



# Urban Water Transformations: Can social innovations and entrepreneurships transform governance and citizenship in developing cities?

Penyusun :

(a)• **Erika M. Duncan**

(b)• **Megan A. Farrelly**

(b)• **Briony C. Rogersc**

(a) Graduate Research  
Interdisciplinary Program,  
School of Social Sciences,  
Monash University

(b) School of Social Sci-  
ences, Monash University,  
Clayton VIC 3800, Australia

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### Abstract

*Global environmental change and increased resource consumption are driving the need for urban water transformations. The complexity of this challenge calls for strategic action to advance alternative governance and citizenship practices. This paper reviews literature on social innovations and social entrepreneurship and conceptually integrates it with insights from sustainability transitions scholarship to explain how social innovators and entrepreneurs influence transition dynamics. It proposes seven core ingredients (social mission, creative innovations, entrepreneurialism, social networks, hybridisation, social value-creation, and social change) and four key processes (opportunity recognition, resource mobilisation, empowering and embedding, and learning and adaptation) to explain the influence of the social innovation and entrepreneurship within the context of inadequate sanitation in developing countries. The results show that social innovations and entrepreneurships affect transformational changes in governance and citizenship while creating multi-dimensional value in the areas of social inclusion, economic development and environmental sustainability.*

## 1. INTRODUCTION

Cities worldwide face complex challenges in managing urban water resources under conditions of rapid urbanisation, climate change and resource scarcity (UN 2014). The situation is particularly severe in rapidly developing Asian cities, where a critical lack of sanitation infrastructure is

leading to acute water pollution and increase health and environmental risks under pressures of burgeoning population, widespread poverty and inequality, and lack of investment capital (Larsen et al 2016; WB 2009; WSP 2013). The Millennium Development Goals brought significant advances in reducing global poverty and expanding water supply coverage but failed to meet sanitation targets

in many developing countries (WHO and UNICEF 2014). Impeded by social, cultural, financial and institutional barriers, sanitation has historically received much less institutional support than water, leaving individual households responsible for fulfilling their own needs (Isunju et al 2011; Okurut et al 2015; Van Dijk 2012; WB 2009). Despite aspirations to achieve universal access to sanitation by 2030 under the new UN Sustainable Development Goals, Hutton and Chase (2016) estimate it will take another 60 years before improved sanitation reaches poor and marginalised citizens. This has led scholar and practitioner to have an interest in exploring alternative practices to improve sanitation for the poor, while ensuring socio-economic development and environmental sustainability.

In Indonesia, where small-to-medium sized enterprises play vital roles in the economy, *social entrepreneurs* have emerged as key players in delivering improved sanitation services for the poor, while contributing to social inclusion, economic development and environmental sustainability (Gero et al 2014; Idris and Hati 2013; Rostiani et al 2014; Tambunana 2007; Sachs 2015). The work of social entrepreneurs has also been reported in relation to diffusing toilets as pro-poor innovations in India (Ramani et al 2010), operating franchise sanitation business in Kenya (London and Esper 2014; Ziegler et al 2014), and upscaling eco-neighbourhood initiatives in Tunisia (Leitaifa 2016). The concept of social entrepreneurship (SE) is closely related to *social innovations* (SI), now adopted as cornerstone policy in Europe and attracting the largest public research funding (Bonifacio 2014). SE and SI emerged as civic responses to meet underserved needs of society and recently evolved into global phenomena. A significant amount of literature has developed around SI and SE in recent years, along with growing interest from government, business and civil society for their ability to tackle complex social and environmental problems while catalysing change (Howaldt and Schwartz 2010; Huybrecht and Nicholls 2012; Osburg and Schmidpeter 2013; Phillips et al 2015). However, the current scholarship lacks theoretical explanations and empirical evidence of the strategic approaches used by social entrepreneurs and innovators to affect transformations and to influence governance and citizenship.

Research on sustainability transitions has to date contributed many valuable insights that can be used to analyse how change occurs in urban water and other complex societal systems (Brown et al 2013; Ferguson et al 2013; Paredis 2011; Loorbach 2010; Rotmans et al 2011). Despite a focus on science and technology, these insights have been useful in diagnosing critical enabling factors that influence transition dynamics and their governance (Brown et al 2013; Ferguson et al 2013; Paredis 2011). Defined as “long-term, multi-dimensional and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption” (Markard et al 2012; p.256), sustainability transitions involve a continuous process of system innovations that co-evolve with changes in needs, demands, institutions, cultures and practices (Rotmans et al 2011). In the context of urban water, sustainability tran-

sitions research has previously focussed on overcoming institutional inertia and technological lock-ins associated with conventional urban water systems in developed countries (Brown and Farrelly 2009; Farrelly and Brown 2011; Ferguson et al 2013). However more recently, scholarly interest has expanded to explore alternative pathways and practices for enabling developing countries with underdeveloped infrastructures to leapfrog directly towards more sustainable forms of urban water management (Binz et al 2012; Butler et al 2016; Leach et al 2012; Revi et al 2014). This paper provides the first step towards conceptually linking understanding of social innovations and entrepreneurs with scholarly insights on sustainability transitions to make explicit ingredients that make up these alternative practices in influencing transition dynamics. Such insight is critical to assisting planners and policy makers in devising strategic initiatives to support social innovations and entrepreneurs in driving urban water transformations.

This paper serves two objectives: 1) to develop conceptual links between theoretical explanations of transition dynamics and the practice of social innovations and entrepreneurship, and 2) to propose a preliminary framework that can be used to guide strategic initiatives that support social entrepreneurs in developing countries towards urban water transformations. The research approach used to achieve these objectives involved: (a) examining the literature on social innovations, social entrepreneurship and sustainability transitions to identify and synthesize findings on core ingredients that make up the alternative practices, (b) aligning these core ingredients with critical enabling factors recognised in sustainability transitions research to synthesize understanding of the transition dynamics and strategic approaches used by social entrepreneurs, and (c) applying the identified ingredients to illustrate examples in the context of the Indonesian sanitation sector to analyse how social entrepreneurs can become important drivers of transformative change and improved governance and citizenship. With empirical testing, refinement and validation throughout the course of the doctoral research, the preliminary framework developed as a result of this study may serve as a basis for guiding and designing strategic initiatives to support social innovations and entrepreneurs targeted at urban water transformations.

## 2. UNDERSTANDING SOCIAL ENTREPRENEURSHIP (SE) AND SOCIAL INNOVATION (SI)

### 2.1. Historical and contemporary trends in the literature

A significant amount of literature has developed around SI and SE in recent years with increased interest in their potential to create transformative change. A systematic search on SCOPUS returned 9610 and 2620 studies respectively under keywords ‘social innovation’ and ‘social entrepreneurship’ between 1978 and 2016, progressively increasing in volume after 2010. Similarly, a combined search of the two keywords returned 492 results over a period of two decades, evidencing growing convergence

between the two concepts after 2005. The emerging significance is also made evident by the number of specialised journals dedicated to the topic: *Journal of Social Entrepreneurship*, which is primarily targeted at the business sector, *Stanford Social Innovation Review*, geared towards social innovation research in Europe, and *International Journal of Social Entrepreneurship and Innovation*, which aims to bridge cross-boundary communication for the development of social innovations. This paper excludes studies focussed on organisational change and the information technology, agriculture, hospitality and tourism sectors as they were considered less relevant for the context of water and sanitation.

As noted by Phillips et al (2015), the scholarship is dominated by descriptive and conceptual analysis of definitions and key concepts covering a range of topics including: *social capital* (Alguezaui & Filieri 2010; Bhatt and Altinay 2013), *social networks* (Sonne 2015), *social change* (Grimm et al 2013), *social value-creation* (Di Domenico et al 2010; Jokela et al 2015), *social impact* (Paunescu 2014), *social enterprise* (Gero et al 2014), *social responsibility* (Harazin and Kosi 2013), *bottom-of-the-pyramid and pro-poor innovations* (Hall et al 2012; Ramani et al 2010; Pervez et al 2012), *empowerment* (Raheem et al 2014), *scaling* (Desa and Kosa 2014; Westley and Antadze 2010), *policy significance* (Adam and Hess 2010; Bonifacio 2014), *sustainability* (Di Zhang and Swanson 2014; Hall et al 2010; Mueller et al 2011), and *governance* (Baker and Mehmood 2015; Letaifa 2016). Empirical studies began emerging after 2012, along with studies exploring the emergence, development and internationalisation of SI and SE and their role in effecting change (Letaifa 2016; Phillips et al 2015). However, engagement with theoretical work such as sustainability transitions is still at nascent stage, as evidenced by a combined search of SI or SE with 'sustainability transitions' returning only 26 studies in the last two decades.

Despite the 'social' element, SI and SE do not have a background in social science (Cajaiba-Santana 2014). SI was first introduced into academia in 1912 by Joseph Schumpeter as a process of 'creative destruction' undertaken by entrepreneurs to shift resources from lower to higher productivity areas, and later reintroduced by Peter Drucker in the 1980s as a practice used by non-profits to increase efficiency in social services (Caldwell et al 2012). The concept did not gain much academic interest until the late 1990s, only growing into a major area of study in innovations after 2005 (Howaldt and Schwartz 2010; Paunescu 2014). Consequently, an overwhelming majority of studies come from the business and management disciplines, while more recently discussed is innovation studies, environmental studies, developmental studies, social policy, social psychology and urban studies.

SI and SE are areas of study in which practice preceded theoretical development (Cajaiba-Santana 2014; Mulgan et al 2010). Whilst they are relatively new to social science, the practice has existed long before the 20th century in the form of social movements and social interventions such as the Steiner and Montessori schools and civil rights movements led by visionaries, reformers, philanthropists

and humanitarians (Howaldt and Schwartz 2010; Jiang and Thagard 2014; Roy et al 2014). Among more recent examples include the Fair Trade and microfinance, which both provide impoverished communities with increased access to resources through empowering and altering socio-economic dynamics (Osburg and Schmidpeter 2013). Compared to historical examples, contemporary SI and SE are increasingly operating in areas that traditionally offer no socio-economic incentives for private and civil society participation, while creating larger and more direct impacts on greater society (Idris and Hati 2013; Kayser and Budinich 2015; Osburg and Schmidpeter 2013; Nicholls 2006).

## 2.2. Conceptualising SI and SE

Social innovators and social entrepreneurs are widely recognised as society's change agents. However, there still remains much confusion on what these practices mean due to lacking convergence on definitions, scattered and fragmented literature, interchangeable use with related concepts, lack of theoretical framework, and *fuzzy* boundaries that defy conventional ways of thinking (Cajaiba-Santana 2014; Joshi et al 2015; Paunescu 2014; Phils et al 2008; Sinclair and Baglioni 2014). Value-laden, multi-dimensional and multi-purposeful, SI and SE can mean different things depending on where the emphasis is placed (Choi and Majumdar 2014; Moore and Westley 2009). For example, when seen as a *product*, they are alternatives to satisfy social needs in the absence of state and market welfare but when seen as a process, they are models of change and enablers of hybrid governance that increase socio-political capabilities and access to scarce resources (Huybrecht and Nicholls 2012; Moulaert et al 2011; Paunescu 2014). Similarly, when seen as an *outcome*, they are change makers at three different levels: individual needs satisfaction, community and network building, and societal change (Cukier et al 2011; De Ruyscher et al 2016). Alternatively, they can be conceptualised into typologies: social bricoleurs who address small scale social issues using locally available resources, social constructivists who exploit scarce resources to fill institutional gaps, and social engineers who address systemic problems to bring about transformative change (Nandan et al 2015; Zahra et al 2009). Lastly, they can be analysed as interrelated sub-systems consisting of communities of practitioners and organisations jointly addressing social needs through innovations that bring benefit to broader socio-political, economic and environmental contexts (Westley and Antadze 2010). From these dimensions, it is evident that SI and SE are systematic approaches consisting of a variety of inputs, processes, strategies and outcomes that are strategically aimed at creating multi-level changes in society but exist at different scales depending on stage of development.

Several scholars have sought to map definitions to identify core ingredients that make up the SI and SE phenomena, many coming up with own variations of definitions that now number more than 50 across the two scholarships. For example, Dees (1998, p.4) describes social entrepreneurship activity as 'adopting a mission to create and sustain social value; recognising and relentlessly pursuing new

opportunities to serve that mission; engaging in a process of continuous innovation, adaptation and learning; acting boldly without being limited by resources currently at hand; exhibiting heightened accountability to the constituents served and for the outcomes created'. Similarly, Bonifacio (2014, p.146) defines social innovation as 'new ideas (products, services, models) that simultaneously meet a social need (more effectively than alternatives) and create new social relations and collaborations that are not only good for society but also enhance society's capacity to act'. Overall, definitions on SE tend to reflect individual leadership attributes (e.g. ambitious, ethical, creative, strategic, resourceful, results-oriented, mission-driven) and organisational processes (problem solving, networking, capacity building, opportunity recognition, entrepreneurialism), whereas SI tends to focus on impact (e.g. social change, empowerment, improved wellbeing, behaviour change). Collating and coding definitions across the two scholarships, this paper identifies seven core ingredients that make up the SI and SE phenomenon. They are: *social mission, creative innovations, social networks, entrepreneurialism, hybridisation, social value-creation, and social change*.

SI and SE emerged from separate schools of thought but are increasingly converging to expand reach of impact (Moore and Westley 2009). Inspired by public entrepreneurs shifting resources to create value, SI emerged to create new and better ways to address social problems, while SE began from the desire to bring business and social sectors together through creating and maintaining private enterprises and earning an income (Dees and Anderson 2006). Both schools share in common an explicit social mission and the potential to effect systemic change but differ in emphasis on outcome or inputs (Dees and Anderson 2006; Howaldt and Schwartz 2010; Lehner and Kaniskas 2012). When earning an income, they are known as social entrepreneurs, social enterprise, and social ventures, while when not earning an income they are known as non-profits, public entrepreneurs, policy entrepreneurs or social intrapreneurs (Datta 2011; Huitema and Meijerink 2010; Peredo and McLean 2006; Ziegler et al 2014). While SI does not necessarily require business principles, they are increasingly hybridising, forming cluster concepts with SE as they become mutually inclusive of one another (Choi and Majumdar 2004). The benefits of bringing the two together are threefold: hybridisation across the social and business sectors, increased access to existing resources, and opening multiple pathways for socio-economic development (Dees and Anderson 2006; Groot and Dankbaar 2014; Huybrechts and Nicholls 2012; Nandan et al 2015; Seelos and Mair 2005).

The recent rise of the social economy has fuelled the emergence of numerous social business and initiatives, ranging from purely philanthropic institutions engaging business principles to purely commercial enterprises up-taking social issues (Howaldt and Schwartz 2010; Huybrechts and Nicholls 2012; Nandan et al 2015). Blending social and market orientations and bridging the for-profit and non-profit sector, SI and SE differ from existing institutions and initiatives in several ways (Dees and An-

derson 2006; Volkmann et al 2012). For example, SI and SE differ from commercial enterprise and corporate social responsibility in *value proposition*; by having an explicit social mission and ethical orientation towards improving the lives of marginalised citizens versus exploiting shared value and mainstream markets for profit maximisation (Elmes et al 2012; Joshi et al 2015; Seelos and Mair 2005; Ziegler et al 2014). They differ from government and other non-profits in earning an income (*entrepreneurialism*), which can be invested back into the business to ensure financial and operational sustainability, and provide employment opportunities for the poor (Dees and Anderson 2006; Di Domenico et al 2008; Groot and Dankbaar 2014; Huybrechts and Nicholls 2012; Nandan et al 2015; Weerwadeena and Mort 2006; Volkmann et al 2012). They also differ in their ability to gain legitimacy and accountability, not through law or positional power, but through creative problem solving capacity (*innovativeness*), fostering ownership through inclusion and participation (*empowerment and local embeddedness*), and bringing outside recognition to the problem and encouraging others to take action to reach greater society (*social impact*) (Elmes et al 2012; Howaldt and Schwartz 2010; Letaifa 2016; Mair and Marti 2010; Martin and Osberg 2007; Partzsch and Ziegler 2011; Ziegler et al 2013). They rely on community and networks (*social capital*) to gain access to scarce resources through empowering internal capabilities, building bridges across sectoral boundaries to enhance opportunities for learning and knowledge sharing (Alguezuai and Filieri 2010; Baker and Mehmood 2015; Bhatt and Altinay 2013; Cajaiba-Santana 2014; Dal Fiore 2007; Grimm et al 2013; Paunescu 2014; Yujuico 2008). Lastly, they differ in *social value-creation*, which can be created at any step of the innovation process through finding new and better ways to influence government, engage community, mobilise resources, deliver products and services, or market their services, while constantly learning and adapting (Dees and Anderson 2006; Di Domenico et al 2008; Weerwadeena and Mort 2006; Lehner and Kaniskas 2012).

Five iterative phases of innovation can be identified from the literature: (a) *opportunity recognition*, in which a social entrepreneur recognises a problem or a social need and finds new and creative ways to solve the problem, (b) *prototyping and demonstrating*, in which the idea is tested in pilot projects while making creative adjustments, (c) *mobilising resource capabilities*, in which communities and networks are engaged, and new collaborations and partnerships are formed, (d) *empowering and embedding* the innovation through recognising internal capabilities, changing behaviour, and fostering local ownership, and (e) *constantly learning and adapting* through engaging community and networks (Bhatt and Altinay 2015; Datta 2011; Groot and Dankbaar 2014; Mulgan et al 2010; Ramani et al 2012; Ziegler et al 2013). However, these phases are non-linear and overlapping, with every action purposefully and strategically planned to create long-term sustained change through building resilience into the innovation (Ebrashi 2013, Howaldt and Schwartz 2010; Jokela and Ela 2015).

The issue of upscaling has attracted much attention due

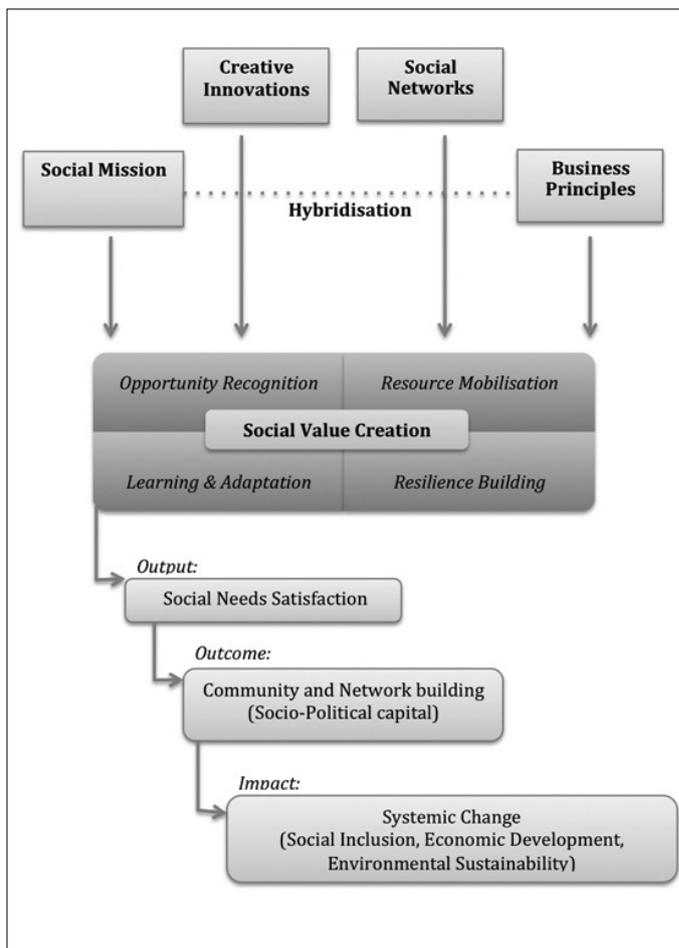
to prevalent thinking of diffusion of innovations (Murray et al 2007; Rogers 1995). According to Ashoka (2015), most SI and SE scale their impacts through changing policy, but reaching impact can also be achieved through creating grassroots movement, franchising, and spreading awareness and acceptance through media and social marketing. Desa and Koch (2014) assert that upscaling in SI and SE differ from conventional notions of expansion through increasing in number and business activity, which are commonly achieved by increasing efficiency through economies of scale. Scaling in SI and SE is rather assessed through impact, which can be measured by the extent to which the affected groups are empowered by the innovation, and by the level of influence it has on changing norms, values, beliefs and behaviour within government and society (Baker and Mehmood 2015; Ebrashi 2013; Jokela et al 2015; Mulgan et al 2007; Yujico 2008). In the context of social and environmental problems like sanitation, which traditionally offered no incentives for private and civil society participation, impact can also be measured in terms of the positive outcomes on socio-economic development and environmental sustainability.

Several authors highlight the critical role that governments play in replicating and upscaling innovations (Bonifacio 2014; Desa and Koch 2014; Kayser and Budinich 2015; Westley and Antadze 2010). According to Mulgan et al (2007), successful scaling requires effective collaboration between the 'bees,' who are quick to mobilise individuals with the ability to pollinate, and 'trees' of powerful institutions with capacity and resilience to scale innovations. While mainstream innovation scholars have long approached innovations from a binary perspective, practitioners in SI and SE argue that strategic innovations are 'sandwiched,' taking advantage of top-down management techniques and bottom-up participatory methods by bringing together a variety of actors at different levels of society (Schwab 2015; Westley et al 2011).

Looking back to the various dimensions, definitions, perspectives and key processes identified in the literature and applying them to a simple logic model consisting of inputs, processes, strategies and outcomes, this study proposes the following working definition for SI and SE: "A systematic process aimed at creating social, economic and environmental value at three different levels: social needs satisfaction (micro-level), community and network building (meso-level), and effecting systemic change (macro-level). Operating in a hybrid zone and combining a vision for social value-creation with creative innovations, social networks and entrepreneurialism, SI and SE recognise opportunities, mobilise resource capabilities, empower communities and networks, and embed innovations locally, while constantly learning and adapting." This working definition can then be translated into a preliminary conceptual framework, which consists of: **inputs** (*social mission, creative innovations, social networks, entrepreneurialism*), **strategies** (*social value-creation, hybridisation*), **processes** (*opportunity recognition, resource mobilisation, empowering and embedding, and learning and adaptation*), **output** (*needs satisfaction*), **outcomes** (*community and network building*), and **impact** (*systemic change and*

*sustainability*) as shown in Figure 1 below.

**Figure 1.**  
Conceptual framework of social innovation and entrepreneurships



### 3. LINKING SI AND SE WITH SUSTAINABILITY TRANSITIONS RESEARCH IN URBAN WATER CONTEXT

#### 3.1. Sustainability transitions and the discourse of sustainable development

Sustainability transitions find its origins in the discourse of sustainable development that seeks to meet present generation needs without compromising the needs of future generations (Paredis 2011). Despite this equity principle, most sustainability initiatives in the past have been technology-oriented following mainstream ecological modernisation thinking, which views progress to be achieved through adopting and diffusing new technologies (Castellaci et al 2004; Paredis 2011). For this reason, sustainability transitions research has long remained relatively disconnected with value-based alternatives innovations, despite constantly existing as niche practices. However, there is now increased evidence that scholarly and practitioner interest is expanding towards alternative pathways and practices like SI and SE in response to growing needs for more equitable and sustainable forms of development (Cook 2014; Leach et al 2014; Thomas 2014). This normative shift is reflected in the new UN Sustainable Develop-

ment Goals, which is aimed at achieving social inclusion, economic development and environmental sustainability through global network problem solving and local social change, rather than through traditional technological transfer and foreign aid that characterised the millennium development goals (Sachs 2015).

In the context of urban water, sustainability transitions has been studied primarily from developed country perspectives, where socio-technical systems like water are managed using centralised infrastructure systems, which are necessitating change towards more decentralised approaches under growing pressures from increased consumption, a changing climate and aging infrastructures (Farrelly and Brown 2014; Keath and Brown 2008; Pahl-Wostl 2007). However, transition has been difficult, impeded by many interlinked institutions, supply chain networks, regulations and user practices, which has created institutional inertia and path dependencies towards technocentric solutions (Geels 2002; Brown and Farrelly 2009, Brown and Wong 2008; Falcone 2014). Incremental institutional change through experimentation and niche accumulation has therefore been prescribed as the way forward for developed countries through sustainability transitions research (Bos and Brown 2012; Ferguson et al 2013). However, the rich insights from sustainability transitions research has yet to be tested in developing countries, and in particular for applicability with non-technical alternatives like SI and SE.

### 3.2. Aligning research in sustainability transitions with SI and SE

Built upon understanding that different actors interact within the constraints and opportunities of existing systems to influence transitions, sustainability transitions scholars assert that the role of agency is critical to achieve transition towards a desired state (Geels 2004). Agency, in this case, can be defined on two levels: actors, which include niche actors (innovators, entrepreneurs), regime actors (regulators, policy makers, planners), outside actors (intermediaries, community), and their governance (Brown and Farrelly 2013). Several transition scholars have reported on actor-related variables such as leadership (Kavimaa 2014; Rotmans and Loorbach 2009; Taylor 2009), networking (Olsson et al 2006), bridging organisations (Berkes 2009; Folke et al 2005; Olsson et al 2006), social learning (Bos et al 2013), and the role of individual and collective actors in maintaining institutional stability, disrupting existing institutions, and creating new rules and practices towards institutional change (Lawrence and Suddaby 2011). In highlighting the role that agency plays in enabling sustainability transitions, Brown et al (2013) identifies six key variables that need to change

over time in order to influence transition dynamics. They are: *narrative, actor-networks, bridging organisations, research and scientific progress, experiments/focus projects, and administrative tools*. In identifying the role that governance plays in influencing transitions, sustainability transitions research further argues that a hybrid form of adaptive governance, consisting of a variety of interactions across the public, private and community sectors is needed to steer transition towards sustainability (Farrelly et al 2012; Rijke et al 2012; van de Meene et al 2011). According to Farrelly et al (2012), there are four structures (*narrative, regulatory and compliance agenda, economic justification, and policy and planning frameworks*), and four processes (*capacity building, leadership, behaviour change and partnerships*) need to enable adaptive governance in the urban water sector.

Looking back to the SI and SE literature, we find that each of these variables identified in sustainability transitions research conceptually align with the core ingredients identified earlier in the preliminary conceptual framework. This provides great opportunity to leverage SI and SE for advancing sustainable change under sustainability transitions research. Table 1 shows an analysis of core ingredients of SI and SE and how they align with transition enabling factors and adaptive governance related variables identified in sustainability transitions research.

## 4. RESULTS AND DISCUSSION

**Table 1.**  
SI and SE and variables that influence sustainability transition dynamics

Critical enabling factors that influence transition dynamics (Brown et al 2013)	Core ingredients of SI and SE identified through a literature review	Structures and processes that enable adaptive governance (Farrelly et al 2012)
<b>Narrative</b> A shared vision for environmental sustainability develops across actor-networks overtime	<b>Social Mission</b> Seeks to meet unmet social needs but is strategically oriented towards <b>social value-creation</b>	<b>Narrative</b>
<b>Actor-Networks</b> During transitions, a variety of actors and networks at micro-niche and meso-regime level interact with one another to influence change	<b>Social Networks</b> Community & networks are harnessed to access scarce resources, while leaving behind compelling new social relations (social capital)	<b>Leadership</b>  <b>Partnership</b>
<b>Bridging Organisations</b> Formal institutions that bring key actors together for learning, sharing and generating ideas	<b>Hybridisation</b> Combines social and business orientations using <b>entrepreneurialism</b> to engage market principles, and empowerment to engage community and networks.	<b>Capacity building</b>  <b>Behaviour Change</b>
<b>Research &amp; Scientific Progress</b> From problem identification to the development of technological tools and institutional guidelines	<b>Creative Innovations</b> Develops context-specific solutions to social problems in a way that makes sense to local community to gain their support and attention.	<b>Regulatory and compliance agenda</b>
<b>Experiments and focus projects</b> Testing, demonstration and implementation, and upscaling	The process involves <b>opportunity recognition, resource mobilisation, empowering and embedding, and learning and adapting.</b>	<b>Economic justification</b>
<b>Administrative Tools</b> Development of guidelines, regulations, modelling tools and political mandates	<b>Social change</b> Achieved through impact at three different levels: needs satisfaction, community and network building, and systemic change	<b>Policy and planning frameworks</b>

Aligning the core ingredients that make up the SI and SE practice with transition enabling factors and structures and processes needed to advance adaptive governance, this paper shows that SI and SE are capable of steering change and influencing transition dynamics towards sustainability through strengthening governance and citizenship. Using the case of Melbourne's urban water transitions as an example, Brown et al (2013) showed that a variety of actors and networks interact with one another to influence transition dynamics, each playing different roles at different times. Led by bridging organisations, which are formal

institutions that bring key actors together for learning, sharing and generating ideas, these actor-networks develop a shared vision towards sustainability over time, jointly creating research and scientific progress through technological experimentation and demonstration projects. The results of these efforts in the case of Melbourne were manifested in the form of best practice guidelines, regulations, and political mandates to push the new agenda forwards. Critical to these actor-network interactions were processes such as leadership, capacity building, behaviour change and partnership, which together with long-term vision, regulatory and compliance agenda, economic justification, and policy and planning frameworks enabled improved governance. Believed to be an outcome of interactions between various actors across the public, private and community sectors capturing dynamic interactions between these variables, Farrelly et al (2012) defines adaptive governance as “multi-level, flexible, reflexive, robust and self-organising structures that manage networks, community and market relations through strong leadership, long-term visioning and collaborative decision making based on soundly researched data.”

Like research in sustainability transitions, the SI and SE literature recognises the critical role that actor-networks and bridging organisations play in transformations, and the role of the four key processes in enabling improved governance. However, while in sustainability transitions research, bridging organisations are recognised as formal institutions that bring key actors together for learning, sharing and generating ideas (Brown et al 2013), in the case of SI and SE, it is usually the social innovator or entrepreneur that bridges community and actor-networks at local level. Similarly, while all the variables that enable adaptive governance are recognised, in the case of SI and SE, community and networks are harnessed to access existing resource capabilities, while capacity building and behaviour change are sought through fostering collaboration, empowering participants, and socially embedding innovations. A good example comes from a case of a social entrepreneur in Indonesia, who developed a communal wastewater treatment system for the purpose of providing improved water quality in his local village. Stimulating local behavioural changes and capacity building through improving the environment and creating income-generating opportunities for the poor, the initiative gradually began to take care of its development in a self-perpetuating way, gathering the attention and support of local community. Additionally, on gaining support from local government officials and social networks afar, the idea was replicated in several different locations, eventually working up to a nationwide program known as community-based sanitation.

In another example of a social entrepreneur engaged in raising awareness for industrial river pollution, we see that behaviour change was induced by bringing together industry, government and community to engage in discussions and creating platforms for learning and knowledge sharing. Involving various other methods to engage children, tourists and citizens in river clean-up efforts, this initiative has also been recognised by the national government for potential upscaling. Similarly, in the case of public toilet service

provision, we find that a social entrepreneur brought community and government together in facilitating agreements to jointly address sanitation issues in slum communities while providing income-generating opportunities for the poor. As we can see in these examples, communities are typically social containers where radical and specialised innovations can breakthrough and become socially embedded but require networks for boundary-spanning learning and propagation (Dal Fiore 2007).

In terms of experimentation and progress, the literature review showed five iterative processes involved in SI and SE practice, which align with similar structures and phases identified in sustainability transitions research. Like the critical enabling factors identified by Brown et al (2013), SI and SE begin from identifying a social problem and developing solutions, which is usually tested in several pilot projects before developing innovations. However, in SI and SE, problems are recognised as opportunities for change; pilots areas are arenas for learning and adaptation rather than for demonstration, and tools and guidelines become creative innovations that combine social value-creation with social networks and business principles. Among examples of these include two cases of social entrepreneurs from Indonesia, respectively providing savings accounts and free medical care to the poor in exchange for rubbish, which can then be recycled rather than sent to the landfill. While both of these examples are relatively new cases of SE that have sprung up in the last few years, they have been recognised for possible upscale, demonstrating the capability of social entrepreneurs to find new and creative ways of creating a business case for local socio-economic development and environmental sustainability to influence regulatory and compliance agenda and policy and planning frameworks. However, similar to all other innovations, not all social entrepreneurs succeed, and there have been reported cases of failure that took several attempts and adaptations before being recognised as social entrepreneurship. Similarly, while SI and SE share with critical enabling factors identified in sustainability transitions research the importance of having a narrative, in the case of SI and SE, this is the only variable that remains the same throughout the innovation process amongst all other context-specific variables. From this, we can conclude that there is applicability between sustainability transitions research and SI and SE practice, and that they can be brought together to complement one another.

In addition to finding applicability, aligning sustainability transitions research with SI and SE core ingredients also reveals three critical insights that may influence leapfrogging pathways for urban water transformations in developing cities. They are: (a) the need to focus on social capital, (b) the need to strengthen citizenship along with governance, and (c) the need for innovations to take into consideration socio-economic development and environmental sustainability. Firstly, in developed countries where there is universal access to water and sanitation, there is a tendency to rely on science and technology in times of trouble. However, in developing countries where there is underdeveloped infrastructure, social entrepreneurs rely on social capital to build capacity and change behaviour

to create sustained social change. Similarly, in developed countries, where there is mutually agreed understanding between community and formal institutions that the provision of water and sanitation is a responsibility of the government, there is a strong focus on formal networks and institutions. For this reason, most research in sustainability transitions in developed country contexts has to date focussed on institutional change and governance to influence transition dynamics. However, in the context of developing countries where such hydro-social contract has not had the opportunity to develop, it is important to strengthen both citizenship and governance in steering change towards more equitable and sustainable forms of urban water management. SE activity in sanitation, which has traditionally been considered an individual household responsibility, therefore provides a perfect learning ground to gain insight into strengthening governance and citizenship simultaneously. Among tools identified in the literature include engaging, empowering, embedding and encouraging, which will be empirically tested for validation and refinement in Indonesia throughout the course of this doctoral research.

Lastly, in developed countries where there is advanced social welfare, there is a tendency for innovations to focus on environmental sustainability and economic rationalism in line with mainstream views for ecological modernisation. However, in developing countries where there is widespread poverty and inequality along with severe water pollution and increased health and environmental risks, there is need to support innovations that take into account the socio-economic development of poor and marginalised citizens and environmental sustainability to create self-perpetuating outcomes while ensuring sustainable social change. The large presence of the informal economy in developing countries therefore hold potential to be harnessed as social capital towards urban water transformations. While these insights can be useful to inform leapfrogging pathways in developing cities, they can also be applicable for informing pathways to overcome institutional inertia, technocentric path dependency, and balancing the triple bottom line in developed country contexts.

## 5. CONCLUSION

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This papershows through an extensive literature review that social innovations and entrepreneurship can enable transformative change while strengthening governance and citizenship. The paper reveals the key strategies and processes used by social innovators and social entrepreneurs using illustrated examples of social entrepreneurships in Indonesia. This paper also shows through conceptually linking research in sustainability transitions with SI and SE that there is applicability across the three bodies of knowledge, which can complement one another despite contextual differences. Through an analysis of critical enabling factors that influence transition dynamics, structures and processes that enable adaptive governance and the core ingredients of SI and SE identified through a literature review, this study highlights three important implications for developing cities in advancing sustainable development. They are: the need to build citizenship and governance in the absence of formal institutions, the need to focus on social capital, and the need to focus on 'social' factors for social value-creation to enable social inclusion, economic development and environmental sustainability.

The preliminary framework developed as a result of this study demonstrating the core ingredients of SI and SE will be tested empirically in the Indonesian sanitation sector and refined throughout the course of this doctoral program. However, it can also provide the basis for validation and future study in other sectors under different contexts.

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