cases where differing levels of transformation to institutional structures and governance processes could be demonstrated. To this end, the initiatives in Jakarta and Surabaya, respectively, represented incremental adaptation and systemic transformation for the following reasons. The NCICD was a product of formal incremental planning activities and technical improvements proposed by the local and national governments with routine assistance from long-term foreign advisors. While the masterplan represented a political and technical agenda to reform the water sector, there were, nonetheless, limited evidence that new normative and/or regulatory frameworks were being actively enacted to support a systemic transformation.

By contrast, the green initiatives in Surabaya were implemented by enacting significant changes to formal planning instruments and regulations combined with gradual, but effective, cultural reforms through formal and informal networks. In Jakarta, existing planning and regulatory frameworks were frequently indicated in the scoping interviews as obstacles for implementing the urban water reform agenda. Meanwhile, in Surabaya, synergy between local government, academic partners, private sectors, and civil society groups led to a range

of social and technical innovations across the formal policymaking arena and informal fabrics of the society. This pointed to one last point to be made in relation to the level of contrast between the cases. In Surabaya, the early scoping confirmed a widely shared narrative and identity as *green, engaged, and innovative citizens*. On the other hand, in Jakarta, the NCICD was embroiled by ongoing divisive narratives among different social groups—stacking up the interests of foreign and/or private investors against marginalised communities—resulting in system inertia and counterproductive uncertainty over the future of the initiative. Below, the two cases were discussed in more detail to provide contexts for the research. The indicators for transformation were also summarised in Table 2.4.

Case I: The NCICD initiative (Jakarta)

Jakarta is situated on relatively flat land, with approximately 40 per cent of its land area below sea level; therefore, is highly susceptible to coastal flooding. On top of this, a substantial gap in the provision of piped water supply means that unserved urban populations tend to rely heavily on regulated and unregulated groundwater extraction (PAM Jaya, 2015), which is the leading cause of land subsidence (Abidin et al., 2001). Given these ongoing challenges, coastal northern Jakarta is experiencing more rapid subsidence than other subdistricts, where some land parcels are already permanently inundated (Ward et al., 2011).

To compound this effect, the city's main drainage capacity—comprising thirteen rivers and flood channels—has been substantially reduced in the past three decades due to lack of maintenance, solid waste dumping and uncontrolled land use changes in the surrounding catchments (Firman, 2009). Consequently, flood frequency and intensity have increased to the extent that minor and major events are routinely causing flood hazards in every sub-district in Jakarta (Firman et al., 2011). It is not surprising that managing flood risks continues to top the agenda of the national and provincial government. The city's government even budgets annual emergency funds to alleviate the impacts affecting some 10,000 to 15,000 people (Steinberg, 2007).

The most damaging flood events occurred in 2007 when reportedly some 60–70 per cent of Jakarta was flooded (Susandi et al., 2011; Texier, 2008), with evacuees estimated at 590,000 people, far exceeding the impact of any other major flood event reported between 1996 and 2014 (Sunarharum et al., 2014). Due to its unprecedented magnitude, it was perceived as a 'national calamity' by the government with the National Development Planning Agency (*Bappenas*) reporting an economic loss of approximately US$453 million (Steinberg, 2007). The event revealed a systemic failure in anticipating and mitigating flood impacts—primarily stemming from poor planning practices and slow implementation of vital physical and non-physical measures.

Under the renewed sense of urgency, the government responded by announcing additional investment to enable completion of a number of critical drainage rehabilitation projects (Steinberg, 2007). In addition to those ongoing technical improvements, elite policymakers proposed a more ambitious agenda to formulate an integrated urban development blueprint for protecting the capital city from sinking while tackling future climate-related risks. This was the seed for the NCICD initiative. Between its conception in 2007 and the

announcement of the draft masterplan in 2014 the initiative enjoyed a relatively positive trajectory, but this was derailed when a corruption case related to its land reclamation component came to light in 2015. Furthermore, considering the projected scale and impact of the mega-investment—estimated at US$10–40 billion over the next 30 years (Coordinating Ministry for Economic Affairs et al., 2014) if fully materialised—the pivotal commitment could alter or lock Jakarta's future urban water development trajectory. As summarised in Table 2.4, the initiative is at the master planning stage. Development of the master plan involved, to varying degrees, four leading national sectors, five multinational companies, multilateral foreign assistances, three provincial governments and several private developers.

This initiative was worth investigating for a number of reasons. While the proposed technical solution was largely based on conventional technologies, it required cross-sectoral integration of various government and non-government stakeholders, traditionally more used to working in silos. The latter was the effect of Jakarta's planning and development practices that have been primarily predicated upon a mixture of activities spanning many levels, from multiple bureaucratic arrangements to various international agreements. The contentious nature of the program also provided a context for studying dynamic interplays among the actors involved. This case also represented an incremental adaptation, whereby the solution proposed was largely an outcome of incremental planning and technical improvements through a routine interplay between state actors and policy advisors.

Case 2: The green city initiatives (Surabaya)

In Surabaya one of the pivotal commitments made towards transforming the city's public infrastructure sector was conceived around 2001 in the embryonic form of the green city initiatives. In less than two decades it has been widely acknowledged by local, national and international urban practitioners that the city-wide restoration of green open spaces and grassroots innovations are on course to deliver sustainable urban development in Surabaya (Bunnell et al., 2013; Global Forum on Human Settlements, 2017; Joss et al., 2011; UN-Habitat, 2008).

Prior to widespread implementation of the green initiatives, Surabaya was experiencing some of the worst social and ecological impacts of rapid uncontrolled urbanisation, such as extensive pollution, flooding, a high level of social inequality, an increasing proportion of informal settlements, and rampant land grabs by the private sector companies. Such conditions are often experienced by many other rapidly developing cities around the world. At the peak of the market-driven development boom in Indonesia towards the end of 1990s, dramatic modifications to land use and urban planning instruments were occurring, where land was developed and converted rapidly for housing and commercial purposes (Firman, 2009). The effect was especially apparent in major cities where enforcement of the law and weaknesses in the land permit system facilitated unregulated land conversion practices (Firman, 2009).

Table 2.4 Summary of selected case studies

Case	Key visions and objectives	Implementation phase	Organisations
National capital integrated coastal development	*Vision:* Integrated flood protection and land reclamation in the North of Jakarta. *Objectives:* Short-term reinforcement of existing dikes; Medium-term construction of an off-shore seawall (35 km dams to enclose Jakarta Bay, converting it to a freshwater reservoir); Long-term development of a connecting dike on the eastern shore; Integrating the off-shore seawall with land reclamation* to generate revenue for funding the flood-protection measures. *Indicators for transformation:* A product of incremental planning and technical improvements through a routine interplay between local and national governments with foreign technical advisors; Limited enactment of new normative and regulatory frameworks to support reform agenda; Existing normative and regulatory frameworks oft-cited as obstacles for implementation; Ongoing enactment of divisive narratives among social groups that contributed to system inertia and counterproductive uncertainty. *) This is a particularly contentious aspect of the program. Based on several iterations of the master plan, this design has been renamed, revised substantially, and may be eliminated entirely.	Master plan phases I & II	A joint venture involving the Coordinating Ministry for Economic Affairs (Kemenko), the Ministry of National Development Planning Agency (Bappenas), the Ministry of Public Works (PU), the Provincial Government of DKI Jakarta, the government of the Netherlands, five major Dutch consulting companies, and private developers
Green city initiatives	*Vision:* Transforming Surabaya into a liveable and resilient city *Objectives:* Revitalisation and augmentation of existing city parks and forests, green belts, and blue open spaces for environmental and social purposes; Revitalisation of *kampung* (low-to middle- income subdistricts) with community-based approaches to environmental management. *Indicators for transformation:* A product of distributed political, technical, and cultural leaderships across the city; Effective enactment of new planning and regulatory instruments combined with gradual cultural reforms through informal and formal networks; Social and technical innovations fostered through a strong synergy among local government, academic partners, private sectors, and civil society groups; Ongoing enactment and promotion of a shared narrative and identity as *green, engaged, and innovative citizens.*	Implementation to date has achieved 20% public green open space target Ongoing green *kampung* competition (2005–present) to promote and maintain public participation	Local government in coordination with academic partners, the private sector, NGOs and community members

In Surabaya these multifaceted pressures greatly affected the functioning of the city's public services, which were reduced to paralysis by a solid waste crisis in 2001. One of the main solid-waste disposal sites had reached the end of its lifespan, having been established in 1970. Amid insufficient planning, maintenance and monitoring, the site was heavily contaminated, posing serious health and safety hazards for workers and local inhabitants (Silas et al., 2014). This triggered a community-led blockade that prevented all entry to the facility ('Warga Keputih Memblokir TPA, Surabaya Dipenuhi Sampah', 2001). Dismayed by the alarming rate at which solid waste was piling up across the city, the city government went into negotiation with community leaders and NGO representatives to find alternative solutions. Perceived subsequent government inaction eventuated in a second blockade and a permanent shut down of the disposal site. With a new facility still under construction, Surabaya's urban environment deteriorated severely.

Under such pressures, the then newly appointed mayor marshalled an 'urban renewal' agenda (Peters, 2013), which aimed at sprucing up Surabaya's public spaces. The initiative, which includes greening of public space and *kampung* (a non-administrative term used to refer to low- to middle-income neighbourhoods), has been widely endorsed by state and non-state actors. Over the past fifteen years Surabaya's reputation has been bolstered by national and international recognition, and other city governments have aspired to emulate its success. The green city initiatives present a more advanced case of institutional change where the city has solidified its reputation as one of the greenest cities in Indonesia. Many credited the current mayor—who was the head of the Parks and Cleaning Department under the previous administration—with changing the city's conditions and the strong involvement of academic partners in the city's urban planning and development strategy.

Overall, the Surabaya case represented a more systemic transformation, whereby changes to formal and informal structures and processes can be detected. Comparatively speaking, Surabaya exhibited a more decisive and stable urban planning and development processes than Jakarta. The institutional contexts of the two cities diverge in a number of ways. Jakarta as the capital city is an important and strategic political arena for the national and for provincial governments. This means that many high-level development agendas in Jakarta are negotiated and determined across multiple bureaucratic layers. Meanwhile, Surabaya attracts far less political interference—also reflected in a lower financial contribution from the central government in their development sector. Surabaya's city government undertakes most of its decision-making processes fairly independently, while aligning with or adhering to high-level performance indicators and targets set by the central government.

There is also a perception that Jakarta tends to receive disproportionately more funding from the central government for infrastructure (and other) programs than secondary cities. In turn, this cements a dependency and allows stronger intervention by the central government. It is also worth noting that the cultural characteristics of the two cities potentially play an important part in determining change processes and governance outcomes. In terms of population, Jakarta is more than twice the size and relatively more culturally diverse than Surabaya, having been the most popular destination for migrants of various

backgrounds from other Indonesian cities. Surabaya, on the other hand, appears to have maintained a more cohesive cultural identity.

In summary, the cases selected are intended to provide rich empirical material for examining the spectrum of strategic actions that can be taken under diverse institutional contexts. With this, the strategic agency framework (developed in chapter 3 (Publication 1)) and the heuristics (developed in chapter 6) can be tested across the cases to ascertain their validity and theoretical replicability.

2.4.3 Data collection

This section contains an overview of data collection campaigns undertaken between April 2016 and October 2017 to gather primary and secondary information across the two cities. Multiple fieldwork visits for scoping, intensive and additional data gathering were conducted during that period. A summary of the data collection campaigns is presented in Table 2.5. Data gathering activities for the two cases were alternated with periods of data analysis, which allowed the researcher to become immersed in real-world contexts and subsequently reflect on and refine the research strategy, as discussed in section 2.2. As shown below, the intensive data collection activities in Jakarta took place between April and June 2016—more than a year before the intensive data collection activities conducted in Surabaya between August and October 2017. In between these periods, empirical data collected from Jakarta were analysed. Insights emerging from this analysis fed into refining the research questions and interview questions guiding the Surabaya data collection.

The first data collection campaign in Jakarta was undertaken from April to June 2016. A second of data collection campaign was carried out in January and February 2017 to interview remaining participants. Eighteen participants were interviewed across the two campaign periods. As discussed in section 2.3, recruitment of research participants followed a purposeful sampling technique (Patton, 1990) to reveal perspectives from different groups of actors in light of the research topic. Recruited participants, while approached as individuals with unique perspectives on the urban development sector, also represented their institutional roles. Therefore interview questions focused on their specific roles and knowledge in shaping the institutional arrangements in which they were embedded.

The participants were senior project managers for the program, technical advisors, policymakers in ministerial departments involved, the city planning agency and independent experts. The majority of the participants held senior positions in their respective organisations. Additionally, to gather more perspectives, extensive field notes were taken during participation and observation conducted at a half-day roundtable discussion on 21 June 2016 organised by opposing pressure groups. While invitations were extended to private developers, no response was obtained. The lack of response was likely associated with the timing of the data collection period, which was at the height of media scrutiny on the bribery scandal involving private developers in the related land reclamation project.

Most of the interviews were conducted in Bahasa Indonesia (the researcher is a native speaker). Three out of the 18 were conducted in English; these interviewees were Dutch nationals who used English in their professional environments. Interviews ranged from 30 to 90 minutes. Most participants were interviewed only once; three were interviewed twice. A senior project manager was interviewed twice to obtain more detailed information on the project. For the other two participants who were interviewed twice, a follow-up interview was necessary because the interviewees had to leave earlier than expected. Generally the interviews took place in the participants' workplaces. In a few instances, meetings took place in public places following suggestions from participants.

Preliminary scoping work was conducted in Surabaya from mid-May until the end of July 2016. During that time the researcher visited a number of key government officials and academics involved in city planning, urban design, water management, and park and garden maintenance. These visits were facilitated by senior academics at Institut Teknologi Surabaya (ITS). The general purpose of the visits was to introduce the team of researchers involved under the Australia-Indonesia Centre's Urban Water Cluster research program—of which the researcher is a member. The discussions revolved around the roles of different government agencies and their current infrastructure challenges in relation to providing urban services. Team members were given time to ask questions relevant to their individual research projects. In each session, field notes were taken, and some secondary data, such as city master plans and current policy documents, were also collected.

The preliminary discussion with stakeholders was particularly useful for navigating the complex bureaucratic systems. The scoping helped identify potential research participants and key organisations that held important roles in the green city initiatives. These early datasets were used to illustrate the contextual elements of the initiatives, and gave some indication of the types of strategic responses enacted by relevant groups of actors. Intensive data collection took place between August and October 2017. During that period 21 interviews were conducted with current and former city mayors, several public officials, academics and experts, community leaders and activists, a private consultant and representatives from the media.

Site visits to several local parks and a few green *kampungs* were also undertaken to observe the extent of physical improvements that had been achieved by the green initiatives. Some of these visits were suggested and facilitated enthusiastically by interviewed local champions, indicating a sense of pride in being a part of the green communities. However, extensive survey of public perceptions was not part of this research.

Table 2.5 Summary of data collection campaigns in Jakarta and Surabaya

Campaigns	Primary data	Secondary data

Jakarta (April to June 2016; January to February 2017)	18 in-depth interviews with:
	senior policymakers from several ministries (n=7) such as the National Planning Agency, Public Works, Coordinating Economic Affairs, Environment and Forestry, River Basin Authority, and Technology Appraisal and Application;
	public officials from DKI Jakarta Regional Planning Agency (n=2);
	foreign technical advisors (n=2);
	a representative of the Dutch government (n=1);
	senior technical consultants (n=3); and
	external urban and policy experts (n=3).
		Relevant policy material, legislation, published project material, internal reports and presentations, minutes of meetings, media reports, and scientific literature relating specifically to the NCICD program and broadly to the urban planning and development paradigm in Jakarta.
		Extensive field notes taken during participation and observation conducted at a half-day roundtable discussion on 21 June 2016 organised by opposing pressure groups, with presentation from planning and infrastructure experts, social scientists, activists, media representatives and a senior staff member from the Coordinating Ministry of Maritime Affairs.

Surabaya (May to July 2016; August to October 2017)	21 in-depth interviews with: political leaders (present day and former mayors, n=2); public officials working in specific departments across the city and national level (n=9), such as the Regional Planning Agency, Green Open Space Department, Land Department, Environment Department, Agriculture Department, Ministry of Environment and Forestry; academics and experts from local universities (n=3); community leaders and environmental activists (n=4); a private urban planning consultant (n=1), and a local news editor and a media event organiser (n=2).	Relevant policy materials, legislation, organisational reports, media reports, published books and scientific literature relating specifically to green initiatives and broadly to the urban planning and development paradigm in Surabaya. Several field visits to urban parks and green *kampungs* were also conducted, facilitated by local activists. Of particular interest were past and present urban master plans and development policies produced between 1978 and 2014 that were cross-examined to develop an understanding of how zoning regulations had been modified over time in ways that had facilitated or hindered the green initiatives.

During the interviews, participants in Jakarta and Surabaya were prompted to discuss their involvement in the respective urban initiatives, which provided information on their roles, capacities and interests in influencing the formulation and implementation of the initiatives. In some interviews personal opinions regarding the initiatives were also revealed. Initial questioning usually led to a relatively free-flowing conversation around the history and background (when, where, who) that shaped the initiatives. More specific probing or prompting was utilised by the interviewer depending on the flow of the narrative. A list of indicative questions was prepared to guide the interviewer to cover different aspects of the initiatives (e.g. events, activities, milestones, interactions, processes, instruments) that can reveal how different agents exercised their particular capacities to enact changes. While this study relied mainly on interview data (and does not employ an ethnographic methodology) to derive what actors did in practice, the in-depth interviews allowed participants to expand on their roles and those of others in detail. The open-ended inquiry helped reveal a diverse range of strategic work enacted at various stages and through specific interactions. Thus

consistent patterns of practice that underpinned the transformation could be distinguished as participants' accounts converged on the key roles played by specific actors and particular forms of interactions.

The interview questions were also adapted to the circumstances surrounding each session (e.g. participant's role and interests, flow of conversation, new clues or references). For instance, in Jakarta, strong perceptions (or preconceptions) about the initiative emerged as a crucial theme in early interview sessions. Raising the issue around the divisive perceptions about the initiative in subsequent interviews overwhelmingly resulted in a quite dynamic conversation around what, why, and how the initiative came to receive such strong public attention. More specific probing then ensued, prompting the participants to divulge perceptions about other stakeholders in the project. This revealed the dynamic relationships among actors. Those conversations also revealed how different agents attempted to manage interactions and influence the course of action, directly and indirectly. Participants were also asked about the key constraining and enabling conditions for the initiatives. All of the interviews were audio-recorded and transcribed verbatim. Field notes were taken in each session; and reflections written down shortly after each session. Coding was performed on the transcriptions in their original interview languages (either Bahasa Indonesia or English). Translation of interview quotes from Bahasa to English presented in thesis was done by the researcher.

All procedures associated with the interviews (including approaching potential interviewees, conducting the interviews and maintaining confidentiality of interviewees) complied with the requirements of the Human Ethics Certificate of Approval (number CF16/488 - 2016000241), granted by the Monash University Human Research Ethics Committee. As part of the research protocol, interviewees were presented with an explanatory statement and consent forms (Appendix I), and were given time to read through them at the beginning of the session. Participants were given space to ask questions, indicate off-the-record discussion, or even withdraw their consent at any given point during the interviews. They were also guaranteed anonymity to ensure confidentiality.

2.4.4 Data analysis

As discussed in section 2.3, empirical data were analysed using a number of qualitative techniques, including coding, categorical aggregation, interpretation and generalisation (Bryman, 2012). In this section, the overall analytical approach is discussed. Additionally, specific data analysis methods are reported in each publication included in this thesis. The coding of raw data was performed using NVivo Pro 11.

In the early stage of analysing the first few interviews, 'a myriad of informant terms, codes, and categories emerge' as suggested by Gioia et al., 2013 (p. 20). According to Strauss and Corbin (1998) this stage represents the open coding process. As the research progressed, and more interviews were analysed, similarities and differences across statements became more apparent and they were aggregated into common themes in reference to the preliminary framework of the strategic agency concept developed in chapter 3 (Publication 1). This followed the axial coding paradigm (Strauss & Corbin, 1998), by which responses were grouped into

themes before being analysed in terms of conditions, processes, and interactions that shaped the institutional change dynamics and capacities differently across cases.

This stage required the researcher to move back and forth between statements from informants and the abstraction of those statements (Gioia et al., 2013); and in accordance with retroductive strategy, the emerging abstractions were then considered in tandem with existing theories. Emerging data and their abstractions were either visually configured or reported in table formats across the publications included in this thesis. Visual representation of the data in process models also served to clarify the dynamic relationships among the emergent themes, and 'makes clear all relevant data-to-theory connections' (Gioia et al., 2013, p. 22).

In addition, emergent data were interpreted for reporting in narrative formats focusing on the chronology of events as well as on strategies enacted by different actors at various development stages of the urban initiatives. In this sense, strategies were examined in terms of process. The development of such process theory, according to Langley (1999), is dependent upon the proper temporal sequencing of events leading to an outcome. In other words, the analytical rigour rests upon the process of distinguishing and understanding patterns in events. The narrative reporting was used in this research mainly as a preliminary step to make sense of the complex process data to facilitate further analytical work (Langley, 1999). The analysis of the narrative progressed by utilising a *visual mapping strategy*, whereby several visual representations of the processes could be compared to 'look for common sequences of events and common progressions in sources of influences' (Langley, 1999, p. 702). Examples of visual representations of critical events and strategies are reported in chapter 4 (Publication 2) and chapter 5. While the mapping strategy depends to some extent on the focus of the analysis and the researcher's creativity, Langley suggests that it is a highly productive way to facilitate theory development in multiple-case studies. Furthermore, used in combination with the narrative strategy, this data analysis approach can maintain simplicity while yielding a relatively high level of accuracy.

Drawing more specifically from structuration theory, the data analysis also followed what Giddens (1984) terms 'methodological bracketing'. This is because the mutually dependent relationships between actions and structures are difficult to capture simultaneously, so Giddens suggests separating the two analyses temporarily by 'bracketing' them apart. This facilitated conceptual organisation of the data while still accounting for their duality. Langley (1999) also notes that discontinuous analysis is useful for clarifying how different institutional contexts influence the patterns of interactions, and what the consequences of those interactions are on the future contexts and other relevant variables of interest. This analytical approach resulted in the temporary bracketing of the 'transformative agency' concept analysed in chapter 4 and the 'institutional contradictions' concept analysed in chapter 5. Reflections on the mutual relationships were provided across the chapters. Finally, the emergent datasets from the two cases were brought together and compared in chapter 6 further to generalise insights across the findings.

To limit subjectivity, the analytical outputs were iteratively reviewed. The narrative accounts were also sent back to key participants for validation. Thus, validation of research findings was performed through

interviewee checking. This is a type of qualitative validation approach in which participants' feedback is solicited to weigh the credibility of the interpretations (Creswell, 2007). Key individuals with extensive involvement in the initiatives were selected to provide feedback on the research findings through electronic means (e-mails) and online communications. Publishing of the research findings in scientific journals provides another level of external validation.

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Chapter 3

Operationalising interrelationships of agency and institutions

3.1 Introduction

This chapter addresses the first research objective, i.e. to develop a theoretical explanation of the role of strategic agency in enacting changes under diverse institutional contexts, drawing on scholarships on socio-institutional and practice theories. While mainstream sustainability transitions scholarship has advanced understanding of complex system transformations by rendering societal processes, interactions, and interplays in terms of a quasi-evolutionary metaphor (Geels, 2002), to date, the question of how agency might lead transformation in various contexts remains underexplored. The scholarship tends to highlight path-dependent nature of complex societal systems (Brown & Keath, 2008) or overemphasise the instrumental capacity to navigate niche-regime interactions and chart institutional works along a functional model of socio-technical (innovation) sub-systems (Fuenfschilling & Truffer, 2016; Loorbach et al., 2017; Rogers et al., 2015). Furthermore, existing transitions research tends to study agency through selective theoretical models with emphasis on the role of elite policy actors and technology-based entrepreneurs (Lawhon & Murphy, 2012). This narrow perspective, arguably, has led to difficulty in explaining how and why variations in transformative capacity exist across cases.

Against this background, this chapter presents, through publication 1, a development of a framework of strategic agency that operationalises complex interrelationships of agency and institutions in the infrastructure sector. The framework was developed by drawing from practice and institutional theories to reveal (a) different sequences of actions through which agents reproduce and, by extension, transform institutions, and (b) reflexive capability as entwined with the exercise of power. In doing so, it facilitates a balanced inquiry that interrogates actions to expose their various embodied performances and patterns within a set of real-world contexts. The framework lends perspectives for unpacking actions as embedded and institutions as mutable. It operationalises this duality by taking institutional reproduction processes as the core unit of the diagnostic.

The framework was then illustratively applied to explore the interrelationships of agency and institutions in a developing urban water sector by utilising empirical material from the Jakarta's urban initiative. The empirical application focussed on exploring the agency of the proponents and opponents of the urban initiative. The analysis clarified how the proponents' agency was directed at increasing institutional inertia within the urban water sector (i.e. by potentially locking in the development trajectory with the decision to implement the large-scale water infrastructure). On the other hand, the opponents' agency was directed at disrupting or potentially de-institutionalising the current development trajectory. What this implied for the scope of action was that the temporary disruption by the opponents generated a small window of opportunity for altering some of the traditional approaches to infrastructure planning, and for broadening participation from local experts and civil society groups.

The theoretical development of strategic agency presented in this part of the thesis provides a backbone for linking the rest of the research objectives, while extending the literature overview presented in chapter 1. The

core theories on agency and structure presented were applied and refined systematically through in-depth empirical case studies reported in chapters 4 and 5. The concept of strategic agency was then advanced with additional procedural development and theoretical perspectives in chapter 6 to serve the practical aim of sharpening the examination of governance issues for more specific design of intervention strategies. The paper presented in this chapter has been published in the scientific journal *Environmental Science and Policy*. It is presented in the original publication format in accordance with Monash University's guidelines for thesis including published works.

3.2 Publication 1

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A diagnostic framework of strategic agency: Operationalising complex interrelationships of agency and institutions in the urban infrastructure sector

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ABSTRACT

In developed cities legacy infrastructures tend to lock future development pathways and investment decisions into perpetuating itself, presenting barriers for sustainability transformations. In contrast, the lack of physical infrastructures in developing cities hints at greater opportunities for fast-tracking transformations. To examine the potential capacity for overcoming barriers and exploiting opportunities for transformations, a more nuanced operationalisation of strategic agency—than is currently offered in sustainability scholarships—is needed. Mainstream perspectives provide quasi-evolutionary explanations of system transformation, which, to date, tend to emphasise agency as a capacity to navigate niche-regime interactions specifically by charting institutional works along a functional model of socio-technical innovation or transition trajectory. Against this background, this paper sets out to develop a diagnostic framework of strategic agency that contributes to the under-explored question of how agency might lead transformation in various contexts by fine-tuning their works to windows of opportunities. More specifically, the framework adopts a practice lens to reveal the (a) type of interaction dynamics that agency can give rise to in reproducing and, by extension, transforming institutions, and (b) reflexive capability as entwined with the exercise of power. In doing so, it facilitates a balanced inquiry that interrogates actions to expose their various embodied forms and patterns within a set of real-world contexts. The framework draws from new-institutionalist studies and practice theory, which lend perspectives for unpacking actions as embedded and institutions as mutable. It operationalises this duality by taking institutional reproduction processes as the core unit of the diagnostic. The framework is illustratively applied to an example case from the developing Indonesian water sector.

1. Introduction

Classical water engineering in urban contexts represents one of the most successful and tested infrastructure development approaches for improving public health outcomes and increasing productivity across developed cities. To a great degree, this legacy paradigm still shapes policy options and investment agendas in both developed (Dunn et al., 2016) and developing cities (Goldman, 2007). Despite its advantages, overreliance on technological fixes and deep-seated perceptions that such large infrastructure systems are fail-proof can increase vulnerability of existing urban water systems from future environmental shocks (e.g. extreme floods, long term droughts, etc.) and uncertain societal pressures (e.g. rapid population growth, economic downturns, etc.). The lock-in of the urban development trajectory as a consequence of past infrastructural choices (Walker, 2000) also encumber other critical sectors, such as transport and energy. There is an increasing agreement that legacy approaches—having resisted major updates since its conception—are no longer adequate for dealing with complex and interdependent challenges (Ludwig, 2001; Pahl-Wostl et al., 2009). In water sector, scholars have suggested that 'a major socio-technical overhaul of conventional approaches' is required for delivering more sustainable and resilient outcomes (Wong and Brown, 2009, p. 674). However, despite many attempts to introduce alternative approaches in the past two decades and more, widespread adoption has remained elusive in practice (Medema et al., 2008).

The studies of socio-technical urban transition have demonstrated that legacy infrastructures tend to lock future development pathways and investment decisions into perpetuating itself; this diminishes opportunities for systemic overhaul. Such inertia is best observed in developed cities with a long, well-embedded technical and organisational

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tradition (e.g. Brown et al., 2006). In these studies, transformation is possible when external forces (e.g. climate-related shocks, political upheavals) put enough pressures on the dominant regime (Geels and Schot, 2007). Along which incremental and/or radical variations through niche-experiments, social learning, pilot projects, etc., may achieve a breakthrough. Indeed, agents, working under the constraints of such a regime, are up against a sophisticated structural power that actively co-opts their knowledge and resources to maintain infrastructure and institutional variations to a minimum degree. In contrast, the lack of basic physical infrastructures in many developing cities theoretically indicates that there may be less barriers for wider adoption of more sustainable infrastructures. Without discounting cultural and economic entrenchments, this hypothesis implies a potential capacity for accelerated transformations in developing cities. However, until a more nuanced conception of agency is developed than is currently offered in transition and governance scholarships, this hypothesis cannot be tested satisfactorily.

Within existing literatures, agency remains under-operationalised (Smith and Stirling, 2010; Voß and Bornemann, 2011). Commonly, capacity to enact change is interchangeably labelled as *adaptive* or *transformative* with limited conceptual distinction (Wolfram, 2016). Capacity to adapt is frequently associated with social learning processes (Pahl-Wostl, 2009). Others used it to denote a specific capacity to innovate and experiment (Moore et al., 2014), to build network (Kramer and Pahl-Wostl, 2014), or to foster participatory processes (Muro and Jeffrey, 2008). More broadly, mainstream perspectives tend to downplay power relations, while emphasising a plethora of collaborative and cooperative mechanisms presumed to shift socio-cognitive arrangements (Coenen et al., 2012), e.g. vision, ideas, and policy options (Voß and Bornemann, 2011), into widely diffused rules and resources that facilitate transformation. This tendency is attributable to the functionalist root of the scholarships, which focuses on describing patterns of change on societal level and renders agency as hazily-operationalised system feedback. Scholars have called for more systematic clarification of the less-than-mechanistic operations conducted by agents in steering, directing, and navigating transformations (Smith and Stirling, 2010; Young, 2002).

There is an increasing number of contributions that attempt to close this gap by typifying strategic interactions using an institutional entrepreneurship perspective (e.g. Huitema and Meijerink, 2010; Westley et al., 2013) and power concepts (e.g. Avelino and Rotmans, 2011; Boonstra, 2016). However, there remains a disproportionate focus on elite groups, e.g. scientific/bureaucratic leaders and champions (Lawhon and Murphy, 2012), presumed as standard power holders. This is worth noting as it reveals a bias, which can obscure the influence of other institutional agents (Lawrence and Suddaby, 2006). More recently transition scholars have furthered the debate by engaging more closely with micro-level analysis through Lawrence and Suddaby (2006) institutional work typology (see Binz et al., 2016; Brown et al., 2013; Fuenfschilling and Truffer, 2016; Rogers et al., 2015). These studies demonstrate the conceptual and empirical utility of the typology for rendering agency with more nuances through a thick description of actions during specific innovation phases. The focus on the latter tends to suggest that actions of strategic nature are to be found as a direct function of innovation sequences. There is no strong reason to believe that strategic actions can be neatly parameterised only within the boundary of innovation phases—more fundamentally, this argument hinges upon the notion that the reproduction of socio-technical system through innovation related practices is but a subset of more diverse societal practices. In fact, Binz et al. (2016p. 258) affirm that phases of legitimation are not invariably 'synchronised' with phases of technology innovation (i.e. niche-diffusion-market formation). Notably, organisation research has indicated that transposing change-related works across contexts requires not just knowing the critical tasks ('ingredients') but getting 'the recipe of the sequenced steps' right (Brown and Eisenhardt, 1997, p. 3). The present paper argues that application of the work typology that fixates topically at innovation-related sequence potentially overlooks other structuring sequences, which are plausibly relevant for transition in other contexts. As such, to contribute to examination of ways in which agency is enacted strategically, research needs to pay proportionate attention at institutional works as well as critical structuring sequences that constitute the reality of infrastructure development.

Against this background, this paper puts forward a diagnostic framework of strategic agency that focuses on contextualising institutional works as embedded actions within their specific environments. Through practice lens, being strategic pertains to a capacity to sustain recognition, accountability, and reciprocity in social contexts (Giddens, 1979). In agreement with new institutionalist scholarships, agency is conceived as knowledgeable and capable of acting in a skilful manner (Lawrence and Suddaby, 2006). Agents perform the so-called 'institutional works' to accomplish particular strategic intents, whether to create, maintain, or disrupt structure. The concept has allowed researchers to identify different types of works performed during phases of system transition, however, this earlier application does not necessarily deal with operationalising works in terms of their *embeddedness*. This means that works evidently effective in transitioning one system in a specific environment may or may not bring the same result in another, because the effectiveness of those works depends upon how well they are expressed and situated in terms of social practices within certain institutional contexts. Furthermore, the transition pathways—modelled in terms of niche-regime interactions—are by no means the only set of relevant contexts for agents to consider in enacting works. Other sets of interrelated contexts, such as cultures, organisational values, knowledge systems, governance arrangements, political systems, biophysical conditions, etc. might co-determine the degree by which agents fine-tune their works. Such dynamic interplay between structure and agency, according to Giddens, is regularly embodied through social practices. Giddens contends that 'practices are situated within intersecting sets of rules and resources' (1979, p. 82). The emphasis here is on examining how practices are combined during interactions, rather than on generating a typology of non-contextualised works. Examining the different ways in which practices are combined reveals the work agents enact as a particular response embedded to relevant structural opportunities in real-world context. By taking the dynamic constitution of these practices as the core unit of analysis, this paper proposes a preliminary framework that can guide an examination of how strategic agency is varyingly played out in different institutional contexts. The framework ultimately aims to contribute to the broader question of identifying how agency might lead system transformation in various contexts by fine-tuning their works to relevant windows of opportunities, which, to date, have been largely reduced to studying a small set of opportunities and innovation mechanisms more typically associated with developed urban contexts. The framework application is illustrated using examples from an urban water infrastructure case study in Jakarta, Indonesia. The development of this infrastructure has been marked by overt (and covert) relational dynamics amongst its stakeholders. In this paper the application reveals a number of ways in which works are embedded and practices combined by two opposing groups of actors in response to opportunities. By using case-specific examples, the illustrative application fulfils a demonstrative purpose of highlighting the potential of the novel framework for advancing a more nuanced analysis of the interrelationships of agency and structure in urban development context.

2. A diagnostic framework of strategic agency

The strategic agency perspective put forward in this paper is informed by a classical debate around the degree of agents' capability to diverge from and alter existing institutional settings. The perspective views strategic agency as demonstrated through active and sophisticated consideration of structural opportunities. This ontology has

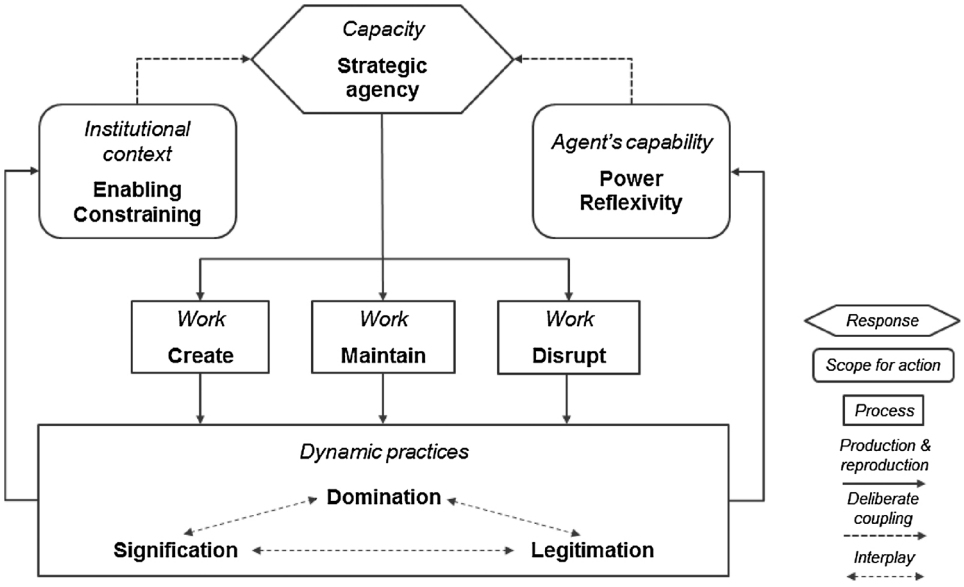

Fig. 1. A diagnostic framework of strategic agency (adapted from Giddens, 1979; Lawrence and Suddaby, 2006).

guided a more recent studies on agency by Westley et al. (2013), where adaptive capacity is demonstrated through strategy formulation that fits opportunity contexts. A similar perspective was used by Smink et al. (2015) to study how incumbents influence their environment to gain a strategic advantage. Being strategic does not mean that agents can operate entirely autonomously (as understood through a flat ontology). From a practice perspective, capability to enact change is enabled or constrained by particular institutional settings (Giddens, 1979). As such, the coupling of agents' capability with institutional context is a basic requirement for performing strategic agency (as seen in Fig. 1: the first layer of the diagnostic framework). The provisional bracketing of agent's capability from institutional context is to fulfil a methodological purpose that facilitates a systematic inquiry between the two concepts while still accounting for their duality (Giddens, 1979).

The development of the second and third layer of the diagnostic framework is based upon the crucial challenge of conceptualising institutions as mutable (Jepperson, 1991; Lawrence and Suddaby, 2006). This is important as there is a tendency to view institutions as relatively static, inanimate frameworks. Meanwhile, recent studies have moved towards specifying the 'semi-coherent' nature of urban water institutions, for instance. To emphasise mutability, institutions can be viewed as 'the product of specific actions taken to reproduce, alter and destroy them' (Lawrence and Suddaby, 2006). Inspired by Giddens, the framework represents the duality of institutions in terms of the contexts in which actions are embedded in and the product of the very actions. To operationalise 'the product and reproduction', the approach taken here reflects on Jepperson's (p. 145) assertion that institutions can be viewed as 'standardized interaction sequences'. Similarly, Giddens takes the ongoing series of regularised actions (or *practices*), as the core unit of analysis in structuration theory. The interaction sequences are represented in terms of three types of institutional works, as originally conceptualised by Lawrence and Suddaby (2006), and a set of dynamic practices, as postulated by Giddens (1979) (see Fig. 1). In this way this paper operationalises strategic agency as *a capability to respond to relevant institutional contexts with a range of institutional works that are fine-tuned and combined into coherent practice sequences.* Below, elements of the framework are discussed further.

2.1. Enabling and constraining settings

The framework deliberately emphasises the properties of institutions as enabling and constraining i.e. it focuses on qualifying the relations between structure and agency. Before going into the specific reasoning behind this, a working definition for institutions shall be formulated as a common starting point. The rich debates around what the term means are acknowledged, and the intention here is not to offer a conclusive definition as much as a working one. For the purpose of the diagnostic, a broad definition offered by Giddens is considered appropriate: institutions are those regularised practices that exhibit the most extensive spatial and temporal presence. Giddens's formal definition of institutional structure is 'recursively organised sets of rules and resources' (1984). So much of the criticisms for this definition pertain to the under-specification of the *rules and resources* aspect of it (see Avelino and Rotmans, 2011; Sewell, 1992). Here, the specification of the types of *rules and resources* is not prescribed because the proposed framework is imagined to be compatible with most specifications –so long as they address the enabling and constraining quality of those structures. Non-exhaustive references to a few of the relevant specifications of institutional rules and resources are provided (see e.g. Avelino and Rotmans, 2011; Boonstra, 2016; Ostrom, 2005; Rogers et al., 2015; Scott, 2001; Sewell, 1992). As cogently argued by (Sewell, 1992, pp. 12–13), the duality of structure can only be satisfactorily retained when resources are recognised as 'coequal elements' to rules in sustaining the reproduction of structure i.e. for institutional rules to be reproduced in time and space, they must be mutually substantiated by 'the accumulation of resources that their enactment engenders'. As such, broadly understood, institutions are the prevailing formal and informal rules and resources commonly applied and materialised by agents to routinize interactions.

Going back to what qualifies the enabling and constraining settings, it is noted that while institutions are prevailing, it is not to be misunderstood as omnipotent. Institutional structure shows signs of mutability through contradiction, semi-coherence, and unpredictability (Friedland and Alford, 1991; Jepperson, 1991; Sewell, 1992). Structure is solid yet volatile. The enabling and constraining quality of institutions are associated with the following conditions: multiplicity, transposability, unpredictability, ambiguity (Sewell, 1992) and its 'taken-for-grantedness' (Scott, 2001). Multiple institutional systems may co-exist, complementing or contradicting one another. In one sense, this means that the system boundary is rather fuzzy i.e. agents may become exposed to a whole host of alternative practices. Agents may step away from their 'embeddedness' and reflexively adopt new practices. Furthermore, with transposability, agents can apply alternative practices to different context, and in the process, also accumulate resources (Sewell,

1992). Like any other open systems, however, reproduction processes can be unpredictable (or imperfect). The source of errors can be endogenous—attributable to subjective interpretations—or exogenous—induced by environmental shocks. Changing regime memberships, for instance, may increase unpredictability when new members interpret existing systems differently or bring with them new resources to renegotiate or reframe existing systems (Dewulf et al., 2004; Vink et al., 2013). Contradiction, in particular, has an important enabling effect on reflexivity (Battilana et al., 2009). Discrepancy between prevailing institutional arrangements and a sustainability vision, for instance, can trigger agents to take a critical stance and challenge the underlying structures. Finally, 'taken-for-granted' practices indicate the special quality of structure that remains unacknowledged or 'hidden' to agents (Scott, 2001). This delimits agents' capability to monitor their context in its entirety. To summarise, enabling settings tend to permit agents to explore system boundaries, adopt, and experiment with new practices. It invites exploration and sharing of resources. On the other hand, constraining settings tend to prohibit exploration, sanction transgression, and block resource-sharing.

2.2. Power and reflexivity

Agents are conceived as capable of monitoring their institutional context reflexively and exercise power over their environments to change the course of things (Giddens, 1979). In terms of power, Giddens proposes a broad definition, which views it as a capacity rather than 'a type of act'. As a capacity, it implies potentials, embodied in clarrying out particular actions in relations to others. The relational aspect of power is broadly agreed upon in social sciences (Boonstra, 2016). Giddens conceives it in terms of a degree of *autonomy* and *dependency* that agents exhibit in interactions (1984). This is fundamentally compatible with the formulation of relational power as power *over* and power *to* (Avelino and Rotmans, 2011). Resources—utilised and reconstituted—are the media that facilitates and hierarchizes power relations. Insomuch as interests are implicated in the analysis of power, Giddens sees them as rooted in wants or motives. Jepperson (1991) offer a slightly different take, suggesting that the operation of power in modern societies is largely shaped by institutionalised systems of interest. According to them, this is also the reason why analysts have found it difficult to account for and locate 'the founts of power'. For Jepperson & Meyer, power, to a great degree, has been converted to formal roles and legitimated authority (e.g. capital, labour, consumers, business elites, etc.), which create what is 'truly structural power'. Professions, knowledge, and technologies are, for instance, embodied strongly as institutionalised myths in our modern society (Meyer and Rowan, 1991). It is important to note here that, while this perspective remains useful, it overemphasises the omnipotent quality of structure over agency. Powell and DiMaggio (1991,p.30) admit that, 'institutional constraints always leave space for autonomous play of interests and improvisation' and that, little is known about 'how incumbents maintain their dominant positions'. Smink et al. (2015, p. 97) recently show that incumbents of socio-technical regimes dominate technical standard setting processes which allow them to 'define standard that favour existing technologies'. The practice provides a clue into how incumbents *dominate* a strategic arena—revealing their power over new entrants. In similar vein with Boonstra (2016), power to shape conduct (direct, intended) is established in relation to power to shape context (indirect, unintended consequences). The recursive diagnostic proposed in this paper allows agents' scope of influence to be traced back and forth between observed practice modality and their relative autonomy/dependency within a specific context.

Reflexivity makes up the other half of agents' capability. Unlike the concept of power—which has received limited attention to date– reflexivity has been more widely conceptualised across sustainability literatures. It is understood that reproduction processes are facilitated through translation, modulation, and mediation that involve subjective interpretations. Giddens distinguishes three dimensions of reflexivity. It starts with *discursive formulations* as its most perceptible expression, whereby agents articulate their knowledge of the systems through communicative means. Such discursive sphere has been utilised as a crucial method for steering transition (Hendriks & Grin 2007). The second, less perceptible, form is skilfully applied *tacit knowledge* for rationalising action. Tacit knowledge is recognised as essential for translating vision into implementation in urban water innovations (De Graaf, 2009). Transfer of tacit knowledge through networks of practice communities is also considered as a characteristic of adaptive governance (Rijke et al. 2012). The third dimension, and the least easy to detect is motivation. Here, motives are understood as an unconscious layer of human conduct. This means that even when motivations are explicitly acknowledged, they should be corroborated with observable actions that hold impact on social interactions. Considering practical limitation, it is sufficient to examine the first two forms of reflexivity in this diagnostic. Revealing real motives behind individual's action would require a whole other host of methodologies—more closely associated with the field of psychology—which are beyond the scope of this research.

2.3. Modality: works and practices

The modality layers are represented with institutional works, denoted by a typology of actions (Fig. 2), and dynamic practices, denoted by modes of sequencing (Fig. 3). Agents interact with institutions by creating, maintaining, and disrupting structure. This typology is drawn directly from Lawrence & Suddaby's extensive review of organisational works (2006), which has been applied in urban sustainability studies to distinguish strategies at different transition and innovation phases (e.g. Binz et al., 2016; Brown et al., 2013; Fuenfschilling and Truffer, 2016; Rogers et al., 2015). Creating works are intended to establish new rule or resource systems. Maintaining works, in contrast, are geared towards minimising variations. This can be achieved by controlling transgression and reinforcing compliance. Meanwhile, disrupting works are intended to interrupt or thwart established routines. The different types of work differ in their efficacy and require specific competency and skills to enact. Lawrence et al. (2009) concluded that 'rule-based work' targeting the adjustment of regime memberships or property rights show greater efficacy to result in '*de novo* construction of new institutions'. Other types of work targeting cognitive and normative adjustments were found to be more frequently associated with reproduction outcomes that 'parallel or complement existing institutions'. The

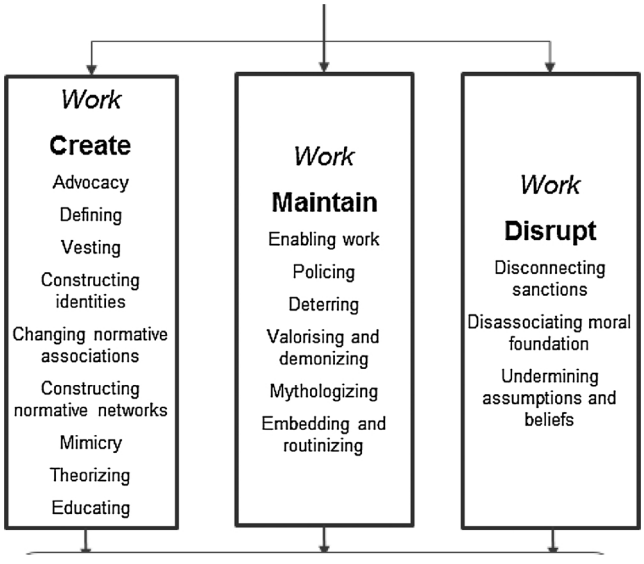

Fig. 2. Types of institutional works (adapted from Lawrence and Suddaby, 2006).

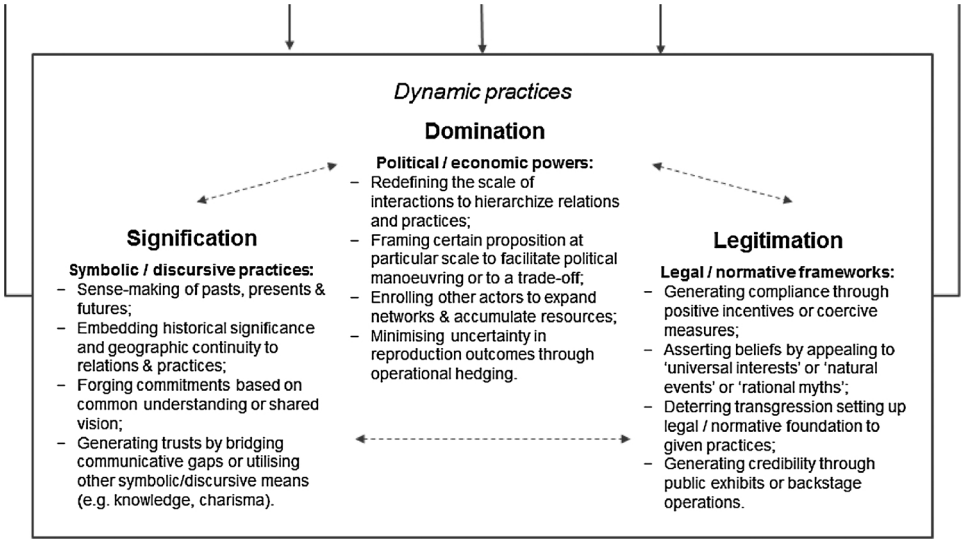

Fig. 3. The relative alignment of practices (modified from Giddens, 1984, 1979).

typology of works provides an overview of the range of actions that agents can take towards accomplishing their strategic intents. However, diagnosing the actual outcome of institutional works needs to go beyond relying on interpretation of agents' intents; this can be achieved by examining how the performance is fine-tuned to structural opportunities.

This requires the diagnostic to clarify the dynamic interplay between structure and agency expressed in terms of social practices, which according to Giddens (1984) consist of signification (symbolic/discursive practices), legitimation (legal / normative frameworks), and domination (political/economic powers). In Giddens' words (1979, p65) 'practices are brought into being in the context of overlapping and connected sets of rules, given coherence by their involvement in the constitution of social systems in the movement of time'. By this definition, structure and, by extension, the effects of works performed to alter, preserve, or interrupt them, are embodied in the form of practices. Hence, the effectiveness of institutional works can be examined more satisfactorily by diagnosing how well practices are combined in a specific real world context. Giddens notes that structuring is not sustained by any single practice, but instead occurs when signification (S), legitimation (L) and domination (D) practices are effectively-linked to achieve regularity and coherency. The following analytical sequences are proposed by Giddens (1979): (i) S-D-L (modes of discourse); (ii) D-S-L (political/economic orders); and (iii) L-D-S (modes of sanctioning). These sequences are useful in guiding empirical application of the framework. Examining the different ways in which practices are combined, or in other words, the modes of sequencing (Fig. 3) reveals how agents fine-tune their response to structural opportunities. A whole range of relevant opportunities may be exploited depending on the configuration and movement of intersecting rule and resource systems in time and space—discussed in Section 2.1. Conceptually, the sequences also highlight that the constitution of meaning i.e. signification cannot be adequately examined only through its link with legitimation practices; the practice of domination by definition facilitates the two (Giddens, 1979). Thus, the diagnostic needs to consider all possible sequences by which strategic agency is expressed, while recursively tying the explanations to identified enabling or constraining settings. To guide the diagnostic, the discerning question is: *how do agents fine-tune their works to cultivate coherent practice sequences in response to relevant opportunities?*

With signification, agents exchange meanings, both symbolically and discursively. According to Giddens, this exchange occurs 'in time' which means agents evaluate others' accountability and consistency with reference to their past conducts and by anticipating future encounters. He also highlights the importance of narrowing the so-called *communicative gap* that exists between intended meaning and perceived meaning. Examples of time-scaled practices can be found in *retrospective* and *prospective* narratives, rhetoric, or frames utilised to mediate interests (Garud and Gehman, 2012). Visioning is a common prospective tool that can embed shared expectations and commitments to achieve particular societal goals (Ferguson et al., 2013). In terms of communicative gap, evidences support that stronger stakeholder participation may undercut feedback time and leads to better adaptation outcomes (Huntjens et al., 2012).

With legitimation, Giddens suggests that it denotes the fulfilment of *rights* and *obligations* by institutional participants. As such, this practice involves both positive incentives and coercive measures. Legal and normative measures have sanctioning effects on participants. To transgress means agents take risks of being *outcast* or, if successful, their action may generate obligations from others i.e. legalising what was once a rule-breaking conduct (Giddens, 1979). Normative sanctioning, in particular, can be enacted quite irrespective of the actual technical efficiency of the practice. This is what Meyer and Rowan (1991) suggest as 'rational myth' that increases the legitimacy and survival prospects of organisations. Additionally, Giddens–with reference to Goffman—-highlights the *spatial context* of legitimating practices, which is the contrast between the *front* and *back regions* of interaction. Such virtual separation implies a hidden aspect of interaction—not everything is publicly disclosed. Giddens suggests that such spatial redlining can facilitate manipulative practices.

Domination fundamentally corresponds with the exercise of power. Linked with signification and legitimation, 'power is expressed in the capabilities of actors to make certain "accounts count" and to enact or resist sanctioning processes' (Giddens, 1979 p. 83). This practice is conducted by utilising resources. In real-world context, this can be observed in terms of political and economic powers. Giddens suggests two applications of resources: authoritative and allocative. Bourdieu (1986) suggests a third application i.e. accumulative. Indeed, accumulation is the root of asymmetrical power relations. The literature on political ecology is particularly informative for illustrating how power relations are *hierarchized* (Bulkeley, 2005). Skilful rescaling of relations has been denoted as "politics of scale" or "scalar politics" (Meadowcroft, 2002; Neumann, 2009). This depicts how practices can be framed or embedded at certain (geographical/ administrative/ jurisdictional/ temporal) scale to gain (political/economic) appeal. By way of example, Gupta (2014) demonstrates that the rhetoric for sustainable water management is often *upscaled* to embed it with more compelling public and intergenerational goals. Giddens, similarly,

observes that sectional interests tend to assert themselves as the bearer of "universal" goods or that decisions were driven by "natural" events. Besides upscaling, others have identified *downscaling* and *scale jumping* strategy (Cohen and McCarthy, 2014; Hüesker and Moss, 2015). The key, here, lies in scrutinizing how actions are negotiated, how trade-offs are made, and how political manoeuvring is performed (Adger et al., 2005)

3. Illustrative application: procedure and examples from Jakarta's flood program

The application of the strategic agency framework to tailored research problems requires the analysts to be familiar with the underlying theories discussed earlier; this will guide the choice of application and analysis of certain element(s) or relationships in the framework, as well as the abstraction of empirical observations in terms of the different operational elements of the framework. The choice of where to start is not prescriptive, an analysis can begin with a focus on a particular set of institutional works i.e. expected to have been performed to influence key decisions or direct systemic shifts. To ascertain these assumptions, the analysts trace the set of works in relation with the other diagnostic elements (e.g. agents' power and reflexivity, the contexts, the reproduced structure). In other instances, the application may begin with a map of the active constellation of actors; or from noteworthy events (e.g. endogenous or exogenous pressures) with system-wide consequences. As such there is no one prescriptive order to undertake the analysis across the operational elements; the crucial step lies in carefully clarifying the sequence of structuring which has been theorised as linked signification, legitimation, and domination practices that sustain continuity. This can be achieved with an iterative procedure of data collection, abstraction, and validation to develop robust explanations. In practice, the level of detail for applying such diagnostic framework 'depends on the degree information' available and 'can be successively increased' as the complexity of the problem increases (Pahl-Wostl et al., 2010, p. 574). This means that some applications may achieve in-depth understanding on certain research questions (likely across multiple case studies) or explore the breadth of processes or relationships pertaining to strategic agency in a single case (or more).

In this paper, the application is demonstrated with illustrative materials from a single case study. The materials are drawn from a research project conducted in Jakarta to reveal how strategies are conceived and enacted by two opposing group of actors in the formulation of a flood defence program, the National Capital Integrated Coastal Development (NCICD), between 2007 and 2016. Primary data includes qualitative interviews with 16 participants conducted between April 2016 and February 2017 and supplementary document analysis. Participants consisted of senior project managers, foreign technical advisors, senior policy makers from several ministries (National Planning Agency, Public Works, Economic Affairs, Environment and Forestry, River Basin Authority, and Technology Appraisal and Application), Regional Planning Agency, a representative of Dutch government and independent experts. Secondary data consist of policy documents, published project materials, internal reports and presentations, minutes of meeting, online database, and media coverage.

This illustrative application is primarily intended to suggest the potential of the novel framework for advancing a more nuanced analysis of the interrelationships of agency and structure in urban development context. It is not within the scope of this single publication to fully test and validate the framework empirically, which will require more elaborate comparative works. As such, it is noted that the empirical insights drawn here have limited generalisability beyond the stated aim of this paper i.e. to demonstrate the framework's value in revealing embodied and varied performances of strategic agency and their interrelationships with identified windows of opportunities. The examples are selected to highlight a set of strategies enacted by the program proponents (Fig. 4) and the so-called opponents (Fig. 5). The distinction is made to examine variations in structuring sequences enacted across the two groups and suggest the relative capacity of the different actor-networks. The examples outline key agency-structure interrelationships that facilitated the development of NCICD in its current form—an ambitious multi-phase and -billion dollar urban infrastructure and development enterprise (valued at about 40 billion US $; to put in perspective, the annual Indonesian government spending in 2017 is around 160 billion US$ (Direktorat Penyusunan APBN, 2017)). As a background, the latest master plan proposes staggered interventions for mitigating climate-related flood impacts: (1) short-term improvement of existing dikes; (2) medium-term implementation of offshore seawall and land reclamation in North Jakarta; (3) long term development of dikes on the eastern shore.

3.1. Results

Fig. 4 depicts how the proponents enacted their strategic capability to dominate policy forum and set high-level developmental agenda in Jakarta context. A key window of opportunity was traced back to early 2007, when a major flood disaster hit the capital city and 60% of Jakarta was reportedly submerged in just over 24-hour (World Health Organization, 2007). Elite policymakers in the National Planning Agency responded urgently by commissioning an investigation into the causes of the flood, which was led and funded by a Dutch research institution and the Dutch government as the first of a series of technical grants awarded between 2007 and 2014. In total, approximately 23 million US$ were awarded, resulting in three consecutive studies which rationalised the need for the large-scale flood infrastructures and urban development investments. The early grant seeded a network of policy proponents, which subsequently grew the relationships into more substantial multilateral partnerships. Memorandum of Understanding (MoU) between Government of Indonesia and Government of the Netherlands concerning cooperation in water management was signed in 2012 and renewed in 2015; by early 2016, another tripartite MoU involving South Korean Government was already on the horizon. Policy advisors also managed to perform enabling work during a scheduled update for Jakarta's spatial plan regulation in 2012. Leveraging personal network and formal access to this regulation-making process, the advisors managed to advocate part of the flood protection measures to the then-governor of Jakarta and have it written into the spatial plan. In this example, financial and human resources (provided by foreign counterpart and technical advisors) were linked with bureaucrats' authoritative power to configure the actor-network and facilitate agenda-setting, in this case culminating with the publication of the NCICD master plan.

The practice of negotiating interests among the proponents was also revealed in the deliberate widening of the scope of the master plan. What began as a relatively small risk assessment study has over time evolved into a mega-urban development program across three provinces (Jakarta, Banten, and West Java) of not only flood protection measures, but also a fresh water reservoir, new land reclamation, transport links, and a port. On one hand, this reflects the renewed interests of the National Planning Agency to test multi-sectoral partnerships for bolstering infrastructure investments by diversifying revenue sources—beyond relying on a single sector government budget. They took the opportunity to formulate the NCICD as a grand response to multi-decade infrastructure spending gap encumbering the nation (World Bank, 2008). They also rationalised private investments as a necessary revenue source for closing the spending gap, thus enrolling business interests into the program as reflected in the program's scope that accommodates greater off-shore expansion of the capital's lucrative urban development. As will be discussed later, this related land reclamation aspect of the program turned into a sore point for the proponents, when an incriminating bribery scandal in 2015 involving a member of the regional parliament and a private developer surfaced.

That event marked a window of opportunity for the opponent to

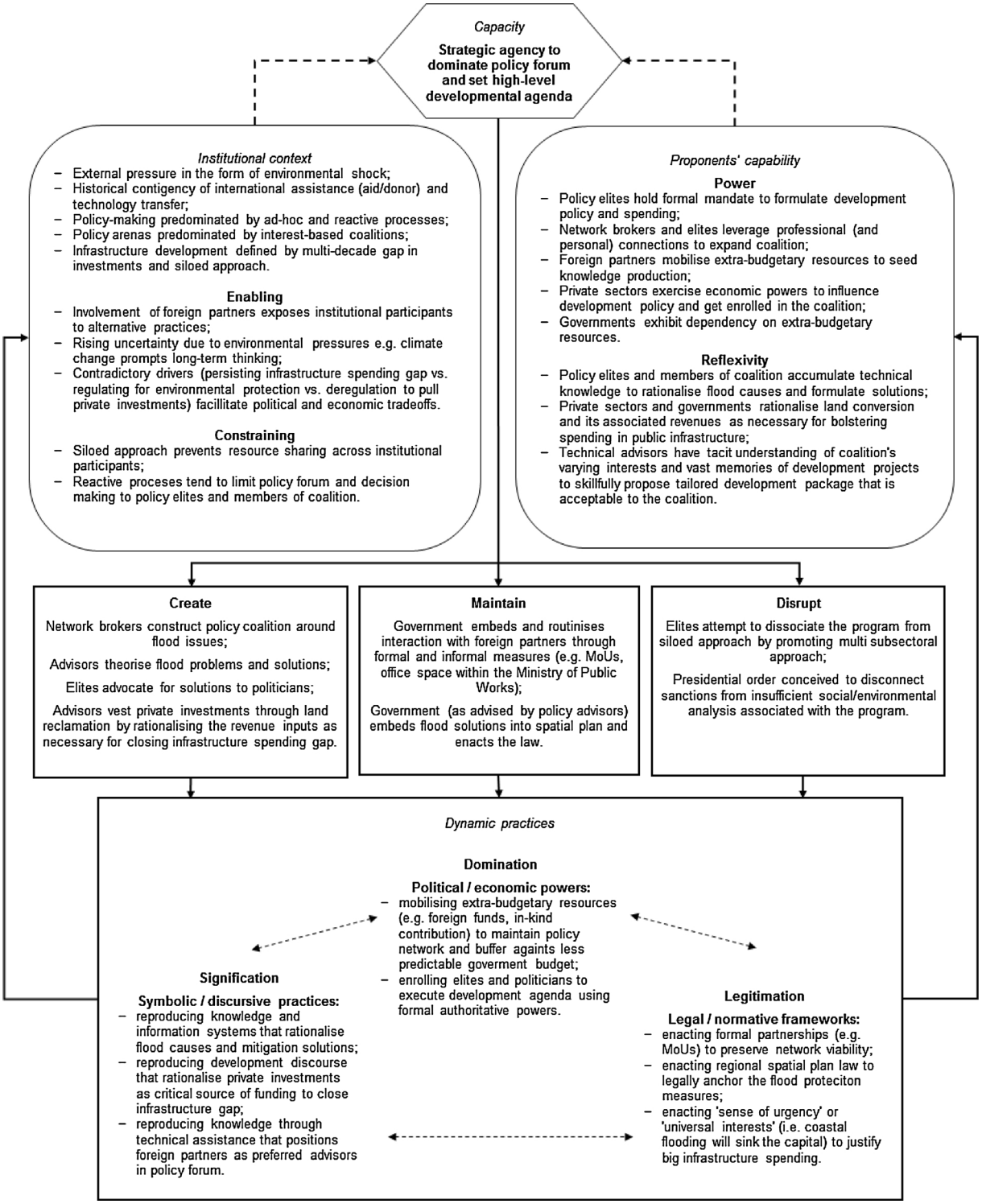

Fig. 4. Diagnostic overview of proponents' strategic capacity in shaping the NCICD.

disrupt formal policy processes (Fig. 5). The widely publicised scandal was utilised by the opponents to interrupt the proponents' momentum. The opponents, e.g. academics, pundits, special interest groups, responded by intensifying their presence in the media to expound counter-narratives and theorising of Jakarta's flood problems and their preferred solutions. Even prior to this, outspoken experts had already published their concerns and opposing views across media outlets, albeit with less intensity and polarising effects. Some interest groups argued conspicuously against the NCICD citing its perceived limitations in mitigating potential negative social and ecological impacts of the seawall. More subtly, ambivalent government agencies also attempted to outmanoeuvre the sharing of responsibility and resources over the program by expressing normative discords, which constrain cross-sectoral relationships. Timed with the scandal, the counter-movement attracted massive public attention, resulting in a significant polarisation that juxtaposed public concerns with elite's vested interests. At the height of it, the partisan sentiments even divided the line of ministries with compromising remarks and criticisms being made across the

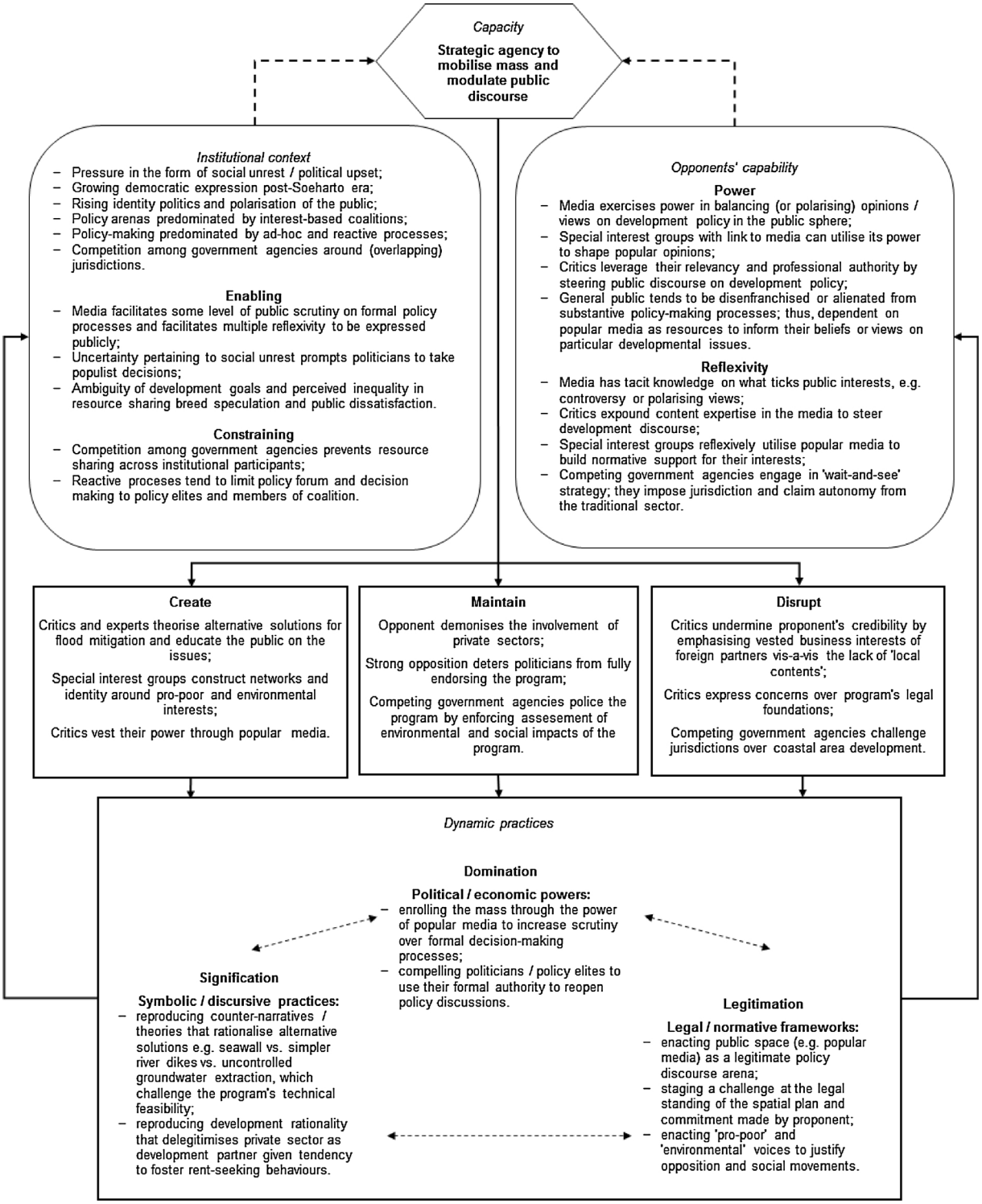

Fig. 5. Diagnostic overview of opponents'strategic capacity in shaping the NCICD.

bench. By April 2016, the escalating tension eventuated in the President holding a cabinet meeting and issuing an executive order, which directed the lead agency to update the master plan, especially with regards to fleshing out the socio-ecological impact assessments of the program, within a six-month period.

3.2. Discussion

Through a structuralist lens, the infrastructure program might appear as an inevitable legacy of the past few hundred years of Dutch technical influence in Indonesian water sector, however, the application of the strategic agency framework provides a closer look at a range of responses and opportunity contexts that at different stages have shaped the infrastructure agenda. Identified strategic agents appears to be enacting a number of practice sequences that are situated as much within the legacy context of development aid and technology transfer (Goldman, 2007), as they are within a characteristic reactiveness of the policymaking domain to current political-economic trends, both of

which are periodically punctuated by exogenous pressures and endogenous volatility.

Domination-signification-legitimation

Firstly, the proponents' response can be examined in terms of D-S-L sequence. When the major environmental shock—known as a typical class of enabling context in the literature (Smith and Stirling, 2010)—occurred, policymakers responded by tapping into the legacy network of foreign investors to augment local resources to deal with the infrastructure challenge. This reveals the *dependency* of local policymakers on the global development network.[1] Similar observation of the dominant role of multinational corporations in shaping water sector logic in China has, for instance, been reported by Fuenfschilling and Binz (2017). The choice of infrastructure—the off-shore dikes—to some degree, does reflect a classic Dutch water management approach and their interests in exporting this expertise. Yet, this cannot be simplistically taken as a confirmation that Dutch paradigm predominates the entire infrastructure development logic. There is a patchwork of foreign partnerships delivering segments of the urban water systems. The NCICD program, for instance, requires wastewater infrastructures to be constructed prior to the bay closure that are currently being delivered separately through a bilateral agreement with Japan International Cooperation Agency (JICA). As such, this practice of enrolling foreign counterparts does not appear to be enacted principally to reinforce 'ideological-hegemony' (e.g. western orientated expertise)—despite being frequently emphasised by some critics. Rather, it appears to be driven by the government's short-term need to cobble up financial and technical capacity to deal with long-term infrastructure challenges. To this end, foreign counterparts have been deliberately positioning themselves as providers of extra-budgetary assistance to bureaucrats, which in turn, afford them with access to policymaking. The degree of their influence cannot, however, be assumed without scrutinising the composition of the coalition; in this example, the allocative power of the foreign counterpart is offset by the authoritative power of bureaucrats that binds the coalition together.

The balance of power in shaping the infrastructure agenda is also shared with private investors—potential revenues from off-shore urban development is considered as critical extra-budgetary resources for financing long-term overhaul of public infrastructures in the capital city. The potential co-optation of public interests by business agenda has been especially forcefully contended by the opponent in the light of the bribery scandal. Such dissatisfaction at government's development policy—perceived as bearing neo-liberal economic agenda—has been previously documented in the water sector (Ray and Ing, 2016). The negative environmental impacts of land conversion in Jakarta, largely driven by private developers has also been noted (Firman, 2009). Yet, Davidson (2010) cautions against a blanket reading that pigeonholes private investments as necessarily negative within the context of public infrastructure delivery in developing countries.

Considered through the D-S-L sequence, the proponents' works, so far, appear to be reinforcing a practice of political-economic domination, which mobilise elite authority and extra-budgetary resources to shape the subsequent discursive and legitimating practices. Interests are brokered and rationalised in terms of public need for a grand solution for the sinking nation's capital. Evidently, the proponents understand that the legitimacy of such grand discourse is bound to be constrained by the reactiveness of the policymaking domain—they reflexively performed auxiliary works to anchor the NCICD solution with legal-regulatory frameworks (e.g. MoUs, spatial plan). However, the legitimating practice is relatively less well-executed when considering the overall degree of normalisation of the development narrative beyond the coalition.

Legitimation-domination-signification

Examining the proponents' response in terms of L-D-S sequence reveals a lack of capability to enact shared normative frameworks for anchoring the NCICD agenda across government sectors and public arena. The proponents resort to enacting sanctioning mechanisms (L-D-S)—pursuing an agenda directly to the Presidential office to enforce vertical order and restrain horizontal disagreements regarding the values and validity of the program. The caveat is that the underpinning sectoral ego—a key constraining context—tends to outlive such authoritative order, which is subjected to cyclical political ambitions of the elected leader.

Strong sectoral ego underwhelms the proponents' efforts to generate shared expectations and responsibilities across various governmental agencies, which on paper were meant to be actively involved in the planning and implementation of the program. Works to construct an integrated identity and normative basis upon which inter-sectoral commitments and resources can be aligned are repeatedly crippled by unstable short-term memberships within the NCICD team, a symptom found across broader governmental systems. Without responding to the need for creating new governance arrangements for re-allocating resources across sectors, the current legitimating practices remain susceptible to endogenous volatility, such as changes in leaderships or memberships to elite networks.

Furthermore, beyond formal policy arena, this strategy is less effective in generating public buy-in, especially when public discourse is ever so vibrantly modulated by the opposition and the media as legitimate critics of state authority—a historical consequence of entering the democratic era in 1999. Contradictions, outside the coalition, were bred by ambivalent and opposing actors to construct counter-narratives. Consequently, the proponents' momentum has been withheld by this endogenous volatility. A peak is reached when the related land reclamation project was embroiled with corruption charges, upsetting the system's equilibrium momentarily. Subsequent polemic staged by the opposition effectively halted the proponent's momentum.

Signification-domination-legitimation

Around this time, the strategic advantage was shifted to the opponents, whereby they skilfully modulated the development discourse from outside the main policy arena. Examined in terms of S-D-L sequence, their strategic agency is embodied through a practice of effectively linking counter-narratives with media power to generate dissociative normative frameworks. Disrupting works are performed to publicly discredit the values of the program by highlighting the unresolved contradiction of improving public safetywith coastal defence to the potentially negative impacts of the infrastructure on the livelihoods of fishermen and environmental quality of the bay. Use of public space to mobilise the mass resembles social movement strategy. Bunnell and Miller (2011, p. 41), for instance, note that 'civil society transformed Jakarta's sites of "nationalist urbanism" into propaganda spaces of their own making'. In this example, the opponents dominated the discursive arena for a while with significant assistance from the media during the height of the controversy; by contrast, the proponents' media rebuttals tend to reinforce the perception of impervious policymaking.

The exercise of power by the media in destabilising high-stake public infrastructure agenda is particularly noteworthy. Simanjuntak et al. (2012) in another study of flood project in Jakarta has characterised the media as the 'fourth policy entrepreneur'. Under the circumstances, the critics partially accomplished their intents and tipped the balance of power when the counter-movement triggered the Presidential order. Yet, the effectiveness of such destabilising force for substantially steering long-term policymaking cannot be easily concluded. Media attention has since dissipated as the novelty of the issue wears down. With it, the opponents' disruptive and creative works lose some of its edge. It remains to be seen whether the execution of the

[1] Donors' perceptions of suboptimal development in receiving countries have been characterised as one of the rationalising means for international aids (Suhardiman et al., 2015). The perceptions seem to find resonance amongst bureaucrats themselves. In some interviews, leading bureaucrats and foreign partners expressed the view that state decentralisation (following the fall of Soeharto's regime in 1999) has been 'disastrous for water management', reasoning that authority on sub-national levels are typically not knowledgeable or skilled enough to manage assets handed over to them.

Presidential order can redistribute resources to address socio-environmental concerns or expand memberships to policymaking. An early indication is that memberships to the elite networks remain relatively intact—biding their time to reconstitute subsequent course of action concerning the program. This course of action is critically circumscribed by public legitimacy, hence, the proponents need to consider enacting alternative practices that can restore credibility, facilitate more inclusive policymaking, and forge collective commitment.

4. Conclusions and further developments

This paper aims to introduce a framework for diagnosing strategic agency by combining institutional and practice perspectives. Whereas existing institutional work applications in transition literature mainly reveal patterns of strategic action as a direct function of innovation phases, our framework enables studies to examine how agency might lead transformation in various contexts by strategically fine-tuning their works to relevant windows of opportunities. The generic conceptualisation of institutional reproduction processes as practice sequences allows analysts to develop an empirically-driven diagnosis of agents' responses in specific case studies. Niche-innovation related practice sequences may be, for instance, less critical in developing contexts than practice sequences enacted through the global-local development network, as suggested in the illustrative examples. To emphasise, the framework facilitates future research to provisionally steps away from presumptions of who ought to exhibit strategy agency (e.g. frontrunners, niche-actors, incumbents, etc.) or when works of strategic implication might occur during societal transition (e.g. particular transition cycles or innovation phases). Instead, such strategic role and scope of influence are derived through recursive observations and abstractions of various events, actions, and practices within their given contexts. The multi-layered representation of the agency-structure elements helps organise complex inquiry and systemize data collection of relevant relationships and dynamics that constitute strategic agency. In this sense, the framework is based on a diagnostic approach which helps reveal the complexity of human-environment interactions (Ostrom and Cox, 2010). The paper, as such, contributes to extending current theoretical debate on the need to move towards a more nuanced understanding of strategic agency.

While the illustrative application presented in this paper does not offer a full account on the whole range of interrelationships shaping the NCICD, it does demonstrate the framework's applicability to specific research questions. The application demonstrates the value of the framework in revealing how strategic agents are capable of responding to various opportunity contexts with a range of works and combining them into practice sequences that at different stages have shaped the infrastructure agenda. The diagnosis of how the opponents interfered with the program's momentum and eroded its legitimacy suggests that the framework is capable of revealing specific modes of sequencing associated with de-institutionalisation—understood in terms of de-legitimation of established routines (Oliver, 1992) or inertia-breaking episodes (Turnheim et al., 2015). To explore other modes of sequencing associated with de-institutionalisation and test the framework's limitations, more in-depth case studies are required. With respect to the case presented, additional analysis can further unpack how the opponents might potentially secure more substantive influence in the making of the infrastructure agenda; or reveal other practices that sustain the relationships between private investors and governments in co-financing public infrastructure. More extensive examination of the actor-networks can also enhance understanding of the fluidity (or rigidity) of the network configuration. Additional applications will allow testing the feasibility of developing a typology of practice sequences that strategically sustain reproduction of urban infrastructure agendas in similar or different contexts (e.g. Jolly and Raven, 2016, 2015; Meijerink and Huitema, 2010). Comparative applications across developed and developing contexts may further substantiate the theorized advantage of developing contexts in escaping lock-in or leapfrogging to sustainability (Fuenfschilling and Binz, 2017). Practically speaking, case specific insights can also guide formulation of governance recommendations that can help facilitate transformations in urban infrastructure sector.

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Chapter 4

Discerning the role of transformative agency in Surabaya's green initiatives

4.1 Introduction

In this chapter the concept of transformative agency is proposed to examine green transformations dynamics in the Surabaya case study. This addresses the second research objective partially, i.e. to examine the influence of variations in contexts and capabilities for change on local transformation dynamics in contrasting empirical cases of developing Indonesian cities. The finding is reported in Publication 2 submitted to *World Development* for consideration. It is presented in the submitted manuscript format in accordance with Monash University's guidelines for Thesis including Published Works.

The concept utilised to analyse the case study was extended from the theoretical understanding developed in Publication 1 (chapter 3). Transformative agency is viewed as actors' varying capabilities to monitor temporally and spatially differentiated social contexts, identify opportunities that may arise from both unfolding and incompatible processes, as well as exercise particular forms of power to exploit the opportunities and set a new course of actions. This proposition was tested by analysing various opportunities and strategies enacted by different actors in facilitating Surabaya's green initiatives over more than three decades between 1984 and present. Different types of resources were found to be mobilised by different actors to shape social relations and the urban initiatives, ranging from formal political authority, informal network, to cultural resources. A few salient forms of agency were identified, such as civic activism, distributed grassroots leaderships and municipal activism. The tight coupling between global actors and local urban actors was also underlined—confirming the need for international development and transnational actors to look beyond fostering a linkage with domestic national actors. The agency of local state and non-state urban actors was, therefore, brought into focus by employing the practice-based perspective.

Conceptually, this study demonstrates that a finer grained analysis of transformative agency can be made by focusing not just on opportunities created by exogenous crises but also by endogenous tensions. This extends existing transitions perspective that primarily emphasises change mechanisms that direct resources towards protecting niche-innovations, without clarifying *where* innovations are likely to emerge or *how* they may be embedded across the various societal levels and sectors. Instead, transformative agents situated within intersecting rule and resource systems are confronted with the challenge of exerting their powers differently across multiple spheres of activity, and conceiving a range of temporal and spatial strategies. Strategies that can identify *where* the opportunities lie and can determine *how* to resolve contradictions arising from endogenous tensions. This research, hence, advances the debate on how agent- and practice-based perspective can be employed to uncover rich insights into micro-level interaction dynamics that shape change initiatives in a given context, while balancing the accounts with critical reflections of the macro-level influences.

4.2 Publication 2

Discerning the role of transformative agency for sustainable development: Surabaya's journey towards green city

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ABSTRACT

The role of agency in facilitating urban transformations has received significant attention in the literature given growing interests in understanding how cities can rise to the challenge of developing more sustainably. To date, much of the research on urban transformations has focused on developed cities, with limited understanding on how the role of transformative agency may vary in developing cities. To advance more nuanced understanding of change dynamics, this paper examines the concept of transformative agency in a developing city through a practice perspective. It is argued that variations in the role of actors in responding to and shaping local contexts can be detected more accurately by focusing on how power and reflexivity are exerted differently to exploit both exogenous shocks as well as social tensions. This hypothesis is tested in the analysis of the dynamics of a three-decade green transformation in Surabaya, Indonesia. It reveals how various actors perform diverse sets of practices, which include: (i) urban activists mounting social tensions to initiate change; (ii) municipal actors creating a sense of urgency by mobilising formal authority; (iii) civic and municipal activism embedding participation on the street level; (iii) distributed grassroots leaderships sustaining on-ground implementation; and (iv) tight coupling between global and local urban actors to enhance knowledge and credibility. Conceptually, this research advances the debate on how agent-based perspective can be employed to uncover rich insights into micro-level interaction dynamics that shape change initiatives in a given context, while balancing the accounts with critical reflections of the macro-level influences. This paper demonstrates that a finer grained analysis of transformative agency can bring into focus the role of local urban actors—often obscured by tendency to emphasise the influences exerted by national and global actors—in initiating and, more importantly, sustaining the momentum for realising sustainable transformations in developing cities.

Keywords: agency; transformation; sustainable development; developing city

1. Introduction

As the world becomes more urban than ever recorded in human history (UN-Habitat, 2016), the challenge of developing sustainably as a global collective is greatly determined by the success of our cities in responding to rapidly changing socio-environmental pressures and adapting existing urban infrastructures and practices to robustly cope with those pressures. This challenge is even more pronounced in developing regions, particularly in Asia and Africa, where by 2050 an estimated 90 percent of the additional urban population will be concentrated in cities (UNDESA, 2014). Yet, cities, as specific and dynamic contexts for sustainability transitions (Castán Broto, 2017; Frantzeskaki et al., 2016b), have been generally eclipsed by national contexts in existing sustainability transitions research (Hodson and Marvin, 2012; Raven et al., 2012). And, while recent contributions investigating the role of cities in sustainability transitions in western contexts have emerged (see e.g. Barnes et al., 2018; de Haan et al., 2015; Ehnert et al., 2018b, 2018a; Ferguson et al., 2013; Frantzeskaki et al., 2014; Nevens et al., 2013; Rohracher and Späth, 2014) there remains limited empirical contributions that analyses such dynamics from developing urban contexts. Overall, this area of inquiry, whether in developed or developing contexts, is still in its infancy, grappling with the question of how to frame and analyse capacity to facilitate urban transformations (Hodson and Marvin, 2010; Wolfram et al., 2016).

The increasing numbers of studies investigating transitions dynamics at the national level in developing contexts has placed a great deal of emphasis on understanding the diffusion of green technologies from developed contexts to developing countries through transnational linkages (Berkhout et al., 2009; Binz et al., 2012; Hansen et al., 2018; Rock et al., 2009; Wieczorek et al., 2015). While these scholars have demonstrated the value in studying the role of technology transfer as a key change mechanism in facilitating the emergence of sustainable systems in less developed contexts, they have also reflected on the need to further clarify local capabilities in orchestrating transformations. Technology transfer—a process primarily mediated by policy makers and development practitioners working at the national level—may be critical at that higher analytical level, however, its manifested outcomes in relation to other processes at the city level remain an important dimension to examine. Scholars who study the role of cities in developed contexts also grapple with similar questions of understanding the multi-level interaction between processes taking place at global, national and local levels (Ehnert et al., 2018b; Hodson and Marvin, 2010; Raven et al., 2012; Rohracher and Späth, 2014). The capability to navigate interactions across governance levels, as such, holds an important clue to clarifying the role of agency in steering transformations.

Increasingly, it is also believed that cities with 'nimble and less ideological' leadership can take on 'global sustainability challenges—even as international treaty efforts and national policymaking stall' (Wachsmuth et al., 2016, p. 393). The 'proactive and innovative' role of city leaders in shaping global governance has also been argued by Acuto (2013, p. 495), who concludes that 'it is nothing but fair to allow them [mayors] room for manoeuvre and institutional access that can match that of diplomats and statesmen'. Such 'transformative leadership' has also been characterised by Wolfram (2016, p. 126) as a key element of agency in urban transformations. Transformative leadership, however, is not confined to 'political elites' but takes on 'polycentric and socially embedded' forms distributed across communities (Wolfram, 2016). In addition to this, Wolfram recognises the role of *empowered communities* with capabilities to self-organise and access resources, as another element of agency.

An agency-based perspectives have gradually gained more prominence in transitions research. Other recent developments include studies drawing from power theory (Avelino, 2017; Grin et al., 2011), institutional entrepreneurship (Huitema and Meijerink, 2010; Meijerink and Huitema, 2010) or through micro-level investigation of institutional works (Brown et al., 2013; Fuenfschilling and Truffer, 2016; Rogers et al., 2015; Werbeloff et al., 2016). There has also been rising interest in understanding other forms of transformative capabilities in navigating local governance processes (Barnes et al., 2018), mobilising grassroots movements (Celata and Coletti, 2018; Wolfram, 2018) or enacting civil activism (Frantzeskaki et al., 2016a). Taken together the emerging body of work represents an expanded view of agency interacting with opportunity contexts across multiple social interfaces. This shift recognises that change processes may be manifested in diverse forms depending on their local contexts, beyond the sphere of technological or formal policy innovations that was much of the focus of earlier transitions perspective.

Against this background, this paper extends on recent strands of the sustainability literature which has begun

to explore the importance of embedded agency in urban contexts (see e.g. Barnes et al., 2018; Ehnert et al., 2018b; Wolfram, 2018). To complement existing scholarship, this research draws on practice theory (Giddens, 1984, 1979) to provide insights into the embeddedness of diverse and distributed actors in multiple overlapping institutional structures. This is a line of inquiry that has yet to receive adequate attention in existing literature which tends to examine actors' embeddedness in a given sphere of activity. The value of a practice perspective rests on its ability to contextualise actions as they are enacted in time and space, and to reveal the way in which actors, events, and resources are entangled in interactions (Birtchnell, 2012; Hoffman and Loeber, 2016; Novalia et al., 2018). In doing so, this perspective can enhance understanding of *the roles and influences different actors can exercise in response to differing contexts*—an underexplored question in understanding transformation dynamics (Novalia et al., 2018). The theoretical development of this perspective will be further elaborated below.

In addition, empirical material from a three-decade transformation towards a green city in Surabaya, Indonesia—driven by local leaderships and socially-innovative community initiatives—is utilised to demonstrate the new conceptual insights that can be gained by examining transformative agency through the practice lens. This paper presents evidence of the distributed roles that diverse local urban actors in Surabaya played in driving collective actions and transformations at the city level. While there are key linkages made between national and international actors, this research shows that the embedding of change processes are dependent upon local coalitions of city governments, trusted local experts, and empowered community organisations. In doing so, this case offers insights into what it means for cities to drive a global sustainability development agenda (Parnell, 2016).

2. Conceptualising transformative agency

Broadly conceived, the notion of embedded agency in transformations can be understood as the capability to enact change processes in terms of situated practices in social systems (Novalia et al., 2018). This perspective is based upon Giddens's conception of human agency as knowledgeable, which focuses on 'how actors reflexively monitor what they do; how actors draw upon rules and resources in the constitution of interaction' (Giddens 1984, p.373). By this definition, *the capability to be reflexive* is coupled with *the capability to enact power* to influence the direction and outcomes of change (Giddens, 1993). The practice of being reflexive refers to the capabilities to monitor contexts as well as to express discursive and rationalised responses to situate actions within contexts. Not only are knowledgeable agents capable of being reflexive, they also enact forms of power to strategically reproduce or transform existing systems. Indeed, Giddens stresses that power be regarded as the 'transformative' aspect of action that is exercised to change the course of things (Giddens, 1993, p. 117). Power is also understood in terms of its relational aspect, referring to the degree of autonomy and dependency that actors exhibit in social interactions (Giddens, 1984). Material and non-material resources are the media for the exercise of allocative and authoritative power, respectively (1984, p.16). Thus far, transformative action may be examined as the enactment of different forms of power to change the course of things as agents monitor their contexts.

The ongoing contexts exhibit different structural properties across time and place. Variations of structural properties over time as a system goes through an adaptive cycle have, for instance, been conceptualised in socio-ecological studies. This view posits that agents employ different strategies to promote change as structures go through phases of disturbance, reorganization, and stabilization (Westley et al., 2013). This corresponds with the prominent understanding in socio-technical research that exogenous shocks are what punctuate a stable regime, thus representing a key opportunity context for agents to enact changes (Geels, 2001). While the temporal differentiation explains some of the variations in agents' situated responses, it does not adequately recognise the monitoring of internal contradictions that stem from spatial differentiation within a social system. Ongoing contradictions within institutional structures (Friedland and Alford, 1991; Powell and DiMaggio, 1991; Seo and Creed, 2002) also underpin practice theory, which emphasises the intersections and overlaps between multiple systems of activity (Giddens, 1984; Whittington, 1992).

For the most part, because there is 'little coordination between the multiple contexts within which [social] construction take place' the resulting institutional fabric is splintered with 'contradictions growing out of the unevenness and disconnectedness of social production' (Benson, 1977, p. 5). Institutional innovation—

broadly understood as a new way of producing rules and resources—would also tend to contradict established routines. As reported by others, spatially distributed unevenness or messiness appears to be more pronounced when zooming in on social construction processes at the city level than at national level (Hodson and Marvin, 2010; Wolfram, 2018). Developing contexts also generally exhibit greater degree of structural non-uniformity than developed contexts (Wieczorek, 2018)—manifested in several forms, as noted by development scholars in terms of service fragmentation (Bakker et al., 2008), urban informality (Watson, 2009a), legal and administrative overlaps (Brown, 2015; Gore, 2018), social exclusion (Ramos-Mejía et al., 2018), among others. At the same time, this condition is not exclusive to developing contexts, scholars studying urban transitions in developed cities have also demonstrated the heterogeneity of regimes (Fuenfschilling and Truffer, 2014; Rohracher and Späth, 2014).

Recognising both the temporal and spatial differentiation of structures means that *transformation requires actors to monitor differentiated social contexts and identify particular opportunities that may arise from both unfolding and incompatible processes.* As noted earlier, unfolding processes mean that institutional structures go through phases of stability and instability—generating temporal variations. Socio-ecological crises have been discussed elsewhere as destabilising forces on strong regime, thus, providing opportunities for transformation (Duit and Galaz, 2008; Folke et al., 2010). In complex systems, the occurrences of such crises are largely unpredictable. Also important to consider in accounting for contextual variations is the spatial interdependency among social production processes and the incompatibility among them. A whole host of ambiguously organised and overlapping processes (e.g. political processes, formal policymaking, technocratic planning, neoliberal market, informal place-making, globalisation, cultural systems, etc.)—constituting the existing institutional fabrics—represent less-than coherent and uniform structures where apparent and latent contradictions may be exploited as opportunities to enact changes.

Contradictions can, over time, become intensified and manifested in social tensions, which could have a comparable destabilising effect to exogenous crises. Ongoing contradictions between the spheres of formal planning regulations and everyday building practices have been highlighted by development scholars as reproducing urban informality and social exclusion in developing contexts (Brown, 2015; Friendly and Stiphany, 2018; Watson, 2009b). Brown (2015) shows the possibility in which tensions are exploited by informal urban actors to gain high-level of political supports for staking their claim for space in Dakar city, thereby transforming the ongoing urban processes. The sources of contradictions can be typically examined by focusing on the interfaces across multiple spheres of activity within a given social system. Recent developments highlight some of these key interfaces, such as, those located between multiple political and administrative levels shaping public policy (Ehnert et al., 2018b; Rohracher and Späth, 2014) or between formal and community-led activities (Celata and Coletti, 2018). This underscores the role of agency in navigating interactions across levels and activity spheres. Development scholars also point to the interface between neoliberal development activity and public infrastructure provision activity that resulted in unequal access and fragmented urban services (Bakker et al., 2008), revealing the underlying distribution of power that can constrain some forms of agency. At the same time, the interfaces where multiple structures overlap contain contextual richness (Whittington, 1992) that actors can draw from to create opportunities for change. Thus, it is argued that opportunities for transformative actions may be manifested in the interfaces between diverse (potentially incompatible) production processes.

The question of how contexts are differentiated at a given time in a given place is a subject of empirical investigation, which is argued here as requiring recursive observations of interrelated actors, events and processes that can reveal specific strategies enacted by different actors in response to particular opportunities. This perspective orients the critical deliberation over how transformative agency is manifested differently by considering: (i) diverse opportunities arising from unfolding and incompatible processes; and (ii) diverse forms of strategies enacted by different actors—with relative power and reflexivity—distributed across the social system. The conceptual lens is summarised in Figure 1 and will be used to guide the analysis of the case study presented next.

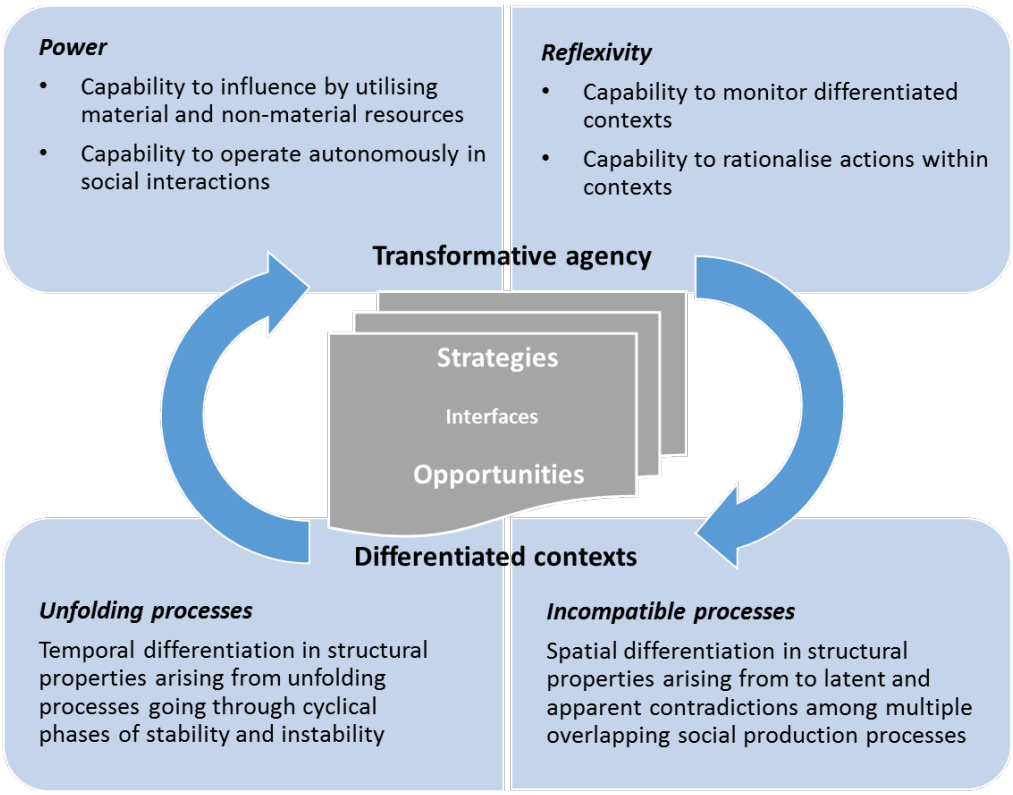

Figure 1 A conceptual lens for discerning transformative agency

3. Research methodology

3.1 Case selection

This research took a qualitative single-case study approach (Yin, 2009) to allow an in-depth analysis to ground and refine the proposed conceptualisation of transformative agency with rich empirical insights. It analysed the development of green city initiatives in Surabaya, Indonesia. Surabaya is the second biggest city in Indonesia with estimated 3 million inhabitants (City Government of Surabaya, 2015). The past few years have seen the city receiving global recognitions for tracking well with its successful implementations of city-wide urban greening policy and fostering strong grassroots participation. The city-wide green initiatives represent a significant accomplishment in setting the course of actions towards realising sustainable urban development, earning Surabaya the 2017 Global Green City Award by Global Forum on Human Settlements, the UNESCAP Award 2007 for Urban Environment Improvement, and the UN Habitat's best practice recognition for environmental management and civic participation. The leadership from the current city mayor has also been critically lauded (Bunnell et al., 2013; The World Bank, 2017).

Prior to the widespread implementation of the green initiatives, Surabaya was experiencing some of the worst social and ecological impacts of uncontrolled urbanisation, resulting in extensive environmental pollution and rapid unregulated conversion of land. Similar challenges stemming from poor capacity for planning, policy implementation and infrastructure development have often been identified as a threat for sustainable development in rapidly urbanising developing cities around the world (UNDESA Population Division, 2014). Hence, Surabaya's success is notable as one of the major urban centres located in the rapidly developing Asian regions. The case brings to the fore the agency of local state actors and their repertoires in facilitating urban transformations. In addition, the strong interface between public policymaking and community-based initiatives as well as notable involvements from business sectors and international actors also provide a rich ground to examine how various non-state actors intervene and change urban development trajectories (Castán Broto, 2017). In investigating the variety of processes and diverse forms of agency influencing Surabaya's transformations, this research generates practical insights for broader audiences engaging with design of strategies to drive sustainability development in other developing cities, while extending conceptual development of transformative agency.

3.2 Data collection, analysis and validation

This research entailed collection and analysis of primary and secondary data to draw insights about how different actors facilitated and hindered the initiatives in practice. Firstly, the study developed a detailed case history outlining key phases of the green initiatives spanning two political eras: (i) New Order Era (1984-2000) and (ii) Reform Era (2000-present). The starting point of 1984 was selected because the available data gives a clear indication of political commitment to urban greening being seeded in this period. The development of core policy instruments and urban initiatives was initially constructed through scoping study and content analysis of a range of secondary documents including policy materials, legislation, organisational and industry reports, media reports, published books and scientific literature. Past and present urban master plans and development policies produced between 1978 and 2014 were cross-examined to develop a comprehensive understanding of how zoning regulations and spatial configurations have been modified over time in ways that facilitated or, alternatively, hindered the green initiatives. Field visits to a number of urban parks and green *kampungs* (non-administrative term used to denote low- to middle-income neighbourhoods) were conducted to experience and observe on-ground practices. Through coding and thematic analysis the chronological was constructed and recursively refined in terms of different key events unfolding temporally. The findings were further subjected to validity testing through a member checking procedure (Creswell, 2007). The case history was triangulated with coded interview data. An additional member-checking process was conducted to ensure validity and accuracy of the case narrative (Creswell, 2007).

The subsequent data collection phase involved in-depth interviews (Rice and Ezzy, 1999) with open-ended questions designed to encourage participants to recollect and reflect on key events, instrumental strategies, their roles in the initiatives and their relationships to others, and specific interaction dynamics that shaped the initiatives and facilitated transformation. Whilst this study relied mainly on interview data (and does not employ an ethnographic methodology) to derive what actors do in practice, the in-depth interviews allowed participants to expand on their roles and social relations in detail. This open-ended inquiry helped reveal a diverse range of strategies and specific interactions enacted at various stages to shape the initiatives. Consistent patterns of practices that underpin the transformation could be distinguished as participants' accounts converged on some key actors and interaction patterns. The participants were selected through a purposeful sampling technique (Patton, 1990) that targeted informants who were directly involved in the green initiatives and represented a wide range of perspectives from local government to national government, academics, community, media and the private sector. A total of 21 interviews were conducted with: political leaders (present day and former mayors, n=2); public servants working within government departments or agencies overseeing green policy and programs across the city and national level (n=9); academics and experts from local universities (n=3); community leaders and environmental activists (n=4); a private urban planning consultant (n=1); and a local news editor and media event organiser (n=2). Interviews were recorded and transcribed verbatim. Follow up interviews were conducted with some interviewees for clarifications. Interviews with two of the environmental activists were followed by day-long visits to the various locations where they mobilised actions within the communities, providing contexts for understanding their roles.

The empirical data were analysed with a number of qualitative techniques, including coding, thematic aggregation, interpretation and generalisation (Bryman, 2012). Following the axial coding paradigm (Strauss and Corbin, 1998) data were grouped into themes corresponding with the conceptual framework, before analysing them in terms of key strategies and opportunities; and interpreting the relative capabilities of different actors. Similarities and differences across statements became more apparent as the analysis progressed and were continually taken into consideration in refining the aggregation of different forms of agency in relation to the conceptual lens. The chronology also facilitated a systematic analysis of temporally differentiated contexts and the strategies enacted in response. The data was also analysed for spatially interdependent spheres of activity that shape the initiatives. The distinct, but interdependent, spheres of activity range from formal policymaking, informal place-making, international relations, and private development. The analysis focuses on the interfaces where activities intersected and overlapped to reveal contradictions and contextual richness that were exploited by different actors to facilitate transformation. The capabilities to transform were interpreted by distinguishing actors' social roles and the types of resources they mobilised to shape social relations across the interfaces. This revealed the different forms of power actors exercised. The way actors rationalised their actions in relation to key events, processes, and outcomes was also examined to reveal their reflexive capabilities. While this research focuses on the possibilities of

transformation, it also highlights potential limitations that arise from unintended consequences of past or ongoing processes and social relations. The results presented below represent a thick description of how various actors, events, material and non-material resources were entangled through interactions that have shaped the initiatives across time and space. In this research the green initiatives, therefore, are understood as socio-physical systems of activity that shape and reconfigure social relations and urban outcomes. Finally, to ensure validity and limit subjectivity the findings were iteratively reviewed through peer debriefing and member checking (Creswell, 2007).

4. Opportunities and strategies shaping Surabaya's green transformations

This section presents the chronology of the green initiatives spanning back for more than three decades. The narrative focuses on key opportunities and strategies enacted by various state and non-state actors. A summary of the initiatives and development priorities across four mayoral periods—under two different political eras—is provided in Table 1. While detailed analysis is not provided for the periods before 1984, the historical cords that link urban initiatives to change agents, change agents to organisations, and organisations to institutions, extend beyond that practical cut-off point, especially where the *kampung* program is concerned. As such, where relevant, links with a legacy Kampung Improvement Program (KIP) (Atkinson, 2001; Dianingrum et al., 2017; Silas, 1992)—initiated back in 1969 as a result of a strong collaboration between the city government and trusted academics in a local university, Institut Teknologi Sepuluh Nopember (ITS)—will be duly highlighted. The summary presented in the table is distinguished into two eras corresponding with the macro-political contexts of the time i.e. the New Order Era associated with the nation's authoritarian regime and the Reform Era associated with democratisation of the political systems. The authoritarian context bears constraints on the agency of local state actors with nationally-imposed urban policy and development priorities (Kusno, 2004), as well as tight control on media and use of space by the central government (Padawangi, 2013). In contrast, the democratised context has seen decentralisation distributing greater autonomy to local governments as well as enabling vibrant civic activism.

Table 1 Summary of urban development initiatives between 1984-present

	City's mayor	Key actions and events	Green initiatives and urban development priorities
NEW ORDER ERA	*Poernomo Kasidi (1984-1994)*	• 1985 Master plan revision: more inner city green open spaces; northwestern green open spaces rezoned for industrial use. • 1986 Adipura award launched by national government to promote environmental stewardships across Indonesia. • Regional Law 199/1987 passed to formalise yellow troopers for public space clean-up. • Regional Law 15/1987 passed to confine street vendors with formal permit requirements. • 1992 National environmental campaign promoted by governments. • 1992 Master plan revision: large proportion of green open spaces rezoned for housing and commercial use.	Government flagships initiatives: - Routine public space clean-up - Enforcement of administrative sanction on littering - Parks upgrading & 1,000 tree program Non-state partnerships: - Urban planning experts from local university engaged to formulate urban greening strategies Grassroots initiatives: - Green and clean *kampung* program Legacy *kampung* improvement program: - Final 5-year of KIP (started in 1969) completed in 1989 <u>Recognition:</u> 1986 Aga Khan Award for KIP 1988-1993 Consecutive Adipura wins 1992 World Habitat Award for KIP 1992 Memorial Prize for J. Silas for contribution to KIP
	Sunarto Sumoprawiro 1994-2002	• 1998 Adipura award suspended by national government due to unstable political condition and economic downturn. • 2001 The mayor issued a decree to improve public spaces through parks beautification.	Government's development priority: - Neoliberal land development practices favoured in deference to national government's policy - Urban beautification decree issued in a late attempt to placate the public after authoritarian regime lost its power Legacy *kampung* program: - Revival of KIP legacy with the launching of Comprehensive-KIP program in 1998, which lasted to 2008

Table 1 Continued

	City's mayor	Key actions and events	Green initiatives and urban development priorities
REFORM ERA	*Bambang D. H. (2002-2010)*	• 2002 Master plan update for year 2007-2017, priority for city-wide parks restoration agenda. • Regional Law 07/2002 passed providing operational frameworks on how green open spaces must be implemented (detailing administrative sanctions, obligations and rights of citizens, and implementing obligations and sanctioning authority by government). • Regional Law 17/2003 passed to regulate illegal use of space by street vendors. Amendment of Law 22/1999 into Law 32/2004 granting greater autonomy for local governments. • 2004 Adipura award resumed by national government • 2005 Master plan evaluation: increased numbers of green zones across the city centre and a slight increase in the eastern shore. • 2007 Master plan evaluation: reduced green space and mangrove reserve; western part rezoned into residential and commercial use. • Law 26/2007 on Spatial Planning passed providing a legal anchoring for urban greening policy across Indonesia.	Government flagships initiatives: - Solid waste management program - City-wide parks restoration program - Conversion of private and semi-private gas stations into public parks - Launch of major public parks in inner city - Fence-removal from public parks to allow more seamless public interactions Non-state partnerships: - Corporate Social Responsibility (CSR) funds attracted for facilitating parks upgrading and grassroots initiatives - Formalising partnerships with local universities to enhance policymaking capability - Media co-facilitated public campaigns and grassroots program - Grassroots leaders and NGO representatives engaged to contribute to green agenda Grassroots initiatives: - Surabaya Green and Clean launched in 2005 - Mass public campaigns launched by local medias and NGOs for city clean-up in the aftermath of Keputih waste crisis <u>Recognition:</u> 2007 UNESCAP Urban Improvement Award 2008 UN Habitat Best Practice database 2009-2017 Consecutive Adipura wins 2009 National award for gas stations conversion into public parks
	Tri Rismaharini (2010-present)	• Law 02/2012 on Land Acquisition for Public Uses passed, enabling government to enact a 'consignment' policy to compensate private owners for lands that are rezoned for delivering public infrastructure. • 2014 Master plan revision: proportion of green open space considerably increased to a level similar to '85 master plan revision; increased proportion of green open spaces in the city centre and western side of the city; restored mangrove reserve zone. • Regional Law 12/2014 on Surabaya Spatial Plan passed, providing a legal anchor for declaring proxy achievement of 20 per cent public green open space target required in Law 26/2007. • Regional Law 15/2004 passed to facilitate urban forests implementation. • Mayoral decrees passed between 2012-2015 to formalise urban forests implementation in four locations.	Government flagships initiatives: - Amendment of master plan to allocate more green open spaces across the city - Systematic authentication of remaining government-owned lands or *Bekas Tanah Kas Desa* (BTKD) - Existing parks enhanced with recreational facilities and government-owned lands reallocated for more parks building - Urban forests program initiated Non-state partnerships: - Maintenance of existing partnerships with CSR partners, local universities, media, grassroots leaders and NGO representatives Grassroots initiatives: - Surabaya Green and Clean progressively refined to promote more innovations <u>Recognition:</u> 2012 ASEAN sustainable city award 2012 Asia Pacific International Award for Best Public Participation from Citynet 2013 Asian Townscape Award for Bungkul Park 2014 World Mayor Prize (Jakarta Globe, 2015) 2017 Global Green City Award

4.1 Early-wave of green initiatives colliding with market-oriented developments (1984-2000)

In 1984, Kasidi was appointed directly by the central government as the Mayor of Surabaya. He had been identified consistently by research informants as one of the key figures who advanced a city-wide green agenda. During his two terms, Surabaya became synonymous with *Adipura* city—a national award conferred annually by the national government to appraise cities (and mayors') performances across Indonesia based on environmental stewardship and sustainability principles—retaining the prestigious title for multiple consecutive years (1988-1993). The fact that Surabaya did not win the award in its first two seasons troubled

Kasidi (as it reflected poorly on his performance as a top bureaucrat) and became an important trigger for initiating a city-wide green policy. Kasidi directed his senior staff to engage with Prof. Silas, a prominent ITS's urban planner who led the development of Surabaya's first master plan and drove KIP, for policy advice on how to modify existing urban development strategies (with an explicit pragmatic objective of elevating the chance of being appraised positively by the *Adipura* committees) (Dick, 2002). As a result of this collaboration, an early version of competitive events held regularly among *kampungs* was developed to promote grassroots participation and leverage green innovations towards enhancing the quality of shared spaces and public facilities within *kampungs*.

In addition, the Mayor formally commissioned 'yellow troopers'—a euphemism for street sweepers—to spruce up public spaces. Puspitasari and Trilaksana (2016) reported a small increase in total green open space areas from approximately 46.7 ha in 1990 to 48.7 ha in 1991—attributable to Kasidi's green policy on parks upgrading. Comparing the original master plan of 1978 with the revised version of 1985 shows that more green open spaces were allocated in the inner city area and much of the original zoning of the green open spaces was preserved, except for a proportion in the north western side which had been rezoned as industrial areas. The strategies proved to be successful in earning Surabaya its consecutive *Adipura* wins. Around this time, Surabaya's KIP was also recognised internationally earning the Aga Khan award in 1986 and, later in 1992, the World Habitat Award.
Nonetheless, the surging neoliberal development trend[1] appeared to overwhelm the green initiatives. Towards the end of Kasidi's term another round of master plan revisions were undertaken, revealing a jarring contrast with the original zoning of green spaces. Green spaces allocated in the city centre were completely wiped off from the revised master plan. Furthermore, a green belt on the western part of the city had been substantially reduced and reallocated for housing development. Another dramatic modification was seen on the eastern shoreline of the city—what was originally a mangrove reserve had been almost entirely rezoned for housing and commercial purposes. Considering the intersecting political and governance contexts of the time—city government held relatively limited autonomy over macro-development priorities—it is likely that such dramatic modifications of the master plan were influenced by the national government's interests to maximise private investment opportunities in its second most important city. Silas's statement in Colombijn (2016, p. 26 emphasis added) was telling—here he recounted that '…one time Purnomo received an unofficial note…from the *Presidential* palace to grant a part of the plant nursery garden [of Surabaya] to be developed as a shop house complex, [and] he reluctantly agreed although I did oppose strongly. That's the only disagreement we had. Only…late in his tenure did Purnomo [have] a closer relation with Ciputra'—the latter is one of the largest private conglomerates in development businesses in Indonesia.

The uncontrolled fashion by which private developments ensued in the 1990s was associated with Mayor Sunarto's legacy (appointed from 1994-2002). He was characterised as deferential to the national government's regime and perceived by many research participants as a pro-investor figure. There was clear indication of a permissive attitude towards rampant land-swapping practices, whereby building permits on public assets were issued to private developers. In the lead up to the uprooting of the New Order Regime in 1998, a number of key contexts critically intersected with the market-driven development trend. Perhaps the most critical was the onset of the Asian financial crisis in 1997 which hit the economy hard, tripling the number of the nation's urban poor and halted the construction sector (Peters, 2013). Eventually, the authoritarian regime was toppled in May 1998, leaving behind massive debts and crippled public institutions.

Sunarto's public popularity declined sharply, but managed to get himself reappointed for a second term (Dick, 2002). However, by January 2002, the local council motioned for his early termination using issues of deteriorating urban environments—amongst other politically-charged indictments—against him. A precursor to this was a major solid waste crisis in 2000 which paralysed the city. One of the main disposal sites, Keputih, had reached the end of its lifespan, having been established in 1970. Compounded by insufficient planning and monitoring, the site was heavily contaminated, posing serious safety and health hazards for workers and its surrounding inhabitants (Silas et al., 2014). This triggered a community-led blockade that prevented all entries into the facility. Officials, dismayed by the alarming rate at which solid waste was piling up all across the city, went into negotiation with community leaders and NGO representatives to find new solutions.

[1] The dawn of the neoliberal urban development paradigm dovetailed with a dramatic expansion of urban regions in Southeast Asia from mid-1980s to 1997 (Douglass, 2010).

Subsequent government's inaction eventuated in a second blockade and a permanent shut down of Keputih in late 2001. With a new facility still under construction, Surabaya's urban environmental quality was severely deteriorated. This provides a crucial context for understanding the subsequent urban renewal strategies pursued by Sunarto's succeeding mayor, Bambang D. H.

4.2 Second-wave of green initiatives rallying with wave of democratization (2000-present)

The waste crisis and worsening encroachment by private developments were generally acknowledged as a turning point for the city government in reassessing its environmental and urban planning policy. One of Bambang's early strategies, dubbed the 'urban renewal' agenda by Peters (2013)[2], aimed to spruce up public spaces. Evaluation of existing environmental policy resulted in the enactment of new regulatory instruments on the management of green open spaces and the revision of the master plan that specifically prescribed the priority of revitalising and restoring parks around the city (Silas et al., 2014). The Cleaning Department (*Dinas Kebersihan*) and Parks Department (*Dinas Pertamanan*)—initially separated administratively—were integrated under Regional Law No. 14 Year 2005, known here onwards as *Dinas Kebersihan dan Pertamanan* (DKP). This integration streamlined public open spaces management, by combining solid waste management, parks construction and maintenance under one department. Tri Rismaharini—the present-day mayor—was the head of DKP.

Between 2002 and 2009 the ambitious program to restore thirteen non-compliant gas stations (operating under build permits issued by past city administration) as public parks was completed. Despite the relatively small physical sizes of these gas stations, the legal action taken by the local government against private business owners signified a great deal of willingness to assert authority to overturn illicit land practices rampantly acquiesced to in the previous administration. There was an inevitable pushback from private owners, who filed lawsuits against the government, but the court sided with the government. This program was recognised nationally as a record-breaking urban park revitalisation initiative by the Indonesian Records Museum in 2009. Development of other major public parks was steadily pursued; by 2014 Surabaya had developed at least eleven such parks. Between 2000 and 2015, 26 new compost houses were established to support the growing need for fertilisers to maintain the health of these parks (DKP, 2015, p. 56; Silas et al., 2014b). The draft master plan, reviewed in 2005, did to some degree reflect this reform agenda, with increased rezoning of green areas in the city centre and a slight increase on the eastern shore. It is interesting to note, however, that the final revision, published in 2007, appeared to have surprisingly rescinded those modifications. The entire green zones in the western part of the city, for instance, were rezoned into residential and commercial use. Considering that the western corridor has been generally preferred for real estate development (Colombijn, 2016), there is reason to conclude that this particular modification is reflective of private sector interests[3].

In parallel, an international cooperation with Surabaya's sister city, Kitakyushu, Japan, was launched in 2002 to deal with organic waste issues by promoting technological intervention in the form of household composting units. The promotion was facilitated by local NGOs and the city governments. This initiative was combined with government-established community centres for recycling and composting, which together modestly reduced municipal solid waste loads (Bunnell et al., 2013). Broader community participation was pursued through the launch of the Surabaya Green and Clean (SGC) program in 2005 in partnership with local media outlets, Jawa Pos and Radar Surabaya. The SGC was packaged as a city-wide competition to stimulate grassroots environmental stewardship. In the first three years, the assessment focused on solid waste management, incorporating the household technological intervention and reflecting the waste crisis context described earlier. Routine monitoring and evaluation of the program led to modifications, particularly to introduce variations around the assessment indicators to stimulate experimentations (e.g. decentralised on-site wastewater systems, water reuse and recycling, urban farming) beyond the original focus on waste management and aesthetic improvement. Levels of participation in the SGC program peaked in 2009 at 2,774 *Rukun Tetangga* (RT)—the smallest formal governance and neighbourhood unit—which roughly represent 30 percent of all neighbourhoods in Surabaya. To stimulate participation in its early days, the city government

[2] Peters (2013, p. 178) describes this as 'an all-out offensive against urban disorder that was to become a hallmark of the term of Mayor Bambang'.

[3] This dovetails with Peters' (2017, p. 178) report that a 'steady growth in mall construction' marked Bambang's term, although he cautions against singularly attributing this development to the Mayor, considering that the trend coincided with 'a fourfold increase in supermarkets and even bigger hypermarkets' across Indonesia.

sought endorsement from heads of RT by hosting formal discursive forums whereby community representatives could air their concerns and aspirations to city officials. In addition, a fresh alignment with NGO representatives[4] was established, involving them in the green coalition to generate broader buy-in. This activity also tapped into local women organisations that existed in most *kampungs* to drive participation. With considerable assistance from various NGOs and local community leaders, the local government enacted a capacity building program for selected community members to receive routine training as environmental facilitators. These facilitators performed a critical dedicated role of driving tangible grassroots action and sustaining participation within their respective communities.

The initiatives were also endorsed by a few private investors through their Corporate Social Responsibility (CSR) scheme. In its early days, the city government approached semi-private and private corporations to co-finance some park revitalisation projects (Silas, 1992). In addition to funding the parks, CSR played an important role in facilitating the green *kampung* initiatives. One of the key partnerships was between DKP and Unilever Indonesia (Unilever, 2017). With intensive training from the Unilever team, some *kampungs* have at least one trained environmental facilitator in each household. Such partnerships can be characterised as mutually beneficial, in that private investors are presented with opportunities to enhance their brand image, and in some cases, even to market-test their commercial products. Given the success of this early phase of private partnerships, it has become a routine part of the green policy. Recently, as park construction slowed down, the funding has been mostly utilised to cover rising maintenance costs or construction of auxiliary facilities in existing parks.

When Rismaharini was elected to succeed Bambang in 2010, the momentum for the green initiatives was carried forward. Her election (and subsequent re-election in 2015) signified electoral payoff for pursuing the green agendas. In her first term she continued with construction of more public parks. By 2015 DKP reported 117 hectares of parks under the department's care (DKP, 2015, p. 56), which represents nearly 2.5 fold increase in park areas compared to 1991. Private sector funding continued to play an important role in supporting DKP's works. Anticipating the plateau of parks restoration activities, new policies and regulations have been formulated to reinstate urban forests for the coming years. This was also a response to emerging criticisms from some NGOs and academics that revitalisation of existing parks has mainly emphasised aesthetic values, as opposed to more ecologically resilient design that can enhance urban biodiversity or stormwater quality. To anchor the development of urban forests, Regional Law No. 15 Year 2014 was passed, specifically endowing the mayor with full authority to allocate areas for urban forests, on either government-owned or privately-owned land. Reported in 2016 by the Agricultural Department (*Dinas Pertanian*) there were seven urban forests under its management with a total area of 31.24 hectares—still substantially less than the total area of urban parks managed by DKP.

Towards the end of Risma's first term, it was widely reported that Surabaya had surpassed the 20 percent public green open space target stipulated under Law 26/2007 (Silas et al., 2014b). Comparing the master plan issued under Regional Law 12/2014 with the previous versions produced after 1985 indeed reveals a larger share of green open spaces. The mangrove reserve on the east coast was replotted; there is an increase in the proportion of green spaces located in the city centre and the western side of the city. New green conservation zones and coastal tourism zones are introduced along the northern and north eastern coastal areas. The master plan modifications is critically scrutinised because the regulatory instrument is recognised by national government as a proxy for gauging city government's commitment towards implementing the 20 percent public green open space target. One of the key tasks for the master plan team is to identify and designate new locations for green open spaces, which, to some degree, involves redefining what constitutes green open spaces[5]. The task of authenticating and updating records of government-owned lands began around 2009. A survey team was mobilised to clarify records enabling the government to legitimately rezone those assets into public open spaces (or other facilities). The reported (proxy) achievement of the public green open space

[4] In the early days of the Reform Era, strained relationships between governments and NGOs or civil societies were common. While Surabaya, through Bambang's leadership, managed to repair those relationships more successfully, such animosity is still commonly observed in national politics and faced by other city governments.

[5] A number of the interviews revealed continuing deliberation and disagreement over the definition and classification of public green open spaces, thus complicating accounting of the total areas. The team responsible for detailing the latest iteration of the master plan remarked that there might be different interpretations over how the 20 percent claim is being presented: (i) real term achievement through completed physical implementation; (ii) proxy achievement through priority rezoning in the current master plan.

target is arguably one of the most significant marks of Rismaharini's administration.

4.3 Uneven outcomes: limited contributions from private developments and contested spaces

Besides public spaces and *kampungs*, Surabaya's green initiatives have been shaped by limited contributions from (middle to high income) private developments and contested spaces across the city. The 10 percent contribution of green spaces from private developments—stipulated by Law 26/2007—has yet to be met adequately. Weak monitoring and lax control over private sector obligations persist, despite laudable progress on the public green open space target. To date, there is limited indication of path-breaking actions being taken by state actors to enforce private contributions from middle to high-income developments. This stands in contrast to the high level of contributions (expected or) demonstrated by low-income developments. The relative power of the private sectors in shaping land use arrangements is even more pronounced when contested spaces are examined. One such space is the nature reserves, particularly the largest mangrove reserve on the eastern shore of Surabaya. Comparing the master plans over time, the size and function of the mangrove reserve had been modified on various occasions, clearly indicating the contested nature of the space[6]. In the early 1990's with surging neoliberal agenda endorsed by the national government, the master plan revision contained strikingly sparse nature reserve zones. The subsequent revision in 2005 (within a few years of the second wave of green initiatives) replotted back part of the original eastern reserve, in reference to the first master plan. This has been maintained in the latest master plan. The modifications of the master plan as a key regulatory instrument have mainly been driven by state actors (both on city and national level), policy advocates, and private developers to shape allocation of land use across the city.

Consequences of the 90's neoliberal practice are still felt today where local environmental watchdog indicated continued encroachments by private developers in the mangrove reserve, and pressure on traditional fish farmers to sell off land rights due to diminishing productivity. In a small area of the eastern mangrove reserve, a grassroots movement has emerged in 2007 to protect the fish farming communities and to pursue environmental protection agenda. The movement was initiated by a traditional leader in collaboration with NGO advocates. It focuses on empowering the communities with a range of productive activities (e.g. eco-tourism, production of mangrove seedlings, experimenting with new fish breeds) while generating public interests and awareness of the socio-ecological values of the reserve. The movement was triggered by the perceived lack of bureaucratic intervention on community marginalisation and illegal development practices found in the reserve zone. The movement intended to take things into their own hands by constructing an alternative identity as an independent environmental patron in the area. Over the years, the movement had attracted intermittent financial and non-financial supports from multinational companies, international researchers, and individuals. Remarkably, although the supports were far from regularised, they enabled the movement to pique wide-ranging interests and participation, and gradually build a level of local legitimacy.

5. Transformative agency exploiting differentiated contexts

This section presents the analysis of the different forms of agency inferred from the detailed opportunities and strategies presented before. Actors' transformative capabilities in catalysing the green initiatives and leveraging informal urban place-making are summarised in Table 1. Using the conceptual lens developed in section 3, the types of resources mobilised by different actors to shape social relations and how they monitor ongoing political and cultural contexts to rationalise the initiatives are discussed in detail below. In addition, the constraining conditions shaping the limited contributions from private developments and the weak interface with some grassroots activities in the protected mangrove areas are also discussed.

[6] Contested nature reserve also includes urban forests, which in the latest regional spatial plan are expected to account for a vast proportion of the 20 percent public green open space target. Conflicts with indigenous groups over the ownership of lands designated for urban forests have been reported by the Agricultural Department. In such cases, the Department act as intermediary—managing tensions and negotiating voluntary cooperation from communities, mobilising experienced facilitators or local figures to build relationships and monitor sentiments, enrolling locals into the management of the forest areas, or even bringing in law enforcement officials to implement legal sanctions. Although such strategies can alleviate some conflicts and increase public acceptance, in reality, a great deal of political leadership is needed from the Mayor to facilitate land transfer and formalise land use changes pertaining to the urban forest target.

Table 2 Insights into actors' capabilities to facilitate the green transformations

Transformative agency	Differentiated contexts
Catalysing green initiatives by capitalising on crises and enacting municipal and civic activism *Key actors*: city-level bureaucrats, NGO representatives, community leaders, private sectors, international organisations *Power and reflexivity:* - City-level bureaucrats gained greater autonomy as political context shifted; - NGO representatives and community leaders exploited ecological crises to push for actions; - City-level bureaucrats utilised political authority to implement short-term measures in site of least resistance after crises for quick wins; - City-level bureaucrats expanded coalitions by enrolling private sectors to boost financial capacity to implement public park revitalisation; - City-level bureaucrats expanded coalitions by enrolling non-state actors as street-level frontrunners to facilitate long-term grassroots participation; - City-level bureaucrats utilised symbolic and discursive practices to strengthen interface between bureaucratic authority and citizens' participation for shaping urban policy and processes; - City-level bureaucrats created global-local interface to boost reputation, credibility and knowledge production.	- Unfolding ecological crises - Unfolding political instability - Contradictions between formal planning and actual land use activities
Leveraging informal place-making by carving inclusive identity and rights to space *Key actors*: community leaders, NGO representatives, trusted policy advisors, city-level bureaucrats, dedicated and trained environmental facilitators, media, private sectors, international organisations *Power and reflexivity:* - Community leaders and environmental facilitators utilised social and cultural capital to sustain participation; - Trusted policy advisors used discursive and advocacy techniques to rationalise community involvement and carved grassroots identity; - City-level bureaucrat's used political authority to legitimise informal place-making and right to space; - City-level bureaucrats expanded coalitions by enrolling non-state actors as street-level frontrunners to facilitate long-term grassroots participation; - Media organisers constructed hype-cycles to pace and maintain public enthusiasm and participation; - City-level bureaucrats, policy advisors and NGO representatives harnessed local knowledge and resources accumulated in past programs to facilitate innovations; - City-level bureaucrats created global-local interface to boost reputation, credibility and knowledge production.	- Social tensions between neoliberal development and informal development in low-income neighbourhoods

5.1 Catalysing green initiatives by capitalising on crises and enacting municipal and civic activism

As conceptualised in section 3, opportunities can arise from temporal instability that weakens structural arrangements. Figure 2—derived from the detailed accounts of opportunities and strategies presented in section 4—shows two lead periods with relatively high momentum for advancing green policy spanning from 1984 to 1994 and 2001 to present. These periods were marked with strong political support and accelerated implementation of public space revitalisation programs by state actors. The trigger for actions in 1984 was the poor environmental quality of the city and the policy push from the national government. The city government, led by Kasidi, exercised formal authority and leveraged informal network previously established through KIP to champion the first wave of the green initiatives, while aligning with the national policy. The autonomy of the city government remained fairly limited given that the mayoral position was directly appointed by the national government. When a new mayor was appointed in 1994 and the national policy shifted towards favouring neoliberal agenda, the first wave of green initiatives entered a lag period. When the Asian financial crisis toppled the authoritarian regime in 1998, the political instability provided an opening for actions for civil society and greater autonomy for local governments. Focusing on temporal instability provides high-level explanations on how the agency of local urban actors was constrained and enabled by their interactions with the national political systems. However, this focus does not provide a fine-grained understanding on the way in which the urban actors subsequently capitalise on the instability, or the environmental degradation issues.

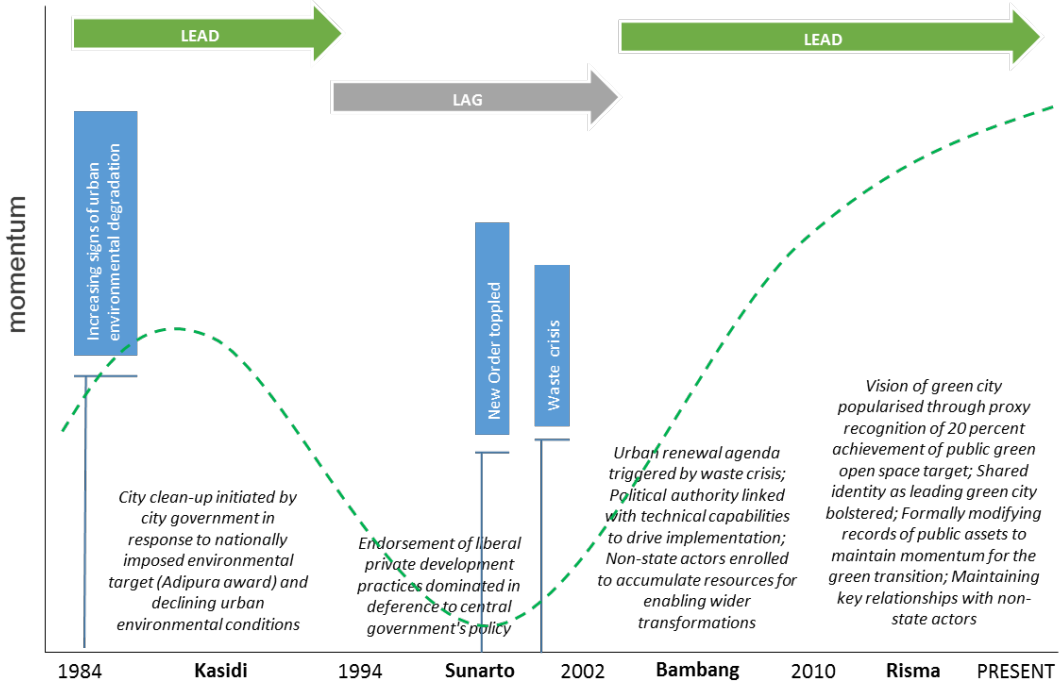

Figure 2 Political momentum for Surabaya's green initiatives (dashed line indicates shifting momentum)

The waste crisis in 2001, which occurred within a few years of the Asian crisis, is better examined in terms of social tensions strategically mounted. Local inhabitants and urban activists led multiple protests and blockades in one of the two waste disposal sites demanding the city government to improve poor environmental conditions in the areas. The strategy expedited the removal of the last nationally-appointed mayor from office by the local council, and subsequently spurred the newly formed local government to launch the second wave of green initiatives. This demonstrates how the democratic political context was monitored by local urban actors to claim their stake on the city—once constrained by nationally imposed development agenda. The importance of grassroots activism in post-authoritarian Indonesia in shaping urban processes has been noted by others (Goh and Bunnell, 2013; Padawangi, 2014). This new form of power is reflexively understood by Bambang who fostered strong ties with local NGO representatives and enrolled them as environmental frontrunners. Bambang's urban renewal agenda was launched by mobilising public campaigns led by those environmental frontrunners. Routine direct consultations with heads of subdistricts across the city also created an organisational interface between the governments and community representatives. The improved interface across local governments, NGOs, and community representatives activated community-based environmental facilitators who consistently promoted and sustain public participation across many *kampungs*. This interface was also expanded with global partnerships that enriched knowledge production and provided technological interventions to improve solid waste management.

Simultaneously, under Bambang's directive, public disorder was quite heavy-handedly discouraged and sanctioned (Peters, 2013) by clearing up (illegal) street vendors in sites of least resistance—highly visible public spaces with clear formal boundaries. A similar strategy was also enacted against some private business owners who encroached on public property. In face of mounting tensions, it appears that state actors can mobilise authoritative power to construct a sense of urgency to set a new course of actions or to restore formal order[7]. The use of power was rationalised as a resolution to address contradictions between formal planning instruments and actual land use activities. In addition, enabling bureaucratic and administrative works were enacted to further embed the green agenda, exemplified by updated policy and legal frameworks, and full political endorsement to accelerate technical implementation of the park revitalisation agenda led by Tri Rismaharini who was then the head of DKP. During Bambang's term, the agency of the loca; governments can be characterised by the use of formal and informal power to create a sense of urgency for the green

[7] Looking further back into Surabaya's past, a parallel strategy for public order restoration was employed by the first mayor of Surabaya, Soekotjo, in the aftermath of a major political upheaval following widespread communist purge in 1965 (Colombijn, 2016)

initiatives and to build the networks that underpin the interface between state and grassroots actors. This is largely comparable to the strategy enacted by Kasidi. What sets them apart is the stronger embedding mechanisms enacted under Rismaharini's leadership.

One of the notable ways in which Rismaharini embedded the initiatives was through her characteristic leadership in spearheading technical implementation and nurturing public participation on the street-level. This style of leadership, referred to as 'street-level bureaucrat', has also been found as an important factor in shaping urban transformation in African cities (Gore, 2018 citing Lipsky, 1980). Similar to Gore's conclusions, these street-level actors play an important role as 'the interface between bureaucracy and the citizenry and have a high level of discretion in the application and implementation of government policy' that 'responds to local needs' (p. 170). In addition to this, they are highly capable of building social capital within communities by fostering trust-based relationships. Rismaharini's mantra of 'lead city reforms by example' (Bunnell et al., 2013) was retold by almost every one of the interviewees, and made her a symbol of the city's identity. Her legitimacy as such is rooted deep in the public trust of her dedication towards the city, which was rewarded with electoral solidarity that secured her a second term. In addition, she leveraged the global-local interface to cement the legitimacy of the transformation processes by promoting the green initiatives around the world. This form of agency by local city governments in the intersection between local, national, and global political contexts has been suggested as a type of municipal activism by other authors (Goh and Bunnell, 2013). Thus, street-level bureaucracy and municipal activism emerged as the crucial form of agency that maintain the momentum for the green transformation.

5.2 Leveraging informal place-making by carving inclusive identity and rights to space

The emphasis on social tensions also brings light to the role of informal place-making in embedding urban transformations. Informal place-making across *kampungs* has a particularly long legacy in Surabaya given nearly four decades of uninterrupted KIP and its spin-offs between 1969 and 2008 (Dianingrum et al., 2017). The KIP was advocated by an instrumental urban planner and academic as a strategic response to rapid marginalisation of low-income neighbourhoods. The model was recognised as one of the most successful in-situ upgrading of low-income neighbourhoods internationally. The key strategy employed by the KIP advocates and the city bureaucrats was to foster open communication with community members. This was coupled with carving out collective identity for grassroots communities enabling them to claim right over part of the city through urban place-making. The identity is situated within a broader cultural context of Surabaya's inhabitants who take pride in '*budaya arek*'—consistently identified by interviewees as an important symbolic and discursive way of life expressed in high level of solidarity and consensus-making within the communities. Older settlements in the eastern and southern parts of the city participating in the contemporary green *kampung* initiatives, for instance, were far more likely to showcase innovative approaches due to enhanced social capital, knowledge and resources from participation in the past KIP. This finding supports the proposition that situating new practices within ongoing cultural context, while shaping it, can be critical for facilitating urban transformations.

Today, *kampungs* continued to be reproduced and transformed by grassroots actors through vernacular approaches (Silas et al., 2012) as a 'protected space' for alternative ways of living and experimenting with more sustainable green infrastructure systems, e.g. decentralised wastewater treatments, solid waste banks, urban greening and farming. Support and facilitation from local governments, NGO representatives, academic communities, and the media anchored the *kampungs* with legitimate identity and citizenry to keep at bay economic pressure from private capital owners. Bolstered social capital, in turn, increased willingness to experiment and innovate. In many advanced green *kampungs*, transformation is generally driven by local leadership from environmental champions[8]. The literature confirms that transformative agency is partially constituted by empowered communities (Wolfram, 2016). Green innovation, in this context, is not entirely about an emergent set of novel technical ideas and arrangements adopted when prevailing routines were breached by exogenous forces, but has been harnessed by local policy advocates, urban activists and

[8] A wastewater expert at ITS—regularly appointed in the SGC judging panel—illustrated that in one of the champion *kampungs,* a technically robust communal wastewater system was designed independently by a local champion (with no formal degree or training). Another NGO facilitator recounted that Surabaya's local champions have become sensations in their own right—in recent years a few other city governments keen on emulating Surabaya's success have invited them over to their cities to provide training and impart their experiences to local communities.

community members as form of 'participatory forms of planning' (Friendly and Stiphany, 2018, p. 3) that mediated endogenous tensions between neoliberal and informal development activities. As reported by Friendly and Stiphany in Brazil, the practice of participatory planning is underscored by three principles: '(i) tenure security for low-income residents; (ii) intervention in real estate speculation; (iii) democratisation of policy decision-making processes'. By looking at sources of tensions at the city level, the enabling conditions for agency by *kampung* inhabitants as rightful citizens resisting marginalisation comes into focus. It is also important to note the role of local experts who advocated the approach to the city governments, highlighting the need to preserve *kampungs* as the integral part of the city's modern identity, and reframing their participation into the future where sustainable living is the norm.

Another aspect of the strategies worth noting is the deliberate pacing of the green initiatives through annual competition which can be characterised as a temporal strategy. Such temporal strategy in organisational studies had reportedly enable creative actors to initiate change in their entrepreneurial ventures (Gersick, 1994). Here, the evidence indicates that the constructed cycle of hype pertaining to the annual competition—starting with intensive workshops, interim roadshows, evaluation week, and ending with an award gala—maintains some level of public enthusiasm and stimulates learning. Media and private financial support also promoted wider participation. However, fluctuations in participation levels were noted over the years with variable outcomes even among spatially-connected (but not necessarily socially-connected) *kampungs*. This underscores the importance of linking such diffusion processes with more specific socio-cultural mechanisms.

5.3 Unresolved contradictions

Unresolved contradictions in the roll out of the green initiatives are noted in the lack of contributions from high-income private developments. Socio-spatial segregation has been emphasised by other scholars as a potential (unintended) consequence of unjust greening strategies (Haase et al., 2017). The contribution gap may become a stumbling block for Surabaya's further green transformation, especially when reflecting on the lag episode of the late 1990s, which was, to a great extent, attributable to the practice of domination by the private sector in shaping land use priority. Economic powers enabled private developers to evade contributions—such private industry 'lock-ins' reportedly also hindered urban transition in a study of a clean energy target in Stockholm (Mahzouni, 2015). Clearer political signals from local state actors exercising their sanctioning power could interrupt the evasive practice.

Finally, social tensions were apparent in the contested mangrove reserve. The nature reserve, forming a significant proportion of the public green space target, has been historically contested by various local urban actors. Private developers' strategy to 'jockey for position and seek to maintain or expand their advantages' (Fligstein, 2013) by influencing formal planning process and grabbing traditional land rights, could be traced in the changes of the master plans and was reported by a local watchdog. Resistance by grassroots actors has emerged to stake claim over parts of the mangrove reserve. This grassroots activism differs somewhat to those found in green *kampungs*, in that they appear to come up against lack of local government's support. The local leader working with the NGO constructed shared identity as environmental patron to mobilise collective actions that resist the pressure from neoliberal development as well as improvise local solutions when local governments were perceived as inert. This is despite the local government establishing an eco-park in the area recently as part of the green initiative. The grassroots actors remained unconvinced that that the eco-park would facilitate protection of the mangrove areas. This underlines the contingent nature of urban transformation processes (Friendly and Stiphany, 2018), whereby the implementation of the green initiatives gives rise to unintended consequences.

6. Conclusions

This paper demonstrates that a finer-grained analysis of transformative agency can be made by questioning the argument made in transitions literature that the mechanisms for systemic regime transition are primarily associated with promotion of niche-innovations and, to limited extent, steering of selection pressure on the landscape level (Smith et al., 2005). This argument rests on a vague distinction between the niche-regime-landscape level (Fuenfschilling and Truffer, 2014). The implication is that the existing perspective generally focuses on studying mechanisms that direct resources to shaping institutional environments that can 'protect niche-innovations' without clarifying *where* innovations are likely to emerge or *how* they may be embedded

across various societal levels or sectors. It also tends to broadly 'promote participation' without adequately identifying *who* should be involved in the change processes. Instead, the agency- and practice-based lens proposed in this research focuses on studying a range of mechanisms that can identify opportunities and resolve tensions arising within overlapping social production processes. Thus, the analysis accounts for how transformative agents—situated within intersecting rule and resource systems—can exert their powers differently across multiple spheres of activity; and conceive a range of temporal and spatial strategies that capitalise on both exogenous pressures and endogenous tensions. During abrupt shifts (e.g. political unrests, ecological crisis) that disrupt regime stability, agents can leverage their influence by 'rapidly chang[ing] their identities and positions' (Fligstein, 2013, p. 50). Urban activists with capabilities to mobilise the mass could exploit endogenous tensions to shift political and governance contexts, thereby influencing policy and development processes (see also Beck, 2016). Meanwhile, local state actors can evoke a sense of urgency in time of crises to set the new course of actions towards transformation.

Focusing on how strategies are contextualised by actors also reveals a range of embedding mechanisms that carried the change momentum forward. This research shows how the urban initiatives were embedded within local political and cultural contexts through routine and dedicated 'street-level' activism and bureaucracy, which construct credibility and trust. Social identity and right to space were mobilised as forms of cultural resources to sustain on-ground implementation through distributed leaderships by community members. This confirms the importance of empowered communities in enabling urban transformations (Wolfram, 2018). The role of transformative leadership in navigating multilevel governance contexts is also underscored in this research. Navigating the global-local interface through city networks (Castán Broto, 2017) has boosted the green initiatives with international credibility. The role of global actors in the form of technological intervention was also noted. This research reveals a tight coupling between global actors and local (state and non-state) urban actors to embed adoption of novel technologies among targeted households, which adds to mainstream literature that emphasises the role of transnational actors and domestic national actors in diffusing green innovations in developing contexts (Binz et al., 2012; Wieczorek et al., 2015). This finding highlights the need to seriously take into account the agency of local urban actors and reconsider new ways for transnational actors to engage effectively with them in facilitating sustainable transformations. Essex (2016 p. 347) even contends that for many international development actors and institutions, 'the urban context [in the global South] remains a difficult and shifting terrain' they find difficult to navigate.

Conceptually, this study demonstrates the utility of the practice-based perspective in facilitating identification of different forms of transformative agency embedded within multiple intersecting structures. The forms of transformative agency identified in this study are, by no means, exhaustive, although many (e.g. empowered communities, distributed leaderships, municipal and civic activism) resonate with what the broader literature argues as instrumental in urban context (Goh and Bunnell, 2013; Hossain, 2016; Wolfram, 2016). The variations captured in this research tend to be obscured when relying on dominant sustainability transitions frameworks, which emphasise the role of national actors (Wieczorek et al., 2015) or the uniformity and stability of regimes instead of the heterogeneity of structures (Fuenfschilling and Truffer, 2014). A recent study in development literature also suggests similar tendency to focus on the dominant role of global policymaking actors, which obscures the 'ongoing, contingent relationships' of development interventions that exhibit 'tensions at multiple levels' from which the agency of on-ground development workers can be revealed (Beck, 2016, p. 29). This research, hence, advances the debate on how agent-based perspective can be employed to uncover rich insights into micro-level interaction dynamics that shape change initiatives, while balancing the accounts with critical reflections of the macro-level influences. While this research has utilised a case study design, methodological refinement that includes ethnographic approach (see Beck, 2016) could potentially reveal more nuances into the tensions and scope of actions at the individual level.

Conflicts of interest

None declared.

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Chapter 5

Reflecting on the role of institutional contradictions in Jakarta's urban water sector

5.1 Introduction

While chapter 4 explored the role of transformative agency through Surabaya's green initiative, this chapter shifts to unpacking enabling and constraining conditions in the more incremental adaptation represented by the Jakarta case study. It has to be noted, however, that this does not mean that the examination of action and structure can be separated theoretically. What was done here is a 'methodological bracketing' (Giddens, 1979), which allows for the analytical emphasis to be placed on one of the concepts while still accounting for the dialectical relation between action and structure. In this way, the findings presented here explore the element of structure in the strategic agency framework—introduced in Publication 1 (chapter 3)—more comprehensively.

This chapter addresses the gap in existing transitions literature where there remain limited perspectives on the specific mechanisms that generate tensions within a regime. While existing transitions perspective acknowledges the role of endogenous tensions in driving regime breakthroughs, the possible mechanisms that give rise to such tensions are not yet clearly understood. Because regime is typically viewed as relatively 'monolithic' (Fuenfschilling & Truffer, 2014), it begs the question of how tensions may arise within such strong and opaque structure. This chapter argues that in order to determine how such tensions arise, structure needs to be reconceptualised—by drawing from institutional and practice theories—in terms of overlapping and plural arrangements. This way, tensions can be studied as a function of contradictions among those arrangements. Furthermore, this lens allows us to diagnose the specific practices that reproduce the contradictions. Identifying the specific practices can then facilitate a more accurate formulation of change strategies that can directly target and resolve tensions, and potentially lead to transformative outcomes.

To foreground the analysis, the next section expands on the conceptualisation of institutional characteristics presented in Publication 1 (chapter 3) to frame the empirical analysis and discussion that follow in sections 5.3 and 5.4. Following the conceptual background, section 5.3 provides a narrative of the key events, actions and processes that led to the initial formulation and latest update of the NCICD (National Capital Integrated Coastal Development) master plan between 2007 and 2017. At the time of writing, the outcome of the latest update—called by the government in 2017 due to a major public outcry—on the scope of the plan and investment has yet to be made publicly available by the government. Media reports suggest no drastic changes (e.g. cancellation or replacement of the contentious elements of the plan) were pledged (Ambari, 2017; Friana, 2017), apart from a minor concession to delay the decision on the controversial off-shore solutions until further feasibility studies are conducted.

This research analysed the institutional contradictions playing out in terms of conflicting discourses and even polarised expectations, values, beliefs and identities, underpinning the showdown between the groups of proponents and opponents, utilising various data sources including in-depth interview data and extensive secondary documentation (e.g. policy material, project reports, technical reports, media reports, scientific literature). The narrative focuses on taking stock of key opportunities and constraints that shaped the scope of actions of the different actor groups in relation to influencing the infrastructure initiative. It facilitates

charting of the NCICD momentum over time, and provides insight into the scope of what was transformed (or not). This forms the basis for analysing the diverse institutional arrangements underpinning Jakarta's water sector and their corresponding contexts, which in turn shape agents' capabilities to mobilise different practices to transform the sector. Finally, a reflection of the key insights into the degree to which institutional structures are alterable is provided at the end of the chapter.

5.2 Conceptualising institutional contradictions

As argued in Publication 1 (chapter 3), institutions can be examined in terms of their mutability, which refers to the enabling and constraining conditions that structures can place on human agency. While this assertion is not novel, the enabling conditions on agency, in particular, have not been adequately analysed in transitions research, which as many have noted largely emphasised the durability of structures (Markard et al., 2012) by depicting socio-technical regimes as rather 'monolithic' (Fuenfschilling & Truffer, 2016), in other words, as deeply constraining on agency. One of the established transition frameworks, the multi-level perspective (MLP), has been widely used by scholars to explain niche-innovation breakthroughs under strong regime arrangements (Geels, 2002; Schot & Geels, 2007). It is theorised that regime equilibrium prevails for a long period of time (half a century and more), and is only punctuated by changes when enough external pressures coincide with adequate diffusive capacity of niches.

To date, the deep regime perspective has potently explained systems inertia that locks large socio-technical systems into perpetuating themselves (Kemp et al., 1998). Advancing this perspective, niche breakthrough has been conceptualised in terms of possible transition pathways under the strong influence of the regime's stable structural properties (Geels & Schot, 2007). These scholars acknowledge that '… niches and socio-technical regimes are similar *kinds* of structures, although different in size and stability' (p. 402). Critics have noted that the key limitation of this notion of structures concerns the lack of clarity as to how, conceptually and empirically, the 'level' that delineates the two can be clarified (Fuenfschilling & Truffer, 2014; Genus & Coles, 2008; Smith et al., 2005).

Here it is argued that the lack of clarity stems from the loose articulation of the notion of structures described in the MLP framework (Geels & Schot, 2007), particularly with regards to the limited considerations given to the *diverse* nature of structures (Giddens, 1979). Using the institutional logic concept, Fuenfschilling and Truffer (2014, p. 776) demonstrate how structures can be conceptually characterised as being 'semi-coherent' by clarifying the heterogeneous 'contents' or 'logics', which 'developed in interaction with certain technologies'. They also argue that a regime can be characterised as 'highly coherent' or stable when it is 'dominated by one established field logic', whereas 'a weak regime would be described as rather incoherent and unstable with different field logics competing for legitimacy' (p. 776). This contribution operationalises the *diversity* of structures, clarifying one aspect of a regime's structural properties from which endogenous contradictions may arise. Their analysis of the urban water sector in Australia also showed how new logics entering the sector have reduced the overall coherence of the regime, which in turn leads to higher likelihood of change. While Fuenfschilling and Truffer (2014) explicitly evoke the notion of 'contradictions' in their

analysis, this concept is mainly employed to describe the *competing* interplay among sector logics when an alternative logic emerges.

In this thesis it is argued that the operationalisation of structural diversity can be extended by clarifying how contradictions function within structure to give rise to internal tensions. This argument finds support in institutional and organisational scholarship, which has conceptualised and analysed institutional contradictions in more depth (see e.g. Benson, 1977; Friedland & Alford, 1991; Seo & Creed, 2002). Similar to the proposition made in this thesis, Seo and Creed (2002, p. 231) contend that 'contradictions may not only trigger the shift in actors' collective consciousness but also may provide alternative logics of action and psychological and physical resources to be mobilized, appropriated, and transposed in the process of institutional change'. Benson (1977, p. 4) suggests that '[r]adical breaks with the present order are possible because of *contradictions*'. Importantly, he conceives three effects contradictions can have on established orders:

> (1) they may occasion dislocations and crises which activate the search of alternative social arrangements; (2) they may combine in ways which facilitate or in ways which thwart social mobilization; (3) they may define the limits of change within a particular period or within a given system. (p. 5)

Inferring plausible change mechanisms from those effects, the first one indicates possible events or actions that trigger crises. The second indicates the possibility of creatively combining contradictions to mobilise actions. As opposed to facilitating change, the third indicates the possibility that contradictions may be employed to maintain system inertia.

With regards to the first mechanism Seo and Creed (2002, p. 235) consider an 'accumulated efficiency gap' as instrumental in giving rise to a crisis over time due to 'conformity to suboptimal institutional arrangements'. They further argue that 'crisis is especially likely when the accumulation of institutionally rooted inefficiencies reaches the point where decoupling the technical core from institutional practices becomes an inadequate or infeasible response'. In this condition, suboptimal performances and outcomes become the norm and established order for a considerable amount of time before a complete system breakdown ensues—triggered by either endogenous actions or exogenous events.

The second mechanism recognises that institutional 'process is carried out in differentiated social contexts producing multiple and incompatible social forms' (Benson, 1977, p. 5). Benson also argues that for the most part, because there is 'little coordination between the multiple contexts within which construction take place' the resulting institutional fabric is splintered with 'contradictions growing out of the unevenness and disconnectedness of social production'. This condition resembles what is termed 'interinstitutional incompatibilities' by Seo & Creed (2002, p. 237)', which are 'constantly and inevitably produced and reproduced within and between various levels and sectors of institutional arrangements'.

This view is consistent with the practice theory, which recognises the plural and overlapping character of social systems and the nature of institutional processes situated within such intersections (Giddens, 1984). It

follows that the examination of change processes from a practice lens requires a focus on 'a dialectical relationship among context, logics, action, and social identity, rooted in practical concerns' (Seo and & Creed, 2002, p. 242). In terms of studying the infrastructure sector, the overlapping contexts mean that sectoral logics must be derived from and shaped by a range of societal sub-systems and their related contexts, such as techno-scientific paradigms, professional practices, political ideology, economic and financial systems, international and domestic spheres, religious belief systems and ethnic cultures.

Returning to the example of water sector logic used by Fuenfschilling and Truffer (2014), it can be argued that while the 'hydraulic logic' may be rationalised by its proponents according to its techno-scientific merit deeply instilled through the engineering professions, and to its public health benefits normalised through state-regulated public affairs commonly shaping the developed urban contexts, such logic in less advanced contexts may be rationalised by local policymakers—more practically concerned with gaining legitimacy in the international sphere—as a way to construct a symbolic identity as a modernised society. After all, social identity can be considered as a form of cultural resource that can be mobilised in institutional change (Gotham, 1999; Seo and Creed, 2002). In this vein, the creative search for an alternative logic needs to be considered as a situated action that cannot be prescribed independent from the ongoing contexts that shape the societal systems. For instance, in developed contexts, the typical infrastructure sector is heavily regulated by formal state-led actions, whereas in developing contexts there is an ongoing tension between formal and informal arrangements. In other words, the types of action that work in some contexts might not always be transferable (without adjustments) to other contexts. This assumption will be examined in more depth in the case study below.

Viewing transformation as a function of institutional contradictions, the degree to which structures are alterable depends on how well agents can craft a solution to address the underlying tensions. Seo and Creed (2002, p. 239) view this as a spectrum of resolvability, where at one end contradictions are resolved through 'reconstruction of social arrangements', which provides the system with 'a period of relative stability, although it also will inevitably produce other contradictions over time'. At the other end of the spectrum is the complete 'failure to transcend' prevailing orders, which for instance may happen when a partial resolution is formulated by the dominant groups to deal with 'the immediate problems, with neither the new form nor the stopgap solution ever addressing the underlying contradictions themselves' (Seo & Creed, 2002, p. 239). Following this argument, it is also possible to conceive that instability or semi-coherency might be maintained strategically by powerful agents to prevent alignment across the social subsystems to form a rival axis of power. As others have noted, such weak arrangements can legitimise and normalise uncertainty and ambiguity to the degree that they occupy and divert attention from the underlying problems, thereby privileging a few powerholders and leading to social exclusion (Ramos-Mejía et al., 2018).

To briefly recap, this chapter proposes the notion of institutional contradictions to advance understanding of the enabling and constraining effects that structures can have on transformative agency. This development highlights: (i) the mechanism by which contradictions are accumulated in a social system, and thereby may lead to major disruptions that facilitate the emergence of alternative arrangements; (ii) the mechanism by

which contradictions arise from uneven processes taking place across overlapping societal sub-systems that splinter the institutional fabric in a given social system. These propositions expand on the discussion presented in Publication 1 about the structural characteristics that are important to consider in examining institutional change. In the next section these propositions will guide the empirical analysis of the Jakarta case study, thereby testing and validating the assertions.

5.3 Charting the NCICD's momentum

The Indonesian infrastructure sector, in which the NCICD initiative was embedded, experienced a serious slump for more than a decade after the Asian financial crisis hit the economy in 1997 (Negara, 2016). In Jakarta, the major flood recorded in 2007 was preceded by a range of compounding factors attributable to the long-term gap in infrastructure investment and weak planning and development practices in the water sector. Weak planning and funding capacity meant that there was negligible investment in new infrastructure to facilitate the adequate draining of Jakarta's low-lying catchment. Substantial reduction of the main drainage capacity was also attributable to lack of maintenance, solid waste dumping and uncontrolled land-use change in the surrounding catchments (Firman, 2009).

Consequently, minor and major rain events were routinely causing flood hazards in every subdistrict in Jakarta (Firman et al., 2011). On top of this, a substantial deficiency in the provision of piped water supply meant that unserved populations relied heavily on regulated and unregulated groundwater extraction (PAM Jaya 2015), which was the leading cause of land subsidence across Jakarta (Abidin et al., 2001). The effect is especially apparent in the coastal area north of Jakarta, where land was subsiding far more rapidly than anywhere else, to the extent that some areas along the coast are already permanently inundated (Ward et al., 2011).

While flood risk had continued to be a top government priority, it was not until the major flood hit in 2007 that a sense of urgency was renewed to boost investment and improve planning capacity to restore and upgrade the water management systems in the capital city. With evacuees estimated at 590,000 people, the 2007 flood far exceeded the impact of any other major flood event recorded between 1996 and 2014 (Sunarharum et al., 2014). Due to its unprecedented magnitude, it was perceived as a 'national calamity' by the government, with the National Development Planning Agency (*Bappenas*) reporting an economic loss of approximately US$ 453 million (Steinberg, 2007). The devastating nature of the event became a crucial driver for initiating the Jakarta Flood Management (JFM) study (2007–08), which was subsequently extended as the basis for the Jakarta Coastal Defence Strategy (JCDS) in 2009 and eventually the NCICD in 2013. This renewed commitment to upgrade infrastructure planning and technical capacity was also further strengthened by a high-level governmental agenda, which was announced in 2011 to boost economic growth through heavy investment in the infrastructure sector (Negara, 2016).

The event revealed a systematic failure in infrastructure planning and slow implementation of vital physical and non-physical flood risk mitigation measures. Some policymakers and donors believed that the flood was

an inevitable outcome of nearly a decade of paucity in asset management following the Asian financial crisis and the shift towards political and fiscal decentralisation, as illustrated by the following interviewee's reflection:

> From one perspective, the need for the NCICD paints a picture of failing institutional capacity within the water resources sector—meaning that they did not have the capacity to manage the river basin, which exacerbated the impacts … (senior bureaucrat, translated)

The initial technical flood study, JFM, concluded that natural land movements combined with uncontrolled groundwater extraction had accelerated the sinking of the coastal areas, which, if considered in relation to rising seawater level (as a consequence of changing climate), would greatly increase flood risk across Jakarta (Brinkman & Hartman, 2009). The report predicted dire consequences for the capital city, as noted by a technical advisor:

> If the land subsidence stops, the current system of high sea walls, high river banks can still function. If it doesn't stop at some point the city, Northern Jakarta, will be four to five meters below sea-level, and you will be living basically in a reversed aquarium … So, if Jakarta can stop the land subsidence in the coming years, you don't have to build this big sea wall. However, it's rather unlikely that that will happen … (foreign advisor)

The technical rationale became the basis for a narrative of a sinking capital city, whereby an offshore seawall solution was seen as vital. The preferred choice of technical measures—the offshore seawall—to some degree, reflects a classic Dutch water management approach and their interests in exporting this expertise (Bakker et al., 2017). Yet this cannot be taken as a simplistic confirmation that the Dutch paradigm predominates the entire infrastructure development logic. In fact, there is a patchwork of foreign partnerships delivering segments of the urban water system in Jakarta, as exemplified by the involvement of Japan International Cooperation Agency (JICA) in delivering parts of Jakarta's wastewater system, as well as the involvement of the Korean counterpart in the later part of the NCICD development. The involvement of Dutch experts does, however, stem from legacy colonial and postcolonial networks that have continued to exert some degree of influence on the Indonesian water development sector (Kooy & Bakker, 2008; Suhardiman & Mollinga, 2012).

The seawall was designed as a multi-functional water and urban infrastructure, providing protection from coastal flooding, freshwater supply as a reservoir, a transport link as toll roads, and reclaimed areas for new development, among others. The 'Garuda' design—deliberately proposed to represent the official national symbol of Indonesia (see Figure 5.1)—was anticipated to attract private investment that could finance upgrading of public infrastructure, as well as leverage regional economies. Until mid-2015 the NCICD master plan heavily featured the Garuda design as reflected in media coverage, website content and promotional videos produced around that time. The opening of the draft master plan states:

> The Garuda will protect the city and bring safety and prosperity to the National Capital. It will offer Greater Jakarta a new image clearly visible and recognizable from the sky … (CMEA et al., 2014).

This headliner—used extensively to attract public buy-in—was, however, an oversimplification of the initiative considered as a whole. The detailed conceptual design features three sequences of development (see Figure 5.2): phase A—strengthening of existing coastal and river dikes (a short-term no regret measure, initially planned for 2014–18); phase B—construction of outer seawall ('Garuda') on the western shore where land subsidence is the most severe (2018–40); and phase C—potential closure of the eastern shore in the event that efforts to slow down or stop subsidence is unsuccessful in that area (2030 onwards).

Figure 5.1 The Great Garuda design (CMEA et al., 2014)

Figure 5.2 Three distinctive phases of NCICD development (CMEA et al., 2014)

While technical recommendations were made, proponents of the solution—consisting of key policy and technical advisors from the foreign-led consortium—worked closely with Jakarta's local government to put legislation in place that would anchor its implementation. Interviews with key proponents reveal a direct working relationship between the administration (headed by Jakarta's former governor, Fauzi Bowo) and key NCICD policy and technical advisors, as indicated by one advisor:

> I was also involved in RTRW [Spatial Planning]. The RTRW team, meaning DKI [Jakarta administration], kept on pushing from the other side: 'Sir, which figure do we include in the RTRW—what is the shape for the seawall?' … I [with my team] produced the blueprint. That is what ended up in the RTRW … (policy advisor, translated)

Partly as a result of this interaction between technical advisors and elite bureaucrats, and the government's priority to strengthen measures against climate change, the seawall was put in place as a key infrastructure measure in the spatial plan legislated in January 2012. Looking at the starting points presented in the spatial plan, global warming, climate change and climate action were prominently considered, linking these challenges with the biophysical conditions of Jakarta as a *delta city* (Perda DKI No. 1 Tahun 2012 tentang RTRW). There was also an indication of political alignment at the national level around 2013, which was marked by the championing of the initiative by the president and the then minister of Ocean and Fisheries, Tjitjip Sutardjo.

However, not long after the draft NCICD master plan was published, a bribery scandal involving a lawmaker—who was lobbying for a change in the regional law on spatial plan—was uncovered and widely reported in the media. The lawmaker was found to have received a bribe from a private developer to influence

the local parliament to stipulate a lower tax level levied on profit earned through property development activities in the land reclamation areas. As a result, intense negative public sentiment ensued, which was exploited by opposing experts and NGOs to put significant pressure on the administration and the NCICD team to defend the solution and its credibility.

The proponents sought to downplay the link between the NCICD and the land reclamation project in response to the bad publicity. Nonetheless, it was quite clear that land reclamation had always been a part of the picture when looking through the range of project materials produced to date (e.g. an extensive analysis of the biophysical and institutional arrangements of land reclamation in the JCDS Atlas report published in 2011). The distancing of the NCICD program from the land reclamation project by the proponents can be noted in the following interviewee remarks:

> Here lies the problem, the islands. The seventeen islands for which concessions were issued by Jakarta [administration]. They are within the area of the NCICD but are not included in the NCICD program. So, Jakarta issued the concessions to developers to develop land reclamation. But our [NCICD] concept no, no. Only in the implementation, when those islands are sold—it can help finance this [NCICD] … (senior bureaucrat, translated)

> … the government didn't want us to touch the seventeen islands—the reclamation projects. They said don't touch. So that, if you see the—do you have access to the NCICD website? There you can, if you see the reports, you can also see it, it is not part of the programming exercise which we did with the government. Now, the President has said you have to integrate it. Right, but it was the choice of the, the choice of the government … He [the President] doesn't want it to be reviewed over and over again, so he has said it has to be updated. Uh, the seventeen islands, the government has to be in the lead, the seventeen islands have to be included, and there should be no negative environmental and social impacts … (foreign advisor)

Meanwhile critics, in their various public appearances and media coverage, continued to emphasise the link between the controversial land reclamation with the NCICD initiative, and challenged the feasibility of the seawall design with a range of counterarguments. Table 5.1 provides an overview of the conflicting opinions and views presented by the proponents and opponents. Some of the independent experts opposing the initiative had had more direct involvement with the policymaking processes in the earlier stages of the NCICD's conception. However, there is a clear indication that they became disengaged from these formal processes over time, and a shared sentiment that their opinions were not seriously valued or taken into consideration, as indicated in a number of interviews:

> … when they launched ATLAS [JCDS design document] I was invited. They organised an FGD for the stakeholders to discuss Jakarta subsidence, and other issues, I was involved. Not only that, I provided input on their draft documents … (external expert, translated)

> About that [extent of land subsidence], my colleagues had been calling it out, 'Let us do [our own] monitoring of land subsidence, etc'. Because from the start that was the critical point. Now, this is

since the beginning of 2009, 2010, I have always raised that concern in every meeting. But they [the NCICD team] don't seem to care … (senior bureaucrat, translated)

Perhaps they [the NCICD team] were apprehensive about my intention—I could feel that during the pressure cooker session held earlier. I was not given opportunities to speak. The forum was arranged such that they dominated the discussion. I was about to jump in by interrupting but couldn't get in … (external expert, translated)

This formal disengagement has prompted these independent experts to search for alternative avenues (e.g. publishing opinion pieces in popular media, running workshops for disseminating alternative views) to get their voice heard. Key points of pronounced difference were the debate on the magnitude of land subsidence and the narrative of the sinking capital, which were pertinently contended by one independent expert:

… NCICD sells the idea that Jakarta has subsided by a degree of 7.5 cm per year. Yes, that is right. But not totally right. Maybe only at one point around Pluit [a subdistrict north of Jakarta]. But not all of Jakarta is subsiding at that rate. Now, this illusion or perception … that Jakarta is made up to be sinking simultaneously at 7.5 cm per year. Now, that is the critical point. I say that is misleading … (external expert, translated)

Additionally, reservations and misgivings over the heavy involvement of the private sector and foreign investors were also raised. The underhanded practice by some actors from the private sector was especially highlighted by the bribery scandal. The narrative around vested interests effectively swung public opinion against the NCICD proponents. The counter-narrative was expressed by a government representative and local expert interviewees:

I don't see [the involvement of] local consultants. Sure, they undertake the study by cooperating with PUSAIR [National Research Centre on Water], with PU [Public Works], with … BPPT [National Agency for the Assessment and Application of Technology] early on. But this was not significant because we were to work from our internal budget … (senior bureaucrat, translated)

… reclamation, in my opinion, attracts huge interest. But particularly I see a strong business aspect driving it forward. And, I do believe, even now that reclamation is a solution. But the studies must be conducted seriously. In other places, I understand it can be implemented successfully. Yes, there are positive and negative [impacts] but adequately regulated, and so on. Some have bad experiences with reclamation, and that's only natural. But they have gone through long debates or discussions … Now, over here, that has yet been done. I don't see it … (senior bureaucrat, translated)

The developers, here, naturally care about business and not much else. From my understanding, if they do not think about the impacts, then what will happen? The concept [of NCICD] is wrong … (external expert, translated)

… need to place NCICD planning within the right context, a context that is holistic and correct. And here, the government must be present. They must lead at the front through regulation. Especially with

regulation. And then, not, not the private … not to be led by the private sector … (external expert, translated)

Table 5.1 Overview of conflicting positions over the NCICD

Issues	Proponents	Opponents
The magnitude of land subsidence and technical validity of the off-shore solution	The Ministry of Public Works, the Dutch consultants and other supporters of the program conceived the NCICD as a long-term measure to protect the city from sinking. The master plan reports a staggering effect of land subsidence, estimated at an average of 7.5 cm per year and up to 17 cm in some coastal areas. The projection highlights that, 'if no measures are taken, a large part of the coastal zone is under threat of permanent inundation. In this area, the lives of 4.5 million people are at stake.' (CMEA et al., 2014, p. 25). While preconditions for improving water supply and sanitation were set, responsibilities for this complex undertaking are left to the government agencies outside the scope of the NCICD. In the latest master plan update—after the scandal emerged—the proponents signalled a minor concession to delay the decision on the offshore solutions until further feasibility studies are conducted.	Challengers of the program questioned both the magnitude of the land subsidence and the potential efficacy of the seawall for alleviating the problem. It was noted, for instance, that land subsidence is not as widespread and as homogenous as suggested by the NCICD team: the rate of subsidence varies from location to location, thus it may not necessarily require the closure of the entire bay. Some academics critically question the design, which emphasises the seawall instead of focusing on reducing groundwater extraction—the primary cause of land subsidence. The critics largely agreed that the offshore solutions are problematic, while they were generally in favour of phase A (strengthening of existing dikes).
The urgency of protecting the national capital	The initiative was conceived, symbolically, as a call to protect the capital city. The 2014 master plan describes the 'motives for action' as 'National Capital Under Threat' (CMEA et al., 2014, p. 21). The narrative of a sinking capital had been widely used, for example, with a strong visualisation of the national monument being gradually submerged over time by future flood events. The narrative was an attempt to embolden the prediction that land subsidence in Jakarta is such that, should business-as-usual continue, coastal flooding would eventually reach the city centre. It has also been admitted by a number of informants that the narrative was conceived to inspire broader buy-in, as the image become popularised. It can be seen as a strategic attempt to upscale urgency in the political sphere.	Key critics strongly questioned the use of such an image and narrative. In response, they attempted to dispel the 'myth' that Jakarta is sinking. Similar arguments as highlighted earlier were used, such as questioning the rate of land subsidence. Some of the key critics published strong opinion pieces against the offshore solution in various media outlets. To attract more support, some NGOs engaged community members, in particular the fishing community, to highlight their potential displacement and the lack of consideration given to the fate of the existing fishery industries and the overall social and environmental impacts that the bay enclosure would likely entail.

Table 5.2 Continued

Issues	Proponents	Opponents
The economic rationale for generating revenues from the envisaged new urban development	The proponents argued that existing water management problems and their solutions cannot be financed through fiscal budgeting by the government alone. An additional benefit of the iconic design was argued in terms of a marketable development that could attract private and international investment, boost economic activities, and subsequently contribute to fiscal capacity, which can then be channelled to finance infrastructure upgrading across Jakarta.	Key critics see this as an attempt to liberalise and capitalise public spaces with little attention paid to the environmental and social impacts of the reclamation, and where private investors will reap the maximum benefits from the new land development. There are strong doubts about whether the projected revenues can reach the amount that has been suggested. Furthermore, underscored by the scandal, there are serious concerns over whether the raised revenues would be secured for public spending in Jakarta.

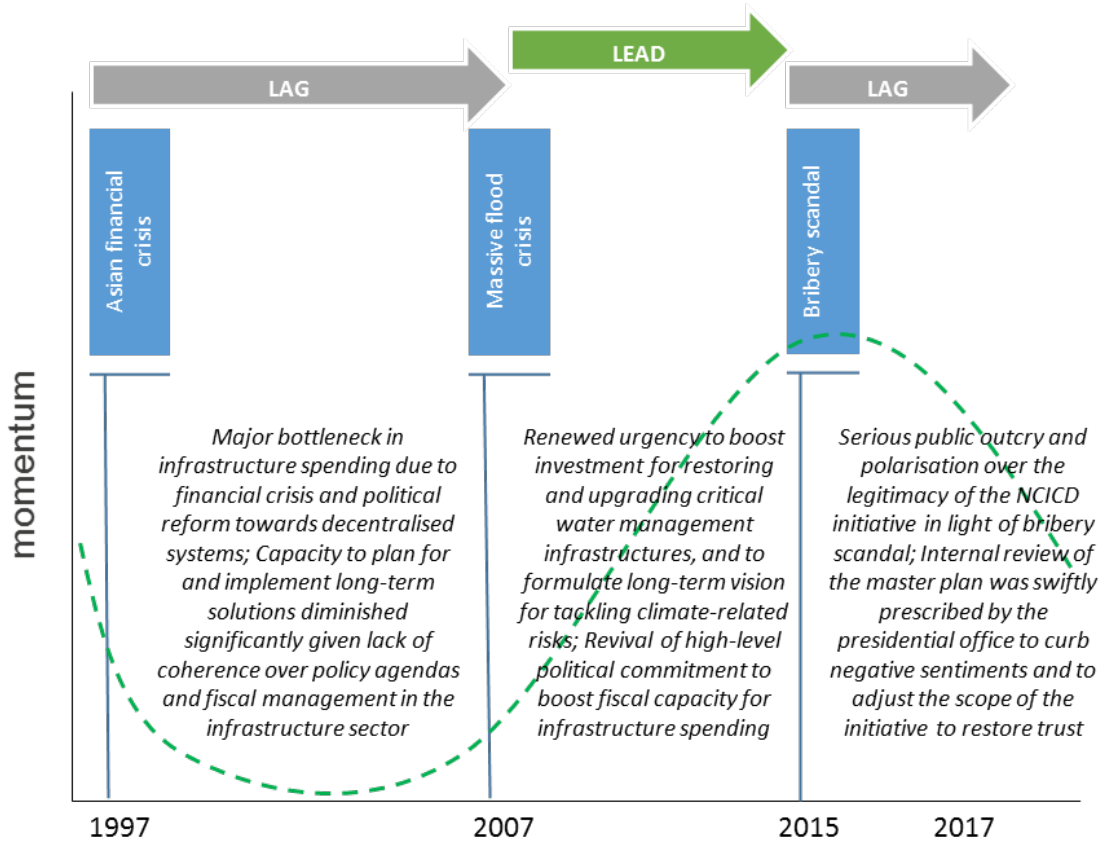

Figure 5.3 Political momentum for Jakarta's public infrastructure investment (dashed line indicates shifting momentum)

5.4 Analysing the institutional contradictions

In relation to the conceptual understanding of institutional contradictions summarised in section 5.2, the constraining and enabling effects of diverse structures shaping Jakarta's water sector are examined with specific focus on the development of the NCICD initiative over time. The analysis is organised in relation to the strategies enacted by the two groups of agents already identified in Publication 1 (chapter 3), that is, the proponents and opponents. The analysis below clarifies how, under certain conditions, these agents were capable of exploring system boundaries or enacting new practice sequences, or alternatively how they were prevented from exploring new possibilities. It also sheds light on how far those actions address and provide a resolution for the underlying contradictions found in the social system.

5.4.1 Accumulated inefficiency driving elite-driven processes and extra-budgetary involvements

As outlined in Figure 5.3, the decade between 1997 and 2008 saw the public infrastructure sector crumbling under the pressure of the Asian financial crisis. The crisis unravelled the fragile stability of the public sector held by the authoritarian grip of Soeharto's 'centralised state corporatism', whose functioning was fiscally secured by the resource boom from the 1970s to the early 1980s (Carnegie, 2008, p. 519). Almost overnight the crisis wiped away the economic power that shielded Soeharto and his oligarch networks, and threw the public sector into chaos. The weak fiscal and technical capacity persisted for nearly a decade, leaving in its trail failing services and substantial investment gap in Jakarta's infrastructure sectors, as many authors have noted (e.g. Steinberg, 2007; Varis et al., 2006).

In turn, the accumulated inefficiency manifested in a persistent spending gap, which provided an enabling context for foreign assistance and other forms of extra-budgetary resources to rationalise their involvement in shaping Jakarta's water systems. Looking more broadly at the development literature, it can indeed be confirmed that around the middle of 1990s, foreign assistance in the form of financial and technical resources, such as from the World Bank, had gained significant traction in the water sector across many developing nations, including Indonesia (Goldman, 2007). At the core of the policy push by the transnational networks was privatisation of the water sector. Goldman (p. 790) further shows that key to maintaining the networks' push on the agenda were the following practices:

> … the cultivation of elite transnational policy networks; large development loans targeting the privatization of the public service sector delivering water and sanitation … and strict green-neoliberal conditionalities upon its borrowers for access to foreign capital.

Examined through the strategic agency perspective, it can be said that networks of foreign actors, elite politicians and bureaucrats, and private sector actors responded to the opportunity presented by the accumulated contradictions between a spending gap and failing public service capacity to make a case for liberalising the water sector in view of efficiency gains promised by the shift towards a privatised market. Indeed, under such enabling conditions, Jakarta's entire water supply systems were formally privatised in 1997—just a few weeks before the Asian financial crisis (Harsono, 2014). It was widely reported that the

agreement was made through the practice of 'crony capitalism' of Soeharto's vast oligarch network (Harsono, 2014; Kooy, 2014). Furthermore, despite the poor performance of public-private partnership (PPP) schemes in delivering reliable supply and meeting expansion targets (Kooy, 2014; McIntosh, 2014), the arrangements have remained largely intact to the present day with only marginal adjustments to investor composition.

The *accumulated inefficiency* in the water sector culminated in the 2007 flood crisis, which put the sector under a lot of stress and, on the flip side, presented it with an opportunity to tackle the persistent deadlock with other forms of institutional innovation. What resulted from the crisis was instead a partial solution: to increase planning and fiscal capacity, which reproduced and expanded foreign assistance and private sector involvement, and appeared to be drawn from the routines used in the delivery of the water supply systems. Citing technical shortcomings within the sector, the partial solution, which depended heavily on foreign-led knowledge practices, was commonly rationalised by elite policy advisors in the following manner:

> That was exactly the moment that we came in because of this flooding from 2007. There was no—there were no foreign consultants any more in, in PU [Public Works] … So, we brought all the, our knowledge [from the eighties and nineties], and we immediately started to share with PUSAIR [National Research Centre on Water] to accelerate the knowledge building within PU … (foreign advisor)
>
> Getting good [technical] data is, is always a challenge … So, we collected our own data, mmm, in the past thirty years. But good data is scarce. Good data on water quality is very scarce. It's, it's—that was really a big, big headache … (foreign advisor)
>
> They [the government of Indonesia] are not very good at project management to be honest … and they love turnkey projects because they are not good at it … (foreign advisor)

According to Suhardiman et al. (2015), such perceptions of suboptimal capacities in receiving countries are often leveraged as a rationalising means for international aid. Taking it a step further, Bakker et al. (2017, p. 7) even suggest that the NCICD initiative 'seeks to combine development assistance with the promotion of Dutch business interests'. The momentum of the crisis carried the partial solution along a relatively steady trajectory between 2007 and 2014, earning the elite networks political support to incorporate parts of the flood protection measures into Jakarta's spatial plan legislated in 2012.

While the partial solution injected extra-budgetary technical and financial capacity to remedy some of the *resource deadlock* afflicting the water sector, it did not appear to address the other underlying contradictions that had resulted in much of the inefficiency noted in the sector. If anything, the patchwork of extra-budgetary dependencies has exacerbated such dynamics, as can be noted in the *chronic disunity* playing across the sector. Such chronic disunity is comparable to what was referred to as the 'siloed' approach in the water sector (Brown, 2005). While the new partial extra-budgetary arrangements were being created by the elite policy networks to resolve the resource deadlock, the modification was not effective in enhancing the in-house capacity lower level bureaucrats and technical staff needed to implement decisions imposed by the elite networks. To justify the modification, the elite proponents tend to attribute the lack of operational capacity

to what they identified as the unintended consequences of decentralisation rolled out in the 1998 political reforms, as indicated below:

> … role of decentralization I clearly explained—that was a disaster. So, the Asia crisis, but definitely the toppling of Soeharto [resulted in] the complete wiping away of national and provincial knowledge.[1] That was of course a disaster, not only for water management, but—I only look into water management—but also of course deforestation, land use … (foreign advisor)

> Honestly speaking, the responsible Indonesian authorities have accumulated failures over the years, because there has been a lack of clarity with regards to administrative boundaries and the agencies working within them … A case in point was when a special authoritative body [over water management] was established during Habibie's administration.[2] However, the law on decentralised autonomy was subsequently passed shifting authority towards local governments. The question then is who in this case holds the authority? This resulted in an ongoing administrative stand-off … (senior bureaucrat, translated)

This view was also confirmed, to a degree, in the development literature looking at the effect of decentralisation in Indonesia (Hadiz, 2004). Contentiously, some authors have expressed a more optimistic view that decentralisation in the Indonesian water sector could foster better leadership and public involvement (Bunnell & Miller, 2011; Simanjuntak et al., 2012). While those positive effects were notable in smaller cities, including Surabaya, the political arena of Jakarta, where greater power and resources are concentrated, generally leads to decision impasse due to perceived higher stakes and amplified differences across densely interconnected actors with their overlapping interests. Indeed, there is strong evidence that such jurisdictional overlaps and fragmented interests across the public sector were critical in limiting the state's capacity to plan, oversee and implement long-term infrastructure solutions. With respect to the *constraining context* constituted by *chronic disunity* and *misalignment of interests*, the following sentiments were generally shared by elite policy actors interviewed:

> … you know, we now have a positive opinion from Mr Jokowi and Mr Basuki [the then governor and vice governor of Jakarta]. PU [Public Works] is also very positive. But I know, one of these days, Ibu Susi, Marine Affairs, will be very critical again. And that might leave everybody in doubt whether or not this project is going to proceed. Because this is what happens, you know—it's like a, a Wall Street index—it's [referring to misalignment of expectations across governments] going up and down … (foreign advisor)

> It is even difficult to convene a meeting across the sectors. When PU [Public Works] was available, Marine Affairs was not. It put us in a difficult position—in the past two years. Also cross-funding is definitely not workable, because there are no regulations in place … (policy advisor, translated)

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[1] The authoritarian president who ruled Indonesia between 1965 and 1998 under a centralised government regime.

[2] The first president in the post-Soeharto era, ruled in 1998 and 1999.

> In my opinion, the President provided a clear directive—it was comprehensive enough. However, the issue is never about the directive, but about who—the stakeholders—would in the end implement the decision from the government, meaning the different ministerial agencies. Who would then oversee the operation? Also in terms of political budgeting, regulations and so on, which have not been detailed … (senior bureaucrat, translated)

The perverse dynamics were compounded by quick turnover rates of bureaucratic staff involved in the initiative. This routine turnover significantly increased transaction costs within the NCICD team, and in the interfaces with other ministerial bodies. This factor, and its impact on the performance of the public sector, were highlighted in the following reflections from key bureaucrats:

> … I would say that, from 2011, only a few are still involved in the five-yearly [discussion within the government]. The rest have changed position. That's why the dialogue between governments never reached a conclusion. But the private sector works consistently … I mean, sure, government, as regulator, understands big challenges. The institutions are dispersed, and then [people] change job easily, yes. For instance, in DKI [Jakarta] alone, in the government, the water management agency is replaced twice a year … (senior bureaucrat, translated)

> I, personally, in principle think that there needs to be someone to take a lead, yes, others can be informed. But, in practice, this is not easy. Because, mmm, in meetings, the participants are constantly changing. Imagine, every time we have to start over with basic explanations, etc. This is constraining … (senior bureaucrat, translated)

Generally, the limitation that arose from the underlying chronic disunity across the sector came across in the following observation by a key bureaucrat:

> Aligning the mission, yes. Commitment. That's the most difficult. Up until now, take this example. Our vision—is it the same or not? That's the question. Okay, say we are going to save, for example, the fishermen—something's got to change, hasn't it? What's originally saltwater fishing, now, perhaps, could be freshwater fishing. Fine, [the opponents] disagree. Fine, if this can't be agreed upon, but what do [they] want, then. I could relocate them, build a new fishing village … But the thing is, it's a no go, absolutely a no go. This put us in a difficult position. Because not all of us see the threat for DKI [Jakarta] is getting bigger and bigger, if we don't make a move now. There, our weakness is in our inability to convince them; while they are too unyielding, refusing to see the bigger problem … (senior bureaucrat, translated)

The proponents attempted to anchor their partial solution with legal and regulatory mechanisms that could shift authority and concentrate resources to execute and implement the initiative under a legally sanctioned entity, which the proponents referred to as the 'Dedicated Organisation' (DO) for the NCICD. While this anchoring technique was frequently highlighted by key bureaucrats as a potential solution to the disunity and misaligned interests across governmental bodies, there has been limited formal work being done around the realisation of the DO, beyond internal discussions among the team. Besides the potentially contested

authority of such an organisation and the complex political-legal manoeuvrings that its establishment would entail, this agenda has remained up in the air given the public backlash that took shape in 2015.

The partial solution advocated between 2007 and 2014 to improve the Jakarta's water sector's efficiency—conceived by its proponents in terms of concentration of authority among elite policymakers and the injection of extra-budgetary resources—failed to address the other ongoing contradictions that constrained the sector from delivering long-term and integrated solutions. While it did address some of the resource deadlock that had contributed to the accumulated technical and fiscal inefficiency, it also inadvertently reproduced the obstinate dynamics marked by chronic disunity and misalignment of interests. Nor did it manage to address an important bottleneck for cross-sectoral coordination, which is the lack of formal fiscal instruments and incentives that can facilitate resource sharing across ministerial bodies, as highlighted below:

> … cross-funding is not possible even across different departments under one ministry. It is not possible. The performance of each [department] is annually assessed against the amount of budget spent on actual projects delivered. (senior bureaucrat, translated)

> When the task force was established around the end of 2012 or 2013 … the [budgeting] issue was too rigid and could not be resolved because when it comes to state budgeting each ministerial body has their own distinct platform. Budget transfer and the like is not easy at all. (policy advisor, translated)

5.4.2 Ongoing incompatibilities leading to sporadic social tensions and political compromises

Despite the NCICD appearing to be conceived by its proponents in terms of a vision for long-term infrastructure planning and cross-sectoral partnerships, the formulation of the master plan was primarily driven by the elite networks, alienating the views, expertise and involvement of particular sections of society, such as local academics, NGOs and community representatives. This, in turn, invited apathy or even antagonism against the initiative from the marginalised groups, and was particularly damaging for the credibility of the initiative in the public sphere. The lack of understanding of how public buy-in could be strategically obtained was broadly admitted by key proponents:

> … we have to admit that the government did not adequately communicate [the program] to the public. That was one of the key weaknesses. Had it been communicated better in the beginning, we would have perhaps obtained greater support than where it's currently at … (policy advisor, translated)

> From the start I think we have said communication is very important. I think it could have been done in a more, in a more comprehensive way. Bappenas [Ministry of National Planning & Development] is, for instance, not a ministry which is strong in communication … We will definitely pay attention to that—on this kind of institutional issue, how do you, how could you involve civil society in decision making processes in project preparation … (foreign advisor)

> Due to the lack of ownership and certainty within the Indonesian government about the project, in communication they are also very hesitant. I don't think that you would see in the *Jakarta Post* or *Kompas* [media outlets], any government's response to NCICD other than some one-liners of President

> Jokowi, or other high-level ministers. Mmm, but there's no public relations for the project … (foreign advisor)

The admission indicated that the proponents took for granted the structure of domination maintained by the elite and expert coalition in shaping the knowledge production processes, where public deference was assumed. While the public was acknowledged as the beneficiary of the initiative, the elite-dominated policy membership prevented them from being more actively involved in the decision-making processes. This, together with generally low public trust of government institutions, constrained the proponents from obtaining public support.

In 2015 the bribery scandal opened up a window for opponents of the NCICD to alter the trajectory of the initiative by bringing public attention to its ambiguous values and potentially problematic implementation models. Examined in terms of endogenous forces, the scandal and eventual public backlash can be unpacked in terms of a culmination of the ongoing tensions between the ranks of 'elite insiders' and 'marginalised outsiders' in the policymaking arena. The incompatibility of ideas, knowledge, values, and beliefs between the two groups is summarised in Table 5.1. While differences of opinion can be expected in multi-stakeholder interactions, what was playing out with regards to the NCICD was arguably beyond scientific or technical disagreements over the initiative—although they were a pivot for the counterarguments. Much of what was disputed arose from ongoing resentment over power—perceived as dominated by a particular group of elites and influencing the investment decisions taken. Such resentment is discerned through the feedback received from a number of notable critics interviewed:

> In general, from my perspective, the NCICD requires a second opinion … Well, I'm not saying it has got to be absolutely independent oversight, because, frankly speaking, this has been driven mostly by the Dutch consultants. And that has been accepted with no question asked … (external expert, translated)

> From this [knowledge production] perspective, local contractors and consultants must be involved … I question why local consultants are not fostered to study [the water management issue]. Why must it be foreign[-led]? (senior bureaucrat, translated)

The elite-driven membership arrangements were perceived by policy outsiders as an instrument of domination by the elite groups over key infrastructure and land development decisions, marked by limited involvement of local experts. Furthermore, public participation was generally rendered as a one-way interaction, where near-final solutions were packaged by technical consultants in terms of the best possible alternative for the public, without necessarily incorporating representative inputs along the way.

Over time, the incompatibilities grew and a splintering of the sector was reached during the scandal. As media got involved, the opponents harnessed media influence to swing public opinion against the initiative. The growing contradictions enabled the opponents to adjust the trajectory of the infrastructure decision by mobilising social capital. This type of strategic mobilisation of identities in inciting social tensions has been

noted as being increasingly utilised by activists to perform micro-level resistance in the post-authoritarian Indonesian democracy (Padawangi, 2014).

The critical role of media in shaping Indonesian's democracy is also widely recognised (see Padawangi et al., 2014); it is even considered the 'fourth policy entrepreneur' by Simanjuntak et al. (2012). Padawangi (2013) also argues that the coupling of media attention with the use of public space for airing criticism against the government can amplify the message to reach wider audiences. Exploiting the window created by the scandal and coupling this with the media's power, the opponents were able to get their dissenting voices heard, which prompted a political compromise from the proponents.

It was offered through a public announcement made by the President indicating an order to update the NCICD master plan to incorporate the inputs aired by the opponents. This manoeuvre was directed especially at reassessing the land reclamation and the socio-ecological impacts of the seawall. It sent the signal that 'marginalised voices' were being seriously considered by the elites. Yet it did not bring about substantial adjustments to the arrangement of the policy membership.

Considered in another light, the exploitation of the window of opportunity, which opened up during the bribery scandal, by the opponents only managed to interrupt the NCICD development briefly. This disruption was based upon another partial solution. One that intensified polarisation of public opinion, leading to political compromises rather than a substantial transformation of the key arrangements and processes commensurate with the constraints stemming from the underlying lack of credibility in decision-making processes. In this instance, the opponents remained constrained by their limited access to the higher level of political authority to transform formal processes, which is partially flanked by senior bureaucrats and foreign advisors who constituted the elite membership. The proponents' ability to legitimise the delivery of the initiative was, however, susceptible to swinging public opinion, given the considerable power the media exercises in shaping public perceptions and discourse. According to Kusno (2011, p. 318) in post-authoritarian Jakarta, elected politicians understand that 'any urban project had to be justified in the name of the public and supported by "the people" … of Jakarta.'

In spite of the challenge to the dominant elite-driven membership rights, the network of policy insiders by and large resisted major modification to this prevailing arrangement. The elite policy actors remained in place for the most part, although their authority was to some extent eroded by the wave of social movements. But at the time of writing there have been no substantial shifts to create a meaningful and legitimate arena for activists or community members to play active roles in the infrastructure initiative. The actions taken by the opponents (which include external experts and senior bureaucrats from within the government) appear to be of the kind that generate temporary disturbances, polarisation and interference, but with limited economic, political or cultural capacity to gain formal access to policymaking.

This represents unresolved contradictions from which incompatibilities between formal policy processes and the public trust of those policy outputs are likely to continue to arise. Neither the minor political compromise enacted by the proponents to delay decisions on the off-shore solutions nor the short-term mobilisation of

social protests by the opponents adequately addressed the deep contradictions. Essentially the ongoing contradictions reveal a lack of legitimising mechanisms for bridging the silos within the sector or for mediating public participation with formal decision-making to enable stable delivery of long-term infrastructure solutions in the sector.

5.5 Summary: insights into the role of institutional contradictions

The main institutional contradictions—manifested in terms of accumulated inefficiency and ongoing incompatibilities—identified above pertain to the following arrangements constraining or enabling actions within the sector:

i. An accumulated capacity gap due to decentralised political and fiscal systems maintaining dependency on foreign assistance and extra-budgetary resources;

ii. Chronic disunity due to technical silos and an administrative void maintaining a decision impasse in executing intergovernmental and cross-sectoral infrastructure planning and delivery;

iii. High transaction costs across bureaucratic organisations due to a rapid turnover of staff, thus inhibiting alignment of expectations and commitments;

iv. Accumulated resentment from policy outsiders due to exclusion from elite-dominated policymaking, inhibiting broader support;

v. Polarisation of public discourse due to sporadic social movements and temporary political compromises that have the effect of maintaining reactive responses to long-term social issues.

Those contradictions shaped reactive responses and short-term thinking among institutional actors, inhibiting them from aligning inter-organisational commitment or generating public support for the infrastructure initiative. Bureaucratic actors and political leaders appeared to favour extra-budgetary technical assistance that provides 'turnkey' solutions—fully designed and built technical projects to be handed over to the public sector for operation. This practice increased dependency on external partners, and has the consequence of maintaining foreign advisors' influence on the investment trajectory and choice of infrastructure solutions. Furthermore, the practice generally bypassed the need to strengthen local capacity that could shift the momentum towards more systemic reform of the sector.

While the initiation of the NCICD indicated a reflexive response from elite bureaucrats and policy advisors to address the technical gap and chronic disunity—especially considering the multi-sectoral scope of the initiative—the resolution was not effectively coupled with an adequate focus on creating a representative decision-making arena that could systematically align stakeholder expectations, break the silos and develop a collective agenda. This shows a limited capacity on the part of those institutional actors to transcend the elite-driven practice dominating the knowledge production processes. From this perspective, the proponents' focus on partial technical compromises can be considered as a rational response to resolving ambiguity arising

from differing interpretations of the extent of the environmental problems and the solutions proposed (Brugnach & Ingram, 2012).

However, in the absence of meaningful engagement with 'outsiders' (e.g. groups of local experts/academics, NGOs or community representatives), such partial compromises are inadequate to resolve the underlying contradictions—if not prone to be viewed merely as a 'political manoeuvre' to stall controversial decision-making (Octavianti & Charles, 2018). Even under the more consensus-based context of the Dutch water sector, scholars have shown that such ambiguity can be utilised by technical experts to secure more privileged positions than lay actors in multi-stakeholder decision-making settings, thereby hampering collective action (van den Hoek et al., 2014). The consequence in this case is similar in that, whether deliberate or unintended, the practice of elite decision-making has routinely marginalised vulnerable communities (Bakker et al., 2017).

Even though the proponents have partially resolved the ambiguity by updating the master plan, in the course of which they influenced the technical and policy discourse towards a better understanding of the causes of land subsidence and coastal flood risks, these gradual adjustments also stem from their inability to overcome the rule that governs access to policymaking. The challenge launched by the opponents against the dominant power structure hints at the role of vested interests in rationalising the practice, despite its weak performance in planning for and implementing long-term infrastructure solutions. Without overlooking the technical value delivered by the short-term measure of strengthening existing dikes along the coastline—which proponents and opponents broadly agreed to following the master plan update—the lack of viable alternative measures for dealing with long-term flooding prospects and the delay in decision-making points to the misguided priority of both groups of actors, which appears to be focusing on 'winning' the immediate power struggle.

This underlying tension highlights the uneven resource distribution in the sector which predominantly concentrates decision-making power in the hands of elite policy advisors (particularly senior bureaucrats from planning, development and public works departments; foreign advisors; and private consultants). This practice arguably maintains influence over capital-intensive infrastructure investment among the national bureaucrats and 'insider' advocacy network. The investment, rationalised by a 'nationalist' discourse, has been characterised by other scholars studying development and political processes in Jakarta as exemplifying the interest of the city's elites in retaining political and economic power (Hadiz, 2004; Kusno, 2004). The use of the national emblem also reflects what Friedland and Alford (1991) conceive as 'transrational symbolic systems' that give meaning to strategic behaviours by institutional actors. The use of the symbol as an anchor for creating shared identity gave political and cultural meaning to the infrastructure investment as the preferred solution for lifting Jakarta's image internationally while addressing environmental challenges.

In addition to its intended technical performance, this rationale reveals the intention of a few power holders to advance their interests. The strong vested interest of the business community is notable, particularly private developers who would reap a benefit from land reclamations, which have fuelled the polarisation of public discourse. Furthermore, as reported by Bakker and colleagues (2017)—representing three independent Dutch organisations: the Centre for Research on Multinational Corporations (SOMO), Both ENDS and the

Transnational Institute (TNI)—the Dutch business interest in exporting their water expertise cannot be discounted either.

In this light, the struggle between policy 'insiders' and 'outsiders' represents the mechanism enacted to splinter *identity and membership structures* dominating the sector, whereas the sporadic protests and subsequent political compromises represent the mechanism to partially resolve contradictions in the *cognitive structures* (i.e. the technical and policy discourses) shaping the scope and design of the solution. The constraining effect of the identity and membership structures on the proponents' transformative agency appeared to be greater than the constraint imposed by the cognitive structures. This case study clearly demonstrates that the proponents were capable of strategically adjusting and readjusting the cognitive structures over the course of the master plan development. Similarly, the opponents were capable of challenging the NCICD narrative on its technical and policy merit.

Although the opponents could exert some power to splinter the identity and membership structures by exploiting the accumulated tensions during the scandal, this was neutralised by the proponents whose political authority remained dominant. Thus, the mobilisation of social tension interrupted the proponents' momentum, but was ineffective in enacting change to the membership arrangements. With no shift in the structuring of obligations to ensure delivery of sustainable infrastructure solutions that can ensure public safety, the prevailing capacity gap and sectoral disunity tend to benefit disproportionately those who are well situated to access political and economic resources. Apart from minor adjustments to the cognitive structures, there was no noticeable transformation in the Jakarta water sector that could promise to shift investment trajectory towards more sustainable alternative solutions.

This case study confirms that dominant structures are more susceptible to change during or after crises. The analysis also provides insight into where latent contradictions within the structures exist and can cause the sector to implode. As shown in the analysis, disruptive strategic actions (enacted by the opponents) can be taken to increase the probability of such implosion. Various institutional contradictions manifested as dependency on extra-budgetary resources, decision impasse, weak inter-organisational alignment, limited public credibility and reactive responses to environmental challenges limit transformative agency within the sector, but the accumulation of such internal tensions can facilitate social mobilisation at different times.

For stable socio-technical regimes found in many developed urban contexts, transitions research generally predicts that major shocks, which can weaken such regimes, could occur in the order of multiple decades up to 50-year intervals (Raven et al., 2012). The semi-coherent, and thus relatively weaker, regime analysed in this study appeared to experience more frequent disturbances—two major shocks between 2007 and 2015, making it more akin to the temporal scale of niche processes. In this sense, this study corroborates the assertion that regimes in developing contexts are far likelier to exhibit 'non-uniformity' and 'internal tensions' (Wieczorek, 2018). This underscores the importance of refining the current distinction between regime and niche utilised in mainstream transitions scholarship, particularly to facilitate its application to a range of other contexts.

This study also confirms the perspective identified earlier that points to a diversity of logics and competition as the source of tensions within a regime (Fuenfschilling & Truffer, 2014). This study extends this view by clarifying how structures may also be splintered as a result of uneven power distribution occurring across overlapping social subsystems. Thus, this approach explicitly links the cognitive structures with cultural and power dimensions that give shape to institutional contradictions. As noted, the update of the master plan only temporarily resolves differences in views and beliefs about the scope and design of the infrastructure solution. Although this cognitive ambiguity has been temporarily resolved, uncertainty over the investment decision continues, especially given that cultural tensions and uneven power distribution remain unresolvable.

While previous transitions research has emphasised cognitive reconfiguration (Geels & Raven, 2006; Geels, 2002b), this finding underscores the need to characterise the possible pathways for reconfiguring power distribution and cultural practices in order to facilitate transformation. Heeding the cautionary tales told by scholars studying cultural and political practices in Indonesia (Hadiz, 2004; Kusno, 2004; Octavianti & Charles, 2018), the partial reconfiguration of cognitive structures shown in this case might be construed as a political manoeuvre for diverting attention—rather than a strategy for enabling sectoral transformation—from concentration of resources by the dominant elite groups, hence abating alignment of a possible new axis of power by the critics.

By employing the concept of institutional contradictions, this research has demonstrated can explain change dynamics, particularly those occurring in a less coherently structured regime found in a developing context.

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Chapter 6

Diagnosing governance mechanisms for transformation across contexts

6.1 Introduction

This final result chapter addresses the third research objective, i.e. to develop heuristics for diagnosing the scope of actions and determining locally relevant governance mechanisms that facilitate transformations in diverse contexts. In terms of its linkage with the first two objectives, this chapter extends the conceptual development of the strategic agency framework presented in Publication 1 (chapter 3) with additional perspectives from governance theories and development literature. While the strategic agency framework was primarily underpinned by a theory building angle to conceptualise how structure and agency are reproduced and transformed through practice sequences, the heuristics proposed in this chapter were motivated by a practical outlook to more accurately diagnose local interaction patterns and the scope of actions that are facilitating or hindering transformative outcomes in diverse contexts. The two objectives, however, were complementary, and the development of the heuristics presented in this chapter brought them together, whereby the concept of strategic agency was further refined and expanded.

The development of the heuristics was complemented with illustrative empirical applications utilising the contrasting cases of Surabaya's relatively more successful transformations and Jakarta's incremental changes. To briefly recap, the transformation in Surabaya was considered more systemic given clear indications of changes in cognitive, normative, and regulative frameworks across societal levels as well as in governance processes (e.g. enactment of formal policy and laws that support green initiatives, broadening of participation through formal-informal networks, widely shared identity as *green and engaged citizens*). By contrast, Jakarta's NCICD masterplan could be viewed as an outcome of incremental planning and technical improvements through a routine interplay between state actors and elite policy advisors. These indicators for transformation were presented and discussed in more detail in the research context section of chapter 2 (summarised in Table 2.4).

Because the in-depth empirical analysis of the cases has been presented in chapters 4 (Publication 2) and 5, the application presented in this chapter serves an illustrative purpose focusing on certain key actors, events, and practices relevant to contrast the limits and possibilities of governance for transformation across the cases. The application demonstrates how the heuristics can reveal specific governance mechanisms that influenced the infrastructure initiatives differently across the cities. This empirically-derived insight is valuable to extend current understanding on how transformation may be realised by navigating the multilevel and multiscale governance settings. The importance of such complex interfaces has been acknowledged in the literature and informed the normative prescription of adaptive, multi-actor, and reflexive governance approaches for sustainability transitions (e.g. Folke et al., 2005; Kemp et al., 2005; Voss & Kemp, 2005). However, it is argued that there remains limited understanding of what could limit or facilitate effective adoption of such normative prescriptions given real-world variations across contexts. Taking an agent- and practice-based perspective, variations are accounted for by conceptualising and examining governance in terms of ongoing processes and patterns of interactions manifested in particular local contexts. To situate this research, the scholarly debate and the development of the heuristics is more fully fleshed out in the section below.

6.2 Diagnosing the possibilities and limits of governance

Within the broad academic community there is a wide range of definitions of the term 'governance'. In this research it is used to indicate *purposive interplay between agents and structures in enacting diverse processes for achieving collective outcomes within a given context.* The key strands of the lively debate on governance theory—found across transitions and adaptive governance scholarships, and more generally in the new public management literature and development literature—will be highlighted to position the definition proposed here with regards to understanding *what* governance is and *how* it can contribute to sustainability transformation.

6.2.1 A process-oriented perspective of governance

Adger and Jordan (2009) distinguish two major strands of debate on the relationship between governance and sustainability: a normative and an empirical strand. The normative strand advocates prescriptive governance approaches as a necessary ingredient for facilitating sustainability transformation. Governance is theorised and prescribed in terms of 'an interactive and reflexive process of debate and dialogue' to realise sustainable development (Adger & Jordan, 2009, p. 15). In sustainability transitions and adaptive governance scholarship, the normative lens has been widely adopted to prescribe new governance approaches, such as transition management (Frantzeskaki et al., 2012; Kemp et al., 2007; Loorbach, 2010; Rotmans et al., 2001), reflexive governance (Smith & Stirling, 2007; Voss et al., 2007; Voss & Kemp, 2005), adaptive co-management (Berkes, 2009; Folke et al., 2005), and collaborative governance (Bodin, 2017). The transitions perspective draws from a complex systems theory to arrive at a theoretical model of co-evolving socio-technical systems that have a capacity to learn and change through iterative feedback mechanisms. In the same way, the adaptive and collaborative tenets view co-evolution and self-organisation as the foundations of governance for sustainability. Broadly speaking, these normatively derived governance approaches theorise that reflexive learning and interactive processes can stimulate experimentations, innovations, and collective actions, thereby enabling a systemic change. A range of organisational and institutional instruments, including vision-making, knowledge co-production, social learning, mobilisation of actors, leaderships, coordination, cooperation, and networking, is advocated to facilitate transformation (Bodin, 2017; Folke et al., 2005; Kemp et al., 2007).

Taking the empirical stance, by contrast, emphasises the need to move beyond the generic prescription of new governance approaches and instruments. Scholars contend that the prescription needs to be better grounded in empirical understanding of how governance is being interpreted and practiced by actors across various contexts (Adger & Jordan, 2009; Kooiman & Jentoft, 2009). The assumption that actors' socio-cognitive arrangements converge in a multi-actor setting through learning processes—underlying much of the normative prescription—has been criticised for circumventing the political realities that shape many social processes and outcomes (Coenen et al., 2012; Daniell et al., 2014; Voss & Bornemann, 2011). While transition management approach recognises politics as 'functionally relevant' (Voss et al., 2009), it is not until recently that detailed considerations of how such politics unfold and are implicated in practice began to be explored in case studies (Avelino et al., 2016; Hoffman & Loeber, 2016; Kern, 2012). In a similar vein, referring to

the adaptive governance approach, Pahl-Wostl (2009, p. 356) notes that '[w]hat is yet lacking is a profound understanding of what "steering" and "managing change" might imply in such diffuse, complex and multi-level networks'. Duit and Galaz (2008, p. 329) argue that future governance scholarship has to shift towards analytically questioning the 'limits and possibilities of governance in a world where change is nonlinear, uncertain, and imbedded in a diversity of multilevel systems'. These assertions underscore the limited exchange between the normative and empirical strands of the scholarships (Adger & Jordan, 2009). Adger and Jordan raise the critical concern that without increasing the engagement between the two bodies of work:

> …governance research becomes a rather dry and technocratic exercise of counting and cataloguing different governing instruments or (in a more normative vein) trying to identify the right governing tool for the job, without reflecting on the fact that agreement on the nature of the job often remains highly elusive. (p. 20)

To avoid the oversimplification of governance research into mechanistic characterisation of what is *possible* in theory, the current approaches may be advanced with studies that deal with the dynamic and interactive nature of governance as they unfold in practice (Sørensen & Torfing, 2018). Conceptually, a process-orientation is useful in this regard and many scholars see governance as a process geared towards collective actions (Lange et al., 2013; Olsen et al., 2014; Termeer et al., 2010). This orientation emphasises the interplay among actors, processes, and structures (Kjaer, 2004). More specifically understood as a *purposive process*, governance is also understood as the exercise of power for guiding, steering, controlling, or managing societies (Kooiman, 1993; Olsen et al., 2014; Torfing et al., 2012). This mixture of different modes of control and influence has been increasingly conceptualised as the hybridisation of hierarchical, market, and networks mechanisms for governing collective actions (Kooiman & Jentoft, 2009; Meuleman & Niestroy, 2015; Sørensen & Torfing, 2018; van de Meene et al., 2011). Drawing from these different perspectives, in this research, a process-oriented perspective of governance is used to indicate *a purposive interplay between actors and structures in enacting diverse forms of control and influence to achieve collective outcomes*. This definition, therefore, encompasses the propositions that governance: (i) is enacted through the strategic exercise of power; and (ii) refers to the dynamic interrelationships between actors and institutions.

6.2.2 Contextualising governance

While aligned with the most current conceptualisation of governance in the literature, the definition proposed above can be further enhanced with a more explicit consideration on how governance is manifested in *local contexts*, where its limits and possibilities are continually shaped by locally relevant social, cultural, political and economic systems. Kooiman and Jentoft (2009, p. 834) contend that 'governance should balance contextual and universal principles … because social practices and cultural values differ, and those involved in governance should be sensitive to those differences'. The argument on contextualising governance, while appearing to be obvious, has arguably been glossed over in the normative strand of the literature (Voss et al., 2007). This has resulted in critics arguing that the scholarship 'amounted to "great deal of discursive smoke"—but little in the way of empirical "fire"' (Adger & Jordan, 2009, p. 17 citing Lafferty & Meadowcroft, 2000, p. 2). The blanket prescription of network-based collaborative governance as normatively desirable, for

instance, has begun to be tested in several empirical studies in the socio-ecological scholarship with results showing variations in the effectiveness of the network mechanism in managing resources sustainably depending on locally-specific limitations, e.g. legal obstacles or poor understanding of mutually dependent ecological systems (Bodin, 2017).

Recently scholars have also begun to look more closely at the relationship between wider national political contexts and local governance contexts in different European cities (Bulkeley & Kern, 2006; Ehnert et al., 2018), and found that the heterogeneous contexts play an important role in shaping the scope of actions. While these attempts are encouraging in extending current debate with empirically grounded accounts of contextual variations, this field of research is still at an embryonic stage, to date, mainly generating insights from developed contexts. The need to further develop current understanding of how governance can contribute to steering transformations in a contextually relevant manner is also argued by Patterson et al. (2017). They point to the importance of developing an approach that can account for the *unevenness* of transformations, which are far likelier to occur in 'multiple interconnected areas' (Patterson et al., 2017, p. 12) that 'intersect, overlap and conflict in unpredictable ways' (in reference to Scoones et al, 2015, p.21).

Against this background, this research argues that an approach that advances empirical substantiation of variations across contexts and their influence on ongoing interaction dynamics can inform a more accurate prescription of governance approaches and instruments for removing locally relevant obstacles or leveraging specific capacities to realise transformation. Here, a more accurate prescription entails sharpening current understanding of the limits and possibilities placed by multiple overlapping contexts on actors' scope of actions by identifying the particular mechanisms they enacted in responding to and in shaping the contexts.

Importantly, understanding contextual nuances becomes even more pertinent when acknowledging that existing governance approaches and instruments for facilitating sustainable socio-technical transitions offered in the literature have been typically derived from studies in developed contexts (Loorbach et al., 2017) with only a few exceptions (see e.g., Nastar, 2014; Yasmin et al., 2018). The study of socio-ecological resilience is more advanced in this respect—offering perspectives from developing contexts (Brown et al., 2012; Castán Broto et al., 2013). These studies underscore the important role of non-state actors and opportunities that may arise from informal systems of activity in shaping climate responses. This contextually-relevant interaction pattern is not always explicitly taken into account in socio-technical transitions perspective, which tends to favour elite technocratic groups of actors (Lawhon & Murphy, 2012). At the same time, the socio-ecological perspective tends to downplay the relevance of physical infrastructure systems in determining change trajectory (Bulkeley et al., 2014). In terms of understanding how governance can facilitate sustainable urban transformation, the overlapping systems of activity (e.g. formal policy, informal way of living, technical organisations, financial systems, physical measures, etc.) that shape urban socio-ecological and socio-technical systems have to be accounted for. The way in which the overlaps and multiplicity play out differently across contexts is a subject of empirical inquiry that can identify how the variations enable or constrain effective embedding of specific governance approaches or instruments into local contexts to deliver desirable outcomes

As argued before, this research takes a process-oriented perspective of governance, which is suitable for examining the dynamic nature of interactions. The working definition is formulated as *a purposive interplay between actors and structures in enacting diverse forms of control and influence to achieve collective outcomes*—indicating the enactment of power and interactions among diverse sets of institutions and actors. In addition to this, to reveal the way in which *governance is contextually embedded*, this research advances practice and institutional perspectives directly drawn from the strategic agency framework proposed in Publication 1 (chapter 3). The rationale for this is that, the practice and institutional perspectives can facilitate the diagnosis of the scope of actions for facilitating transformation processes by recursively accounting for variations in structural properties and actors' capabilities. Furthermore, the focus on power, structural multiplicity, and diverse roles of actors as posited by the process-oriented view of governance is also central to the practice perspective (see Publication 1 in chapter 3). Below the complementary lenses are brought together to draw a few heuristics for revealing the possible scope of actions with respect to relevant ongoing contexts. The heuristics are subsequently applied in the two empirical cases of Jakarta and Surabaya to synthesise locally relevant governance mechanisms for transformation.

6.2.3 Heuristics for revealing the scope of actions

The proposition of combining the strategic agency framework—developed in Publication 1 (chapter 3)—with the process-oriented governance perspective is based upon an understanding that governance can be viewed as a contextually embedded interplay of strategic actions to steer societal activities and outcomes. Based on the practice perspective proposed by Giddens (1984, 1979), Publication 1 (chapter 3) conceptualises strategic actions as performed by situating and embedding practices in time and space to reproduce and transform institutional structures. To further clarify the distinction between practice and process, process is understood as *how interactions evolve and unfold over time*, which is the basis of much of the systems and co-evolutionary thinking of sustainability scholarships. Practice is focused on *the embedding of interactions that bind together actors, events, and material and non-material resources in time and space.* There is a conceptual overlap between the two where both are concerned with how interactions may be steered and shaped by actors over time. While the process perspective focuses on the temporal dimension of interactions, the practice perspective sheds light on how interactions are manifested and embedded both temporally and spatially in a given complex system. Put it another way, practice represents the particular temporal and spatial manifestations of processes within contexts. Similar distinction is also utilised in the study of strategy as practice in organisational literature (see Whittington, 2007).

At the most micro-level, practices might be embodied in organisational routines or operating procedures utilised to steer outcomes. For instance, in the policymaking process in most infrastructure sectors, there are routines for budgeting or regular updating of planning documents. The policymaking process is also embedded in a larger sectoral system, which produces other kinds of routines, such as industry codes or technological trends that influence the scope of strategic behaviours. The policymaking and sectoral processes might also overlap and intersect with other social production processes (e.g. knowledge and space production in informal communities, in market-driven development, or in transnational networks), which may result in

a variety of legitimate ways of steering collective outcomes. Some examples of practices have been shown to be instrumental in shaping the Jakarta's and Surabaya's infrastructure sectors as presented in chapters 4 and 5. The more spatially and temporally regularised the practices become the more they obtain consistent and coherent structural properties (Giddens, 1984). In other words, the practices become more institutionalised.

Considering the global standardisation of many formal sectors, organisational structures, and political systems that shape modern society, the observed forms of practices—while particular to the contexts under considerations—may in fact be similar in character and function across contexts. For instance, the democratic political system—with their particular embodied practices across contexts, such as differing electoral cycles or levels of power distribution—generally has the function of enhancing opportunities for civil society to mobilise actions. The assumption that can be made in generalising the dominance (or influence) of some systems of activity over others across contexts, however, may not be obvious. Especially when the goal of governance is to transform dominant forms of practice, which, by definition, tends to obscure the role of 'shadow systems' (Leck & Roberts, 2015, p. 61) and their potentials for generating opportunities for transformation.

Existing transitions research in developed contexts departs from an assumption of relatively stable regime structures (Geels, 2002), which reflect the traditionally well-established technological system interlinked with strong democratic political system. Arising from this assumption, the possibility of transformations is primarily attributed to external shocks that destabilise the strong structural arrangements. Examples of such events in the infrastructure sectors can be when natural disasters strike leading to infrastructure failures or when global economic crisis hit and lead to political instability. In those moments of crises, the reliable and predictable outcomes that can be expected from the stable dominant regime temporarily fall into disarray. These *events*, as such, reveal some of the *exploitable properties of structures*, i.e. the a*mbiguous and uncertain ways in which societal systems produce and reproduce outcomes*. In other words, the *temporal disjuncture* created by these events conditions the scope of actions. In complex systems, the occurrences of such crises are largely unpredictable.

As demonstrated in Publication 1 (chapter 3) and chapter 5, however, the stability and uniformity of institutional structures cannot be taken for granted. Besides exogenous events, the practice perspective also emphasises the other significant and exploitable properties of structures: latent social tensions (as discussed in more detail through the concept of institutional contradictions in chapter 5). Social tensions may be strategically modulated, and when intensified to a certain degree, may have a comparable effect—to exogenous crises—on the dominant regime, in that they can open up opportunities for actors to enact changes (Publication 2 in chapter 4). Considering the *temporal disjuncture* that can be created by both exogenous crises and endogenous tensions, one of the heuristics that underpin the scope of actions can be postulated as: (i) the capacity to maximise impacts by recognising key moments in time and fine-tuning actions to temporal context. The capacity to monitor contexts and thereby recognise key moments is a fundamental manifestation of reflexivity that constitutes agency as theorised in Publication 1 (chapter 3).

To draw out the other heuristics, the spatial aspect of interactions needs be understood. Social tensions can arise from within spatially interdependent systems of activity. As argued in chapter 5, the tensions typically

arise from incompatibility among various production processes (e.g. political processes, formal policymaking, technical organisations, neoliberal development tenet, informal ways of organising, international relations, etc.). For Benson (1977, p. 5) this condition is caused by 'little coordination between the multiple contexts within which [social] construction take place'; the resulting institutional fabric is thereby splintered with 'contradictions growing out of the unevenness and disconnectedness of social production'. Development scholars have highlighted how the reproduction of uneven access to urban services in many developing cities is a result of incompatibilities among formal policy and technical capacities, neoliberal development processes and informal ways of living (Bakker et al., 2008; Watson, 2009). These incompatible processes, and the resulting contradictions, are typically more pronounced in cities in developing than in the developed regions, although this is not to say that the condition is negligible in the latter. However, the mechanisms that underpin the emergence of endogenous contradictions has indeed received relatively limited attention in the existing literature given emphasis on studying more stable regimes in the developed contexts (Fuenfschilling & Truffer, 2014).

Here it is argued that the interfaces where different processes overlap contain contextual richness that actors can draw from in creating opportunities for change. Exposed to multiple spheres of activity, actors have access to plural and rich contexts that broaden their scope of actions (Sewell, 1992; Whittington, 1992). Thus, *opportunities for transformative actions may be manifested in the interfaces between diverse (potentially incompatible) production processes.* This argument is not new because the multilevel and multiscale characters of governance have been generally agreed upon in the literature (Cash et al., 2006; Gupta, Joyeeta; Pahl-Wostl, 2012; Ostrom, 2010). However, to date, the assertion has not gone far beyond informing a normative consideration that more inclusive and diversified interactions need to underpin future governance. To substantiate and specify the manner in which such normative assumption holds across contexts, the study of governance needs to develop an approach that can identify and examine ongoing interaction patterns empirically.

Utilising a multilevel governance approach, existing studies have examined the interactions between formal spheres of activity, such as the interface between national and local political systems (Ehnert et al., 2018), or the interface between global and national actors (Gupta et al., 2013). By taking the practice lens, a broader view on what constitutes the legitimate or illegitimate spheres of activity is not predetermined, but subjected to empirical observations. Watson (2009, p. 2268) has argued that in many cities the informal spheres of activity '(in terms of forms of income generation, forms of settlement and housing and forms of negotiating life in the city) has become the dominant mode of behaviour'. Recent streams of urban transitions literature have emphasised different spheres of activity, underpinned by civil society (Frantzeskaki et al., 2016) or grassroots actors (Wolfram, 2018). The intention here is not to consider the different spheres of activity in isolation from one another, or to take them out of the wider contexts that shape overall interaction patterns. In agreement with Watson (2009, p. 2269) it is crucial to account for 'where linkages occur across the interface that some of the most interesting possibilities for understanding, and learning, arise'. Based on this understanding of *contextual richness* and *multiple spheres of activity*, the other heuristics underpinning the scope of action can, thus, be postulated as: (ii) the capacity to draw from plural and rich contexts to rationalise (or give

meanings to) actions; and (iii) the capacity to widen the margin of success by strengthening interfaces across different spheres of activity.

The last aspect of how the agent- and practice-based perspective can be utilised to diagnose governance mechanisms is by critically considering the different types of resources that can be strategically mobilised to reproduce and transform institutional structures. With reference to how the concept is used in Publications 1 and 2 (chapters 3 and 4), actors—as agents of change—are capable of being reflexive and of exercising different forms of power. As argued before, the manner in which governance is contextualised is associated with actors' reflexivity. Being reflexive, actors can monitor contexts and rationalised their responses, tacitly and discursively, to situate actions within ongoing contexts, while, in turn, shaping the contexts. Reflexivity can be enhanced when actors are exposed to rich and plural contexts. Power is understood in its relational form—playing out as the degree to which actors can maintain autonomy in social interactions (Giddens, 1984). Material and non-material resources are mobilised during interactions to reproduce or transform existing order of domination. There are different types of resources, e.g. human, natural, mental, artefactual, and monetary that can be mobilised in the enactment of ideological, physical, political, and economic forms of structural control that shape social relations and legitimise interactions. According to Sewell (1992, pp. 20–21) '[A]ctors, of course, vary in the extent of their control of social relations', and 'the scope or extent of agency also varies enormously between different social systems, even for occupants of analogous position'. In terms of drawing the remaining heuristics, what this perspective highlights is: (iv) the capacity to leverage different forms of control across interfaces.

To further bring the definition of practice to life with examples from infrastructure sectors, *actors* can vary from policymakers, planners, engineering and technical consultants, academic advisors, NGO representatives, informal community leaders, grassroots actors, to the media—all playing specific roles with relative degrees of autonomy to influence the interfaces among various spheres of activity (e.g. formal to informal spheres, global to national to local spheres, private to public spheres, etc.). Typically, in most developed contexts, the relatively formalised role of technological frontrunners and policy advocates has been noted as instrumental in promoting new solutions and changing practices in the socio-technical systems (Brown et al., 2013; de Haan & Rotmans, 2018; Nevens et al., 2013). De Haan and Rotmans (2018, p. 279) have further conceptualised three other role types in addition to 'frontrunners', 'connectors', 'topplers', and 'supporters'. Respectively, they provide 'systems with *diversity*', '*connectivity* amongst actors and between solutions and systems', '*coherence* to the alliances and nascent or changed systems', and legitimation by adopting and endorsing the solutions. The authors note that the role of *supporters* is not considered as necessarily transformative, although they do facilitate institutionalisation of new practices.

This conceptualisation of the role types underlines the different capacities required to embed new solutions in a complex system. Whilst the role types are generic and can, in theory, be applied to varying contexts, it should be noted that there would be local variations in the way they are manifested because their legitimacy is dependent on contexts. To stress the point, the predominant assumption that guide earlier transitions scholars to focus on policy experts or technological entrepreneurs, as primary change agents (Lawhon &

Murphy, 2012; Turnheim et al., 2015), is rooted upon culturally deep seated respect of knowledge and expert systems in the developed contexts (Watson, 2009). Such an assumption cannot be taken for granted in other contexts, especially when considering Watson's assertion that urban informal systems have increasingly become the prevalent force in many cities. Because the role types do not specify the broad spectrum of actors that can perform the different roles in practice as well as the relative distribution of capacities to transform, they may be best critically utilised to guide empirical investigation.

To recap, the *possible scope of action* by diverse embedded actors can be traced with reference to the following heuristics:

i. the capacity to maximise impacts by recognising key moments in time and fine-tuning actions to temporal context;

ii. the capacity to draw from plural and rich contexts to rationalise (or give meanings to) change processes;

iii. the capacity to widen the margin of success by strengthening interfaces across different spheres of activity; and

iv. the capacity to leverage different forms of control across interfaces.

While these heuristics emphasise the possibilities for transformation, it is also acknowledged that there are limits to the extent by which outcomes can be deliberately steered. In Giddens's (1979, p. 59) model of actions he acknowledges the role of 'unintended consequences' that flow out of 'unacknowledged conditions of action'. This underscores the point that the notion of deliberation does not imply that actions can be taken in vacuum whereby outcomes are guaranteed to follow intentionality. In addition to such unintended consequences, *deliberate reinforcement of status quo* by its defenders, or the incumbents, also limit the possibility for transformation as theorised in institutional and organisational scholarships (Battilana et al., 2009; Fligstein & McAdam, 2011; Levy & Scully, 2007; Swartz, 2014). The study of institutional contradictions in chapter 5, for instance, shows how contradictions can also be employed to maintain system inertia (or reinforce status quo) by normalising uncertainty and ambiguity to the degree that they occupy and divert attention from underlying problems, thereby privileging incumbent powerholders.

Another under-appreciated limit of governance in sustainability studies focusing on developed contexts, comes in the form of the more sinister reality that *abuse of political and bureaucratic power* is far likelier to afflict governance processes in many developing regions as frequently highlighted by development scholars (Bakker et al., 2008; Essex, 2016; Hadiz & Robison, 2005; Suhardiman & Mollinga, 2016). Hence, the possibilities of governance of transformations may be limited by unintended consequences flowing out of contingent circumstances; out of deliberate counter-strategies to maintain the status quo; or out of the abuse of legitimate forms of control.

Taken together, these heuristics can be utilised to guide empirical examination of governance for transformations across contexts. In contrast to the prescription of governance approaches and instruments

based on normative principles, these heuristics are based upon a refined conceptual understanding of the varying scope of strategic actions and the contextually-embedded manifestations of opportunities. In the next section, the application of the heuristics is illustrated using the contrasting cases of Jakarta and Surabaya. Given that the conceptual development of the heuristics is extended directly from the strategic agency framework—which has been utilised to analyse the cases in great detail in chapters 4 and 5—the insights presented in the next section will give prominence to certain actors, events, and practices that underscore how possibilities of transformations were strategically steered and navigated by different actors in Surabaya, whereas limitations constrained governance interplay in Jakarta.

6.3 Illustrative application in contrasting cases

This section presents a comparative analysis of the two case studies that illustrates the value of the heuristics for diagnosing the mechanisms through which actors monitored temporally- and spatially-differentiated contexts, and mobilised actions to shape the contexts. In turn, this analysis provides indications on how specific governance mechanisms may be utilised to facilitate transformation. Insights into the range of governance mechanisms enacted across the cases are synthesised in section 6.3.5. It is to be noted that the analysis presented below was not a result of linear process of deduction based only on the heuristics developed in this chapter. Rather, the analysis was conducted as a process of iterative reflections of the theories and empirical material presented across the preceding chapters. As referenced throughout section 6.2.3, the heuristics were developed as a result of combining the agent- and practice-based perspective (developed across chapters 3, 4, and 5) with governance theory (reviewed in this chapter).

6.3.1 Maximising impacts by recognising key moments in time and fine-tuning actions

One of the key temporal disjuncture for the inception of the NCICD program was a devastating flood event that hit Jakarta in early 2007. In response to this, elite national bureaucrats mobilised foreign advocacy network to undertake a flood risk assessment study, which became the basis for the subsequent multi-year technical programming that culminated in the NCICD masterplan in 2014. The NCICD proponents primarily consists of the national bureaucrats, private consultants, and foreign advisors. This indicates the relatively greater scope of actions for national state-actors (compared to civil society groups) to react quickly to exogenous shocks and impose a major infrastructure decision that could critically shape long term development outcomes in the city. The moment of crisis is essentially leveraged to construct a sense of urgency around the infrastructure decision (Granqvist & Gustafsson, 2016). However, the tendency to be reactive (rather than responsive) in making a major infrastructure investment in moments of crisis can potentially runs counter to sustainable development agenda (Malekpour et al., 2017). This indicates that the available scope of action in the formal sphere of policymaking may, in fact, limit transformation potential given inclination to channel investments towards 'tried and tested' conventional solutions, particularly when a quick response is called for by the unexpected circumstances.

In 2015 another temporal disjuncture occurred when social tensions were mounted strategically by the NCICD opponent groups during a bribery scandal that emerged in relation to the initiative. The disjuncture was exploited by the pressure groups—consisting of external local experts, NGO representatives, and a few agonistic national bureaucrats with supports from the media—to erode formal authority and demonise private and foreign involvements in the development of the initiative. This insurgent movement was effective in interrupting the NCICD momentum temporarily. The practice of 'insurgent urbanism' has also been reported in Brazilian and South African cities (Friendly & Stiphany, 2018). Other scholars studying the politics of policymaking have concluded that '…real events…coupled with media coverage, public opinion, and political pressure by societal organizations usually represent more powerful pieces of evidence than do comparatively abstract [policy] assessments' (Meadowcroft & Steurer, 2013, p. 17).

In Surabaya, the notable temporal disjuncture occurred in 2000 when a major solid waste crisis triggered the green initiatives. The waste crisis was a culmination of strategically mounted social tensions in the form of sustained community-led blockades of one of the main waste disposal sites. The tensions arose out of spatially uneven outcomes—in the forms of severe pollutions and safety hazards—affecting marginalised communities living and working in and around the waste disposal site. The blockades led to severe accumulation of waste across the city. The political and public pressures were effective in reducing the city managers' technical capacity, as well as, in eroding the local government's inertia (in not addressing poor public services and issues of marginalisation).

Another key timing strategy was enacted in the form of regular annual city-wide green competitions among low- to middle-income neighbourhoods (*kampungs*). The strategy was essentially designed to promote and sustain grassroots participation, or to upscale the initiatives. Here, the evidence indicates that the constructed cycle of hype pertaining to the annual competition—starting with intensive workshops, interim roadshows, evaluation week, and ending with an award gala—maintained some level of public enthusiasm and stimulate learning. Media and private financial supports also promoted wider participation. Timing activities around specific events has been identified as a mechanism that can facilitate organisational adaptation in management literature (Gersick, 1994). More specifically, this timing mechanism is utilised to 'entrain' the grassroots participation by 'synchronising' the initiatives with 'wider reforms' (Granqvist & Gustafsson, 2016, p. 1017). However, fluctuations in participation levels were noted over the years with variable outcomes even among spatially-connected (but not necessarily socially-connected) *kampungs*. This underscores the importance of linking temporal with spatial mechanisms in governance of transformation.

6.3.2 Drawing from plural and rich contexts to rationalise actions

For the NCICD, the proponents deliberately enacted the narrative of 'sinking capital' to amplify urgency for realising the initiative. The use of narrative as a way to contextualise innovations has been underscored by other scholars (Garud et al., 2014). The NCICD was rationalised by its proponents primarily as an integrated technical and organisational solution to improve capacity to deliver long-term infrastructure measures that deal with climate-related flood risks. The initiative was rationalised using a 'nationalist urbanism' narrative (Kusno, 2004). The nationalist urbanism discourse has been argued by Kusno as a kind of steering mechanism

through which 'political elites of the country produce Jakarta as a city of influence'. The hybridisation of public infrastructure delivery with private land development was rationalised in terms of potential economic revenues generated through private development activities that co-finance the public initiative. Furthermore, the innovative design of the off-shore seawall and land reclamation was argued by the proponents as attractive for global foreign investments.

This case shows the different manners in which macro-level contextual trends (e.g. national safety, climate change, globalisation, and neoliberal development tenets) were drawn to produce multiple rationalities that anchor the initiative. The discursive capacity was coupled with formal authority (of the national bureaucrats) and allocative power (of the private sectors) to legitimise the hybrid public-private governance form of the infrastructure delivery systems. Historically, this form of rationalities has also been enacted in the adjacent water supply sector, and has legitimised the concentration of investments in high income areas, and exclusion of poor households from the formal network (Bakker et al., 2008). In this sense, the proponents' strategies can be considered as a deliberate reinforcement of the status quo—which reproduces uneven urban outcomes—that limits transformation.

The NCICD opponents, indeed, highlighted the lack of attention paid on resolving potential ecological and social impacts that could arise from constructing the off-shore seawall (Bakker et al., 2017). The impacts, which disproportionately affect the vulnerable communities and ecosystems in the bay, have been initially glossed over by the proponents. The opponents draw upon the same rich contexts as the proponents, but emphasised the contradictions between 'national safety' and the livelihoods of the traditional fishing communities. This reflects what Watson (2009, p. 2269) denotes as 'conflicting rationalities' between neoliberal development tenets and the survival of the poor and informal. What is crucial for embedding this counter-narrative is the interface with the democratised political system, which gives considerable power to the media—mobilised to popularise the counter-narrative and influence public opinions. The combination of rich narrative with real events can powerfully exert political pressure to shape the credibility of policy evidences (Meadowcroft & Steurer, 2013).

In Surabaya, the notable use of narrative as a governing mechanism to sustain the transformation can be noted in the widely socialised storyline of 'green and clean' Surabaya that has been normalised as a symbolic identity of the city. The narrative was embedded across formal and informal spheres of activity. In the formal policy sphere, the reported achievement of the public green open space target can be considered as a key legitimising element of the overall storyline. The achievement is a proxy because it is future orientated, based on the proportion of green open spaces plotted in the master plan, and does not really represent the current condition. However, the narrative's utility in evoking shared identity, common agenda, and maintaining momentum towards realising the green initiatives was quite significant with plenty of evidences of national and international awards being given to the city for its perceived success.

Another important use of narrative to coordinate past and present initiatives (Bartel & Garud, 2009) in this case is exemplified by linking the contemporary green *kampung* initiatives with the legacy Kampung Improvement Program (KIP), which ran from 1969 to 2008. This strategy can also be seen as a 'spin-off' that

essentially draws 'inspiration from the original initiator movement' (McAdam, 1995, p. 216). This coordinating mechanism is achieved by drawing from 'repository of narratives' that 'provides a generative memory that allows for the translation of ideas in ways that shape, but do not determine, ongoing innovation processes' (Bartel & Garud, 2009, p. 110). The rich repository of such generative memory can be traced to the institutionalised involvement of local academics that have been instrumental in conceiving the KIP and in influencing the green policymaking. Furthermore, accumulated social capital within the communities also facilitated participation in the contemporary green initiatives. Grassroots innovation was also tied with a narrative of 'diverse and democratic urbanism'[1], which fits closely with local cultural contexts ('*budaya arek*')—broadly expressed in high level of solidarity and consensus-making within the communities. The contextually rich narrative helped carve out collective identity and citizenry among the actively involved *kampungs* to exercise their rights and obligations over urban place-making. This finding supports the proposition that governance of transformation requires the construction of rich narratives by local urban actors that provide compelling and intuitive meanings embedded within local political and cultural contexts.

6.3.3 Widening the margin of success by strengthening interfaces

The NCICD was conceived by its initiators as a public-private partnership (PPP) backed by multilateral foreign assistance. Ties with the Dutch foreign advisors were deliberately forged leveraging colonial and post-colonial relations between the two countries in the water management sector. To further embed the relationship and legitimise the influence of foreign advisors in the policy making process, formal agreements were signed between the governments. In comparison with Surabaya, membership to the formal policy sphere in Jakarta was relatively closed, where a select number of technical advocates were handpicked by policy elites with a greater dependency on global advocacy network in knowledge production processes. The closed policy system appears to have bred internal distrust and weak intragovernmental synergy across governmental sectors—whose endorsements must be acquired to implement the master plan.

This was complicated by strong external tension staged by opposing local experts and civil society. The master plan was heavily criticised by local experts as elite co-optation of planning and development flanked by foreign and private interests. The tension between the formal decision-making activities with informally organised public oversight was intensified during the second temporal disjuncture. This case demonstrates how the exclusion of some key issues from the formal policy sphere can result in reactionary (and mostly sporadic) social movements mobilised by local civic activists and endorsed by the media. This represents a mechanism that can influence and alter the infrastructure initiative. However, the sporadic and disruptive nature of the interface between formal and informal activities means that the mechanism does not represent a reliable solution to resolve tensions adequately. As such the finding represents limits to governance given the persisting uneven distribution of power in infrastructure decision-making. The hierarchical steering of policymaking process by the dominant elite technocratic groups of advisors and bureaucrats has been largely

[1] This term 'diverse and democratic urbanism' is borrowed from Kusno's (2004, p. 2391) study of Jakarta's urban processes in the post-authoritarian regime, whereby urban development gained a greater degree of autonomy from hierarchically 'imposed uniformity of the national framework'.

maintained, although some political compromises were offered to incorporate the demands made by the pressure groups.

By contrast, Surabaya's green transformation demonstrated a strong synergy between formal policy sphere, local and global advocacy networks, and self-organised movements. Given the relatively open membership to policymaking, local advocacy and civil society networks (ranging from local experts, NGOs, informal leaders, women's organisations) can play a significant role in shaping the initiatives as well as in embedding the formal-informal model of delivery of the green target. The linked practices across formal-informal spheres of activity was the lynchpin that held together widespread public endorsement and limited divisive forces from detracting implementation. The multilevel synergy between the formal process and community-based knowledge and space production process was arguably the hallmark of Surabaya's transformations. Interface with private sector companies was also relatively strong, primarily in the form of Corporate Social Responsibility (CSR) funding for park construction and maintenance as well as financing of green programs in some *kampungs*.

Interface with the global network is another mechanism leveraged in facilitating the transformation. Soon after the waste crisis, the partnership with Surabaya's sister city in Japan, Kitakyushu was launched to deal with organic waste issues. The global actors collaborated with local NGOs to deliver a simple technological intervention (composting bins) across low-income households; combined with government-established community centres for recycling and composting. This case underscores how global actors could develop a direct engagement model with local urban actors to deliver more locally-specific intervention programs, rather than follow the conventional way of dealing predominantly with national elite actors.

This strong interface between formal and informal activities, while relatively strong, is not uniform across Surabaya. Although less polarised than in Jakarta, a weak interface between state-sponsored activity and informal activity was also present in Surabaya, and need to be accounted for to understand the limits and possibilities of transformation. For instance, Bunnell et al. (2013, p. 872) report that 'logics of neighbourhood competition [in Surabaya] had led to social marginalization of community members who were unwilling or unable to contribute to kampong beautification in ways that conform to prize winning expectations'. In one of the main mangrove reserves, an insurgent community-based environmental protection movement—led by a traditional leader in the local fishing community and facilitated by local activists—had emerged. The movement was founded upon a dissatisfaction over perceived government inaction on marginalisation of traditional communities and illegal conversion of mangrove forests into private developments. While the government has established an eco-park with the aim of leveraging public participation in the mangrove zone, engagement with traditional communities appeared to be low. Closer examination of commitment to the green city target also reveals a limited contribution from middle- to high-income private developments. Furthermore, although the city's nature reserves have been designated as protected zone in the latest urban master plan, an environmental watchdog has indicated continued encroachment by private developers. Reportedly, there has been very limited state intervention to penalise such violation.

The less-than synergistic interfaces across the informal activities in the mangrove zone and the market-led private developments represent some limitations to Surabaya's transformation. Specific governance mechanisms that can align aspirations and needs in those spheres of activity with the wider transformation agenda need to be enacted to resolve the contradictions. Given what is known about the unintended consequences of actions, contradictions would not be entirely resolvable. In this sense, transformation is an ongoing process of identifying places to intervene and anticipating latent contradictions. In this sense, the operational goal of governance for transformation is about fostering transformative agency that arise from contradictions, rather than to pursue systemic uniformity or homogeneity. In a normative sense, strengthening interfaces across spheres of activity does not entail certainty of outcomes. In line with what other scholars propose as a reflexive governance mechanism, it entails an iterative modulation of problems with solutions, and monitoring of both intended and unintended outcomes (Voss & Kemp, 2005).

Tracing the interfaces across the different spheres of activity, as shown above, can reveal the way in which specific governance mechanisms were leveraged to create possibilities, or conversely, how ongoing interaction patterns imposed limitations on the capacities to transform. Four spheres of activity are salient across the two contexts: (i) formal policymaking and development activity; (ii) global and local advocacy network activity; (iii) self-organised informal movement and development activity; and (iv) market-oriented development activity. This distinction does not imply that the spheres operate as separate and independent entities, rather they are interdependently shaping the diverse and uneven urban outcomes observed in the case studies. The range of governance mechanisms enacted in relation to maintaining and strengthening interfaces across the spheres of activity are summarised in Table 6.1 below.

Table 6.1 Governance mechanisms shaping interfaces across spheres of activity

Spheres of activity	**Governance mechanisms**	
	Jakarta (NCICD)	**Surabaya (Green transformation)**
Formal policymaking and development activity	closed and formalised elite memberships to policy making & implementation	open and formalised memberships to policy making & implementation
Global and local advocacy and network activity	formal diplomatic relations and technical assistance to facilitate knowledge production (e.g. multipartite government to government partnerships for technical advice)	informal & formal collaborative units with local advocates to facilitate knowledge production; diplomacy and limited foreign assistance to bolster global reputation (e.g. international award systems)
Self-organised informal movement and development activity	informally organised sporadic opposition by pressure groups and marginalised communities (e.g. staging polarisation and agitation in media)	formally-endorsed and dedicated collaborative units with community members, informal leaders & advocates (e.g. green *kampungs*); informally organised space production unit by marginalised communities & activists (e.g. fishing community)
Market-oriented development activity	formalised contributions from land-development activities; market competition and rent-seeking behaviour (e.g. jockeying for land allocation)	some voluntary contributions to support green target; market competition and rent-seeking behaviour (e.g. jockeying for land allocation, shirking green contribution)

6.3.4 Leveraging different forms of control across interfaces

The NCICD proponents, taking the legitimate positions as elected and appointed bureaucrats, can leverage different degrees of control across the spheres of activity. They have comparatively greater control over the formal sphere, but less influence over the informal sphere, as instantiated by the civil activism mobilised by the opponents. The instrument of control utilised by the proponents was their political and bureaucratic authority. The opponents, by contrast, leveraged a cultural and political instrument through their civic activism and media backed protests to exert some degree of control over the initiative.

Similar political and bureaucratic forms of control were at play in Surabaya. In the first few years of the initiatives, Peters (2013, p. 178)—who ethnographically studied a *kampung* in Surabaya—even suggests the use of 'hard' forces (police and military) by the then-mayor, Bambang D. H., to enact a strategy described as 'an all-out offensive against urban disorder'. Similar militaristic approach was part of the historical context in Surabaya, whose first mayor was a lieutenant colonel often regarded as instrumental in restoring order to the city in the aftermath of a political coup in 1965. The form of control by the city government during Bambang's term was performed by enacting legal sanctions on 'illegal' street vendors, urban squatters and encroaching private owners and companies for violating public orders. Despite controversy, the 'hard' approach appeared to be effective in restoring formal authority in the aftermath of the waste crisis. This form of authoritative control exerted by city mayors became possible when the authoritarian regime was toppled in 1998, providing greater autonomy to local governments to shape urban development agenda in their jurisdictions (Bunnell et al., 2013).

The leadership of the current mayor Tri Rismaharini, also stands out in its capacity to generate another forms of control: trust. Trust has been identified as a critical ingredient in facilitating collaborative governance (Edelenbos & van Meerkerk, 2015). Throughout her bureaucratic career Rismaharini developed a strong reputation and public credibility as an environmental steward of the city, known for her trademark routines of inspecting the city's infrastructures directly, ordering repairs immediately, and even, from time to time, literally getting her hands dirty cleaning up the streets on her own. This dedication has, in turn, aroused admiration and solidarity from many of her supporters. This leadership style on the street-level has also been found as an important factor in the urban transformation of some African cities—referred to as 'street-level bureaucrat' by Gore (2018 citing Lipsky, 1980). Similar to Gore's conclusions, these street-level actors play an important role as 'the interface between bureaucracy and the citizenry and have a high level of discretion in the application and implementation of government policy' that 'responds to local needs' (p. 170). In doing so, they foster trust-based relationships with the communities. Rismaharini's mantra of 'lead city reforms by example' (Bunnell et al., 2013) has been retold by almost every one of the interviewees, and made her a symbol of the city's identity and its transformation. Her legitimacy as such is rooted deep in the public's trust of her dedication towards the city, and rewarded by electoral solidarity that secured her a second term. Such public activism practiced by the city bureaucrats is, thus, the anchoring mechanism for transformations.

Transformational leaderships also appeared to be distributed. This finding corroborates the positive role of distributed agency in facilitating innovation and transformation as reported by other scholars (Battilana et al.,

2009; Garud & Karnoe, 2003; Jolly & Raven, 2015; Wolfram, 2016). In many advanced green *kampungs*, transformation was generally driven by local leaderships from environmental champions. The physical and social space within *kampungs* continued to be transformed by grassroots actors through vernacular approaches (Silas et al., 2012) to carve an alternative urban identity and foster experimentations with alternative infrastructure provisions, e.g. decentralised wastewater treatments, solid waste banks, urban greening, etc. Green innovation, in this context, is not entirely about the form of control often associated with innovations (e.g. expertise in technological solutions), but it is enacted by harnessing cultural form of control that embed communities' rights to space in a modern city. Informal leaders also exercised normative authority that compel community members to contribute, while marginalising those that cannot afford or are unwilling to participate (see Bunnell et al., 2013). Cultural and political forms of control were also leveraged by the local state actors to internalise high-performing *kampungs* as instruments that deliver green targets. By characterising the specific forms of control utilised in different spheres of activity, the agency of *kampung* inhabitants as rightful citizens leading the green initiatives within their own communities comes into focus, as well as how the scope of their actions was shaped by formal control exercised by the local government.

In terms of political leadership, the formal authority in policy making sphere in both Surabaya and Jakarta was similarly dominated by elite state actors, who exhibited relatively high-level of autonomy with filtered (or direct) influences from trusted network of advocates. The key difference here is that in Surabaya, civic societies and community leaders were closely involved during the agenda formulation and its subsequent implementation, creating possibilities for distributing transformative leadership and ownership among non-state actors and organisations.

6.3.5 Lessons: synthesising governance mechanisms for transformation

A number of salient lessons can be learned from the application of the heuristics to the contrasting cases:

i. Mechanisms to time actions to key socio-ecological events appear to be important for initiating, embedding, and maintaining momentum for urban initiatives—timing as a strategy for institutional change has been studied extensively in organisational research (see e.g. Brown & Eisenhardt, 1997; Gersick, 1994; Granqvist & Gustafsson, 2016). Timing is also considered important in the studies of policy change, notably in the three streams model proposed by Kingdon (2003). According to this model, the confluence of a problem, a solution, and political climate opens policy windows that indicates the right timing for change. To this end, given their legitimate authoritative power and access to economic resources, both national and local state actors have relatively greater autonomy—than non-state actors—to respond and impose decisions in a top-down manner as temporal context shifts (unless the crises also disrupt the foundations of the political or economic systems). In other words, they could decisively steer transformation trajectory in those moments of crisis. Yet, it must be noted that reactive decision-making can also reinforce the status quo. In this regards, governance of transformation can focus on building the state's capacities (given their relative power to transform) to take decisive actions during such windows of opportunities that can deliberately alter the status quo.

ii. Narrative mechanisms appear to be important to contextualise the urban initiatives, give meanings to wider participation, create a sense of urgency, construct credibility, and orient the initiatives to the past, present, and future of the cities. The utility of narratives is even more pronounced when mobilised in conjunction with the occurrences of real-world events. Narratives are contested boundary objects used strategically by different groups of actors to produce and reproduce control (Bartel & Garud, 2009; Watson, 2009). Similar argument is also found in the literature on policy analysis that examines the formation of policy coalition, whereby narratives are understood as 'a way of structuring and communicating our understanding' operating across societal levels (Shanahan et al., 2011, p. 539). The study of policy controversies also recognises narrative as a form of discursive strategy labelled as 'frames' (Schön and Rein, 1994). The authors identify the following frames utilised in influencing policy direction: rhetorical frames, action frames, policy frames, institutional frames, and metacultural frames. That the fundamental elements of basic languages, such as symbols and numbers, are used to strategically portray policy problems in terms of causes, interests, and rational decisions, is an argument that can be traced to Stone (1988). Drawing attention to the issue of framing in policy studies, Stone classifies the linguistic use of symbols and numbers in their various forms, ranging from stories, synecdoche, metaphors, ambiguity, and norms (1988). In this light, governance of transformation can focus on the strategic and creative use of symbols and numbers to construct meaningful narratives that can orient actions, mobilise resources, mediate tensions, challenge the status quo, and embed change processes. The notion of shared vision and common agenda (Kemp et al., 2007) is also critical for mobilising actions but must be reflexively utilised to confront, rather than downplay, contradictions.

iii. Mechanisms that create open membership arrangements in traditionally elite or expert dominated spheres of activity (e.g. policymaking, knowledge production) and recalibrate systems of rights and obligations (particularly to legitimise participation by a wider spectrum of actors) appear to be important in facilitating transformation. This insight confirms the instrumental role of informal spheres of activity in shaping the urban development reality (Watson, 2009). Instead of sidelining (or even denying) rights to space (and to participate) for this burgeoning sphere of activity, governance of transformation needs to lead the way in recalibrating the way in which urban laws, land regulations, and infrastructure plans have conventionally reproduced social exclusion. This requires formal institutional and organisational reform as well as informal network and cultural instruments to push for more open, inclusive, and participatory forms of planning and decision making. To this end, boundary-spanning by agents across different areas of activity—as proposed in sustainability science (see e.g. Cash et al., 2006; Cash and Moser, 2000; Folke et al., 2005; Smink et al., 2015)—is also critical to facilitate governance of transformation.

iv. Mechanisms that leverage cultural identities and trust appear to be important for mobilising collective actions. Specifically, distributed leaderships are best situated to give shape to shared identities that fit with local cultural contexts and to dedicate considerable energy in trust-building. Indeed, social

identity has been identified as a form of cultural resource in the study of institutional change (Seo & Creed, 2002) and social movement (Gotham, 1999). Trust has also been suggested by some as a form of control in organisational research (Tobias-Miersch, 2017). In this light, distributed leaderships can maintain their autonomy by employing these non-material resources to respond to local needs. It is critical that they are actively engaged across other interfaces. These mechanisms, thus, entail fundamental redistribution of material and non-material resources. To facilitate transformation, it can be suggested that state actors—with their relatively greater concentration of resources—redefine their traditional roles of 'public service providers' and adopt new roles as 'street-level facilitators' or 'municipal activists' (Goh & Bunnell, 2013; Gore, 2018) that nimbly maintain the interfaces across different spheres of activity.

v. Market mechanisms appear to be relatively dominant in both contexts in shaping inequitable development outcomes. There are indications of unintended consequences flowing out of the ongoing pressure from neoliberal development activity, and even covert attempts to maintain market dominance by subverting the political legal systems. The interface between political and economic spheres of activity, in terms of hidden forces of society, has been emphasised by scholars concerned with critical studies of development outcomes (Jessop, 1997; Swyngedouw, 2005). The hybridisation of state and market into neoliberal vehicle of development, they argue, can be seen through the externalisation of state functions towards greater commodification of public services to private sectors. Swyngedouw (2005) even contends that such hybridisation in many ways can exploit the rhetoric of pluralistic empowerment of horizontal networks and socially-innovative entrepreneurs, and 'can prove to be the Trojan Horse that diffuses and consolidates the "market" as the principal institutional form'. By this token, market transactions can, in some way, diminish political authority, public trust, and democratic representation, in favour of property rights and rational pricing as principle rules for governing societal processes. In this light, governance of transformation needs to critically monitor and reframe the interface between market, formal and informal spheres, given the considerable degree of economic power exercised by the market in shaping development outcomes. The monitoring of such interfaces, traditionally left to state actors, may be increasingly enhanced with stronger role played by diverse and distributed forms of leaderships and civil activism.

Taken together, these lessons reveal the temporal and spatial dimension of governance, and the specific steering mechanisms employed, such as 'timing' to real-world events and utilising narratives as boundary objects, to shape the possibilities of transformation. They also reveal the different forms of control employed by different groups of actors to transform the status quo, particularly by recalibrating membership arrangements and systems of rights and obligations as well as the role of distributed leaderships in mobilising non-material resources of social identity and trust in fostering collective actions.

This finding confirms the need of governance mechanisms that can reimagine traditional social roles while reconfiguring the distribution of resources. The lesson, here, suggests in particular that state actors can assume the role of facilitators (or even activists) in place of their traditional service provider role. The relative

amount of resources that state actors can access also means they remain instrumental, particularly in making (potentially path dependent) decision in moments of crisis. For this reason, it is pertinent to monitor decision-making processes in those types of condition and deliberately reframe crises as opportunities for path-breaking sustainable initiatives. This also entails an amendment to the way resources are predominantly being utilised by the state to deliver (path-dependent) large scale physical measures, rather than to support measures and mechanisms that can *facilitate* and *build* distributed leaderships among the communities. The finding underscores the limitation placed by another dominant power holder, which is the market-driven development activity. There are indications that distributed and diverse forms of civil activism can reconfigure the power relations, however, this requires further comprehensive examination into how the mechanism may be fostered as a constructive force rather than polarising force.

6.4 Values of the heuristics

Overall, the empirical application of the heuristics shows how the possibilities and limits of a few governance mechanisms can be critically synthesised by analysing ongoing patterns of interactions that reveal the varying scope of actions across the two contexts. The lessons that may be derived generally agree with the essential tenets of the normative governance prescriptions, such as the need to modulate contexts, distribute power, mediate various perspectives, involve diverse actors, and strengthen multilevel interfaces (Adger & Jordan, 2009; Castán Broto, 2017; Folke et al., 2005; Kemp et al., 2007; Voss & Bornemann, 2011). However, the heuristics do not take these normative prescriptions as the starting point of the analysis. Rather, the application of the heuristics focused on revealing ongoing interaction patterns, which may then be normatively evaluated based on observed outcomes. As such, this research enriches the literature by revealing how some of new governance forms and approaches were being performed in practice by different groups of actors to facilitate transformation.

First, this study reveals how the normative prescription of power distribution is played out through the mechanism of constructing social identity and building trust performed by dedicated activism of civil groups and municipal actors. This adds empirical depth to existing power theory in sustainability research that has offered a broad conception of different types of power in terms of resource creation, distribution, and '*changing the way*' it is distributed (Avelino & Rotmans, 2011, p. 799), but not *how* this can be achieved in practice.

Second, the confirmation of trust-based mechanisms in the case study echoes another key normative prescription in the literature (Edelenbos & van Meerkerk, 2015), however, this does not mean the heuristics are biased towards revealing or advocating for this particular prescription. Trust-based mechanism appears to be salient in mobilising collective actions through civil activism in the case studied, but the same mechanism may need to be modified or adjusted depending on contexts.

Third, this study also underscores the need to refine understanding on how 'timing' of change processes to real-world events can be enacted in practice beyond the accepted view that exogenous crises disrupt status

quo. The importance of timing and events as steering mechanisms has been highlighted in some studies (Garud & Gehman, 2012; Jolly & Raven, 2016) but cross-pollination of research approaches and insights from the more advanced body of work in organisational and management studies on the strategic use of such steering mechanisms can further refine existing sustainability scholarship (see e.g. Granqvist & Gustafsson, 2016; Orlikowski & Yates, 2002; Reinecke & Ansari, 2015).

Fourth, the use of narratives as cognitive frames to mediate multilevel interactions, particularly when mobilised in conjunction with real-world events, emerged as another steering mechanism. The use of cognitive frames, such as visioning exercises or scenarios, has been advocated in transition management approach (Kemp et al., 2005) although 'with few substantive follow-up activities' the mechanisms appear to be ineffective (Schot & Geels, 2008, p. 542). This research extends the literature by revealing how, in practice, effective cognitive frames were mobilised in conjunction with real-world events, and were not necessarily utilised to reach consensus but to challenge status quo (or frequently to polarise perspectives).

Finally, limitations in transformative capacities, such as exemplified in the relatively path-dependent interaction patterns shaped by market-led development activity (another key power holder in the urban development processes) are also revealed. Because the heuristics are not specifically designed for a particular sphere of activity (by contrast, transition management approach, for instance, is typically tied to formal policymaking activity), the analysis allows tracing of different relevant spheres of activity in the empirical setting.

While the applications presented in this research are based on specific cases of urban infrastructure initiatives in developing contexts, the heuristics are not conceptually tied to those contexts, but more broadly rooted on the study of interrelationships between agency and structure. Hence, they may be applied and validated in other studies of governance interplay in non-developing, non-urban or non-infrastructure contexts. Accounting for contingency and multiplicity of governance contexts in examining the emergence and implementation of sustainable urban initiatives in developing cities has also been identified as an important underexplored area of research (Bulkeley et al., 2014; Ehnert et al., 2018). The synthesised governance mechanisms, while drawn from a small number of cases, represent a set of salient empirical observations that may be further validated in future research.

The illustrative application of the heuristics generates *ex-post* explanations after transformations (or lack thereof) occurred. However, it is possible with increasing empirical applications in diverse contexts, a typology—which 'stands between theory and the test of theory' (Winch, 1947, p. 68)—of governance *for* transformations that clearly links contextual variations with the spectrum of possible scope of actions can be synthesised at a later stage. In this sense, the empirical inquiry is not merely descriptive but is employed to enrich theory-building in governance scholarship. The development of such typology would contribute in guiding the design of governance interventions *for* transformation, hence, potentially facilitating '*ex-ante* (forward looking)' research of governance processes in sustainability literature (Patterson et al., 2017, p. 10). The governance mechanisms identified here can be taken as a starting point in the development of such typology.

There is also the potential to take the mechanisms to inform more practical interventions, where an initiative to transform a particular societal system is being conceived among a group of actors (state, non-state, or combination of them). The heuristics together with the mechanisms can, hypothetically speaking, guide a diagnostic of ongoing interaction patterns for exploring possible scope of actions among the group of initiators, but also those yet to be directly engaged. The diagnostic includes taking stock of the range of existing capacities and mechanisms to time actions, to mediate conflicting narratives, to recalibrate systems of rights and obligations, to leverage cultural and political instruments, and to monitor interfaces among different spheres of activity. The gathered information becomes a basis for exploring ongoing limitations and possible future actions. Such intervention, however, would require further methodological development.

This research represents a small step in bringing governance theory closer to practice. The literature review of mainstream governance scholarship at the beginning of this chapter clearly indicates the need for existing theory to move beyond characterising 'new patterns of governance' towards analytically and critically questioning the 'limits and possibilities' of governing complex systems Duit and Galaz (2008, p.329). In other words, a more empirically-driven inquiry is required to identify locally relevant spheres of activity and ongoing interaction patterns where interventions can be most effective. As shown in this research, better appreciation of the range of empirically derived governance mechanisms can enrich existing normative understanding of governance prescriptions. Without bridging the normative and the empirical strands of the debate, governance theory will lack the clarity as to: where exactly interventions are needed and can be most effective? What kind of mechanisms need to be leveraged? Across what spheres of activity must new arrangements be developed? To this end, this research has complemented and extended existing governance debate by developing heuristics that can guide empirical studies of governance mechanisms in a variety of contexts to obtain greater clarity of *who, where, when,* and *how* specific forms of governance and their mixtures are deliberately enacted to steer collective outcomes.

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Chapter 7

Contributions & outlook

7.1 Introduction

This chapter outlines the fulfilment of the research objectives in terms of specific scholarly and practical contributions that emerged in this thesis. Limitations and outlook of the research are also reflected on.

7.2 Scholarly contributions

This PhD research was designed to extend theoretical and empirical understanding of the limits and possibilities of specific governance mechanisms for steering sustainable transformation under diverse contexts. Three key scholarly contributions are delivered in this thesis:

(i) Extended the scholarship on sustainability transitions by facilitating a higher resolution examination of institutional processes as enacted by change agents situated within intersecting structures.

Established perspectives in socio-technical transitions scholarship—represented by multi-level perspective (MLP), strategic niche management (SNM), technological innovation systems (TIS) and transition management (TM) (Geels, 2011; Geels and Kemp, 2007; Kemp et al., 2007; Loorbach et al., 2017; Markard et al., 2012; Rotmans and Loorbach, 2009; Schot and Geels, 2008, 2007)—provide quasi-evolutionary explanations of system transformations. Given their roots in innovation research and systems thinking, these perspectives tend to emphasise agency as a capacity to navigate niche–regime interactions, specifically by charting institutional works along a functional model of innovation breakthrough and diffusion processes.

Despite the potency of transitions scholarship for retrospectively examining innovation-orientated processes on a system level, many scholars have argued for expansion of the conceptual lens to facilitate more fine-grained and empirically grounded understanding of various other processes on the micro-level (Avelino & Wittmayer, 2016; Brown et al., 2013; Farla et al., 2012; Jørgensen, 2012; Markard et al., 2012; Smith et al., 2010; Werbeloff et al., 2016). This line of inquiry is especially pertinent when considering the growing interest in advancing sustainability transitions approaches in developing contexts, which tend to exhibit less regularity, more ambiguity and greater institutional diversity (Hansen et al., 2018; Wieczorek, 2018) than the developed contexts from which mainstream transitions thinking originated.

Responding to these calls, this thesis adopts an agent- and practice-based perspective to develop a diagnostic framework of strategic agency that enables a higher resolution analysis of institutional processes as enacted by change agents (Publication 1 in chapter 3). By facilitating a closer examination of how practices are combined—rather than prematurely constraining the analysis under non-contextualised models of change processes—the framework has the capacity to reveal the variations of reproductive and transformative processes whereby skilful agents respond to relevant and different structural conditions.

The framework also enables an examination of how agency is varyingly played out and situated among intersecting institutional structures. By implication, this conceptual development can guide future

sustainability transitions research to engage more critically with local dynamics, by freeing analysts from mechanically moulding apparent variabilities under the functional innovation breakthrough model. This study contributes to extending the socio-institutional strand of sustainability transitions scholarship, wherein, to date, critical engagement with practice theory remains underrepresented (Birtchnell, 2012; Hoffman & Loeber, 2016; Shove & Walker, 2010).

(ii) Provided in-depth empirical insight into how urban transformation dynamics in developing urban contexts can enrich existing understanding of the role of transformative agency and the conditions that enable breakthrough.

In line with the budding scholarship on socio-technical transitions in developing countries (Berkhout et al., 2009; Hansen et al., 2018), this thesis shared the ambition of clarifying how transformation dynamics unfold in those non-western contexts. At the same time cities, as specific and important sites for sustainability transitions, have been generally eclipsed by national contexts in existing literature (Hodson & Marvin, 2010; Raven et al., 2012). On that account, research on urban transformation dynamics represents a field in its infancy (Frantzeskaki et al., 2016b; Rohracher & Späth, 2014; Wolfram et al., 2016), grappling with the conceptual and empirical challenges of interrogating local dynamics to reveal specific conditions, processes and capacities for facilitating change in cities. To date there is limited literature focusing on sustainable urban transformations in developing cities. This study contributes to the scholarship by providing in-depth empirical insights into green urban transformations in Surabaya, Indonesia (Publication 2 in chapter 4) and into institutional contradictions in Jakarta's urban water sector (chapter 5).

Publication 2 (chapter 4) focuses on exploring variations in the role of different actors in shaping local contexts for Surabaya's green transformations by focusing on how power and reflexivity are exercised differently to exploit unfolding and incompatible urban processes. The conceptual perspective utilised in this research is based on the theoretical understanding of strategic agency developed in Publication 1 (chapter 3) and extended with conceptualisation of how multiple structures intersect and overlap in a social system (the latter is further explored using the institutional contradictions concept in chapter 5). Instead of concentrating on analysing change strategies around particular regime breakthrough events, transformative agents situated in intersecting rule and resource systems are confronted with the challenge of exerting their powers differently across multiple arenas, and conceiving a range of temporal and spatial strategies that capitalise on exogenous pressures and endogenous tensions.

During abrupt shifts (e.g. political unrest, ecological crises) that temporarily disrupt stability, agents leverage their influence by mobilising cultural resources. Urban activists with the capacity to mobilise the masses were found to exploit such opportunities to shift the political context and facilitate transformations. This research revealed how agents embedded transformations by (i) increasing social tensions to initiate change; (ii) creating a sense of urgency by mobilising formal authority; (iii) embedding participation through street-level civic and municipal activism; (iii) sustaining on-ground implementation

through distributed grassroots leadership; and (iv) enhancing knowledge and credibility through tight coupling between global and local urban actors.

This finding extends the predominant focus of transitions research on formal policy activities and the role of the expert-led transitions arena (Loorbach et al., 2016; Turnheim et al., 2015). The important role of civil society actors, as drivers, service providers and innovators, which has been recently identified as an important area of inquiry in urban transitions literature (Frantzeskaki et al., 2016a), is also corroborated in this research. The particular manifestation of municipal activism (Goh & Bunnell, 2013) and the importance of social identity as a particular form of control in this specific case are also reported.

In chapter 5 this thesis proposes the notion of institutional contradictions to advance understanding of the enabling and constraining effects that structures can have on transformative agency. This chapter addresses the gap in existing transitions literature where there remain limited perspectives on the specific mechanisms that generate tensions within a regime. While existing transitions perspective acknowledges the role of endogenous tensions in driving regime breakthroughs, the possible mechanisms that give rise to such tensions are not yet clearly understood. Because regime is typically viewed as relatively 'monolithic' (Fuenfschilling & Truffer, 2014), it begs the question of how tensions may arise within such strong and opaque structure. This chapter argues that in order to determine how such tensions arise, structure needs to be reconceptualised—by drawing from institutional and practice theories—in terms of overlapping and plural arrangements. This way, tensions can be studied as a function of contradictions among those arrangements. This thesis also complements the recent development by transitions scholars that has indicated the diversity of structures (Fuenfschilling & Truffer, 2014), thus revealing the way in which structures are semi-coherently organised.

This development is extended in this thesis by: (i) highlighting the mechanism by which contradictions are accumulated in a social system, and thereby may lead to major disruptions that facilitate the emergence of alternative arrangements; and (ii) characterising the mechanism by which contradictions arise from uneven processes that splinter the institutional fabric in a given social system. This perspective is employed to analyse the institutional arrangements in Jakarta's urban water sector.

Various institutional contradictions manifested as prevailing dependency on extra-budgetary resources, decision impasse, weak inter-organisational alignment, limited public credibility and reactive responses to environmental challenges, which tend to limit transformative agency among the proponents of the NCICD initiative. The accumulation of such internal tensions can at different times facilitate social mobilisation, such as enacted by the opposing groups of actors. Extending the transitions perspective, this case study confirms that dominant structures are more susceptible to change during or after crises, but also provides insight into the ongoing internal tensions where latent contradictions within the structures exist and can cause the sector to implode.

Although the case studies focused on the urban infrastructure and development sectors in Surabaya and Jakarta, Indonesia, key political, social and institutional dynamics revealed resonate with those identified

in broader literature, such as the micro-politics of policy implementation in Delhi (te Lintelo, 2017); the relations between national and local governments in urban transitions in Cape Town and Casablanca (Mans, 2014); the governance dynamics in Bangladesh's water sector (Yasmin et al., 2018) and Ghana's (Morinville & Harris, 2014); the role of transnational linkages in sustainability transitions in the Philippines and Morocco (Marquardt et al., 2016); or more generally the informal and insecure institutional settings in developing contexts (Ramos-Mejía et al., 2018). Therefore, one might argue that insights from this research such as the novel interpretation of transformative agency and institutional contradictions, can facilitate future empirical investigations in other developing cities, and enrich the development of urban transition and transformation theories.

(iii) Brought governance theory a step closer to practice by developing heuristics that can guide empirical inquiry into the possibilities and limits for facilitating transformation in diverse contexts.

In sustainability transitions and adaptive governance scholarship, normatively derived governance approaches have been theorised to foster systems innovation, mobilise collective action and support institutional change processes. These approaches generally prescribe a broad range of instruments, such as knowledge co-production, social learning, multi-actor coordination and collaboration, and network management, synthesised under the following governance approaches: transition management (Frantzeskaki et al., 2012; Kemp et al., 2007; Loorbach, 2010; Rotmans et al., 2001), reflexive governance (Smith & Stirling, 2007; Voss et al., 2007; Voss & Kemp, 2005), adaptive co-management (Berkes, 2009; Folke et al., 2005), and collaborative governance (Bodin, 2017). Scholars have contended that the normative prescriptions need to be better grounded in empirical inquiry that can reveal how governance is being interpreted and enacted by actors across various contexts (Adger & Jordan, 2009; Kooiman & Jentoft, 2009).

There is an emerging body of work exploring governance dynamics in empirical cases in urban developed contexts (see e.g. Barnes et al., 2018; Bulkeley et al., 2014; Bulkeley & Kern, 2006; Ehnert et al., 2018; Loorbach et al., 2016) and in urban developing contexts (see e.g. Nastar, 2014; Nastar & Ramasar, 2012; Yasmin et al., 2018). The body of work in development studies has more to say about governance in developing contexts but has traditionally emphasised the failure of governance (Bakker et al., 2008; Kooy & Bakker, 2008). This research has extended existing sustainability governance debate by capturing how specific governance mechanisms are being enacted in practice to facilitate transformations in developing urban contexts.

The inquiry is facilitated by developing a set of heuristics, which are based on the earlier agent- and practice-based framework of strategic agency (Publication 1 in chapter 3) combined with perspectives from governance and development literature. The *possible scope of action* by diverse embedded actors can be traced with reference to the following heuristics: (i) the capacity to maximise impacts by fine-tuning actions at key moments; (ii) the capacity to draw from plural and rich contexts to rationalise (or give meaning to) change processes; (iii) the capacity to widen the margin of success by strengthening interfaces

across different spheres of activity; and (iv) the capacity to leverage different forms of control across interfaces. In contrast to the prescription of governance mechanisms based on normative principles, these heuristics are based upon a refined conceptual understanding of the varying scope of strategic actions and the contextually specific manifestations of opportunities.

Illustrative applications of the heuristics across the two urban infrastructure case studies of Jakarta and Surabaya also identified the specific governance mechanisms that were enacted by diverse and distributed groups of actors. Because the heuristics are not specifically designed for a particular sphere of activity, the analysis allows tracing of different relevant spheres of activity in the empirical settings. Interfaces across four different spheres of activity: formal policy, informal development, global–-local knowledge production, and market-led development were therefore identified and examined. Empirically derived governance mechanisms include: (i) the timing of actions and narratives to real-world events as steering mechanisms to create a sense of urgency, construct credibility, and contextualise the initiatives; (ii) the role of civic and municipal activism in mobilising non-material resources, in the form of social identity and trust, to foster collective action; and (iii) the role of distributed leadership to reimagine traditional social roles while reconfiguring the distribution of resources.

This insight is valuable in extending current understanding on how transformations may be realised by navigating the interfaces across spheres of activity. Such complex interactions have been acknowledged in the literature and informed the normative prescriptions of adaptive, multi-actor, and reflexive governance approaches for sustainability transitions (e.g. Folke et al., 2005; Kemp et al., 2005; Voss & Kemp, 2005). However, as argued earlier, there remains limited approaches being developed to bridge the normative and empirical strands of the governance debate. To this end, the development of the heuristics and the governance insights put forward in this thesis represent a small step to bring governance theory closer to practice. While the applications presented in this research are based on cases of developing urban infrastructure sectors, the heuristics—based on the study of interrelationships between agency and structure—are not conceptually tied to those specific contexts. Hence, they may be applied and validated in other studies of governance interplay in non-developing, non-urban or non-infrastructure contexts.

With further methodological advances, there is also potential to apply the proposed heuristics and governance mechanisms in practical interventions, where an initiative to transform a particular complex system is being conceived among a group of actors (state, non-state, or a combination of them). They may be used to analyse ongoing interaction patterns and to explore the possible scope of actions among the group of initiators, but also those yet to be directly engaged. This research therefore contributes by advancing more accurate prescriptions of governance interventions that account for and are grounded in context variability. Existing normative prescriptions can definitely continue to inform interventions, but their validity must be carefully ascertained through context-driven analysis. Without it, it is reasonable to be concerned that the development of governance research and policy for sustainable development might be slanted towards advocating institutional blueprints.

7.3 Practical contributions

This research was motivated by the practical challenge of avoiding technical 'lock-in' in developing cities and accelerating shifts towards more sustainable development. The seemingly intractable infrastructure deficiencies faced by most developing cities have been consistently characterised by many as governance and planning failures (UN-Habitat, 2016; United Nations Development Programme (UNDP), 2014; United Nations Environment Programme (UNEP), 2016; World Bank, 2003). At the same time, those deficiencies also represent opportunities for strategically shifting investments into more sustainable infrastructure options. From this point of view, intensifying domestic pressure to deliver public services combined with external forces imposed by a global commitment to deliver the sustainable development goals by 2030, can be expected to foster active deliberations over urban development policies and infrastructure investment. Nonetheless, historical contingency of technology transfer and the well-recorded failures of the 'blueprint' approach in the developing contexts (Ostrom & Cox, 2010) contributed to valid contemporary concern about how sustainable transformations in developing cities can be realised through timely and, more importantly, context-driven institution building.

This thesis **developed a diagnostic framework and heuristics that can be practically applied in diverse contexts to help actors understand how to exercise more strategically and effectively their capacity to shape urban infrastructure initiatives in cities**, by guiding them to detect and map ongoing interaction patterns, governance mechanisms and the scope of actions. From a diagnostic standpoint, initiating sustainability transformations requires, in the first place, careful identification and evaluation of locally relevant opportunities and barriers attributable to existing patterns of interactions (*when and where*) and ongoing processes (*how*) enacted by particular groups of actors (*who*). To further clarify the utility of the diagnostic framework and heuristics, Figure 7.1 is developed to present tentative procedures that can guide other scholars in applying the insights generated in this research in a new case study. The procedures represent an iterative process of diagnosing practice sequences, transformative agency, structural mutability and governance mechanisms (respectively corresponding with the theoretical developments and empirical insights presented across chapters 3, 4, 5 and 6). The procedures can be utilised to guide the collection and analysis of empirical evidences on specific events, actions, actors, and relationships that shape urban infrastructure decisions, initiatives, or development trajectory. An additional step that involves action-based and evaluative research (not conducted as a part of this research project) is also proposed to facilitate tailoring the governance mechanisms to real-world circumstances and evaluating the effects of the actions taken. This step, as alluded in the previous section, requires further methodological developments and represents a potential outlook for future research.

Figure 7.1 Tentative diagnostic procedures for applying the agent- and practice-based perspectives

By conducting the extensive diagnostics, an agenda for sustainable transformation and institution building in developing cities can thus be formulated with a higher degree of accuracy, as opposed to a generic transfer of transition and institutional blueprints developed elsewhere. To emphasise, the value of the approach developed in this thesis rests squarely on nuanced depictions and enhanced understanding of local interaction patterns and power dynamics obtained through context-driven analysis. This approach can provide practical guidance to what UN-Habitat (2016, pp. 104–5) indicates is one of the key requirements for tackling multidimensional challenges in cities, that is, by responding with 'well-adapted urban laws that govern the relationships among people, define mechanisms of interaction, together with novel ways of reaching agreements and building consensus'. While change processes are often examined in the formal policy arena and/or in market-driven innovation activities in developed urban contexts, our empirical studies suggest that informal self-organised innovation and development activities represent another important space for facilitating transformation. This insight underscores the need to perform the diagnostics across various societal levels and sectors.

In summary, this thesis has made the following practical contributions:

i. The framework of strategic agency developed in Publication 1 (chapter 3) could be used to sensitise a range of target audiences (e.g. policymakers, urban practitioners, development agencies, civic and other non-state actors) to discover the combinations of institutional processes that shape the ongoing power dynamics, implicit and explicit, by tracking the interaction patterns that bind key actors and resources to particular repertoires of constructing knowledge, policies, infrastructure plans and investment portfolios.

ii. The empirical case studies of transformative agency in Surabaya and institutional discrepancies in Jakarta reported in Publication 2 (chapter 3) and chapter 5 respectively could inform target audiences of the range of skilled responses and opportunities that may be utilised to transform key urban governance arrangements. For example, by blending informal arrangements into the formal policy mix through reliable vertical and horizontal support; leveraging unstable political conditions; or resolving ambiguous legal frameworks to intervene.

iii. The heuristics and governance mechanisms put forward in chapter 6 can guide decision-makers and urban practitioners to undertake in-depth analysis of critical gaps in governance and institutional capacities, and to define the scope of actions for adjusting their responses accordingly. In this manner, the application minimises risks of failure from implementing institutional blueprints that, in their design, do not adequately capture the nuanced opportunities and limitations experienced firsthand by relevant actors.

7.4 Research limitations

First, the generalisability of this study is limited by choices made with regard to the empirical cases and the data collection methodology. The framework of strategic agency and heuristics were used to guide empirical analysis in specific geographical contexts: Jakarta and Surabaya, Indonesia, and would therefore need testing in a range of other empirical contexts to confirm their broader applicability. It is reasonable, however, to qualify this limitation by highlighting that many infrastructure challenges and governance dilemmas identified in this research (e.g. chronic deficiencies of public investment, political paralysis around investment decisions, misaligned market-led development activity, transnational influence and the marginalisation of communities) are commonly found in other developing contexts.

Opportunities for change, such as by strengthening the interface between formal state-led policy implementation and informal community-based movements as reported in Surabaya, also affirmed the possibility of more deliberative and participatory approaches in enabling transformation in developing cities. However, it is less likely that these ingredients and conditions would play out with a high degree of resemblance across the diverse regions that sit under the umbrella term 'developing nations', especially since the term itself is not necessarily agreed upon in practice and literature. Nevertheless, future studies employing the perspectives taken in this thesis will be able to reflect on those insights and validate the applicability of

the approach developed here to reveal a greater spectrum of variations in change processes and governance mechanisms in other contexts.

Second, this study employed a case study approach, which might limit the range of insights that can be gathered in examining practices as they are enacted in real-world contexts. The analysis was based primarily on recollections by actors of instrumental processes and strategies that shaped the urban initiatives studied. Recent bodies of work taking a micro-level perspective to examine agency in urban transitions literature also employed case study approaches, relying primarily on interview data (see e.g. Barnes et al., 2018; Ehnert et al., 2018). Given the relative infancy of this research stream, there is little new methodological guidance or refinement on offer. It is acknowledged that more immersive data collection methods combined with longitudinal participant observations, such as ethnographic methodology, may have yielded more refined data on what other day-to-day considerations play into how actors perform their social roles and set about creating a new course of action that represents a break from ongoing patterns of interaction.

Furthermore, given practical constraints related to the lack of response from private developers to interview invitations, this study relied on secondary data to interpret their capacity to influence urban initiatives. However, care has been taken to utilise reliable literature and expert consultation to triangulate evidence with respect to the role of developers. Other more interactive approaches, such as focus group or roundtable discussions, could also have enhanced insight into the group dynamics and promoted learning among actors.

Finally, while the heuristics developed can facilitate identification of relevant interaction patterns and the limits and possibilities of specific governance mechanisms, this thesis does not include in-depth recommendations on a reform agenda that could be adopted. Such recommendations need to be developed with active inputs from relevant local actors, and due to the socially constructed nature of knowledge, they are likely to be highly dependent on facilitated negotiations and the mediation of diverse needs, expectations, values and knowledge of participants. To hazard a prescription, this study has indicated that without more reflexive and decisive state involvement in addressing power imbalances in urban decision-making and creative-constructive feedback from non-state actors, transformation and institution building are likely to stall. This means that an additional translation step, for instance, through more action-based research, is required before the heuristics can be refined into a practical tool for decision-makers or change actors interested in steering transformation within the real-world contexts. While this is beyond the scope of the current research project, the proposed heuristics and tentative diagnostic procedures represent relevant inroads that can inform future research.

7.5 Outlook

Taking into consideration the necessarily limited scope of a PhD research project, possible future research propositions are presented to extend the perspectives and insights developed in this thesis.

First, wider empirical application of the strategic agency framework and the heuristics could generate evidence for testing, validating and refining the conclusions reached in this study. Further application in developing

city contexts could sharpen understanding of the variations in transformation dynamics observed across cities and regions categorised under the broad term 'developing nations'. Conventional geographical distinctions (such as cities in Southeast Asia, South Asia, Latin America, or African regions) could be utilised to guide future studies in understanding cross-regional diversity.

Alternatively, distinction based on a city's population size (megacity, secondary city, tertiary city, etc.) could also provide an angle to understand how opportunities (and limitations) for sustainable transformation may be shaped differently as cities grow larger. Other angles, such as the new role of transnational actors, new forms of democratic participation, or the implication of legal/fiscal decentralisation on power distribution, could well be explored in more depth to generate more comprehensive understanding of capacities for urban transformation. By the same token, other non-developing contexts (such as industrialised cities, emerging cities, or least developed cities) could be taken up as case studies with a view to providing greater nuance to the study of sustainability transitions.

As more empirical insights are generated, the extent of the heuristics developed may be enhanced based on local or regional characterisations of salient *spheres of activity*, *institutional processes*, and the *scope of actions* that can strategically influence urban transformations. Methodological development to complement the application of the heuristics in practical settings would also be needed. The heuristics can be applied in combination with specific policy evaluations or the design of urban reform agendas in particular development sectors to generate targeted recommendations for adoption by city officials and public sector managers. Additionally, the heuristics could be applied in combination with trialling specific process designs to promote social learning, exploratory thinking and other interactive mechanisms such as advocacy, mediation, negotiation and conflict resolution, to increase the capacity of participants to overcome institutional barriers, adopting new policy and governance instruments, and sustaining change processes.

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Appendix

Research ethics forms

MONASH University

EXPLANATORY STATEMENT

(Persons participating in research interview)

Project Title: The scope for strategic action in developing urban water sectors: institutional change as a coupling of reflexivity and power.

Project Number: CF16/488 - 2016000241

Wikke Novalia (PhD Candidate)
School of Social Sciences
Faculty of Arts
[redacted]

Prof. Rebekah Brown (Supervisor)
Monash Sustainable Development Institute
Monash University
[redacted]

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact us via the phone numbers or email addresses listed above.

What does the research involve?
The aim of this study is to develop a framework for understanding how change in urban infrastructure initiatives is conceived and enacted in practice. Alternative urban initiatives need commitments from a whole range of stakeholders. At the same time, these new ideas may also be met with resistance. By understanding how strategic actions may promote or block institutional change in developing cities, this research will provide insights into how cities in Indonesia can channel future investments towards more sustainable urban futures. As part of this research you are invited to take part in in-depth interviews and workshop sessions.

Why were you chosen for this research?
You have been selected to participate in this research because of your role working in and/or supporting the [National Capital Integrated Coastal Development Program, Jakarta / Green city initiatives, Surabaya]. Your experience working and/or supporting the program represents invaluable data necessary to achieving the aim of this project.

Consenting to participate in the project and withdrawing from the research

(i) Consenting to take part in this research process is **completely voluntary,** and at any stage during data collection, you can choose to withdraw without prejudice**;**
(ii) Should you choose to withdraw, any data collected from you will be permanently destroyed along with your original consent form.
(iii) Once the de-identified data has been collected, analysed and published, withdrawal will no longer be possible.
(iv) You will be asked to sign and return the attached consent form;
(v) Those who do not wish to participate in interviews and focus groups may still be able to contribute to the project through informal conversations with the researcher.

Possible benefits and risks to participants
It is anticipated that this research will have a number of societal and individual benefits. Participants are able to share their reflective insights and experience in a confidential manner. This data will then be used to produce a tool to assist in strengthening their capacity in urban water governance activities. Societal benefits, may not be immediate, but ultimately will relate to the improved management of a critical natural resource – water. This work will help to shape activities that ensures the sustainable use and delivering of urban water in a more bottom-up, context-sensitive manner.

The research is focused on exploring the appropriate mode of management practice to guide sustainable service delivery options, and as such will require participants to reflect on their own (and collective) work-based practices related to the broad urban water management approaches. If at any stage the researcher identifies a

participant is uncomfortable with a line of questioning, the participant will be reminded that they can refrain from answering a particular question, or withdraw their participation from the research.

Confidentiality
A number of steps are taken to ensure the confidentiality of the data collected throughout the research process. While interviews are audio recorded, participants are asked to refrain from naming individuals, including themselves. Once transcribed, the original audio file will be destroyed to avoid any identification. Once transcribed the original audio recordings will be destroyed. In publishing the data, individuals will be referred to by either pseudonyms or participant codes, with specific information about position and roles in the organisation that could be used to identify individuals omitted.

Storage of data
Data in the context of this research includes interview and focus group transcripts, audio recordings, filed notes gathered through participation and observation in governance activities. This data will be stored in a password protected storage device. A previously mentioned, audio recordings will be destroyed once transcribed, while transcript will be securely stored for future reference.

Results
Results will be published via peer-reviewed journals, as conference papers, and as a thesis. Each publication will be made available to participants directly from the researcher, or through academic databases in the case of copyrighted, published journal articles. Multiple opportunities to provide the researchers with feedback will be provided throughout the research process by inviting you and other participants to read and comment on the work being produced.

Complaints
Should you have any concerns or complaints about the conduct of the project, please contact:

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
[redacted]

Thank you,

[redacted]

Prof. Rebekah Brown (Lead researcher)

[redacted]

Wikke Novalia (Student)

MONASH University

CONSENT FORM

(Persons participating in research interview)

Project: 'The scope for strategic action in developing urban water sectors: institutional change as a coupling of reflexivity and power'

Chief Investigator: Prof. Rebekah Brown

- I have read the Participant Explanatory Statement in a language that I understand.
- I understand the purpose and procedures of the research described in the project.
- I have had an opportunities to ask questions and I am satisfied with the answers that I have received.
- I voluntarily agree to be a participant in this research project as described in the explanatory statement, and understand that I can withdraw my consent from the research at any time during the project.
- I understand that I will be given a signed copy of this document to keep.

I consent to the following:	Yes	No
Audio recording during the interview/focus group	☐	☐
Taking part in a workshop of up to 20 people	☐	☐
The data that I provide during this research may be used by lead researchers in future research projects	☐	☐
Being quoted anonymously in research publications and reports	☐	☐

Name of Participant _____

Participant Signature _____ Date _____