

The Impacts of Urban Megaprojects on Water and Sanitation Related Human Rights in Southeast Asia.

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Submission to the UN Special Rapporteur on the human rights to safe drinking water and sanitation

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Table of Contents

Abstract	1
1. Introduction - Relations between Water, Rights and Urbanization in Southeast Asia	2
1.1 Scope of the report.....	3
1.2 Methodology and the structure of the report	4
1.2.1 Desakota Systems: concept and context for southeast Asian megaprojects.....	4
1.2.2 Sustainable development and Megaprojects	6
2. Definitions and Scope – Urban Megaprojects, Their Definitions, and Place in Southeast Asia	7
3. Case Studies - Different Types and Implementation Modes for Megaprojects	8
3.1 Phu My Hung, Vietnam.....	10
3.2 Amarapura Urban Development Project, Shankalay Kyun island, Myanmar	12
3.3 Bumi Serpong Damai City, Indonesia	14
3.4 Entertainment City (PAGCOR), Manila.....	17
3.5 Boeng Kok development, Phnom Penh, Cambodia.....	19
4. Human rights to water and sanitation in the megaproject cycle: Challenges and Strategies.....	21
5. Conclusion	23
References	24

Abstract

The provision of secure water supplies to human populations is a challenging task for societies globally, particularly in the context of growing urbanisation. Water scarcity has been identified as a key driver for future global conflicts and water conservation is a major focus for current research. This is because the majority of conventional urban water management systems are proving inadequate.

Global trends such as urbanization and climate change have numerous direct and indirect impacts on urban water-related human rights as they affect water sources humans rely on for drinking, sanitation and a range of other activities which influence human health and prosperity. Groundwater recharge, water runoff, ecosystem health, and urban climate are all affected by the urban hydrological cycle which is distinctively different from rural and more natural hydrological cycles. For example water drainage is a major urban problem because hard urban surfaces prevent infiltration to the soil thereby increasing the risk of flooding and limiting the filtering and cleansing of water supplies. There is a need for more effective solutions for managing urban water. While new approaches such as water sensitive urban design and sponge city technologies are available, they are often not well adapted to protecting community values and rights.

Megaprojects are key modes of development in Southeast Asia, especially over the past few decades. However, the effects of these projects on societies' access to water are not well understood. Nevertheless, the basic impacts of these large-scale projects can be discerned through a range of methods including scholarly and grey literature review, field studies, and earth observation. This report addresses the lack of knowledge on urban megaproject impacts on water and sanitation-related human rights in Southeast Asia.

Megaprojects are perceived to deliver wealth and new technology to urban regions in the context of rapid urbanization. This is important as in the Southeast Asia region where 20 percent of the total population live in poverty. However, the reality of these projects is often quite different from their aims as their large-scale development approach can destabilize local populations rather than address their needs. A concise literature review and five select case studies were used to develop a picture of urban megaproject impacts on the urban water landscapes and the resultant impacts on human rights. The selected concise case studies are:

- Phu My Hung, Ho Chi Minh City, Vietnam
- Amarapura Urban Development, Shankalay Kyun Island, Mandalay, Myanmar
- Bumi Serpong Damai City, Jakarta, Indonesia
- Entertainment City (PAGCOR), Manila, Philippines
- Boeng Kok Lake Development, Phenom Penh, Cambodia

A review of the literature on mixed-use megaprojects reveals a range of complex urban challenges from inception to delivery. While there are compelling reasons for continuing to implement these projects, there are currently few successful projects in terms of economy, environment, and social uplift. To ensure that such projects are successful in terms of water-based human rights in future, a systematic review of such projects is necessary. This report is an initial step in this direction.

1. Introduction: Relations between Water, Rights, and Urbanization in Southeast Asia

Water is an important part of sustainable ecosystems. However, population growth and urbanization have placed new pressures on freshwater systems around the globe. This is evidenced by the fact that currently more than 2 billion people live with limited access to freshwater resources. By 2050 it is predicted that one in every four people will experience chronic fresh water shortages (UN Water, 2018). There is a consensus that water is one of the most important factors for human wellbeing ecosystem sustainability (Heller, 1999). Water has its own dedicated United Nations sustainable goal – SDG 6 which calls for clean water and sanitation for all people. However, water is relevant to the achievement of a wide range of global sustainability goals including SDG 11 on Cities and Communities, SDG 12 on sustainable consumption and production patterns, and SDG 1 on Poverty. Water, therefore, cuts across a number of related sustainability goals and is critical to the achievement of basic human rights in many direct and indirect ways (Water, 2018). Therefore, this report captures some of these complexities by investigating the relationship between a specific type of urban development and its connection to both water and human rights.

The monsoon character of Southeast Asia presents particular challenges for water access and quality. Despite rainfall being plentiful at certain times of the year, Southeast Asia's urban agricultural and industrial landscapes face water shortages (Datta and Shaban, 2016; Pink, 2016). The reasons for water shortages are complex and contributing factors include rapid population growth, urbanization, political evolution, changes in household water demands, agricultural transformation, and industrial revolution (McGranahan et al., 2016). Climate change is creating more uncertainty within these changing landscapes (Le Vo, 2007; Roth et al., 2018).

Southeast Asia is amongst those regions which face the most formidable water-related challenges (Pink, 2016). In the country of Laos, only half of the population have access to clean water. In the Philippines, waterborne diseases are a major problem, with more than 90% of the population lacking modern sewage services. Such characteristics of urban life in Southeast Asia dramatically increase the risk of getting diseases. Studies in Thailand reveal that water pollution has resulted in rivers with 30 to 60 times more pathogens, poisons and heavy metals than government standards permit. Water pollution plagues many Southeast Asian countries with thousands of sanitation-related deaths recorded every year (Pink, 2016, p.12).. Southeast Asia's water and sanitation problems often occur due to the close proximity of natural ecosystems with factories and industry and urban infrastructure. This is a major problem in rapidly urbanizing societies and arises when local populations rely on ecosystem services for access to clean water and sanitation rather than engineered water supplies (Desakota Study Team 2008).

In Southeast Asia large urban populations rely on ecosystem services for water provision, sanitation, food, agriculture and industrial production (Cairns et al., 2010; Desakota study team, 2008; Gurnell et al., 2008; McGee, 2009). These often-conflicting functional relationships place pressure on the local ecosystems, which if not addressed can collapse with drastic outcomes for the local societies which rely upon them. Dynamic patterns of both forced and voluntary migration also place pressure on water systems and make access to secure sanitation and water difficult to manage (Molle and Floch, 2008).

Since the 1980s urban megaprojects have been adopted as a way to achieve urban growth and gain competitive advantage for cities for cities around the world . Urban megaprojects delivered over this period have emerged in the context of a neoliberal political economy supported by global finance and economic restructuring processes that have been evolving since the late 1970s (Harris 2017). In this

political economy cities and states compete for a share of global investment (Moretti, 2012). In Southeast Asia this investment has come in various forms and can be seen in the range of megaprojects presented in this report from elite housing developments, to mixed use developments to new urban commercial centres and vast recreational districts. The intent of megaprojects ‘is to change economic structures, rather than work within existing structures’ (Flyvbjerg, 2005). The structural change these projects aim to bring is often shrouded in a generic ‘glossy globalization’ discourse that idealizes potential investment and ostentatious forms of growth while concealing urban displacement, spatial exclusion and urban fragmentation (Harris, 2017).

This report reviews the body of literature on megaprojects in the context of water and human rights. A combination of scientific literature review, grey literature review, and case study analysis was undertaken to provide a clearer understanding of the impacts of urban megaprojects on water and sanitation related human rights. Harris’s (2017), review identified five thematic criticisms of global mixed-use megaprojects: (1) independent or exclusive governance that evades local planning frameworks, (2) international agendas overriding the local issues and priorities, (3) physical and social disconnection, (4) generic urban forms and visions (5) an absence of public benefits and engagement in favour of private wealth generation and benefit. In the context of South-East Asia, we analyse what the impacts on water degradation are, water shortage, land displacement and many social, economic and environmental issues for the region. This report produces a baseline of knowledge that enables courses of action to be taken. Firstly, it permits more authentic future directions that couple competitive city goals with local planning goals to achieve broader based public benefit at the scale of the city and beyond the limits of the megaproject boundaries (Harris, 2017). Secondly, it sets a foundation and approach for building up the current level of knowledge on megaproject impacts on water-related human rights.

In this regard, although there is some literature on the impacts of megaprojects on Southeast Asian communities and society in general, there remains a large knowledge gap. Most megaproject knowledge is focused on project management and economic imperatives and pays little attention to human rights. There is consequently a pressing need to complete more research to understand the genesis, delivery, urban implications, and future directions of this type of project on human rights and water demands.

1.1 Scope of the Report

The purpose of this study is to increase understanding of the links between urban megaprojects, water, and sanitation related to human rights. To do this a discussion and analysis of the spatial economy, demographic changes, and land tenure is placed in the context of natural ecosystems and their role in providing basic services in urban/rural livelihood systems, particularly for the poor. The main objectives of this report are:

- To clarify the relations between water, rights, and urban development in Southeast Asia.
- Urban megaprojects definitions and their place in Southeast Asian political economy.
- To identify critical knowledge gaps associated with water and urban megaprojects.
- To determine the advantages and disadvantages of urban megaprojects in terms of environmental, social, and economic consequences with particular attention to water systems.
- To clarify actors and their roles to inform policy change and enable better ecosystem management within the ASEAN political system.

- Strategies to preserve or improve water and sanitation human rights through sensitive urban development.
- Strategies for strengthening the capacity of Southeast Asia to address water and sanitation human rights in megaproject delivery.

1.2 Methodology and Structure of the Report

The study integrated two main methods and sources of information:

- A global and regional literature review: Review of grey and scientific literature in view of the impact of urban megaprojects on water and environments that will ultimately result in transformation of ecosystems and urban structures.
- Case study methods: Five case studies located in Southeast Asia were selected from a list of global urban megaprojects. At this stage, the the case study research is limited to literature review, geographic analysis, and initial fieldwork. However, in the next stages of this project, other methods of analysing the case studies such as focus group discussion, intensive fieldwork study, and interviews will be considered.

This research approach involves coverage of local sociological, developmental, and political themes relevant to Southeast Asia. It places these within the context of global reports and scientific studies on urban and ecological systems. To do this, the structure of the report consists of two main parts. The first part covers the theory, concepts, and the scope of urban megaprojects in the context of Southeast Asia's ecological landscape. At this stage, the challenges these countries face in urban development are briefly outlined.

In the second part of this report, five case studies are analysed. The analysis is shaped using the theory of Desakota systems (McGee, 1991). The three main dimensions of urban sustainability, 1) environmental, 2.) social, and 3.) economic, are used to guide the case study analysis. To address the research objectives, the scope of the urban megaproject is first examined. Then, water and human rights and the effect of the urban megaproject on the local context is considered.

1.3 Desakota Systems: Concept and Context for Southeast Asian Megaprojects.

Southeast Asia is one of the most rapidly urbanizing regions in the world. The process of urbanization in this region has been closely studied by leading geographers and scholars including Terry McGee who coined the term Desakota to capture the dynamic process of urbanization in the region (McGee, 1991). The Bahasa Indonesia term "desakota" (meaning village-town), describes the dynamic migration between country and city and the formation of extended urban systems that consist of urban and rural villages and industrial systems which are linked through a dynamic seasonal economy. In such a system people work several jobs, some in the city and some back in their ancestral villages, to capture the benefits of both traditional agricultural economies and new urban economies. Such systems are the result of enterprising families in a globalizing world but also an approach to managing climate, economic, and political risks in such dynamic unstable systems. This process has taken place in sensitive delta and upland rice growing systems. The rapid urbanization of the region has in part been facilitated by the dense populations which inhabit such ecosystems providing a ready labour source for outsourced industrial production (McGee, 1989, 2002; McGee, 2009; McGee, 2010; Robinson, 2011).

The term *desakota* captures the two-fold process of urbanization involving these urban villages and the implementation of large industrial complexes and urban residential or recreational megaprojects constructed for the middle classes. This phenomenon involves a mixing of formal and informal economies and has had a serious effect on environmental management and service delivery have evolved, often leading to their decline or undermining their effectiveness. The intense environmental and spatial mixing of *desakota* systems has changed the relationship between livelihoods and ecosystems resulting in new pressures and various kinds of pollution (Desakota study team, 2008).

Desakota settlements have placed great pressure on ecosystems. They are often economically anchored by a large megacity with a dispersed peri-urban condition surrounding the primary city. Often situated in wet delta environments and a range of types of water types and uses are available and produced within such systems. These can be related to local ecological conditions or land uses. *Desakota* water-related ecosystems integrate a combination of agricultural, local non-farm, and urban demands (Sternberg, 2016). The subsequent pressure is a result of changing land use, increased migration to urban areas, and the escalation of water demand and pollution levels in the area (Shatkin, 2008). It is defined by changes in nature, intensity, and spatial pattern of land use. The changes in land use, intensity mosaics, water resources, and water quality that typify *desakota* areas, alter key environmental processes at the catchment level. As *Desakota* systems are often located in delta and wetland environments ecosystem functioning, and services tend to impact at the catchment level and impact ecosystem functioning and services beyond the immediate land use. Science and social research on these changing areas is not well established. Nonetheless, the reliance of local populations on these water ecosystem changes for wellbeing, social-economic condition, food and water security is apparent (*Desakota* study team, 2008).

Desakota systems are produced through both informal and formal urban growth and megaprojects are one of the modes of urban growth that contribute to their fragmented growth pattern. In relation to such urban growth patterns it is important to maintain and develop green infrastructure, ecological networks the integrity of surface and groundwater systems, river-floodplain flows and general ecological connectivity in ways that can support critical ecosystem functions. Management questions also involve the increasing dependence of local populations on services produced by distant ecosystems. Understanding of heterogeneity, thresholds and tipping points within interconnected ecological, economic, and social systems represents a fundamental challenge for basic scientific research (*Desakota* study team, 2008; Hawken, 2017).

Populations in *desakota* systems adopt multiple livelihoods in an attempt to manage or escape from poverty; however, the process often exposes the same populations to human rights abuses both directly and indirectly through economic exploitation and pollution. Economic intensification and increased mobility also increase in energy consumption and greenhouse gas emissions contributing to climate change and urban heat island effects (Xie et al., 2007). Whilst rapid urbanization can enhance access to urban services in Southeast Asia, it is a volatile process that is susceptible to the whims of multinational firms with just-in-time supply chains. Such rapid urbanisation also brings within it increasing demands on water and forest-based ecosystems. Urban megaprojects typically limit accessibility to ecosystem services by the poor as they are exclusive land-uses focused on narrow demographics (Dick and Rimmer, 1998; *Desakota* study team, 2008).

Desakota processes also effect water-regulation functions such as flood control, disease control, and filtering of pollutants. This form of urbanisation leads to environmental degradation resulting in increased health problems and exposure to disaster risks. This condition mostly affects the poor who are likely to move to more hazardous low-lying geographical locations because of the lower value of

the land. This can be exacerbated by the lack of political organisations. Strategies to enhance community representation and collective action in such dynamic urban environments are difficult to establish but are important. These strategies enable the poor to negotiate for water rights and collectively bargain for access to fresh and reliable ecosystem services. (*Desakota* study team, 2008)

1.3.1 Sustainable Development and Megaprojects

Most megaprojects are not well publicized despite their size. The most fundamental aspects of their social and environmental impacts are usually not well known or researched and receive lesser attention than economic or financial aspects. Further, economic measures are usually accounted for in terms of project profits rather than a broader-based approach to societal wealth. This report uses a triple-bottom-line sustainable development framework to assess each case study. The three main dimensions of sustainability: environmental, economic, and social development are used to generate critical insights on the case studies. (Figure 1.1). Further a range of simple metrics are collated to sketch a picture of the strengths, weakness, opportunities, and threats of the megaprojects in relation to water, sanitation, and human rights.

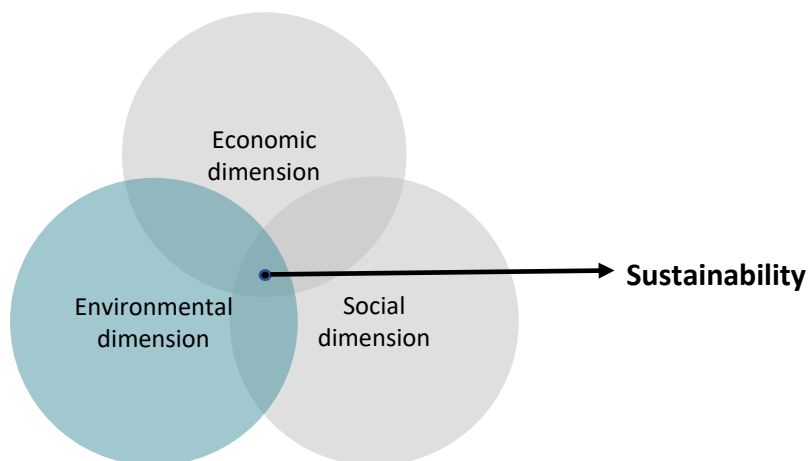


Figure 1.1: Sustainable development dimensions based on Triple- Bottom- Line, (Schweikert et al. 2018)

2. Definitions and Scope: Urban Megaprojects, Their Definitions, and Place in Southeast Asia

Megaprojects are multibillion-dollar infrastructure projects that are usually commissioned by governments and delivered by private enterprises which may consist of multiple parties and organizations (Van Marrewijk et al., 2008b; Chakriya and Jeewook, 2016). They may consist of developments such as dams, roads, pipelines or in the case of this report large urban developments. Urban megaprojects may focus on residential development, mixed-use development, new town centres, industrial zones, recreational or tourist developments or specialised areas focused on specific institutional purposes such as a new capital city. As such they usually are framed with a clear urban vision and implemented via a linear ‘pipeline’ approach. Therefore, although they are socially more complex than many other megaprojects ‘urban’ megaprojects share this singular vision and focused development mechanism. Sensitive community participation and feedback systems are not usually built into the development approach of urban megaprojects.

Urban megaprojects are a convenient way for governments to engage with the global economy and to modernise whilst also providing new urban services and infrastructure. Because of their size and internal uniformity, they give the appearance of doing this efficiently and on a large scale. As urbanisation is projected to continue urban megaprojects are likely to remain an appealing mode of urban development well into the future. In the decades leading up to 2050, urban areas in Africa and Asia will more than double. In this context innovative development approaches are necessary to address the challenges of sustainable urban growth and land use. Emerging urban planning and design theory and knowledge needs to address the issue of providing ecosystem services for these expanding urban areas (Ahern et al 2014, McDonald et al., 2011; Altshuler and Luberoff, 2004).

Migration to urban areas in Southeast Asia is a complex phenomenon with many push-and-pull factors such as economic policy, institutional frameworks, and development strategies, poverty, ecological and economic instability and demographic and social pressures. Southeast Asia’s urbanizing deltas have been a magnet for massive capital investment since the 1990s.

Investors from around the world have sought out cheap labour markets that remain more affordable than China, new opportunities to be gained from an incipient middle class, changing political contexts and a strategic location for global trade. Southeast Asia has therefore transformed from a local economic base dominated by agriculture and primary resources to a manufacturing and mixed economy. This has driven *desakota* systems and uneven economic development focused on cities which is the underlying driver of urban migration (Seto, 2011; Hawken, 2017).

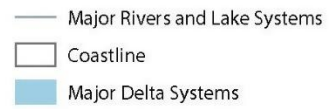
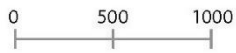
Southeast Asia’s urbanising regions are often located in densely populated areas such as the fertile rice growing mega-deltas; These landforms are highly productive places but also susceptible to environmental change. The presence of rich sediments in these estuarine zones makes them biologically productive ecosystems that support high-energy crops and plentiful aquatic life. These productive sites activity and have become home to large and dense populations over several millennia. These populations benefit from Southeast Asia’s delta and wetland systems, but are exposed to serious environmental hazards such as sea-level rise, typhoons, tsunamis, storm surges, coastal-

erosion and seasonal flooding or inundation. Natural disasters like flooding and sea level rise are exacerbated by a lack of adequate infrastructure and planning in Southeast Asia's urban areas. (Francisco, 2008; Bankoff, 2003; Hassan, 2002).

3. Case Studies - Different Types and Implementation Modes for Megaprojects

The five selected case studies are located in a range of wetland environments characteristic of *desakota* systems -see figure 3.1. These range from the mega-delta environments of Phu My Hung to the river island of Shankalay Kyun development. The various projects are also at different stages of UN Special Rapporteur Prof Heller's (2018) six stage Human rights cycle of mega-projects which are quoted below:

1. First, from a macro planning perspective, the stage when mega-projects are identified as part of the national development agenda of a country;
2. Second, the stage of planning and design of a given mega-projects, involving environment and social impact assessments;
3. Third, the stage when the mega-project is licensed by public authorities;
4. Fourth, the stage when the construction of the mega-project is in progress;
5. Fifth, when the mega-project commences its operation; and
6. Sixth, related to the impacts of the megaproject in the long term.



1. Amarapura (Shankalay Kyun island), Myanmar
2. Boeng Kok lake, Phenom Penh, Cambodia
3. Phu My Hung, Vietnam
4. Bumi Serpong Damai City, Indonesia
5. Entertainment City (PAGCOR), Manila, Philippines

Figure 3.1. Location of case studies and major delta systems in Southeast Asia

3.1 Phu My Hung, Vietnam

Vietnam is located in South East Asia and sits on a 331,201 sq. Kilometres. It lays on the Eastern part of the Indonesian Peninsula, bordered by China to the North, Laos and Cambodia to the West, and the East Sea and the Pacific Ocean to the East and South, with a 3444-Kilometer-long coastline. Its location made it an ideal hub for trade and tourism. Most of the population is congregated on the plains, especially the two fertile delta areas of the Red River delta in the North and the Mekong River delta in the South (Huynh, 2015; Wust et al., 2002).

Ho Chi Minh City is the largest city in Vietnam and located on the periphery of the Mekong River Delta in the South. Rapid growth has transformed the city form a compact colonial centre to an emerging megacity in an expanding urban region which extends both south and west to Cambodia. HCMC features many urban megaprojects but the largest and most well-known is Phu My Hung (PMH) or Saigon South is larger than the 19th and early 20th century central districts of HCMC. At 33 km² or 3000 hait is one of the largest urban megaprojects in the world and itself is the size of a vast new city. The development primarily consists of residential middle-class housing but also includes range of retail facilities, recreation landscapes and services and civic institutions such as a branch of the Royal Melbourne Institute of Technology. PMH has been envisaged as ‘a self-contained edge-city’. (Douglass and Huang, 2007; Huynh, 2015).

In HCMC most residents are low-income earners, which makes the middle-class aspirations of PMH stand out. The design is exclusive in nature with gates, hired guards, and surveillance. This system controls how the new urban space within the urban megaproject can be used and experienced by locals. The 24 hours/7 days a week private security service is used in the marketing of the district.

The district of PMH was first developed from 1993 on the wetland systems that characterise the landscape of the region and has transformed the environment, economy and society of its immediate landscapes and accelerated change in other parts of HCMC too. The megaproject is therefore in Heller’s final parts of the six stage human rights megaproject cycle whereby the project commences operation and some of the long term impacts are already a part of the new experience of local communities.

Despite HCMC’s dynamic urban agricultural system such activities are not permitted, in PMH as the district aims to promote an industrial and service economy (Douglass and Huang, 2007; Storch and Downes, 2011; Daniere et al., 2005). This change has affected the social, environmental, and economic characteristics of this area (as demonstrated in table 3.1.)

Phu My Hung has also created significant off-site water flooding and sanitation issues. Areas such as Cholon, the pre-colonial part of Ho Chi Minh City now experience more frequent and intense flooding (HCMC should reconsider southward urban development: experts, 2018; Huynh, 2015; Katzschner et al., 2016)

HCMC’s rapid urbanisation, which megaprojects such as PMH promote, has resulted in environmental consequences in the region such as offsite flooding, water deterioration, inadequate drinking water, and sanitation impacts that have caused health problems, and disrupted livelihoods and communities which rely on access to fresh water (McIntosh et al., 2014). Furthermore, despite PMH’s verdant canals and waterscapes, the development type is water resource intensive. The city’s total water demand is projected to triple in 2020 as a result of increases in domestic and industrial consumption with some of this demand being addressed through groundwater extraction. Moreover, water quality has been diminished by industrial and domestic wastewater (Le Vo, 2007).

Phu My Hung, Vietnam

Size: 3000ha **Location:** 2.201960 N, 102.248530 E **Developer:** Phu My Hung CORP **Start:** 1997-ongoing



Figure 3.2. Phu My Hung location

Table 3.1: The impacts of PMH as an urban megaproject on the water and socio-economic landscape

Triple Bottom Line Criteria	Urban Megaproject Characteristics	Human Rights Impacts
Environmental		
Natural resources Biodiversity and ecosystem services Urban spaces and landscape	<ul style="list-style-type: none"> - Lack of regional ecological assessments of urban megaproject construction. - Upstream flooding - Limited access to ecosystem services 	<ul style="list-style-type: none"> - Upstream flooding and deterioration of quality of life - Offsite impacts on drinking water and sanitation - Extraction of groundwater
Socio-cultural impacts		
Wellbeing Equity and affordability	<ul style="list-style-type: none"> - Exclusive public spaces - Inadequate amenities and services for lower-income populations 	<ul style="list-style-type: none"> - Displacement of communities - Disruption of communities and social networks
Economic impacts		
Economic prosperity Statutory, regulatory, business, administrative and political processes Land use Transport	<ul style="list-style-type: none"> - Steep increase in the price of land - Limited range of economic activities - Reduced access to ecosystem services 	<ul style="list-style-type: none"> - Limited opportunities for work for broad demographic

3.2 Amarapura Urban Development Project, Shankalay Kyun Island, Myanmar

Myanmar, is a country which has experimented with various urban megaprojects. Many of these are in their operational phases. Perhaps the most well known is Naypyidaw, the new capital city of Myanmar located in the centre of the country. The Amarapura Urban Development Project is a planned development plan for Shankalay Kyun Island on the Irrawaddy River and will function as a vast urban extension of Mandalay, the second largest city of Myanmar. The project fits within the national development agenda of Myanmar.

Considering the human rights experiences of past large-scale urban developments in Yangon, Naypyidaw and elsewhere in Myanmar, the project should be closely watched throughout its megaproject development cycle. There is some local activism and community organisation along with online social media and reportage. Various colour renderings and videos of the proposed project are available and present a vision which of a medium density (1-10 storey) development upon agricultural land and an existing village. In March 2016, the Mandalay City Development Committee signed an agreement with the Mandalay Business Capital City Development Company (MBCCD) readying the project for the construction phase. Project masterplanners ‘Spiral’ state that the project will lift living standards (in Mandalay) to the ‘required international level’.

The proposed Amarapura Urban Development Project megaproject is 809 ha in size and involving 375,000,000 USD of investment. The project was launched in 2016 and will involve the transformation of traditional agricultural and villages landscapes for a mixed use urban centre and a new port that aims to provide massive new shipping capacity along the Irrawaddy River. The development is comprehensive with facilities such as modern hotels, hospitals, schools, jetties, shopping centres, gardens, and apartment buildings. The development project also involves the construction of a large new port which will be the primary port on the Irrawaddy River and it will be built using funds from the Japan International Cooperation Agency (Mandalay port development project to take off early next year, 2019). The project is part of a bigger plan to modernize Mandalay and is expected to be completed in 10 years (Yin, 2008).

The main village on the island, Shankalay Kyun, relies on activities such as fishing and agriculture and locals have reportedly been active in challenging the compensation and agenda of the project which will displace the village entirely. The environmental justice atlas (EJOLT 2019) reports that the intensity of conflict and resistance is low and that it can be described as ‘latent’. The cultural beliefs and traditions of the own are well known and active despite the fact that it is situated only six kilometres south of Mandalay. The main occupations practiced include agriculture and fishing. (Ko ko, 2019).

The proposed change will increasingly affect communities and people living there. The company is buying land and properties, which makes it difficult for the dwellers to remain. In addition, by changing the ecology and economy of the area, the occupation of most of the people will also change. Apart from the socio-economic concerns, there are concerns about the impact of this project on the hydrological condition of the river and the surrounding area. Due to the developments proximity to the large Irrawaddy River and its situation in the floodplain, there is potential for serious environmental impacts that affect sanitation and water supply for the immediate urban areas and also downstream areas. The emergence of an extended urban area linked with Mandalay could create unforeseen water-based conflicts and risks. Construction and dredging near or in the river have increased erosion as well as narrowing of the river (Grzybowski et al., 2017; Pink, 2016).

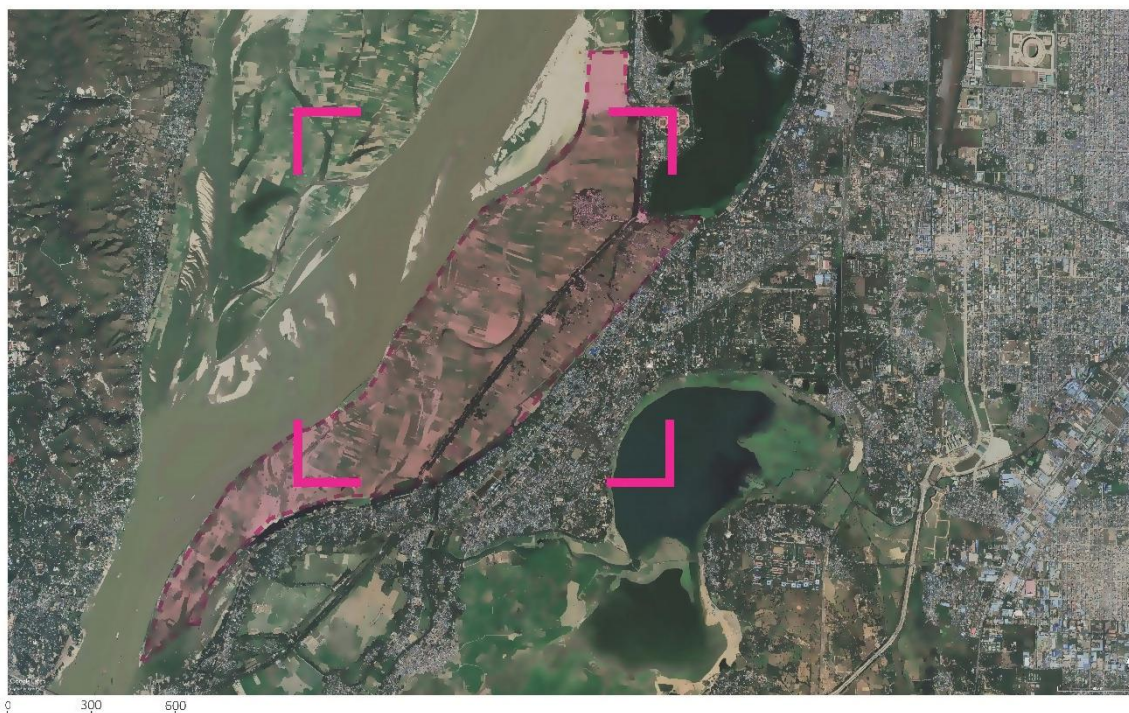


Figure 3.3. Amarapura location

Table 3.2: The impacts of Amarapura (Shankalay Kyun island) as an urban megaproject on the water landscape and displacement of communities and the transformation of existing socio-economic conditions

Triple Bottom Line Criteria	Urban Megaproject Characteristics	Existing/Potential Human Rights Impacts
Environmental impacts Natural resources Biodiversity and ecosystem services Urban spaces and landscape	-Transformation of river hydrology and geomorphology -Transformation of traditional ecosystems	- Reduced access to water for agriculture - Potential pollution related to port activities and urban construction -Potential disruption of aquatic food sources in Irrawaddy
Socio-cultural impacts Wellbeing Equity and affordability	- Lack of consultation with communities	- Population of traditional village displaced - Change in the communities 'lifestyle - First residents have left the area - Possibility of water-related diseases related to large scale development
Economic impacts Economic prosperity Statutory, regulatory, business, administrative and political processes Land use Transport	- Change in local economy - Massive population change - Change in land use	- Reduced access to water for livelihoods - Reduced access to traditional food sources - Potential access to new sources of income

3.3 Bumi Serpong Damai City, Indonesia

Jakarta is a city of many urban mega projects financed by private capital. Water focused urban megaprojects include the well-known National Capital Integrated Coastal Development (NCICD) plan which involves the construction of 17 artificial islands reclaimed from the sea. The 40 Billion USD project is devised by the Indonesian and Dutch governments and designed by a consortium of Dutch firms and involves a 32km offshore seawall and 5100ha of land reclamation. The island developments are justified in terms of revenue raising for the construction of the wall. The project claims to address coastal flooding related to the subsidence of Jakarta which is one of the fastest sinking cities in the world.

As the capital and largest city in Indonesia, Jakarta concentrates investment, political power and population in a relatively compact area for the 10 million people it supports. The capital is located on the northwest coast of the world's most populated island, Java. The following brief case study discusses Serpong Damai -known as BSD City-which is located in the Southwest of Jakarta (Keeton, 2011).

Bumi Serpong Damai City is being developed by the Bumi Serpong Damai Company which itself part of Sinar Mas, formed in 1938 and one of the largest corporations in Indonesia made up of a conglomerate of subsidiaries including Asia Pulp & Paper and palm oil producer PT SMART. It is well known for its environmental controversy and has been boycotted by various multinationals for its environmental destruction of forests. At 60 km² Bumi Serpong Damai, is a vast New Town- roughly half the size of Paris. Since only one-quarter of this massive area is currently developed, the availability of new urban space is significant in a city where over-crowding and congestion is an ongoing problem. Situated on the periphery of Jakarta the development represents a massive 'land bank' which is well placed to capitalise on the urban displacement caused by urban congestion, sea level rise and the rapid subsidence of Jakarta. Sina Mas also has land banked in other locations such elsewhere in Jakarta and Bogor, Surabaya, Palembang, Balikpapan and Samarinda. The size of the development is such that it contains a range of residential developments and ambitions to be Indonesia's 'Silicon Valley'.

However, new urban residents migrating from rural areas are often unable to find a foothold in new megaprojects because they represent a modern or upmarket development model that relies on return on investment and so is expensive both to build and to purchase a stake in.

Like Phu My Hung, this project has been perceived as a successful project from the urban developer's point of view. There are many commercial markets in the city, and the value of properties in BSD has increased with many middle-class families requesting single houses with safety and security in low-density areas (Winarso et al., 2015). Water and sanitation rights in this city are not an issue because of its market focus and development mode. However, it is also a missed opportunity for urban migrants without the financial capacity to buy in. Such projects can serve to limit available affordable land and housing concentrating newly urban populations where access to water and sanitation where they are most difficult. Megaprojects at this scale are context creating and therefore need to be assessed at the scale of the city that they relate to.

Within Central Jakarta many poorer residents reside in Kampung and rely on informal networks to supply affordable water and sanitation services. However, such systems are complex and rely on

feedbacks and links between formal and informal infrastructure. For example, often rich and poor residents alike illegally tap into piped water networks for their personal or commercial needs. Further, there is frequent illegal dumping of sewage and sludge into public water bodies to avoid the cost and inconvenience of transporting waste to legal sites (Putri et al 2017, p.934). In megaprojects such as BSD these water and sanitation complexities are excluded but in doing so they remain unresolved. Scholars such as Winarso et al (2015) and Douglass (1989) suggest that the development plans for BSD increase the isolation of social and economic groups. This vast exercise in urban exclusion may be seen by the above scholars as 'voluntary' segregation but the economic contours of the city ensure that there is nothing voluntary about it for Jakarta's poorer residents.

The ambition for BSD and its future 1 million residents to be water 'independent' is understandable considering the challenges of the rest of the city. With its own water infrastructure, treatment plants and planning for water reuse BSD has many sustainable principles in place. It also aims to preserve the 'natural beauty of the Cisadane river basin' whilst also addressing 'the needs of adjacent traditional village communities' (Widjojo 2015).

This splintering of Jakarta into water and sanitation haves and have nots is a likely to increase along with urbanisation and environmental pressures.

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Bumi Serpong Damai City, Indonesia



Size: 6000ha **Location:** 6.285510 S, 106.651190 E **Developer:** Sinarmas developer and Real Estate **Start:** 1994-ongoing

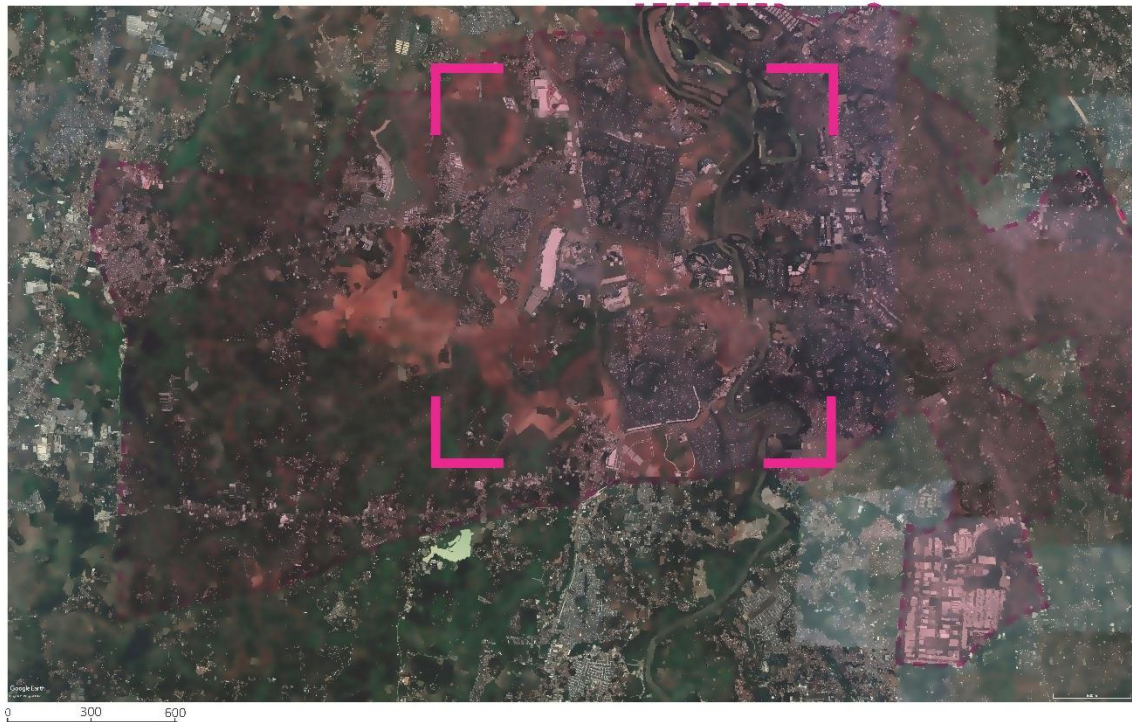


Figure 3.4. BSD City location

Table 3.3: The impacts of BSD City as an urban megaproject on the water landscape and displacement of communities and the transformation of existing socio-economic conditions

Triple Bottom Line Criteria	Urban Megaproject Characteristics	Human Rights Impacts
Environmental impacts		
Natural resources	- Canals and drains	- Water independence
Biodiversity and ecosystem services	- Reuse of wastewater	- Cope with water scarcity
Urban spaces and landscape	- Controlling water demand	- Potential flood impacts downstream
	-Pollution and removal of wetland and stream systems for construction of urban megaproject.	
	-Increase in urban heat island effect	
Socio-cultural impacts		
Wellbeing	- Different layers of security among communities	- Isolation of social and economic groups
Equity and affordability	-- Reliance on industrial sources of water	- Self-segregation' or 'voluntary segregation
Economic impacts		
Economic prosperity	- Limited public transport options	- Dependency on cars
Statutory, regulatory, business, administrative and political processes	- Commercial places and malls	- Increase in the value of land and properties
Land use	-Economic exclusion	
Transport		

3.4 Entertainment City (PAGCOR), Manila

Manila is one of the three distinct metropolitan areas of the Philippines, and is situated in the Southwestern part of Luzon Island. The province lies along the flat sandy lands, on the coastal margins of the city which have been used for fisheries and land reclamation projects. Entertainment City, also known as E-City, is a gaming and entertainment complex under development by PAGCOR in Bay City, Metro Manila, Philippines. It lies to the western side of Roxas Boulevard and South of SM Corporate District (SM Mall of Asia), part of Paranaque City (Manasan and Mercado, 1999) in the coastal margin of the city.

In 2007, the government-owned and controlled casino operator Philippine Amusement and Gaming Corporation (PAGCOR) was determined to build the city on the eight-km strip along Manila Bay with all facilities required for an Asian version of Las Vegas. This tourism centre would be called the 'Entertainment City'. This development will change the appearance and the economy of the region as well as have environmental and socio-cultural consequences. The Entertainment City, a 120-hectare gambling land, is a tourist and entertainment megaproject that demonstrates the opposition trend through privatization. The government has used this project as a demonstration project to show it has the capacity to develop large projects in Manila's urban landscape, contrary to historical failures in urban and regional planning (Saguin, 2017).

The development is focused on economic growth through local and international tourism. Malls, casinos, resorts, and other recreational facilities make up the megaprojects. With easy access to the nearby airports, Entertainment City is proposed as a gateway to other premier tourist destinations in the Philippines. The large-scale terraforming or remodeling of the coastline will have large impacts on the environment and the livelihoods of the people who relied on the functioning of the previously intact marine ecosystems.

Entertainment City, Manila

Size: 800 ha **Location:** 14.688430 N, 121.074530 E **Developer:** PAG Corporation **Start:** 1998-ongoing



Figure 3.5. Entertainment City location

Table 3.4: The impacts of Entertainment City as an urban megaproject on the water landscape and displacement of communities and the transformation of existing socio-economic conditions

Triple Bottom Line Criteria	Urban Megaproject Characteristics	Human Rights Impacts
Environmental impacts Natural resources Biodiversity and ecosystem services Urban spaces and landscape	- Development and construction of near the bay wet ecosystem	- Depletion of water resource - Change in the ecosystem balance
Socio-cultural impacts Wellbeing Equity and affordability	- Change the community's structure	- Increase in population - Ignorance of the first residents 'lifestyle, occupation
Economic impacts Economic prosperity Statutory, regulatory, business, administrative and political processes Land use Transport	- Variety in entertaining activities - Commercial places and malls	- Increase in tourism - Increase in the value of land and properties - Increase in occupation variety and opportunity

3.5 Boeng Kok development, Phnom Penh, Cambodia

Phnom Penh like Ho Chi Minh City (HCMC) was originally a planned colonial city, but has expanded greatly in recently years. Both HCMC and Phnom Penh were built on marshy land and considerable reclamation was required to establish them as European style capitals in the early late 19th and early 20th centuries. Situated within the Doun Penh district in the North of Phnom Penh city Boeung Kak was previously a reminder of the formerly semi-aquatic environment of the city.

Boeung Kak Lake was located at the centre of urban Phnom Penh and was previously the largest urban wetland in Cambodia before the 90-hectare lake was filled in for an urban megaproject. A private developer, Shukaku Inc, took out a lease from the Municipality of Phnom Penh of an area of 133 hectares, including the lake. It then commenced to fill and developed the area.

Prior to redevelopment, the area was home to approximately 20,000 people living and working there (Un and So, 2011). During the 1980s, the lake was a rich source of aquatic and plant life. Subsequently, the development in this area has attracted tourist-based development with the establishment of guesthouses, cafes, and tour operators along the lakeshore to encourage the patronage of both local and international visitors. The lake was a closed lake system, which means that the catchment for the lake was not much larger than the lake itself. However, the lake stored rainwater and the volume of this direct rainfall in the lake was estimated during a storm event in April 2008, to be 360,000m³. After development, the runoff was directed to downstream neighbourhoods. Although the catchment area of the lake is not big, the development generated large volumes of runoff in the highly built up surrounds of the lake. This runoff has tremendous effects on surrounding property value and has caused flooding hazards for nearby areas (Schneider 2011).

In 2014 an estimated 3500 families were forced to accept insufficient compensation for their homes and lands. The former commercial operators and residents of the lake have been resettled on the margins of the city where it is much more difficult to make a living. The urban development has thrown many of the families further into poverty. Further the evictions also contravened several laws about the purchase of public lands such as lakes. The large-scale evictions are thought by human rights agency inclusive development international to be one of the largest single urban displacements in Cambodia since the forced evacuation of Phnom Penh in 1975 (Inclusive Development International 2016).

Beong Kok Lake

Size: 90ha **Location:** 12.006070 N, 105.464030 E **Developer:** Shukaku Inc. **Start:** 2007-ongoing



Figure 3.6. Boeng kok lake location

Table 3.5: The impacts of the Boeng Kok urban development on the water landscape and displacement of communities and the transformation of existing socio-economic conditions of Boeng Kok Lake

Triple Bottom Line Criteria	Urban Megaproject Characteristics	Human Rights Impacts
Environmental impacts Natural resources Biodiversity and ecosystem services Urban spaces and landscape	- Destruction of the lake - Transformation of surrounding hydrology and drainage functions.	- Disruption of ecosystem services used by the community - Possibility of flood and drought - Problems in the sewerage system
Socio-cultural impacts Wellbeing Equity and affordability	- Complete remodelling of previous tenure structure	- Loss of livelihoods such as fishing, tourism - Loss of dwellings and homes - Land grabbing and community displacement
Economic impacts Economic prosperity Statutory, regulatory, business, administrative and political processes Land use Transport	- New Economy - Commercial places and malls	- Increase in poverty through disruption of livelihoods - Increase in the value of land and properties and continual displacement through gentrification

4. Human Rights, Water and Sanitation in the Megaproject Cycle: Challenges and Strategies

This final part of the report reviews the megaproject human rights development cycle as proposed by Leo Heller (Heller, 2019). The cycle is reviewed with reference to the impacts of Southeast Asian urban megaprojects on water and sanitation-related human rights. The notes in the following table are based on the specific issues particular to urban megaprojects in the Southeast Asian context. This research has been generated from the literature review and case study analysis contained within this report.

According to the five main stages in the megaproject cycle, the challenges and strategies are summarized in table 4.1. The column on generic megaproject challenges are direct quotes from a comprehensive literature review by Othman et al (2013). Impacts on water and sanitation for megaprojects cycle is a synthesis of the previous 5 case studies that are applicable to each stage of megaproject's development.

Table 4.1. The impacts of Southeast Asian urban megaproject on water and sanitation-related human rights

Megaproject cycle	Description of the cycle	Challenges quoted from Othman et al (2013).	Impacts on water and sanitation in urban megaprojects
Macro Planning	<ul style="list-style-type: none"> –Integration of megaprojects in national development agenda –Decision of the legal and policy framework applicable to megaprojects –Consideration of alternative development models 	<ul style="list-style-type: none"> –<i>Missing intermediary bodies</i> –<i>Unfavourable regulatory framework</i> –<i>Lack of political support and inefficiency</i> –<i>Governance decisions fail to strike a balance between short- and long-term objectives and effective risk mitigation</i> –<i>Inadequate communication at all levels and poor coordination interface management between project stakeholders</i> –<i>Political imperatives and authority misuse</i> 	<ul style="list-style-type: none"> –Water and human rights issues on national development agenda that could be addressed by the megaproject not identified –Water and human rights issues are not part of the strategic decision-making process on development options –Water and human rights goals and strategies not integrated into megaproject governance structures
Planning and Designing	<ul style="list-style-type: none"> –Practical and technical aspects defined –Designation of concrete roles and responsibilities of actors involved. –Ex-ante assessment and participatory processes 	<ul style="list-style-type: none"> –<i>Large number of people and organisations of different specialties involved in megaproject development</i> –<i>Lack of design knowledge and experience related to megaprojects</i> –<i>Difficulty resourcing the right skills and matching with project demands and geography</i> –<i>Lack of experienced staff to accept critical roles</i> –<i>Lack of providing and managing high-qualified human resources</i> –<i>Improper identification and engagement of various</i> 	<ul style="list-style-type: none"> –Roles/organisations not assigned to develop/monitor strategies to address water and human rights –Existing environmental and social conditions are not adequately investigated in order to conform to the planning and design process or enable monitoring during or after construction –Community access to drinking water or water for irrigation not evaluated or ensured into the future –Potential water displacement and increased flooding due to large scale urbanisation not adequately investigated

Megaproject cycle	Description of the cycle	Challenges quoted from Othman et al (2013).	Impacts on water and sanitation in urban megaprojects
		<i>stakeholder groups in the early stages</i>	
Licensing and Approval	<ul style="list-style-type: none"> –Validation of megaprojects by public authorities –Environmental and social impact assessment –Authorisation for actors involved to undertake the next phases 	<ul style="list-style-type: none"> –<i>Misunderstanding and partial achievement of project objectives</i> –<i>Tight service market and lack of internal capacity</i> –<i>Improper implementation of project management processes and training of key project staff</i> –<i>Weak governance of project management</i> –<i>Project authorisation pressures on individuals</i> –<i>Lack of considerations for human rights protections and environmental and historical preservation</i> 	<ul style="list-style-type: none"> –Without legislated protections or strategies, environmental and social vulnerabilities become implicitly expendable
Construction	<ul style="list-style-type: none"> –Initiation of actions by actors involved –Monitoring of physical or legal impact on lands and natural resources –Impacts due to pollution or depletion or blockades by the affected population 	<ul style="list-style-type: none"> –<i>Lack of professional expertise and full consideration of technical requirements</i> –<i>Lack of available on-site skilled workers or local labour forces</i> –<i>Lack of properly trained on-site supervisors</i> –<i>Lack of construction material availability</i> –<i>Inappropriate level of scientific and technological knowledge and application required</i> –<i>Lack of managing cultural project complexity</i> –<i>Lack of managing social project complexity</i> –<i>Lack of financial resources, cost control and venture capital</i> 	<ul style="list-style-type: none"> –Disruption of ecosystem services used by the community –Change in the ecosystem balance –Depletion of water resource –Water scarcity –Water dependency –Reduced access to water for agriculture –Potential pollution related to urban construction and activities –Potential disruption of aquatic food sources –Possibility of flood and drought
Short-term Operation	<ul style="list-style-type: none"> –Operation of the project after construction –Monitoring of impacts due to construction –Assessment of possible gaps between expectations and outcomes 	<ul style="list-style-type: none"> –<i>Lack of measurable targets limit the ability to pursue positive outcomes</i> –<i>Lack of accountability mechanisms allow changing agenda under dominant national or local actors</i> –<i>Unachievable targets cause sub-optimal project outcomes</i> –<i>Lack of financial resources, cost control and venture capital</i> 	<ul style="list-style-type: none"> –Problems in the sewerage system –Upstream flooding and deterioration of the quality of life –Offsite impacts on drinking water and sanitation –Extraction of groundwater

5. Conclusion

Today urban megaprojects are a feature of Southeast Asia's urban landscape. They concentrate urban development and deliver it through a tightly controlled pipeline that through its inherent top-down delivery model impacts a wide range of human rights. Such large-scale projects affect both onsite and offsite transformations across the three key areas of sustainability: Environmental, social, and economic. The complete remodelling of water systems presents noticeable impacts on water and sanitation-related human rights. Firstly, they displace populations that are forced to find alternative homes and livelihoods with new sources of water and sanitation. Such residents are often not adequately compensated, and instances of land grabbing often occur. Secondly, as with the Phu My Hung project or Boeng Kok project, they cause offsite flooding, either upstream or downstream. This can be extremely disruptive and limit the functioning and sustainability of these areas in the future. Finally, through transforming ecosystems, such projects limit the range of ecosystem services that are available for economic, socio-cultural, and environmental uses and functions.

Although megaprojects are a source of intensive investment and growth in Southeast Asia, they conform to the global 'megaproject trend' of failing to demonstrate how the promise of wealth generation is fairly distributed (Siemiatycki, 2013). They may work as triggers for developers and governments that provide employment growth and change the industry, but they overwhelmingly do so by offering specialized, high-end, and exclusive urban environments. Cases such as BSD city demonstrate the exclusive nature of urban megaprojects.

Authors such as Spencer argue that megaprojects are constructed on a background of poverty without fundamentally transforming it. To comprehensively address urban poverty, the top-down urbanisation model, as embodied by the 'megaproject', requires integration with bottom-up approaches offered by vernacular urbanism. Neither of these two development approaches are solutions for more liveable cities in themselves; rather, they require integration (Hawken, 2017; Spencer, 2010). Although investment-seeking megaprojects represent relatively recent form of urban development for Southeast Asia, *desakota* cities retain a great deal of heritage albeit much of it under threat. Southeast Asia's urban traditions offer sensitive ways to design and create water sensitive developments (Hawken, 2017). Currently, new-water based urban development innovations such as Sponge City development, present a technocratic vision that does not always integrate community-based values or rights efficiently.

The findings of this report demonstrate that although these projects are powerful forces in shaping the ongoing urban transition in Southeast Asia they have not been sufficiently studied. All these projects demonstrate massive change not only in physical condition but also through social and cultural conditions. They transform ecosystems that have functioned to serve traditional livelihoods and therefore affect the liveability of the urban areas especially for lower income people.

This report is an initial step in characterizing the southeast Asian megaproject in relation to water and sanitation related human rights. As has been set out in the introduction, it is clear that despite the vast size and irreversible impacts of urban megaprojects, their ecological, social and economic impacts have not been well monitored by national, regional or global communities. In some cases they have attracted academic interest where they are controversial and in other cases non-government human rights organisations draw attention to the issues. However, systematic global and national review of such projects is missing.

The urban megaproject type offers important benefits and is arguably necessary to address the rapid urbanization challenge in Southeast Asia. Nevertheless, it is essential to better understand their impacts on water, human rights and displacement of the communities within their immediate footprints and beyond. It is also important to recognize the opportunities that megaprojects offer to address the water

and human rights agenda; especially if strategies can be integrated into all five steps of the megaproject development cycle.

As the five selected urban megaprojects show, the projects can have severe and significant impacts such as loss of livelihoods, forced migration, uncertain unemployment, increased poverty and social segregation, water degradation, flooding and increase in wastewater, water-related diseases, and finally, the loss of culturally significant lakes and rivers. The issues and solutions discussed in this report are therefore a small but important step in addressing this major gap in understanding on urban megaprojects in Southeast Asia.

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