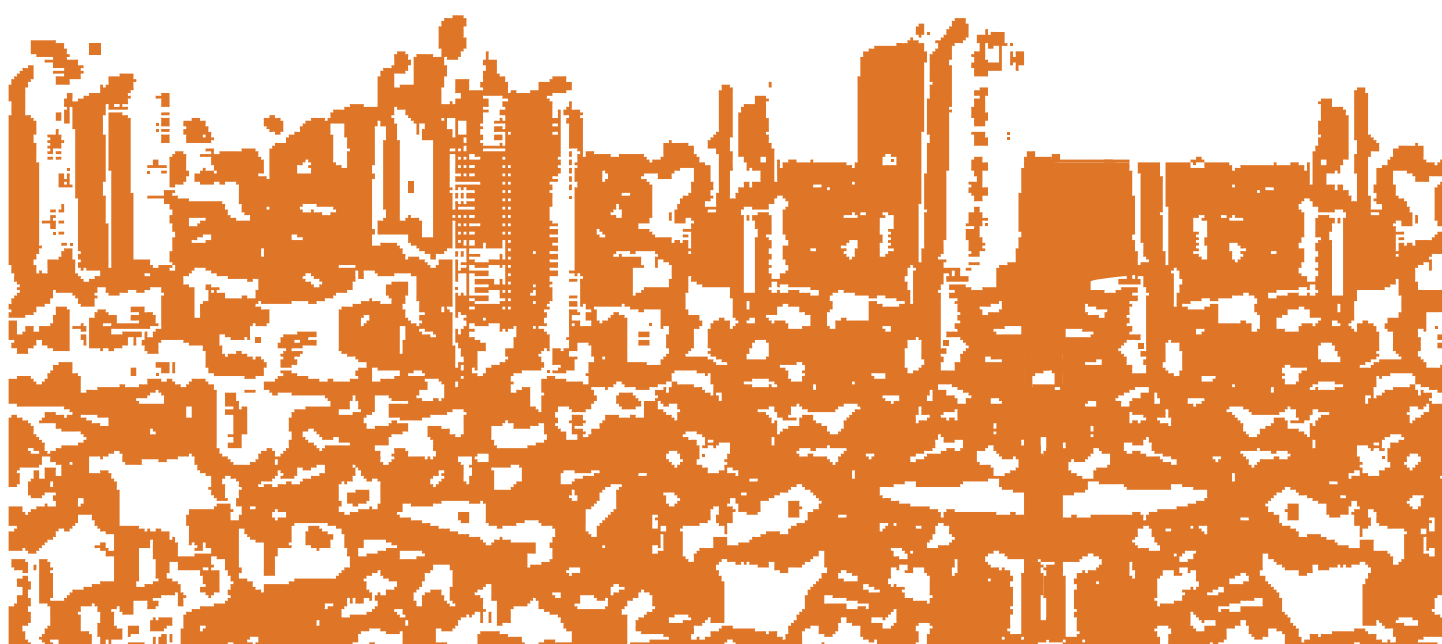

Asian Cities Climate Resilience

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A political economy of urbanisation and climate risk in Vietnam

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Abstract

This report uses a problem-driven political economy approach to analyse how the leadership of three mid-sized cities in Vietnam, Can Tho, Quy Nhon and Da Nang, are trying to pursue their urban growth ambitions under conditions of increasing awareness of climate change risks. For nearly two decades, urban growth has been both an indicator and target for social development and economic progress in Vietnam. Under the banner of modernisation and industrialisation, the Ministry of Construction created a fine-grained regulatory structure that uses the classification of urban areas to encourage spatially balanced growth. In recent years, however, those regulatory structures have been used by some provincial authorities not only as standards for urban classification, but also as means targeting urban growth. The realisation of these urban growth ambitions has been facilitated by a shifting political economy in which a liberalised urban development sector fuses with the institutions of socialist planning, aligned with the interest of political and business elites. However, this compromised urban growth machinery is increasingly meeting challenges with respect to social, economic and particularly environmental sustainability. Climate change-related risks serve as a magnifier for these challenges, especially in the realm of environmental hazards. Cities do not only grow into areas highly exposed to natural hazards such as floods or typhoons but also intensify the impacts of these very hazards, particularly flooding, due to their consumption of open space and encroachment into wetlands, floodplains and coastal areas. Despite the emerging acknowledgement of such risks, incentives within the political administrative system continue to pull decision makers along an urban growth pathway that is likely to increase the vulnerability of Vietnamese cities to climate change. Getting incentives, standards and procedures, and systems of accountability for urban development right, therefore, becomes the key to urban climate change resilience.

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1 Urbanisation trends and transformation in Vietnam

Vietnam is a latecomer to an urban transition that has transformed, and continues to transform, Asia. In the decade after the end of the American War, the government of the Socialist Republic of Vietnam attempted to limit urban growth through policies that favoured district-level self-sufficiency, migration from cities and densely populated rural areas into agricultural frontiers, and control of migration to urban areas through use of a household registration system (Thrift and Forbes, 1986). The anti-urban biases of this period remained part of official public policy, particularly by Northern political cadres even as the state subsidy economy began to wither under the effects of market-oriented reforms. These reforms had been introduced from the late 1970s onwards but were formally adopted in 1986 under the label of ‘renovation’ (đổi mới). What began as a trickle of migrants in the early years of renovation accelerated into a steady stream in the early 1990s as the cooperative system disintegrated and the rural population, needing new sources of income, began their search for opportunities both in frontier areas and in cities and towns (Douglass and DiGregorio, 2002). By the late 1990s, faced with the realities of a growing, globally connected economy, the government of Vietnam reversed its anti-urban biases. Modernisation and industrialisation, the key elements of the country’s socio-economic development plan, became linked to the process of urbanisation. *As an engine of economic growth, urbanisation became both an indicator and a target of socio-economic development.*

In the mid-1990s, roughly 20 per cent of Vietnam’s population lived in urban wards and rural towns, administrative categories officially classified as urban. By the late 1990s, the Ministry of Construction (MOC) had estimated that nearly half – 45 per cent – of the country’s population would be living in cities and towns by 2020 (Ministry of Construction, 1999). In order to deflect population growth away from the emerging megacities, Hanoi and Ho Chi Minh City, the MOC developed a national urban development strategy that would encourage more dispersed spatial development through gradual upgrading of smaller cities and towns (Ministry of Construction, 1999).

Urged forward by both the expectation of a rapid urban transition and a need for domestic and global capital to impel it forward, post-*doi moi* urbanisation has been supported by an expanding portfolio of land rights, acquisition policies, investment incentives, indicators, and standards for urban upgrading. These policies have led to a massive change in the way cities are planned, managed and run. In the past, urban planning had been a state function directed by sectoral targets and carried out in an environment of limited urban growth, restricted private investment, and the absence of a formal real estate market. In contrast, it now functions in an environment of deregulated and largely privatised real estate markets, coupled with state-led land conversion and the issuance of land titles, as well as large-scale foreign investment, profit motivated state enterprises, and a land reallocation system that regulates land compensation rates to aid development (Labbe, 2010). Because of the considerable – and growing – economic values in urban land and real estate and the political clout of urban growth as proof of economic progress, there is now an increasing fusion of public and private interests. A diverse set of state and non-state actors has therefore emerged who determine the goals of socio-economic development and the trajectories of urban planning and growth – as well as the questions of whose interests are expressed, how profits from urban growth can be made, and by whom.

One of the key questions is whether economic liberalisation and the changes in the institutional economy currently driving urban growth has been mirrored by adequate institutional changes in the administrative apparatus. This is necessary to steer urban development along an inclusive pathway of greater overall social welfare and urban sustainability, as well as creating administrative checks and balances between private sector interests and the state's interest in providing for the general welfare. In order to understand urbanisation in Vietnam, therefore, one needs to look at systemic incentives and interests behind urban growth that range across the state–non-state divide at different levels, from the national legal and political architecture all the way down to the motivations of private developers, local political cadres and other local actors.

The assumptions that impelled urbanisation, and the relationships forged in that process, are now being confronted with a new set of challenges. In 2007, a World Bank report on the impact of sea-level rise on developing countries (Das Gupta *et al.*, 2007), which was widely read and reported on in Vietnam, ranked the country first in terms of impact on population, GDP, urban inundation, and wetland loss, and second in terms of impact on land area (behind the Bahamas) and agriculture (behind Egypt). Given that almost all major cities are either coastal or in river deltas and therefore exposed to sea-level rise, floods and typhoons, the World Bank report was received with a degree of urgency. However, the question whether the increasing risk related to climate change is driven only by externally forced trends or also – or maybe even chiefly – by vulnerabilities generated by urbanisation itself, was barely considered and has remained greatly underemphasised. It therefore needs to be asked how the first set of issues outlined above, that is, the changing political economy of urbanisation, is related to the emergence of and response to urban climate risks in Vietnam. *In other words, how does the changing political economy of urbanisation affect the capacity of cities to effectively recognise and mitigate current and potential climate risks, in particular, those risks related to flooding?*

2 Conceptual approach

To observe that the challenges cities face with respect to climate change emerge within a political-economic context is, by now, rarely contested (Marks, 2015). Despite this, political economy analysis has been largely ignored in favour of technical assessments, particularly those that focus on predicting and preparing for natural hazards seemingly unconnected to the institutional environments, political conflicts, and competing expectations in which these risks emerge. Similarly, current studies on urban climate change in Vietnam – and elsewhere – largely gravitate towards technocratic risk management approaches. They are typically more concerned with the response to hazards than with the understanding and prevention of deeper institutional and political root causes for the production and reproduction of urban vulnerability (Garschagen & Romero-Lankao, 2013). In contrast, political economy analysis can offer a means of understanding incentives within the political administrative system, how these incentives motivate action on the part of elites, and how changes in the incentive structure might offer better outcomes. This approach differs from conventional political economy approaches, which tend to engage public policy at the level of national accounts (Hout *et al.*, 2013). Nor does it represent Marxian variants, whose deterministic analyses often result in unimplementable prescriptions for systemic change. Rather, our approach is in line with pragmatic approaches to political economy that have emerged as a reflection of the limitations and failures of development aid (Verena *et al.*, 2014). These approaches have recast political economy as the investigation of ‘how political and economic processes interact in a given society, and support or impede the ability to solve development problems that require collective action’, taking into consideration incentives and constraints on the actions of individuals and groups, related distributions of power and wealth, and explanations of ‘how politics works, how wealth is created, and how developmental change happens’ (Unsworth and Williams, 2011, p.4). By focusing on these questions, we hope to provide both a systemic assessment of the problems and practical means of addressing them.

3 Research methods

The original research for this report was carried out by the authors separately in Can Tho (Garschagen, 2014), Quy Nhon (DiGregorio and Van, 2012), and Da Nang (Phong, 2014; Tuan *et al.*, 2015). The authors used a mixture of interviews, both with members of the city and province administration and people living in flood affected areas. They also conducted technical research, principally related to urbanisation and flooding. And they collected and analysed a range of public documents, including provincial socio-economic development plans and urban general (i.e. master) plans as well as secondary data relevant to their studies. The latter included not only typical data sets found in the national population and housing censuses, but also fine-grained disaster damage assessments carried out at the urban ward level. In preparation for this report, the researchers also carried out semi-structured expert interviews at both the national and local level aimed at filling in information for the political economy questions that underlay this study. Research carried out by DiGregorio and Phong was first used as case studies in a training course for public officials on urbanisation and climate change.¹ Feedback from public officials in these courses added important information on how the National Urbanisation Strategy works, in practice, relative to the risks associated with climate change. These case studies were later published with extended analysis in a peer-reviewed article (DiGregorio, 2015) and as a technical report (Phong *et al.*, 2015). Garschagen returned to Can Tho in 2015 to conduct a similar case study. Information from that research is included in this report.

¹ The training course on urbanisation and climate change was carried out in six regional cities in Vietnam in 2013–14. It was managed by the Vietnam Urban Planning and Development Association under a grant to the Institute for Social and Environmental Transition with funding from the Rockefeller Foundation.

4 Natural hazards and expected climate change impacts in Vietnam

Vietnam has a long history of disasters related to natural hazards to which, for better or for worse, communities have developed coping and adaptation measures. Thus, while we consider the political sphere both the correct and more difficult focus for analysis of urbanisation and climate change risk, we do not want to suggest that climate related-risks are either new or emerging, or that they can be dismissed as an outcome of poorly planned urbanisation in and of itself. The question is whether the experience of natural hazards and the coping measures that have emerged out of that experience will be sufficient in the face of urbanisation and climate change and, equally important, whether the political-administrative apparatus can adapt to these new challenges.

4.1 Historic threats and adaptation measures

4.1.1 Climate related threats

Vietnam's long coastline, geographic location, and diverse topography as well as climates make it one of the most hazard prone countries in the Asia Pacific region, with tropical storms, flooding, landslides and droughts taking a toll on its population, their assets, and public infrastructure. Historically, several typhoons, and many more intense tropical storms, have struck somewhere along Vietnam's long coast every year. The worst impacts have been caused by typhoons that send storm surges up estuaries to inundate croplands with salt water, and by those that stall over mountains, saturating soils, producing mudslides and torrential floods. Droughts have typically occurred in *El Nino* years, as in the dry season of 2015/2016, and impacted the central highlands, the southern coast, and the Mekong Delta. Given Vietnam's high seasonal variability, areas affected by drought one year may also experience flooding the next.

4.1.2 Adaptation measures

Given this context of high exposure to natural hazards, traditional rural society in northern and central Vietnam evolved strong social institutions and adaptive strategies to help individuals cope with the all too frequent disasters that befell them. Chief among them was a system of closed corporate communities (Rambo, 1973) in which shared identity, family networks and ritual served as unifying factors (Jamieson, 1995). In contrast, the much more predictable environment of the Mekong River Delta, whose annual floods typically rose and fell gradually, favoured development of a dispersed settlement structure along rivers and canals and a much lower capacity for collective mobilization (Rambo, 1973). These historic differences have not only affected how farmers in northern, central and southern Vietnam have adapted to natural hazards and threats, but how they perceive them as well.

Floods, drought, and salinisation of cropland caused by storm surges are the natural disasters most frequently faced by farmers in Vietnam's low-lying deltas. Historically, Vietnamese responses to these threats varied regionally based on the type of river system. In the north, dikes were used to promote agriculture, and thus also promote social stability, since at least the 11th century. In the centre, steep slopes and relatively small deltas tended to result in responses to flooding that encouraged rapid drainage and protection from fast-flowing floodwater. In the Mekong Delta, however, predictable, gradual seasonal flooding was accepted as part of a natural cycle that renewed soils and groundwater sources, while also providing an abundance of fish. As agriculture was commercialised and cities grew under the colonial regime, the first of these models took prominence, principally in the Red River Delta. Post-reunification, under the same pressures of agricultural commercialisation and urban development, this Red River model of dike construction has become the primary model of flood protection (DiGregorio *et al.*, 2003). The expansion of dike systems as a response to flood risk, combined with the long history of climate hazards and variability in Vietnam means that at all levels of government and society, there is high recognition of flooding as a fact of life. And, as noted above, dike construction has become the common response. Unfortunately, as with other climate-related issues, the focus of attention has been on historical hazards. There is now increasing awareness that future hazards are likely to be an even greater threat.

5 Climate trends and projections

5.1 Recent climate trends

A recent United Nations report on extreme events in Vietnam (IMHEN and UNDP, 2015) and a World Bank report on climate change vulnerability (GFDRL, 2011) have identified some recent trends that suggest the longer-term effects of climate change. These include a mean annual temperature increase of 0.4 degrees C and a significant increase in hot days and nights, measured as temperature above the 90th percentile of seasonal averages, since 1960. At the same time, the report noted a significant decrease in cold days and nights, measured as temperatures below the 10th percentile of seasonal averages. Overall, extreme rainfall events have increased, particularly in the Central and South Central regions where the majority of Vietnam's hydropower plants are located. The number of consecutive dry days has also increased in the northern part of the country and decreased in the south. With regard to tropical storms and typhoons, the report indicated that the frequency of typhoons in the East Sea has decreased over the past several decades while the total number of storms reaching landfall in Vietnam has increased by 0.43 events per decade over the past 50 years. Typhoon trajectories are also shifting southward. This affects the peak month for landfalls, which has now shifted from August to November. Finally, satellite imagery suggests that sea levels are rising at a rate of 4.7 mm per year with the highest increases in the Central regions and Southwest, where Ho Chi Minh City is located. The combination of sea-level rise, drought, dam construction and water diversion is also affecting ground- and surface water salinity. Salt water is now penetrating further upstream in the Red, Thai Binh, and Dong Nai rivers, and the Mekong River Delta overall (Vietnam News Service, 2016).

5.2 Climate projections

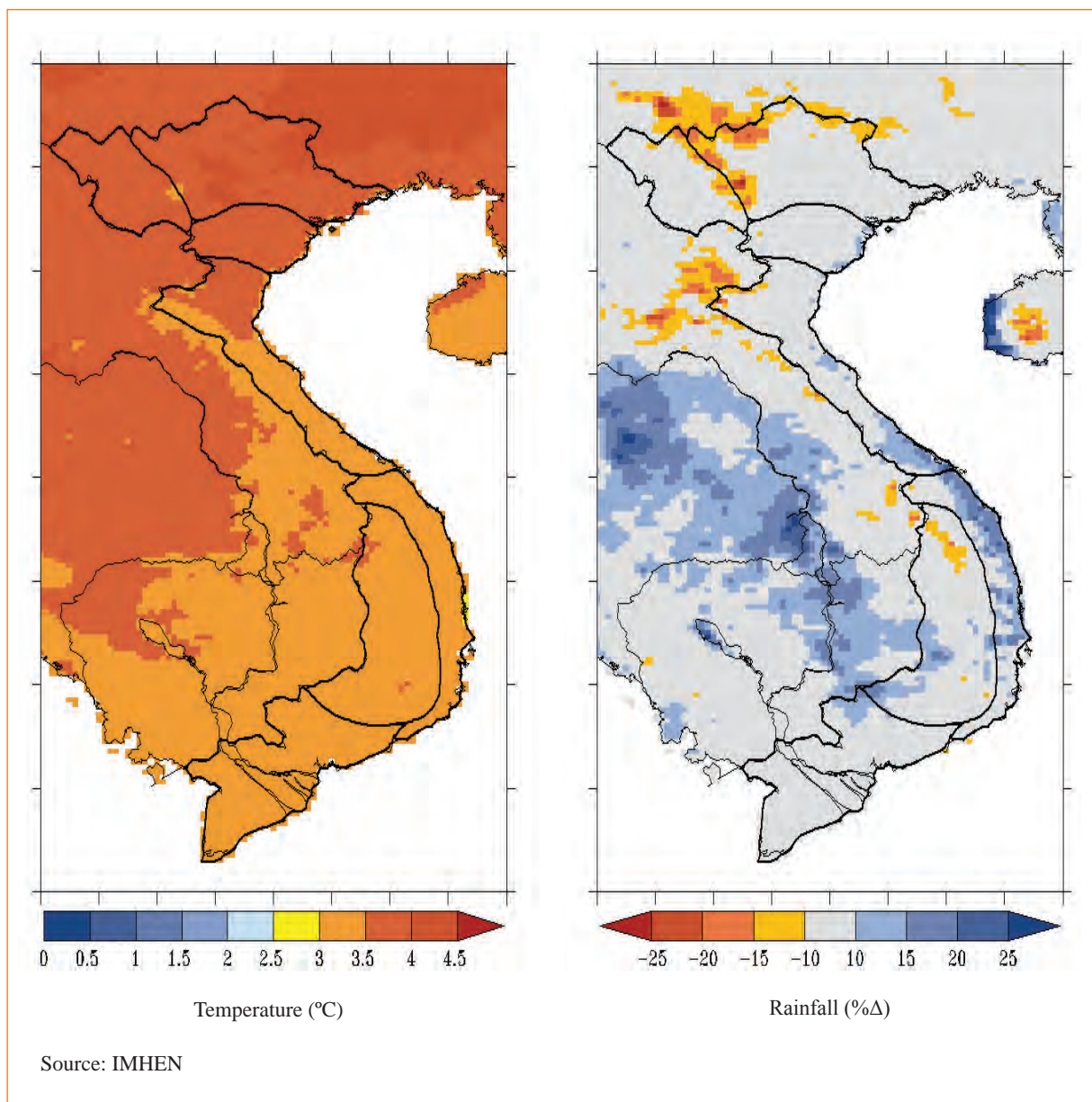
5.2.1 Temperature and rainfall

A recent UNDP report suggested that Vietnam was likely to experience a rise in the average annual temperature by 2100 of approximately 2.3 degrees C (UNDP, 2012). Vietnam's Institute of Hydrology, Meteorology and Climate Change (IMHEN) in collaboration with CSIRO have prepared detailed maps of expected changes in temperature and rainfall² by the end of the century. The maps, which are derived from four climate models (PRECIS, CCAM, WRF, RegCM), show the wide variations in rainfall and temperature that are likely to occur.

2 These maps were provided to the authors for a training course on urbanisation and climate change and are not available in publicly accessible sources.

By the end of the century, climate change is expected to reduce total annual rainfall in some areas of the Northwest by 20–25 per cent. Everywhere else in Vietnam is likely to see increases in total annual rainfall, with the largest increases, 20–25 per cent, along the Central coast. The probability of extreme rainfall events there, with the likelihood of flooding, will also increase. At the same time, IMHEN expects rainfall in the dry season to decrease on average by approximately 20 per cent compared to the 1970–2000 period, with the largest decreases in the Southeast and Mekong Delta. Decreasing rainfall in dry months will lead to increased drought risks and salinisation of groundwater, both of which will be affected by higher temperatures. By the end of the 21st century, IMHEN expects some areas of northern Vietnam to see average annual temperature increases greater than 4 degrees C. Much of the remainder of the country is likely to see a 3 degree C increase in average annual temperature.

Figure 1. Projected change in average annual temperature and rainfall by the end of the 21st century, Vietnam



5.2.2 Extreme climate events

Vietnam is ranked 13th among 170 countries regarded as vulnerable to the impacts of climate change over the next 30 years and is one of 16 ‘extreme risk’ countries (Verisk Maplecroft, 2011). Vietnam currently experiences six to eight typhoons per year and, while tropical storms and typhoons have not shown an increase in intensity, more are hitting the coast. The increase in these storms is strongly associated with extreme rainfall events and flooding. There has also been a clear trend in the increase of heat waves, defined as three consecutive days of extreme temperatures (Tran and Neefjes, 2015). By mid-21st century the number of heat waves in the Southeast and Mekong Delta regions is expected to increase by 6–10 events (20–30 days) compared to the 1980–1999 average. Results of recent studies also indicate that alongside heat waves, Vietnam is expected to experience an increasing number of droughts across most of the country except for the South and Central Highlands where, once they emerge, they are expected to last longer (Tran and Neefjes, 2015). The current drought is one example of this trend.

6 The costs of climate change

Over the past 30 years, about 500 Vietnamese per year have died every year in climate-related disasters and thousands more have been injured. The economic losses have been equivalent to roughly 1.5 per cent of GDP annually. Between 1989 and 2009, economic losses have tended to increase alongside GDP growth. At the same time, the number of deaths per year, though highly variable, have been decreasing relative to economic losses. Given these trends, the UNDP's extreme events report expects the absolute damage potential from tropical storms and typhoons to increase as a result of increasing population density and higher value property and infrastructure, particularly in urban areas while the ratio of cost to GDP remains roughly the same (Tran and Neefjes, 2015).

7 Analysis: the political economy of urbanisation and climate risk in Can Tho, Quy Nhon and Da Nang

In 2010, Francois Fortier pointed out that despite the apparent commitment of the Vietnamese government to address the potential impacts of climate change, both policies and strategy largely reinforced a business-as-usual complacency (Fortier, 2010). In part, he blamed this complacency on well-intended, but technically narrow analyses that ‘remain blind to the power relations that shape climate change policy’. However, the main source of complacency, he argued, were state and private interests deeply vested in the reproduction of relationships, policies and government structures that favour them. The power of interest groups explains the possibilities and constraints on Vietnam’s climate change policies and practice (Fortier, 2010, p. 235).

Fortier’s assessment, which are similar to Gainsborough’s analysis of deep political structures in Vietnam, paint a negative picture of the prospects of action on climate change (Gainsborough, 2010). If interest group politics rule, and if the decisions that are negotiated between them are solely focused on capital accumulation, then the tendency will only be to generate the highest immediate returns possible.

The gaps between private interests and public good are widening as the mitigation and adaptation needs become clearer. Based solely on climate projections, the Ministry of Construction (MOC) considers 115 cities and towns in coastal areas, deltas, and along rivers to be vulnerable to storm surges, wind and rain damage from typhoons, flooding, landslides and other effects of climate change (Lan Anh, 2012). Some cities have responded with flood control infrastructure projects and disaster preparedness programmes. Others have done little or nothing in response to these threats. Most have held onto socio-economic development plans and economic growth models that are more appropriate to the past than to the future. In part, this is due to a growth orientation that has allowed new urban construction in vulnerable areas, such as that noted in Hoi An, in the name of economic development and job creation. Rapid urban growth with the attendant mix of interests and incentives that cross over between political-administrative authorities, state owned enterprises (SOEs) and the private sector also creates a context in which coordinated policy responses become increasingly difficult, or once approved, difficult to implement (WB and MPI, 2016). Finally, the need for infrastructure to service new and existing urban areas is staggering. The ADB estimated the cost for new urban infrastructure at 10–12 per cent of GDP between 2015 and 2020 (ADB, 2015). Within this same context, the Ministry of Planning and Investment (MPI) estimates the cost of coping with climate change at \$30 billion over the next five years (Anon., 2015). The Urban Development Agency, a functional agency within the Ministry of Construction, notes that this new infrastructure has to be different in order to meet the mitigation and adaptation requirements of climate change (Lan Anh, 2012). Given the growth orientation and mixture of public and private interests, the question is whether the political administrative apparatus is up to the task. A review of the planning system for urbanisation and disaster management helps to understand how gaps have emerged in the current system.

7.1 Overview of the Vietnamese planning system

According to Article 110 of the 2013 Constitution (enacted on 1 January, 2014) Vietnam's national territory is administratively divided into provinces and centrally managed cities, each with their own administrative subdivisions of cities, towns, rural communes and urban wards (Nguyen, 2015). In addition, the Law on Urban Planning classifies urban areas into six classes based on a combination of infrastructure, function, and labour characteristics, none of which directly match the administrative designations noted in the constitution. Based on this latter classification system, the MOC's Urban Development Agency divides Vietnam's 774 cities and towns into 2 Special Class cities (Hanoi and Ho Chi Minh City), 3 centrally managed cities (Da Nang, Hai Phong and Can Tho), 12 additional Class I cities, 21 Class II cities, 42 Class III cities and towns, 68 Class IV towns and townships, and 626 Class V townships.

Since centrally managed cities are equal to provinces in the administrative hierarchy, and thus have political and administrative privileges like a province, several large Class I cities now administratively under provincial management have promoted themselves for upgrading to centrally managed status.

The six criteria for centrally managed city status and their relative weight are laid out in Table 1, below. Details are included in Decree 42/2009/ND-CP and its appendixes and amendments. Note that more than half of the points needed for upgrading to a Class I centrally managed city are related to infrastructure. For this reason, infrastructure development whether with direct government funding or through alternative sources, such as public-private partnerships, is an important means of moving up the urban hierarchy. Second, each city grade corresponds to a specific set of functions. An urban area or province petitioning on their behalf, can earn 15 points out of the total needed to upgrade. For example, a Class I provincial city wishing to reach Class I centrally managed status would have to prove that it functions as:

a domestic and international economic, cultural, scientific-technical, administrative, education-training, tourist and service centre and international traffic and exchange hub with the role of promoting socio-economic development of an inter-provincial territory or the whole country.

Decree 42/2009/ND-CP

Attracting a university or research centre, building an airport, port, or rail transfer facility, or creating a regional cultural venue are thus all means of rising up the hierarchy. Finally, the regulations also include a number of criteria based on population including total population, density, per centage dwelling in administratively urban areas, and per cent not employed in agriculture. Expanding urban boundaries to gain population, creating new urban districts to increase the urban population, and moving suburban populations out of farming by allocating their land to non-agricultural uses all become a means of moving up the hierarchy.

All of these incentives are both legal and inscribed in the regulations. Article 8 in Decree 42 specifically states that:

Urban development programs at all levels shall be based on urban centre-grading criteria prescribed in this Decree, and formulate urban development programs and mobilize resources for investment in urban construction and development as a basis for the grading of urban centres.

Decree 42/2009/ND-CP

Note that these criteria originate in a desire to create a more even distribution of cities and towns, a reasonable desire considering the rapid growth of Hanoi and Ho Chi Minh City. The incentives, however, have become embedded in a competition for development funds through which upgrading becomes possible. Thus, in a perverse way, urban development in Vietnam can proceed on the basis of socio-economic development targets rather than projections based on trends and demand. In fact, cities often request upgrading *before meeting criteria outlined in Decree 42* based on a promise³ that, once a higher city status is received, they will be able to attract investment. This, in fact, is the case of Quy

³ This observation was offered in a conversation with the General Secretary of the Vietnam Urban Planning and Development Association, Hanoi, Vietnam, June 2014.

Nhon which, without planned territorial expansion, is unable to meet even the population requirements for its current status as a Class I provincial city.⁴

Table 1. General criteria for consideration as a centrally managed city

| Criteria | Weight |
|--|-----------|
| Urban functions | 15 points |
| Population size | 10 points |
| Population density | 5 points |
| The percentage of non-agricultural labour | 5 points |
| Infrastructure systems | 55 points |
| Management of architecture and urban landscape | 10 points |

Source: MOC

Planning in Vietnam has been locked in an assumed transition between a highly prescriptive model based on central control to a more flexible and adaptable system with considerable authority delegated to local governments for at least 20 years. In this state of transition, planning is carried out both horizontally and vertically within government. Most entities with planning responsibility have a dual reporting relationship, a vertical relationship to the central ministry and a horizontal relationship to the appropriate executive level of local government. Government and the Party also have parallel policy guidance and reporting requirements. Most important planning decisions are endorsed at the central government level, without effective cross-sector consultation and discussion. This top-down process tends to produce well-documented plans without clear guidance on implementation, including financial considerations. In Vietnam, they are frequently called ‘hanging’ plans in part because they are not implementable and in part because planning maps are prominently displayed on the walls of central and provincial construction agencies.

Two types of planning, social economic development planning, led by the Ministry of Planning and Investment and its agencies, and general, or master planning, led by the Ministry of Construction and its agencies.

7.1.1 Socio-economic development planning

Socio-economic development plans are development strategies, but they also set precise development and investment targets and combine proposals contained in sector plans (e.g. transport, industry, education, health, construction, land use...). They are prepared largely at the district level and consolidated at higher levels. The five-year socio-economic development plan (SEDP) has been the main pillar of Vietnam’s strategic planning architecture for many years, and is a remnant of the centrally planned economic structures. SEDPs are prepared after formal consultation within government and Party structures. MPI has the primary role in coordinating and ultimately producing the SEDP. At the provincial level, the Departments of Planning and Investment (DPI) take the lead role. Each level of local government (communes, districts, provinces) submits proposals to the next level where they are screened, consolidated and passed on up to MPI. Past practice has been for the SEDPs to set out goals and detailed production targets for all geographical regions and productive sectors of the economy. Economic, social and poverty data underpinning an SEDP and used as a basis for

⁴ Article 10 of Decree 42/2009/ND-CP concerning the categorisation of cities gives a 500,000-person minimum population for consideration as a class I provincial city. In other words, Quy Nhon City, with a population of less than 300,000 in 2009, needs mergers with neighbouring rural districts to increase its population to the required minimum.

projections are drawn from government sources. Once an SEDP is approved, it becomes the basis for the annual budget proposals from ministries and local governments. Furthermore, once approved, the data on which the SEDP is based becomes the official planning data. Whether accurate or not, this is the data that must be applied to any related planning activity since it is tied to the achievement of approved targets. In this sense, approved data can become a form of administrative fiction that undershoots or overshoots reality on the ground.

SEDPs don't appear to be subjected to rigorous economic and financial analysis, nor do they take much account of the resources likely to be available. There is a general tendency to approve plans and related lists of projects optimistically in the hope that funding will become available. They are essentially driven by production targets. There is also a tendency not to take adequate account of potential social and/or environmental impacts. For example, implementation of aspects relating to urban development may be undertaken without taking due account of integrated infrastructure networks, or proper budget support, resulting in delays, low efficiency, and environmental impacts and costs.

7.1.2 Spatial planning

Spatial plans are commonly referred to as 'general plans' or construction 'master plans', and may be issued as 'detailed area plans' for subdivisions of urban areas, or specific projects. They present the proposed spatial arrangement of land uses, building footprints and infrastructure for a province, city, district, or development site in progressively greater detail. Spatial plans, and master plans in particular, have the greatest impact on urban development. Spatial planning in Vietnam was designed for an era when all construction was carried out by the state, but when Vietnam moved to market economy this tool became much less effective. Therefore, the spatial planning system has been recently revised under the new Land Law (2013), Construction Law (2014)⁵ and Urban Planning Law (2010)⁶. However, the process of developing spatial plans for cities and provinces still remains largely expert-driven, top-down and is likely to continue the tendency to create idealised, rather than strategic and practical, visions of the future.

In terms of administrative responsibility, the Ministry of Construction (MOC), or subordinated departments of construction at the province and city level, undertake spatial planning, i.e. master or detailed area plans. Most urban master plans are prepared by the Vietnam Institute of Urban and Rural Planning (VIUP) or its sister organisations, often with the aid of foreign consultants. Spatial plans are prepared in four levels of detail: orientation plans (national policy), regional plans (introduced in 2005), master plans (province or city), and detailed area plans (ward, industrial zone, or project). Most are prescriptive for specific land uses in specific locations, rather than permissive as in Western land use planning, despite the fact that development is largely driven by private investment decisions and plan enforcement mechanisms are weak. In fact, spatial plans are regularly violated when they become inconvenient to either the interests or prejudices of local or national authorities. Thus, in 2015, Vingroup, a large domestic real estate developer, received permission to construct a 54-hole golf course (Anon., 2016) on land in Hanoi's Long Bien District. Based on the approved plan for the district, this land within the dike along the Duong River was zoned for the production of safe fruits and vegetables. A letter from a senior government official sent to the Hanoi Urban Planning Institute authorised conversion of this farmland before feasibility and impact assessments⁷. The district had already constructed roads, water supply for irrigation, and a cold storage facility with its own funds in order to support farmers who had lost their rice growing land to the construction of Vinhomes Riverside new urban area, also a Vingroup project.

Not only is compliance with land uses set aside in the general plan weak, development often leapfrogs to rural green fields and projects may be out of sequence with socio-economic and sector plans. This lack of coordination in sequencing is exacerbated by the fact that the urban planning institutes tend to overlook economic and social dimensions, while the socio-economic planners seem to overlook the spatial and environmental implications of investment programmes. The result is that spatial plans are largely aspirational in that they serve a role in promoting investment and guiding the process of upgrading while ignoring practical issues of market demand, feasibility, financing, staging and sequencing.

⁵ The Construction Law of 2014 stipulates that construction planning must integrate issues of environment and natural disaster.

⁶ Urban planning law requires strategic environmental assessment in each general plan, zoning plan, and detailed plan.

⁷ On request, one of the authors was given a copy of the letter authorising this project.

Master plans are required to include long- and medium-term direction for physical development and the arrangement of urban space and infrastructure networks and facilities. They also cover the characteristics of urban areas, population size, land use, resettlement, redevelopment, conservation, and zoning. Technical master planning specifications (Ministry of Construction, Circular 322 BXD/DT) that drive plan design, city investment priorities, and city classification guide all elements of the plan and are represented in a variety of maps, including the general planning map, the principle outcome of the planning process. The focus on technical standards, supported by approved data and targets, stifles creative or strategic thinking, often leads to the inefficient use of public funds on aspirational projects, and also encourages corruption and insider deals aimed at circumventing the planning process and outcomes.

The Prime Minister approves master plans for Special, Class I and Class II cities. In the current system a formal and arduous process must be followed to obtain the Prime Minister's approval to modify technical standards to officially allow desirable measures such as urban infilling, urbanisation and servicing for suburban villages, or the creation of multifunctional floodways that combine agricultural, aquacultural, wildlife habitat and recreational uses, for example. This process stifles local innovation. But equally, given that the Prime Minister has the authority to modify plans, large corporate players, like Vingroup in the case noted above, can directly petition the government officials in their own interest.

Since 2007, the state has held authority to reallocate land in order to meet economic development goals (Labbe and Musil, 2014). This change in laws encouraged the growth of large-scale real estate conglomerates linked to state authorities with the capacity to order land conversion. In some cases, as in the Hanoi Master Plan prepared together with POSCO Engineering, which is also a large real estate developer, planning embeds the interests of corporations. In other cases, this linkage between state, individual and corporate interests undermines planning by circumventing it.

Master plans in Vietnam therefore tend to be idealised top-down representations of what the planning experts, city administrators and well-placed real estate developers would like their city to become. These plans are seriously limited in that they only take account of the views of a fairly narrow range of stakeholders, primarily government and party officials and the developers who are able to influence them. This also create a porous boundary between the state and private sector that reduces the state's capacity to function in the public interest. In the end, planning has become locked into the mechanisms of a socialist system. Land uses are prescriptive, formally inviolable and designed by top-down processes, while, at the same time, insider deals between elites have become both embedded in the planning process and the only means of seeking a variance of land uses, aided by the state's authority to reallocate land.

7.2 Summary

The planning system for cities in Vietnam consists of a series of disarticulated processes that are guided by independent and frequently contradictory national policies and legislation. Urban master plans are intended to guide construction and infrastructure development, but because they are aspirational rather than demand-driven, and because they are formally difficult to modify or update, they are of limited use in guiding urban development. Master plans thus suffer from a misplaced concreteness that practically guarantees that anyone wishing a variance in the plan will do so surreptitiously, as in individual home construction, or through consultation and negotiation with those in authority, as in the case of large-scale corporate real estate developers. Thus, we find that detailed area plans, which are more closely linked to actual construction, may not be consistent with either approved master plans or environmental contexts and constraints since they are green-lighted outside the prescribed regulatory process. At the same time, while social and economic development planning provides a context and vision for planning, including urban planning, it is largely driven by targets rather than by demand, feasibility, financial viability or even strategic constraints such as flood risk.

8 City case studies

8.1 Can Tho City⁸

8.1.1 City description and context

Can Tho City is the demographic and economic centre of the Mekong Delta. The city provides central services in trade, higher education, specialised health and commerce and hosts large-scale – and growing – industrial zones in its peri-urban fringe. In 2009, Can Tho City became a centrally managed class 1 urban area. This gives its leadership increased responsibility and independence with regards to urban and economic planning and the approval of investment projects (Coulthart *et al.*, 2006). At the same time, Can Tho City is now one of only five cities in Vietnam that has its plans and policies controlled and approved directly by the national government,⁹ given the particular role it is considered to play on national development at large. Given its location in the central Mekong Delta, Can Tho is exposed to current and particularly future natural hazards, most notably flooding.

Can Tho City is made up of nine districts with a total population of around 1.2 million. However, its urban core and its newly urbanising fringe is limited to the three districts of Ninh Kieu, Cai Rang and Binh Thuy (Figure 2). Together, these three districts account for around 450,000 inhabitants. The most densely urbanised district, Ninh Kieu, has a population density of 8,500 per square kilometres (GSO, 2012). This district constitutes the oldest urban core of Can Tho City and hosts most of the commercial and administrative infrastructure such as the administrative offices of the city government, the main commercial hubs, the offices of the main businesses and service providers, and the university. To its north, Binh Thuy District also has a long-established urban to peri-urban morphology, hosting, for example, a number of extended industrial parks as well as an important power plant. Cai Rang District, locally also referred to as South Can Tho, is the most dynamically growing district – in fact one of the most dynamically transforming urban districts in all of Vietnam. It is thus an important window into the political economy of urbanisation and climate risk.

8.1.2 Brief development history

Can Tho City's history has been shaped by waves of growth and development during different political and economic eras. Having been a small centre for trade and political control, strategically located at the confluence of Hau River and Can Tho River, Can Tho experienced an important consolidation under the Nguyen dynasty which, in 1739, turned Can Tho into the centre of Trang Giang, one of its four newly established districts in the Mekong Delta (Shannon and Nijs, 2011). A second considerable consolidation of Can Tho followed under French colonial rule. It strengthened the role of Can Tho City for administration (notably of the Mekong Delta's growing hydraulic conversion through canal systems for irrigation and transport), trade and military control. This consolidation was accompanied by considerable population growth, to an estimated 55,000 inhabitants by 1954 (Shannon, 2009). An even stronger population increase then followed

⁸ This chapter heavily draws on the detailed analysis of flood governance in Can Tho City provided in (Garschagen, 2014).

⁹ Hanoi, Ho Chi Minh City, Can Tho, Da Nang and Hai Phong

under American influence. The American military leadership made Can Tho their headquarters of the fourth tactical zone. By 1975, the city's population had grown to around 180,000 people, in large part as a result of population movements (voluntary as well as forced) from rural combat zones into so-called 'strategic hamlets' and especially urban centres (Vinh, 1996). Infrastructure development could hardly keep up with this swell in population, creating areas of sub-standard housing that became the nucleus of slum areas, which partly persist to this day, many of them being hotspots for current flood vulnerability in the city (Garschagen, 2014). However, while Can Tho City was regarded as a strategic gateway into the Mekong Delta, it could not match the role of Saigon in terms of trade and industrial production.

The period from 1975 to the commencement of the reform process (*đổi mới*) in the mid-1980s was characterised primarily by economic stagnation. In fact, having ambiguous feelings towards urbanisation, the socialist party-state-leadership of the re-unified country strived for de-urbanising the large urban centres, notably Saigon but to a lesser extent also Can Tho City. It tried to redistribute population in order to promote the agricultural development of the countryside (Thrift and Forbes, 1986) and (McGee, 2000). However, the effect of this policy was rather limited in Can Tho City, as in most parts of southern Vietnam (Thrift and Forbes, 1986). Leading posts in the city's urban administration were filled with cadres from the north, who often lacked a background in urban management and administration (Turley, 1977).

The period from the reform process till today is characterised by the continued growth of Can Tho City in terms of economic output and population. As in Vietnam overall, the growth of Can Tho City has been increasingly seen as a driver – rather than a barrier – of regional development. Apart from governmental infrastructure programmes, private investment has become the main engine for Can Tho City's growth. However, alongside this a new investment landscape, the reform process has also led to significant institutional changes in how planning is done – and by whom. Leverage for shaping urban development has increasingly shifted into the domain of private market forces. Yet as the analysis of this report shows, the private economy forms powerful coalitions with state interests, in effect propelling urban growth and expansion. Hence, the key question of this report is also of great relevance for the case of Can Tho City: But whether and to what extent is the new institutional planning architecture capable of facilitating urban development, while balancing growth against the general welfare and addressing current and future challenges such as climate change?

8.1.3 Targeting urban growth

Can Tho City has for years been set onto a rapid growth trajectory that is driven by the market forces emerging out of the reform process as well as by planning processes. Given its role as the Mekong Delta's hub for industries, services and trade, Can Tho City is – and has for long been – the Delta's province with the largest net-immigration (Garschagen *et al.*, 2012). In fact, all of the surrounding Mekong Delta Provinces feature a strong net-outmigration (*ibid.*), mostly in into the greater Ho Chi Minh City metropolitan region (Garschagen *et al.*, 2012). However, the industrial growth of the city lags behind earlier growth ambitions and cannot keep pace with the rapid upward trend of Ho Chi Minh City, 160 km to the east of Can Tho City (Garschagen *et al.*, 2012). Urban and economic growth is therefore an important theme in Can Tho's development and construction master plans.

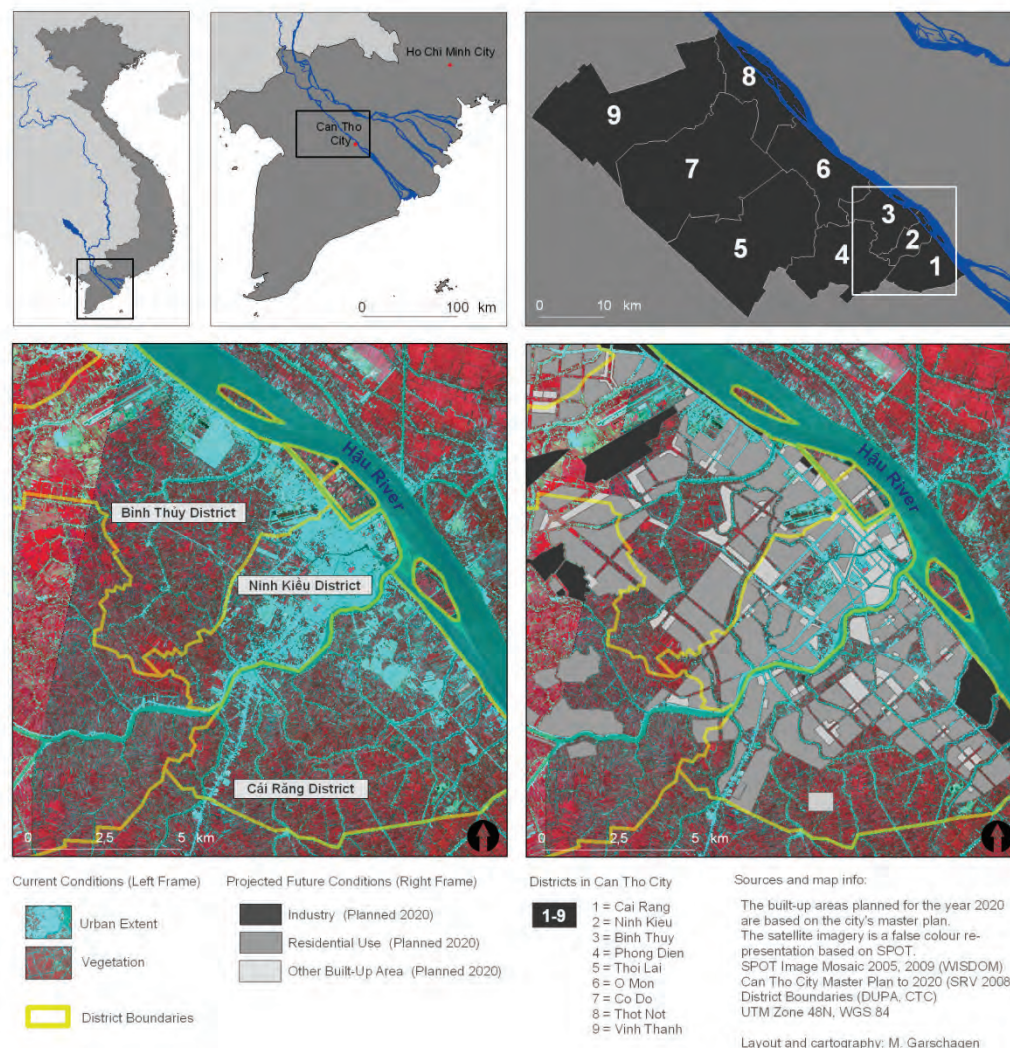
The urban development of Can Tho City is currently subject to parallel – and to an extent conflicting – master plans. The general development master plan for the city has recently been overhauled with a specific target of climate change adaptation. The plan was headed by an international planning consultancy from Europe. The plan debates and proposes a number of innovative solutions for climate change adaptation, including, for instance, a strengthening of water transportation and integrated land use patterns with a close mix of residential areas, green spaces and water bodies. However, the plan does not put a lot of emphasis on the overall industrial, spatial and demographic growth of the city. It therefore received heavy criticism from within the leadership and bureaucracy of Can Tho City. The question of how far it will be pursued and translated into concrete, downscaled plans for investment and development action is currently undecided.

In the absence of such downscaled and specified follow-up from the most recent development plan, actual growth and development is to date largely oriented along the previously existing generation of plans, with a horizon to the years 2020 or 2025, depending on the district. The basis for that respective cycle of plans is the Master Plan for Construction of Can Tho City up to 2025, which was approved by the Prime Minister in September 2006. This plan targets a population

of Can Tho City of up to 1.8 million people by 2015, of which 1.1 million will be living in the urban core (SRV, 2007). The main nuclei for economic industrial growth are planned to be established, first, through a new urban centre for industry and services to emerge in Thot Not with access to the Hau River; second, a high-tech as well as heavy industry zone in O Mon; and third, a new port and industrial zone in Cai Rang, which is also supposed to feature significant new residential developments.

Thus, Cai Rang District is the single most impressive and relevant district for projecting and analysing the city's growth targets – and the political economy around them. While its peri-urban morphology provided for around 86,000 people in 2009, the district's current construction master plan envisages the development of new residential quarters for an additional 120,000 to 150,000 people by the year 2025, covering an area of 700–800 hectares. Furthermore, two industrial parks (called Hung Phu I and II) are planned, covering an area of 600–700 hectares. Implementation of these planned developments is under way, causing remarkable changes not only in the districts land use but also employment profile, mainly shifting away from agriculture. However, the development also bears considerable challenges with respect to future climate risks and flood mitigation.

Figure 2. Current extent and development master plan of Can Tho City



8.1.4 Current and future natural hazards

Can Tho City is exposed to multiple current and future natural hazards. Situated at the confluence of Hau River and Can Tho River, many parts of the city are subject to urban flooding during the rainy season. There are three main sources of flooding. Though located around 75 km inland from the coast, flooding in Can Tho City is strongly influenced by tidal effects during the high water season, causing inundations particularly during the monthly tide peaks towards the end and middle of the lunar month. Second, river-based flooding can happen during the rainy season when the Hau River and other rivers carry increased discharge. Third, flooding is caused by heavy precipitation (pluvial flooding) given that the urban impervious surfaces hampers infiltration and increased surface run-off. Past measurements reveal precipitation of up to 80 mm per hour in Can Tho City (Huong and Pathirana, 2013). Accordingly, the strongest flooding occurs when tide peaks coincide with pluvial flooding and river floods, causing wide-spread inundation in Can Tho City through overflow, water logging and backflow from the drainage system (Huong and Pathirana, 2013; Thy *et al.*, 2010). In addition to the flood hazard, Can Tho City is exposed to storms and tropical depressions that in the past have caused considerable damage resulting from the combination of wind breakage and flooding. Further, riverbank erosion is an increasing problem, particularly for people living in the numerous settlements along the banks.

Can Tho City is also highly exposed to several projected climate change-related hazards – including sea-level rise, an increase in annual river-based flooding and localised heavy precipitation events, and in the intensity of storms and typhoons – making it an interesting case study for exploring how a dynamically growing city is dealing with the challenge of adapting to future (and new) hazards. These changes are likely to lead to an increase in flood hazards (MONRE, 2009; People's Committee of Can Tho City, 2011). Further, they might lead to a complex mix of secondary hazards, including the increased spread of water- and vector-borne diseases in slum areas with insufficient sanitation, draining or the likelihood of increased flow velocity, leading to intensified riverbank erosion and the consecutive collapse of buildings and other infrastructure.

The official projections by the Ministry for the Environment and Natural Resources forecast that a sea-level rise of one metre would lead to direct inundation of 19 per cent of Can Tho's area, as per current topography and protection infrastructures (MONRE, 2012). An early study by the International Centre for Environmental Monitoring even predicts that one quarter of the city's area would be affected in such an event (Carew-Reid, 2008). The Delta-wide models suggest that these impacts appear particularly in the northwestern parts of Can Tho City, i.e. the districts Co Do, Thot Not and Vinh Thanh. However, more specific flood modelling in the urban core of Can Tho City also suggests a strong flood increase in the districts of Ninh Kieu, Cai Rang and Binh Thuy. For Ninh Kieu, for instance, a sea level rise of one metre is predicted to result in a 50 per cent increase in the maximum flood depth, keeping all other factors of urban development being equal (Huong and Pathirana, 2013). Methodological advances are being made to combine the analysis of pluvial and fluvial flooding in the district, accounting for different levels of statistical reliability when including extreme flood events in the equation (Apel *et al.*, 2016).

The different studies on future climate change impacts for Can Tho City show two things: first, progress is being made on developing ever more detailed and valid assessments, especially of future flood risk. Second, however, different assessments produce a wide range of results, even for comparable scenario assumptions. Comparing, for instance, results on the spatial extent of projected flooding across different studies yields diverging – at times conflicting – results, even when using similar scenario assumptions (e.g. one-metre sea-level rise and no change in the urban morphology). This can be explained by the different methods and data sets used in the different studies. The theoretical literature on climate change adaptation calls for accommodating such uncertainty into decision making for risk management. But the case of Can Tho City also shows that such flexibility is hard to reconcile with Vietnamese paradigms of urban planning, which are heavily based on singular visions or targets and use of narrow predictions of the future, rather than the internalisation of a wide-ranging expectations of future trajectories. The following quote by a senior urban planning consultant in Can Tho City illustrates this aspect and shows the problems it yields for proactive climate action:

No, there is no climate change scenario or no sea-level rise scenarios that can be applied in an applicable form in Can Tho. Why? Because until now there are a lot of different voices in the scenarios and nothing can be considered the official reference.

(Interview, September 2009)

This point shows how important it is to ask whether and how the current planning system is equipped to address and navigate the emerging climate risks.

8.1.5 Plans and planning

A major challenge in the new political economy of urbanisation and planning in Can Tho City is that current development plans – and even more so actual developments – are typically driven more by political visions and growth targets than by realistic demand assessment. This results in significant challenges for future disaster risk management and climate change adaptation – as the following analysis will show.

In terms of residential buildings, Can Tho City provides a striking example of how target-oriented planning and virtually uncontrolled real estate speculation have become a major challenge for sustainable urban development. The master plan of Cai Rang district, introduced above, sets out to establish new housing units for 120,000 to 150,000 new inhabitants until 2025 (with the current population of Can Tho's urban core amounting to roughly 350,000 people). Yet due to insufficient planning as well as thriving – poorly regulated – real estate development, the currently planned and permitted projects of private developers amount to providing residential units for 278,000 people (Willets et al., 2010). Most of the land earmarked for this development has already been cleared and the original population resettled – leading to major livelihood challenges for the affected population and to the conversion of otherwise productive agricultural land (Garschagen *et al.*, 2011). However, whether the envisaged projects will prove economically sustainable or will even be implemented remains questionable due to a divergence between rocketing price levels and actual demand profiles. The vast majority of projects are designed to target the upper middle class – implying corresponding price levels. Yet, rural-urban migrants – who are most likely to contribute the bulk of Can Tho's future population growth – are in need of affordable housing in the lower price segments. As a result, Cai Rang District is today a wild mixture of patches with built and occupied housing units, interrupted by large islands of cleared but undeveloped areas and seemingly abandoned skeletons of unfinished housing blocks.

The failure to design – and implement – stringent plans based on realistic expectations or scenarios of future socio-economic development rather than political growth visions can also, in part, be explained by a mismatch in the capacity and background of planners in Can Tho City and Vietnam at large. A senior planner at the Vietnamese Institute for Urban and Rural Planning, who is very familiar with the planning situation in Can Tho, raised the following concern:

In Vietnam, sustainable urban development mostly means architecture development only. So this is not good. [...] Planners in Vietnam do not get enough training in actual urban planning. And in addition we do not have enough planners anyhow.

(Interview, May 2010)

Next to the lack of demand-oriented planning, a second reason for such type of proliferating and uncoordinated development is the existence of overlapping and often conflicting plans. Most notably, the spatial construction plans, the land use plans and the socio-economic development plans are often not in sync in Can Tho City. The following quote by a senior planning consultant with many years of project experience in the city illustrates this point. When asked how decisions are taken in the face of unclear or plainly conflicting plans, the response went as follows:

I think actually nobody, not even, for example, [...] the Vietnam Institute of Architecture and Rural and Urban Planning would be able to answer that question and I think that is already the key – the key crux [...] that the planning system is so complicated. [...] The sad thing that is related to that is that as such it is very easy to [...] abuse the system – because the process is so confusing. It allows for people to go through the cracks – I mean to be able to develop projects which are maybe not completely in line with what is good for a city.

(Interview, May 2009)

With respect particularly to public infrastructure planning, the same informant continued:

Now, [a] second weakness related to this master-planning approach is that [a] master plan almost never have a document related to it or a process related to it, which specifies the resources and the enforcement and institutional and legal structure in order to ensure that the plan can be implemented. Of course, on paper it indicates – you know – what you have in the master plan and should be implemented. But [...] wherever you develop a plan it should be crystal clear about who, what and when! As long as the resources are not allocated in order to make sure that this plan can be implemented and it is not clear who should bring in these resources then the plan is due to fail which in the end results in many plans just hanging on the wall, unable to be implemented.

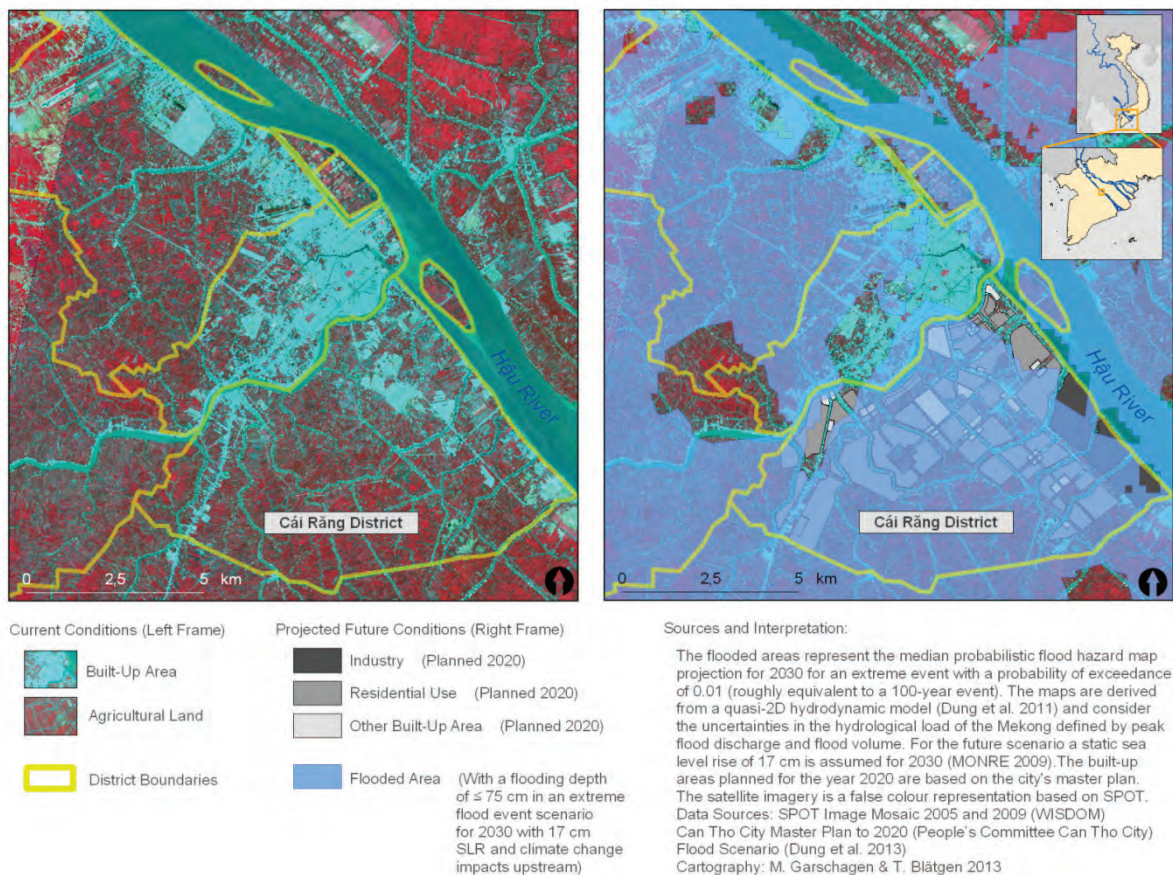
(Interview, May 2009)

A similar pattern can be observed with regard to industrial zones: The current master plan for the socio-economic development of Can Tho City until 2020, for example, envisages three major industrial zones, including the large expansion of the Tra Noc zone in Binh Thuy District and the new Hung Phu zones in Cai Rang District. Planning for these additional zones moves ahead despite the fact that the management boards of the existing zones have been facing substantial difficulties in even finding sufficient capital investment for these, which can be observed in low occupancy rates. Even more industrial zones are planned in the neighbouring provinces. Integrated planning seems to have been neglected. Individual provinces – or even districts within single provinces – are competing against each other, thereby running the risk of wasting resources and remaining – as a region – behind the attractive potential of other regions.

Another remarkable example of planning that is oriented to political visions and growth targets rather than demand assessments is the new Can Tho International Airport. Based on an old military base and later a small domestic airfield, the airport was expanded and overhauled in the run-up to Can Tho's promotion as a centrally managed city. The new international terminal was opened in 2011 with a large passenger capacity (figures vary between 2 and 5 million per year) and 11 gates. This infrastructure, however, in 2016 (that is, five years after inauguration), is met with only five to six departures per day, the vast majority of which are domestic, serving Ha Noi, Da Nang and Phu Quoc.

From a climate risk perspective, the challenge of insufficient demand planning is further met with a lack of risk-sensitive land-use planning within the currently transforming political economy and planning set-up of Can Tho – and Vietnam at large. Figure 3 refers to Cai Rang District in Can Tho's south. It depicts the master plan for the year 2020 but overlays it with a rather mild flood scenario that includes a flood event of 1 per cent probability (i.e. a '100 year flood') and a mild sea-level rise of 17 cm. However, the frequency of extreme flood events is projected to increase with climate change and, second, sea-level rise is currently set on course to overshoot low-end projections for this century. Figure 3 clearly shows that the vast majority of this planned – and currently implemented – infrastructure sits within a zone of major flood exposure, suffering from inundation of up to 75 cm under this scenario. At the same time, the fact that unrealistic growth targets in Cai Rang will most likely not be met in reality and that the current morphology develops into a wild patchwork of used and vacant land, will pose a considerable challenge to the cost efficiency and acceptance of future flood protection measures such as embankments or pumping stations.

Figure 3. Urban growth and climate hazard exposure in Cai Rang District



Source: Garschagen

Interviews with planning experts in Can Tho City, HCMC and Hanoi clearly show that apart from a gap in knowledge and awareness of these future hazards, there are even more pressing institutional and economic barriers within the post-reform power landscape to implement and enforce a stringent application and enforcement of risk-sensitive land-use planning (e.g. through blocking flood-prone areas from development). The following quote by a key informant with many years of professional experience in Vietnamese planning processes, specifically in Can Tho City, captures the essence of this new structure:

I personally feel that for many of the planners indeed they are faced with so many [...] day-to-day priorities they need to address that anything which is beyond a time duration of more than – you know – five years is very difficult for them to grasp [...] because at the same time investors keep knocking on their door, saying: 'I want to put my money somewhere – I want to develop a certain area.' [...] And if they come with enough money, it is very difficult for a local government to say: 'Oh, I'm sorry, we're not building this.' [...]. As such planners do not have sufficient leverage in order to say no.

(Interview, May 2009)

Another quote by a different key informant captures the incapacity of the planners to control and restrict inappropriate planning within the new power structure by saying:

The master plan is nowadays in fact made by the developers, not by the government. Even though we have long-term master plan which is approved by the Prime Minister, we have to change it every five years. Why? Because private developers come in and want to develop it differently.

(Interview, March 2010)

Thus, even if the land use and construction master plans accounted for future flood risks and blocked such areas from development (which they are not to date), there would be great institutional challenges to actually enforce these plans stringently against the short-term pressures for urban growth within the system.

8.1.6 Lessons related to the research question

The findings from Can Tho City clearly emphasise a key challenge within the current political economy of Can Tho and urban Vietnam at large. While the role of planning would originally be to balance different economic and political interests and serve as a corrective in the interest of greater welfare (e.g. by avoiding long-term climate vulnerabilities), the planning system in Can Tho City has been largely turned into a vehicle for channelling the visions and growth ambitions of the political elite. The pressure to deliver growth has even intensified for Can Tho City over recent years due the fact that it is increasingly ascribed the role of growth engine for the entire Mekong Delta, and hence national development. In addition, there is a considerable corruption and rent-seeking within Can Tho's planning agencies given the personal financial gains that can be made from cooperating with investors and real estate developers as well as the personal political gains through producing sudden growth. However, this undermines the authority and corrective function of the state planning system, making it very difficult to implement long-term planning in the public interest if it might conflicts with short-term gains that can be made by parts of the financial and economic elite. The challenge for long-term climate change adaptation and risk-sensitive planning are a prime point in case.

In that sense, the analysis on Can Tho City also clearly shows that climate risks are not exclusively driven by external forces, notably the intensification of hazards such as sea-level rise, typhoons and fluvial flooding. Rather, the case study shows that future risk is also heavily produced through inherent, 'home-made', exposure and vulnerability within the urban system of Can Tho. Urban expansion into the flood-prone areas of Cai Rang District illustrates the conflicts between the immediate pressure, within Vietnam's current political economy, for producing rapid urban growth and the long-term requirements for sustainable and risk-sensitive urban development.

The interviews from the Can Tho City case study clearly show the lack of checks and balances within the current planning system. However, a strong corrective would be needed to review and moderate the increasingly powerful coalition of state agencies and private investment, which have been experiencing an increasing hybridisation since *đổi mới* but share a common interest in propelling short-term urban growth – even at the expense of long-term urban sustainability and climate risk adaptation.

8.2 Da Nang

8.2.1 City description and recent development

Da Nang is the main commercial and service centre of Central Vietnam. Located on the East Sea at the mouth of the Han River, Da Nang is one of the major port cities in Vietnam. It is connected overland to the north and south by the North–South Railway and National Route 1A, and to Laos, Thailand and Burma in the west via the East–West Economic Corridor. Da Nang International Airport, the third largest airport in Vietnam, is sited on a former U.S. air base near the centre of the city.

Geographically, Da Nang is ringed by mountains to the northwest and west and bordered by the East Sea on the northeast and east, with extensive and popular sandy beaches stretching along its coastline. This location, though beautiful, limits development options. The mountains are steep and prone to landslides if deforested, the downstream of the Vu Gia–Han rivers is low-lying and prone to flooding during the rainy season, and the low-lying coasts are exposed to typhoons and storm surge. In recent years, the city has expanded to the east, across the Han River, with the construction of five new bridges; and to the south, across the Vu Gia River towards the neighbouring province of Quang Nam.

Da Nang's population was estimated to reach 1 million in 2014, and grew at rates of between 2.5 per cent and 3 per cent annually from 2005 to 2011, significantly exceeding the national average of 1–1.2 per cent. Migration has been the dominant factor in the city's population growth recently, contributing 1.6 per cent to 2.7 per cent between 2009 and 2011.

The city's economy is dominated by service industries, particularly tourism, trade and transportation. Traditional agricultural and fishing industries are declining, while a modest manufacturing base serves mainly a regional market. Da Nang officially cultivates an image as a modern, well-managed, high service, environmentally oriented and internationally connected city to attract foreign investors and visitors.

8.2.2 Plans and planning

The process of developing an urban master plan in Da Nang is overseen by the Department of Construction (DOC). They typically hire a planning consultant to lead this process, and then engage directly with the consultant and with senior local government officials to review options and present a preferred plan for approval by the Chairman of the City People's Committee. Once approved locally, the plan is sent to Hanoi to be reviewed by the Ministry of Construction, a process that generally draws many questions and comments from central government, and often leads to revisions. Neither developers nor the general public have much opportunity for engagement in plan development.

A major long-term urban master plan was approved for Da Nang in 2005. This was soon out of date as the city began to develop rapidly. Rather than create a new plan after five years (as mandated by national legislation) Da Nang moved forward with detailed planning for the development of new urban areas to the south of the city, in floodplain zones that had been designated in the 2005 master plan for recreational and protected spaces.

The combination of geographical limitations and rapid growth has proved challenging for Da Nang's urban development. Initial growth of the city following Doi Moi (economic reforms) in 1986 was to the east and north, across the Han River and along the coast. As this area filled, and spurred by rapid growth and land speculation in the mid-2000s, development of the floodplain to the south of the city began in earnest. At the height of this boom, between 2006 and 2010, properties were being developed, purchased on speculation and turned over quickly. However, the market stagnated after 2011.

8.2.3 Climate vulnerabilities

Da Nang is susceptible to regular flooding from intense precipitation events associated with tropical depressions and typhoons; high tides and storm surge often exacerbate flood conditions. Substantial damage from flooding occurred in 1999 (very high in-city rainfall; 3 per cent probability flood event), 2006 (Typhoon Xangsane), 2007 (high rainfall coupled with very high tides; 5 per cent probability flood event) and 2009 (Typhoon Ketsana; 5 per cent). Flood events occur within city boundaries almost every year. Historically, the majority of this flooding has been concentrated to the north of the city centre along the Cu De River and to the south in the southern floodplain, which lies between the Cam Le and Qua Giang rivers (Figures 1 and 2). Flooding is worse in low-lying areas bordered by new development or elevated embankment roads. Elevated infrastructure often functions as unplanned dams, blocking drainage and increasing floodwater depth and the duration of inundation.

Further complicating the flooding issue, climate change is elevating sea levels and is projected to increase the intensity of extreme rainfall events. Table 2 shows the possible changes in rainfall intensities by the 2020s and the 2050s, when compared with 1961–1999, for rainfall events that have caused flooding in Da Nang.

Table 2: Projected changes in rainfall intensities by the 2020s and 2050s, when compared with 1961–1999, for rainfall events that have caused flooding in Da Nang

| Rainfall event | Intensity 1961–1999 | Percent change 2020s | Percent change 2050s |
|----------------|---------------------|----------------------|----------------------|
| 1999 | 10.4mm/hr | 9.1 to 29.4% | 13.1 to 48.1% |
| 2007 | 6.7 mm/hr | 3.0 to 23.6% | 26.4 to 63.2% |
| 2009 | 3.5 mm/hr | –4.9 to 13.8% | 3.1 to 22.9% |
| 2010 | 2.7 mm/hr | –10.6 to 4.0% | –0.6 to 14.9% |

Source: Ortiz-Stapleton, 2013

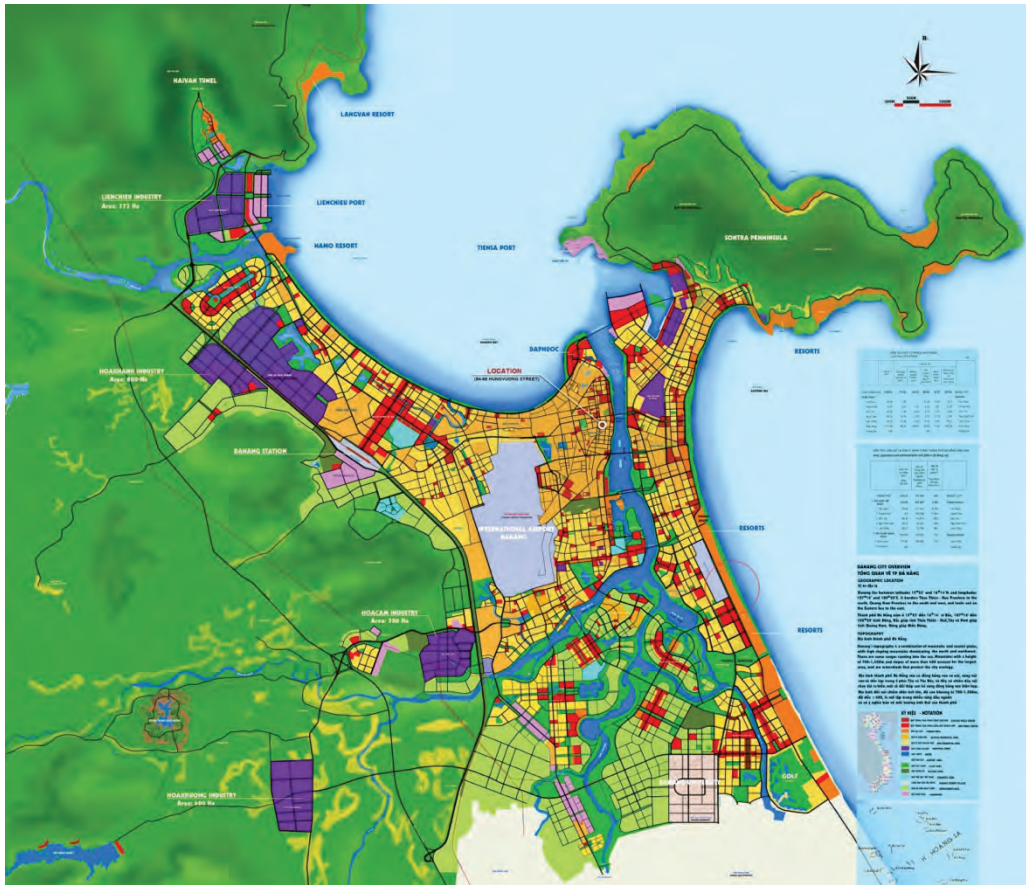
Elevated sea levels will further slow drainage of water; increased rainfall intensity will increase floodwater volume. Both would increase the duration and depth of inundation from floods. Model projections for southern Da Nang suggest that by 2050, even areas that have been filled could flood to a depth of 1 to 1.5 metres in a 100-year flood. Surrounding inhabited lowlands could be under 4 metres of water. Transportation networks would be cut off, hampering evacuation or rescue efforts. Thus, at a time when the demands of a changing climate would argue for the preservation and even expansion of floodwater retention areas, and the widening of rivers to increase their floodwater conveyance capacity, urban development in Da Nang is having the opposite effects.

8.2.4 Urban development and flood risk in Da Nang

Flooding is common throughout coastal Vietnam. The standard approach to development in low-lying lands is to fill the land to a level above the perceived flood risk. In fact, this approach is written into the Ministry of Construction's technical standards. New construction throughout the Mekong Delta and extending up the entire coast of Vietnam is built on fill, often many metres deep. Successive construction, higher than earlier construction, puts the earliest developments, and existing settlements, at increasing risk. Major roads and railroads are also generally built above the level of the surrounding land and Da Nang is no exception. Da Nang's master plan specifies that elevations of land for new urban development should exceed the historical flood elevations of the relevant rivers at flood probabilities from one in 20 to one in 100 years. Though the floodplain south of city centre is regularly inundated during flood events (Map 2), it has become the preferred direction for residential growth since the 2005 city master plan to 2020 (Map 1). The first major phase of this construction got under way in 2013, with home construction taking place on top of 2.5 to 6 metres of fill, to 'prevent' flooding.

Unfortunately, developing the floodplain south of the city reduces flood drainage capacity, resulting not only in higher water levels for equivalent flood flows, but also in shifting flooding to new areas. The floodplain has historically served as an overflow and temporary storage basin for water during high in-city or upstream water events. The low slope of the land means that the Han River outflow to the sea drains the southern floodplain more slowly than the combined runoff of the Cam Le and Qua Giang rivers fill it. If the floodplain is substantially developed on fill, the water will collect elsewhere, or at increasing depth, inundating new areas and creating new hazards, and high flood volumes will be discharged more directly to the river's mouth in the central city.

Map 1. Da Nang master plan to the year 2020. Note the extensive residential development proposed for the southern floodplain area circled in the bottom of the figure



Source: Da Nang Architect's Association

In 2005, when development of the southern floodplain was first approved, Da Nang had no way to quantitatively evaluate the potential impact of development on flood level and flood duration. To address this, in 2011 the Da Nang Department of Construction received support from the Rockefeller Foundation ACCRN programme to build a linked hydrologic-hydraulic model for Da Nang that takes into consideration potential impacts of climate change and urban development. The Institute for Social and Environmental Transition served as technical adviser to the project.

The model was completed in 2013 and used to generate flood maps for multiple development, climate and flood intensity scenarios. These maps indicate that, if the 2030 master plan were fully implemented, even for relatively common flood events (i.e. one-in-ten-year events), sections of the newly developed residential zones are likely to flood to depths of 0.3 to 0.5 metres. Flooding would be more severe when climate change is taken into consideration, and with further development (Phong *et al.*, 2015). However, in spite of this confirmation that current plans will create a high-risk residential zone in the floodplain, few modifications to the plan have been considered since 2013.¹⁰

¹⁰ The DOC reports that flood modelling results led them to increase the height and approach elevations for a new highway bridge, and to scale back the development plans in Hoa Tien ward

Maximum flood extend and flood depth map of Da Nang

LEGENDS

- River boundary
- City boundary
- District boundary
- Intersted place
- Village boundary
- Rivers
- District_point.dip
- Village_point.dip
- Hou ding
- Hou ding
- Step_n_88

Flood Depth Legend:

- No flood
- < 0.5 m
- 0.5m - 1m
- 1m - 1.5 m
- 1.5 m - 2 m
- 2 m - 3 m
- 3 m - 4 m
- > 4 m

DEM of Da Nang Legend:

- < 0
- 0 - 1 m
- 1 - 2 m
- 2 - 3 m
- 3 - 4 m
- 4 - 6 m
- 6 - 10 m
- 10 - 20 m
- 20 - 30 m
- 30 - 40 m
- 40 - 60 m
- 60 - 100 m
- 100 - 200 m
- 200 - 400 m
- 400 - 600 m
- 600 - 1000 m
- > 1000 m

Scale: 5 0 5 10 Kilometers

SOURCE: ACCORP-NVN / SINRR 2009

The problem with developing the floodplain to the south is that its flood retention functions are lost and the floodwater that used to collect in this area has to go somewhere else. That somewhere will be lower elevation lands surrounding the new development, including the built-up high-value lands of the central business district along the banks of the Han River, as well as upstream areas in adjacent Quang Nam province.

8.2.5 Discussion of Da Nang case

The planning decisions to expand residential development to the south of the city centre were made more than ten years ago after the development of a new urban master plan. Even at that time there was concern about development in the floodplain, and there was explicit discussion of flood risks. However, this area was appealing for development because of its proximity to the city centre and the low cost of land acquisition compared to other sites. While acknowledging the flood risks, the DOC reported that this was only one of many considerations involved in master plan development.

Since the approval of the urban master plan, better information on flood risk has become available through the new hydrologic-hydraulic model. This information has not led to abandoning of the urban development plans in southern Da Nang, but it has led to consideration by DOC of the appropriate fill elevations for residential development, to reduce flood risks in areas of new construction, and has also influenced the design of protective dikes for the area where fill is not appropriate. The flood model has also provided a useful tool to improve the design of floodways for drainage and flood retention, according to DOC.

In principle, DOC is obliged to consider flood risks in its review of detailed development plans submitted by developers, and to reject them if they do not offer flood protection at the 3 per cent level. The flood model can also be useful for this purpose, but only if it is updated to reflect changing riverbank and floodplain elevations as a result of development, and emerging new information about future climate risks. So far, it is not clear that the model has been used in this way.

As an aside, it is instructive to note that Da Nang city uses a 30-year flood standard in its approval of detailed residential development plans (this means in any given year, a flood with about 3 per cent probability). This is a much higher flood frequency than the typical 100- or even 200-year floodplain restrictions common in higher-income countries (i.e. 0.5–1 per cent probability), and suggests that both policy makers and the general public are more comfortable in accepting the risks and consequences of flooding. However, with a dynamic climate, today's 30-year flood may be much higher probability in several decades. If local wealth and investment in housing and consumer goods increase, residents are likely to be less tolerant of future flooding than they have been historically. At a minimum, this suggests that developers and purchasers of residential properties should be well informed about changing flood risks.

From our interviews, they do not appear to be. While developers, builders and home purchasers are all concerned about flood risks, and some are suspicious about the effects of filling land on drainage, they are reassured by the plan review undertaken by the DOC, and interpret approval of plans and construction as assurance that flood risks are minimal. There is no widespread appreciation of the dynamic risks imposed by climate change, nor of the results from the flood modelling undertaken by DOC already. While purchasers recognise that there will always be uncertainties about flood levels, better information about flood risks would very likely lead to changes in real estate values and behaviour of buyers concerned with future risks and land values.

Planning officials do not ignore flood risks. Some areas of Hoa Xuan ward were initially designated as parkland because of their flood exposure. But these areas were also closest to the central city, so the initial park designation was later changed to enable more intensive development. The land surface elevation was raised with several metres of fill, and facilities were installed to provide drainage. This area has not experienced serious flooding in the few years since its construction, but it is clear to residents upstream in neighbouring wards that flooding in *their* area has become worse due to the fill downstream and the reduced flood basin drainage. So even when planners make decisions reflecting flood risk, these can be overturned in implementation, partly because the knowledge of plan contents is not widely available to members of the public who may be affected by outcomes.

This lack of transparency inherently exposes planning and development decisions to considerable influence from senior party officials and local government leaders, influence that cannot be easily traced in a well-documented or publicly explained process. Decisions are ultimately made by a very small number of people in a closed and opaque 'top-down' process.¹¹ As a result of those decisions, the financial gains to individuals who control sites that have been privileged as priority development areas can be enormous. Once that land is reclassified by the same local officials as suitable for urban development, and rights transferred to private developers, it may appreciate in value by 100 times (DiGregorio, 2011) over the compensation rate paid to farmers. This distortion of urban land markets can create enormous temptation for senior local officials to benefit personally from their influence on opaque decision-making processes.

Another planning issue is the lack of coordination between different departments and different projects. For example, an ADB highway project in Hoa Tien ward, in this vulnerable southern area of Da Nang, was built at an elevation of 2.5 metres above the surrounding lands. While the roadway is of high quality and provides better market access for local farmers, its construction budget did not allow for the number of drains needed to prevent flood impoundment. As a result,

¹¹ In fact, DOC staff have reported that the project proposal for the low-lying areas of Cam Le district was initially brought to the Chairman of the Da Nang People's Committee who directed the department to develop a new plan for the area.

the road acts as a barrier to overland flow and flood drainage under extreme conditions, leading to much more severe flooding upstream. The problems could have been reasonably anticipated, yet the road planning and oversight mechanisms of the Department of Transportation did not involve the DOC planners who had access to flood projection models, used standard assumptions that failed to include climate change, and could not easily be modified once tendered.

Recently there is increased political and public attention to the flood situation in Da Nang, in part because of the attention given to the flood modelling results, and the DOC's application of the model to reconsider continued build-out of the master plan development in the floodplain of the Vu Gia–Thu Bon River basin in the southern part of the city. Greater attention is now being paid to reserving land for floodways, and DOC has decided to reduce the extent of future development in Hoa Tien ward, partly in response to these concerns. However, as experience has shown, planning decisions can be reversed in implementation through opaque decision-making processes, as developers press for greater returns and both developers and local government leaders put a premium on immediate financial returns over long-term risk to residents.

The Da Nang case shows how even when planners recognise current and potential climate risks, it is difficult for them to gain support for this as a priority in making development decisions, compared to the short-term financial benefits the city receives from urban land conversion and development. Longer-term flood risks from low-probability events are downplayed in an opaque decision-making context controlled by a small number of individuals. To some extent, the Da Nang case also shows how greater attention to scientific and technical evidence from better climate projections and modelling tools can help professional staff to make flood risk and development control arguments to political leaders. But the case also shows that both developers and the public have a very limited understanding of changing flood risk, and their interests may be poorly served by a decision-making process that does not allow for public debate of the relevant information and trade-offs. As the city grows, as its residents become more prosperous and accumulate more assets, and as multi-national corporations invest in new manufacturing and high-tech facilities in Da Nang, the economic damage, and the reputational damage, from flooding in Da Nang city will grow proportionately. In this context, the political costs of urban development decisions that increase flood risk to residents and investors may become hard to avoid.

8.3 Quy Nhon

8.3.1 City description and context

Quy Nhon is a Class I provincial city in the south central Vietnamese province of Binh Dinh. The city is currently composed of 16 urban wards and five suburban communes. In 2013, it had a total resident population of roughly 311,000, some 285,000 living in the historic city centre (Binh Dinh Construction Department, 2015). Between 2009 and 2013, the natural growth rate of the city and surrounding suburbs was about 0.35 per cent per year. This low rate of growth is due in large part to out-migration, – 0.39% over this period (Binh Dinh Construction Department, 2015). This does not mean that the population is declining in absolute terms. In 2009, the Centre for Urban Planning and Construction Inspection reported a temporary resident population of about 40,000 (TTQH và KĐXD Bình Định, 2012), the majority of whom are from within the province. This figure does not include the large number of commuters¹² from nearby districts outside the city.

Due to its climate and topography, the city's physical expansion has been restricted in the south where the terrain is split by mountains, in the east by the sea and marshes, and in the north by annual floods in the Ha Thanh and Con rivers. As a result, city is divided into three parts: the historic city centre, the new industrial areas in the west, and an underutilised expansion area in the east separated by mountains, marshes, seasonally inundated farmland and a lagoon.

¹² A 2008 UNFPA report estimated that 85 per cent of workers in the city's industrial zones were from within Binh Dinh province, the majority being commuters from nearby districts (UNFPA, 2008). Not in Refs

Figure 4. Satellite image of Quy Nhon showing dispersed urban areas



Source: Google Earth

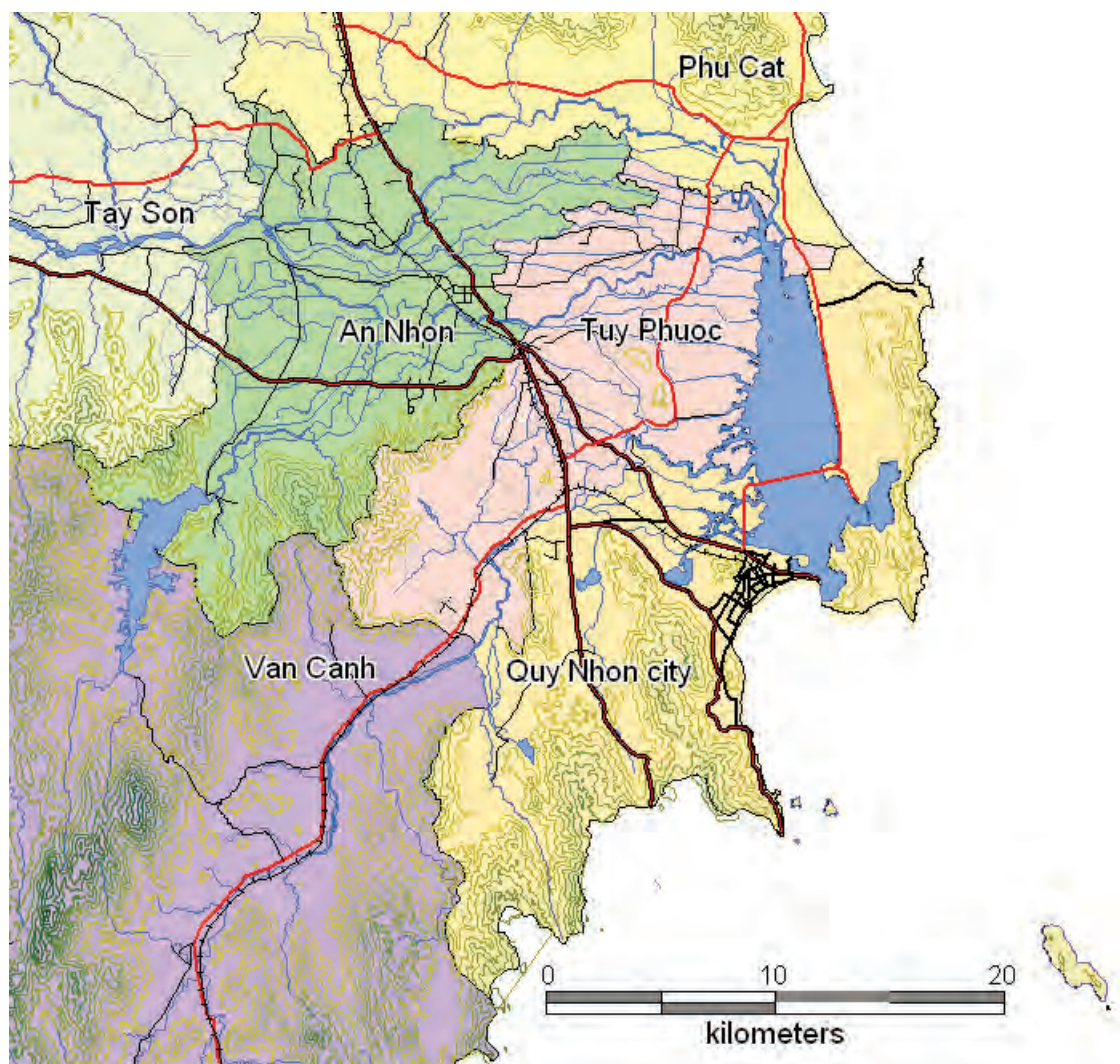
While urban development initially focused on available land in old urban areas and in the river valleys to the west, as this land was occupied, developers began to turn to seasonally flooded land in the Ha Thanh River delta and coast of Thi Nai lagoon to the north of the historic city. Devastating floods in 2009 and 2013 has made clear the vulnerability of these low-lying areas, the increasing impacts of climate change, and the difficulty coordinating socio-economic goals with spatial planning.

8.3.2 Brief development history

In February 2012, the Binh Dinh Centre for Planning and Construction Inspection presented a draft terms of reference (TOR) intended for use in developing a revised master plan for Quy Nhon to the Permanent Committee on Adjustments to the Quy Nhon City master plan (Phi, 2012). The centre's director, Tran Quoc Cuong, suggested that, based on discussions with concerned departments, agencies and institutes in the province, Quy Nhon's current boundaries should be expanded to include all or part of Tuy Phuoc District plus the Nhon Hoi Economic Zone and two coastal communes in Phu Cat District (Map 3). This would create a city with the total area of about 500 km² and a combined rural and urban population of roughly 500,000 (GSO, 2010).

In June 2012, the Binh Dinh People's Committee approved the TOR, but expanded the planning area to include Can Vinh and Canh Hien communes (Xuan, 2012) in Van Canh District. Both communes are in the middle reaches of the Ha Thanh River. Dao Quy Tieu, director of the Department of Construction, noted that while the natural area of the city is relatively large, urban development has been constrained by its geography. Given the relative lack of buildable land, he argued, the city needed to expand into higher elevation areas in Van Canh District.

Map 3. Quy Nhon and Surrounding Areas



Source: The Authors

Environmentalists within the province viewed the plan in a positive light. For three years, they had argued that urbanisation of the floodplains of the Ha Thanh and Con rivers would increase the city's vulnerability to floods which, based on forecasts provided by the National Institute for Meteorology, Hydrology and Environment (IMHEN), would increase in intensity due to climate change and sea-level rise. From their perspective, the possibility of moving into the higher elevated areas of Canh Vinh and Canh Hien might provide a means of limiting urbanisation in ecologically sensitive low-lying coastal areas while still meeting the city's long-term urban development goals.

8.3.3 Targeting urban growth

The city's expansion through annexation has been tightly connected to its socio-economic development strategy. Since 1998, that strategy has been preparing the city to become 'the political, economic, cultural and social centre of Binh Dinh Province; at the same time, an urban centre and mobilizing force for development in the South Central Coastal Region, an important gateway between the Central Highlands, Southern Laos, Northeast Cambodia and the East S'a, and one of three commercial, shipping and tourist centres in the region.'¹³

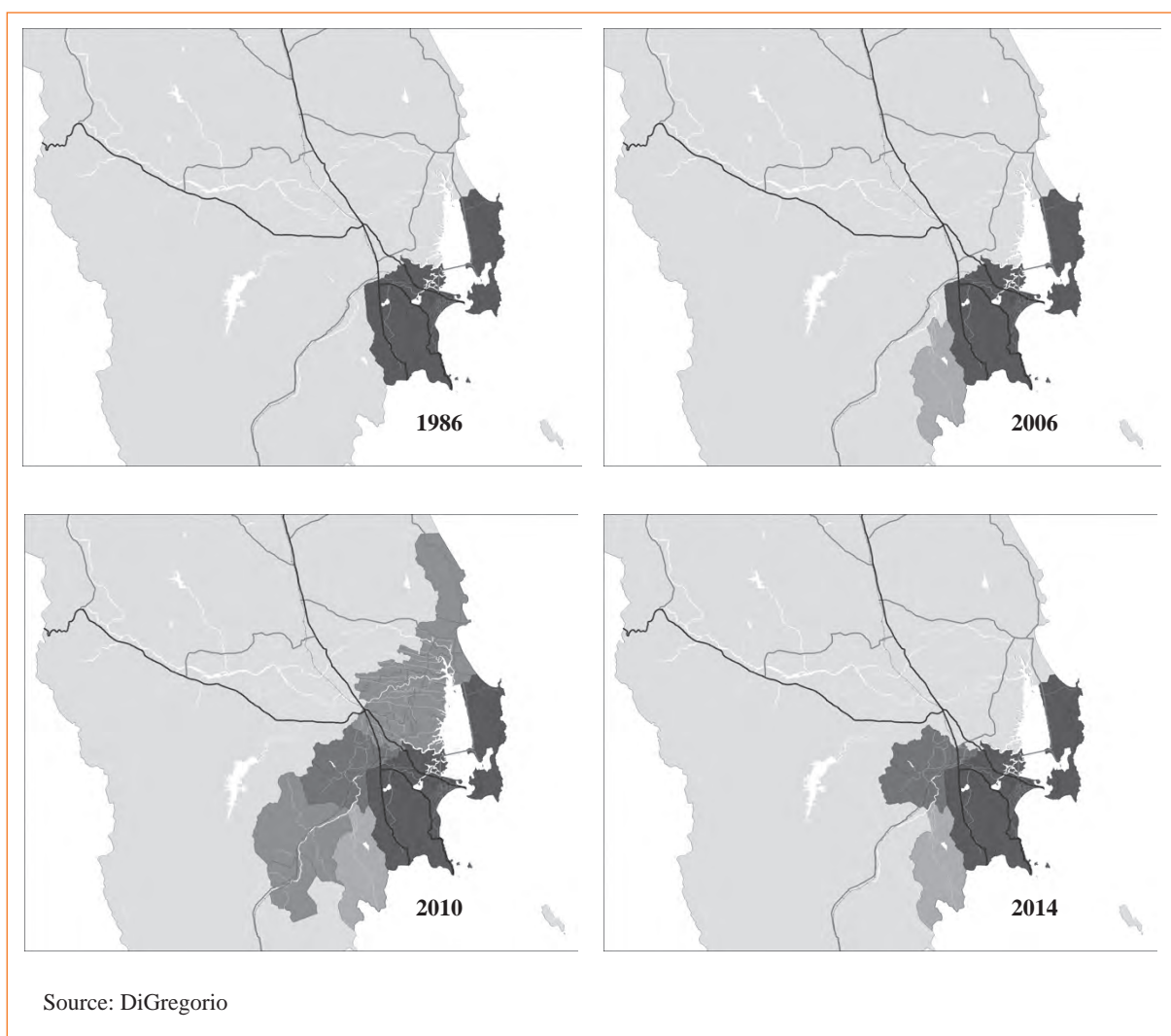
Achieving this goal is the fundamental task of urban planning. A senior staff member of the province's Department of Construction noted that the province's social economic development plan (SEDP) is 'like a key. Everything follows the SEDP: targets for GDP growth, income per capita, industry, trade, tourism. If the SEDP called for construction of a steel mill,¹⁴ the DOC would have to find a place for it' (Interview, 31 October 2013). Expansion of the city's boundaries serves as a means of advancing the SEDP and, at the same time, the city's status within Vietnam's urban system. By law, cities are allowed to use land auctions or land-for-infrastructure swaps as a means of funding infrastructure projects (The World Bank, 2013). Since land in any given area is finite, cities must acquire new land or reclassify existing land in order to meet their urban development and revenue targets. This pattern of creating conditions for growth by annexation or reclassification becomes clear in a review of Quy Nhon's recent expansion history.

In 1986, Quy Nhon was a Class III city made up of eight wards and seven communes with a population of roughly 174,000 and an area of 212 km² (Map 4). Over the 30 years since, city administrators have used annexation as a means of creating new land for urban development, increasing resident population, and rising up the urban hierarchy. This has included adding land for industrial areas in 1986; adding urban population through reclassification of agricultural communes as city wards in 1997; and further expansion to add population in 2006 and 2010 and thus become a Class I provincial city in 2010.

¹³ This is noted in Decision 98/QĐ-TTg 01/06/2004 of the Prime Minister on the approval of the terms of reference for the general plan for Quy Nhon city, Binh Dinh Province to the year 2020.

¹⁴ Ground breaking for the Hoa Sen cold rolling mill occurred in December 2015.

Map 4. Change in urban boundaries, 1986–2014



This process of annexation is not complete. The director of a city-level land management agency, a senior staff member of the Department of Natural Resources and Environment, and a member of the Flood Control and Dike Management Committee all noted that moving further up the urban hierarchy to become a centrally managed city is the goal of the current master planning process. This goal was expressed most clearly by a former Provincial Communist Party secretary:

We expanded the city's boundaries to serve the development needs of the city. In the past, the city was much smaller. In order to expand, we first turned to the west, to Phu Tai (e.g. Phuoc Thanh Commune). That allowed us to become a Class III city. The Prime Minister gave us the right to develop the area along Tay Son Road. That helped us become a Class II city. In 2010, we annexed Dieu Tri, Phuoc An and Phuoc Thanh, and became a Class I city with 16 wards and four communes. We are now becoming a regional centre for trade, education, health care, industry, transport, etc. At each stage, there was a new plan, or more correctly, a revised plan. The next stage is to become a centrally managed city – a regional centre for the South Central Coast, Northern Cambodia, Southern Laos and Thailand.

(Interview, 1 November 2013)

To advance towards the goal of becoming a centrally managed city, Binh Dinh Province's Department of Construction spent two years preparing and receiving approval for the terms of reference that were used as a guide in revising the Quy Nhon's master plan. That TOR suggested four possible proposals for expansion. These proposals upgrade communes within the city's boundaries into urban wards, create opportunities for the expansion of public services outside the floodplains, or add new territory and population. In fact, of the four options, only the most inclusive was actually under consideration. That option brings communes within Nhon Hoi, the city's industrial and port development area, and Dieu Tri, location of the city's rail station, within the city's urban administration. It also annexes resort areas in Cat Tien and Cat Hai, and by annexing Canh Vinh and Canh Hien communes in the District of Van Canh, creates room for cemeteries, landfills, and garden areas outside the floodplain. Each of these approved options adds to the city's functions as defined for Class I centrally managed urban areas. The fourth option also brings in all of Tuy Phuoc District and its population. Tuy Phuoc borders the city on the west and north and includes the low-lying farming areas around Thi Nai lagoon. The city thus created by these mergers, with a population of 525,449 in 2012, has been targeted to grow to a minimum of 630,000 by 2025, 740,000 by 2035 and 1,000,000 by 2050, while at the same time increasing the percentage of people living in urbanised areas from 56 per cent at present to 72 per cent in 2035.¹⁵ As noted above, by targeting growth and annexing communes and districts on its border, provincial authorities have previously succeeded in moving Quy Nhon up the urban hierarchy ahead of meeting urban standards. Provincial officials now regard the proposed expansion scenario as their best chance for winning status as a centrally managed city ahead of reaching urban population, employment and infrastructure standards.

8.3.4 Climate vulnerabilities

In their August 2010 climate change resilience strategy (Tien *et al.*, 2010), the CCCO considered the low-lying floodplains and wetlands around Thi Nai lagoon as the most vulnerable area of the province. This area includes Nhon Binh and Nhon Phu wards in Quy Nhon, as well as Phuoc Son, Phuoc Thang and Phuoc Thuan communes in Tuy Phuoc District as well as parts of Cat Chanh and Cat Tien communes in Phu Cat District. The CCCO based their assessment on three sets of criteria: projected climate impacts, current and future populations at risk, and urbanisation trends. These were initially outlined in a climate change scenario prepared by the Vietnam Institute for Meteorology, Hydrology and the Environment (IMHEN). Using these climate projections, IMHEN and the CCCO developed a list of potential climate threats. This list includes:

- increased flooding in the Con and Ha Thanh rivers caused by intensified seasonal storms;
- permanent inundation of low-lying coastal areas and salinisation of groundwater caused by sea-level rise, with greater severity in the dry season;
- wind and storm surge damage in coastal areas caused by intensified typhoons;
- increased potential for forest fires due to prolonged dry seasons;
- health hazards and crop failures due to periodic heat waves; and
- water shortages as early as 2020.

Typhoon Mirinae, in 2009, offers a glimpse into the relationship between threats and vulnerabilities related to climate change and urbanisation in Quy Nhon. The flood caused by Mirinae, which many public officials considered a historic flood, took the lives of 22 people and caused \$58.6 million in losses to property in Binh Dinh. In November 2013, exactly four years later, a second historic flood, this one caused by tropical depression no. 32W, took the lives of 16 people in the province and caused roughly \$86 million in loss and damage (Huong, 2011).

¹⁵ All figures are noted in the Prime Minister's decision, 1703/QĐ-TTg 23/09/13, to approve the appraisal presented by the Department of Construction.

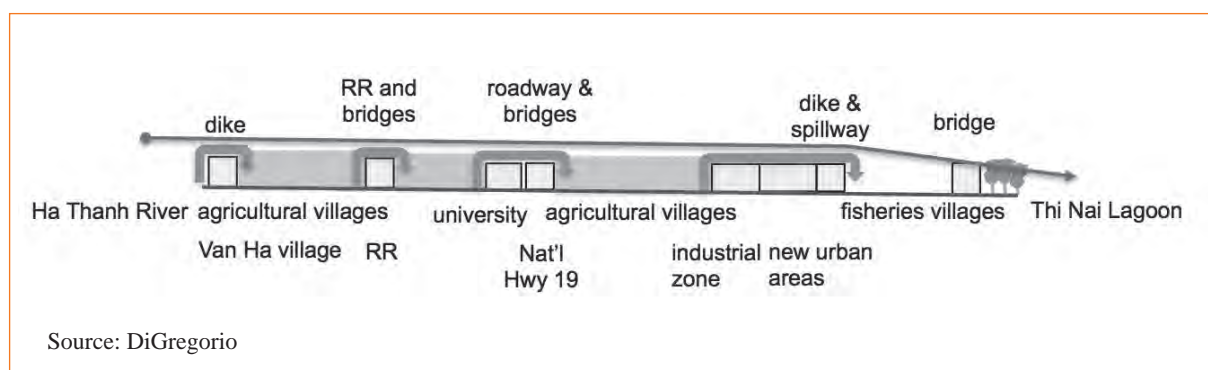
People living for generations in the lower reaches of the Con and Ha Thanh rivers have adapted to this flood-prone environment. Thus, the severity of the impacts of these floods was surprising. In order to understand why damage was so widespread, the CCCO commissioned a report on causes for the severity of one of the storms, Typhoon Mirinae (DiGregorio and Van, 2012). The report relied on interviews with residents of two wards in the delta, Nhon Binh and Nhon Phu, the most severely impacted by the storm. Many long-term residents blamed the severity of flooding on new road construction and urbanisation. Consider the comments of this 81-year-old farmer:

I am really afraid of big floods like the one we just had. They will continue to happen – they will not stop! – because the roads have been upgraded and there are so many reservoirs. When water in the reservoirs is released, the floods will rise, and things will happen. That's because of the barriers, I mean, because the roads are high. Here's an example. The road that goes to Tuy Phuoc – do you know the one I mean? – the road between Tuy Phuoc and Quy Nhon. In the past, it was low. That road was such a mess, no one travelled on it. But now there are houses everywhere, because that road was upgraded. I have been here my whole life. Big floods and little floods, the water was shallow and quickly receded. Now, because there are barriers everywhere, a flood rises even a little, and it's in your house. And second, you put your foot in the water, and you're dead because it is just too deep. So finally, what we need now is better drainage, we need good drainage.

(Interview, 10 May 2010)

Based on these interviews, hydrologic studies and cartographic analysis, the report concluded that recent construction in the floodplain had increased the height of the flood by dividing the delta into flood cells. Barriers comprised of roads, dikes and the foundations of new urban and industrial areas border each flood cell. The flood, which produced a peak flow of 3,238 m³ per second, overpowered the drainage capacity of bridges in the floodplain. This forced water over the top of barriers and since these barriers were relatively equal in height, flooding was also relatively high and equal.¹⁶ In most areas of the delta, floodwater was more than 2 metres deep, a situation that more seriously affected people living in established villages within the flood cells than those living in new urban areas or along major roadways.

Figure 5. Transect of the 2009 flood



In the past, there were fewer barriers in the Ha Thanh River Delta, and most of those that did exist were lower. As a result, while floodwaters were often high on the western side of the delta, they were generally much lower near the edge of the lagoon in the east.¹⁷ The report suggested that bridges would need to be widened and urbanisation would need to be limited within Nhon Binh and Nhon Phu. It proposed an urbanisation strategy that began with renovation of floodways as spaces for agriculture, aquaculture and limited recreational activities. Most of the existing settlements in the delta could remain

¹⁶ Based on the underlying topography, flooding was deeper in the lowest areas and shallower in higher areas.

¹⁷ Thus, people living in the more deeply flooded western part of the delta often use gác lũng (lofts) in their homes for safety during floods while those closer to the lagoon may not have a loft or, if they do, use them only to protect family altars.

in place and be expanded to meet natural population growth. These settlements could be protected with low dikes and pumps as long as surrounding areas of the floodplain remained in agriculture and fisheries use. The report also assessed the impact of current urbanisation plans. If only the projects planned for Nhon Binh were implemented, a flood similar to the one caused by Typhoon Mirinae could increase flooding in existing settlements by as much as 76 centimetres.

The CCCO organised four shared learning dialogues during and after completion of this study.¹⁸ Due in large part to these efforts, staff of many of the province's departments, agencies, committees, and institutes dealing with climate change, the environment, and disaster management, have become concerned about planned expansion of the city's boundaries into Tuy Phuoc District, which faces many of the same issues studied in Nhon Binh and Nhon Phu. They are particularly concerned that the lessons from Typhoon Mirinae, and now tropical depression 32W, are taken to heart. For example, a senior staff member of the provincial Hydrometeorology Centre noted that the CCCO's report on Typhoon Mirinae was 'like a warning':

We need to designate buffer zones and flood channels. Even non-professionals can understand that. If the plan is to expand into areas that are already prone to flooding, then we need to pay attention to the environment and the people who depend on it. In Tuy Phuoc, the Department of Construction needs to pay attention to roads because if the roads are raised, people will think they are safe and build on them, and their homes will create even higher barriers to floodwater."

(Interview, 30 October 2013)

A member of the Flood Control and Dike Management Committee made similar comments:

We have to adapt to nature, not overcome it. This is a fact that most people know, but ignore. For that reason, I have to say that most climate change problems are caused by people, not by industrialised countries or even China. Just look at the impact of roads in the 2009 flood.

(Interview, 31 October 2013)

The attention given to roads and floodplains is evidence of the impact of the CCCO's shared learning dialogues. As the director of the CCCO noted, all current vice chairs of the Provincial People's Committee have served on its steering committee, and through project collaborations, many of the province's department directors and vice directors have become more aware of climate change. This does not mean, however, that all department heads have read the CCCO's reports and agree with them. Both DOC senior staff members interviewed for this case study attested that they were unaware of the CCCO's vulnerability assessments and climate change resilience strategies.

While many department heads are not aware of or have not read the CCCO's reports, some of the observations and conclusions reached in those reports have filtered through the provincial administration. In a sense, these observations and conclusions cannot be avoided. Despite professional differences, all members of the provincial administration must respond to limitations inherent to the climate and geography of the region, and, following instructions from the provincial People's Committee, they must also pay attention to the impacts of climate change. With respect to climate change resilience and adaptation, environmentalists have focused on roads and floodways. Urban planners, however, have focused more on the role and value of a clusters and chain model for urban development. This approach was first presented in the CCCO's report on Typhoon Mirinae, but the Department of Construction has taken ownership of the concept. During interviews for this case study, senior DOC staff as well as the consultants engaged to develop the revised master plan spoke about *chum đô thị* (urban clusters) and *chuỗi đô thị* (chained urban development) as a means of adapting to climate change in this flood-prone region. Both have been incorporated in the revised master plan to 2035. A member of the Flood Control and Dike Management Committee described this process of urban development as follows: 'First, we need to dredge the canals. Then we need to construct low dikes around settlement areas. Each of the areas should have pumps. Remaining areas can be used for agriculture and flood management' (Interview, 31 October 2013).

¹⁸ The length and focus of this article limit space to describe the shared learning dialogue process here. Readers interested in the process can refer to Reed and Friend, 2013.

A former Provincial Party Secretary noted that, in this scenario, urbanisation would take place in a form similar to St. Petersburg, ‘a city of bridges. We have to accept that because this is required for development. People need safe places to live. They need public services, roads, electricity, etc. as well. The environment poses some limitations. We just have to accept that’ (Interview, 1 November 2013).

The image below represents buildable areas in the approved area plan for Nhon Binh and Nhon Phu wards and a proposed alternative. The approved area plan (left) attempts to maximise buildable areas through a combination of dikes, land filling, dredged canals and rivers, and high-capacity pumps. A CCCO report (DiGregorio, 2013) pointed out that this plan would shift flood risks onto people living in established settlements outside planned areas, while narrowing the floodplain would increase dependence on high-capacity pumps. That report proposed a cluster approach (right) based on a restoration of drainage systems and limited urban development based on infilling and expansion of current settlements. While the cluster approach would also require pumps, these would be smaller and more dispersed.

Map 5. Buildable areas in the approved (left) and proposed (right) area plans for Nhon Binh and Nhon Phu wards, 2012



Source: DiGregorio

The provincial leadership, the Department of Construction and the consultants hired to develop the revised master plan to 2035 are struggling to advance a set of urban development goals within a context of geographic and climatic constraints. They understand that the main development axes run north–south along National Highway 1A, and east–west along National Highway 19, but that knowledge leads them into a string of district towns well outside the planned urban area. At the same time, the city’s development strategy compels them to integrate planned tourism centres in Cat Hai and Cat Tien in neighbouring Phu Cat District as well as bring urban, port and industrial development in Nhon Hoi within the city’s administrative system. The former can be achieved by annexation and the latter by upgrading current communes into city wards. Neither of these options substantially increases the city’s population or developable land base, and neither moves it closer to becoming a centrally managed city. While accommodating environmentalists within the provincial

administration, annexing Canh Hien and Canh Van in Van Canh District does not substantially add to the city's population or developable land base, either. Only by bringing in the full set of communes proposed in option four does the city have the land and population needed for the next stage in its bid to become a centrally managed city. Unfortunately, two historic floods in the space of four years have brought home the point that geography and climate change will limit the use of much of this land for urban development. This inconvenient truth is at the centre of the conflict within the province that pits those who see the low-lying areas of Tuy Phuoc District, which border Thi Nai lagoon, as integral to the city's development and those who consider this area as highly vulnerable to both flooding and inappropriate urban development.

8.3.5 Plans and planning

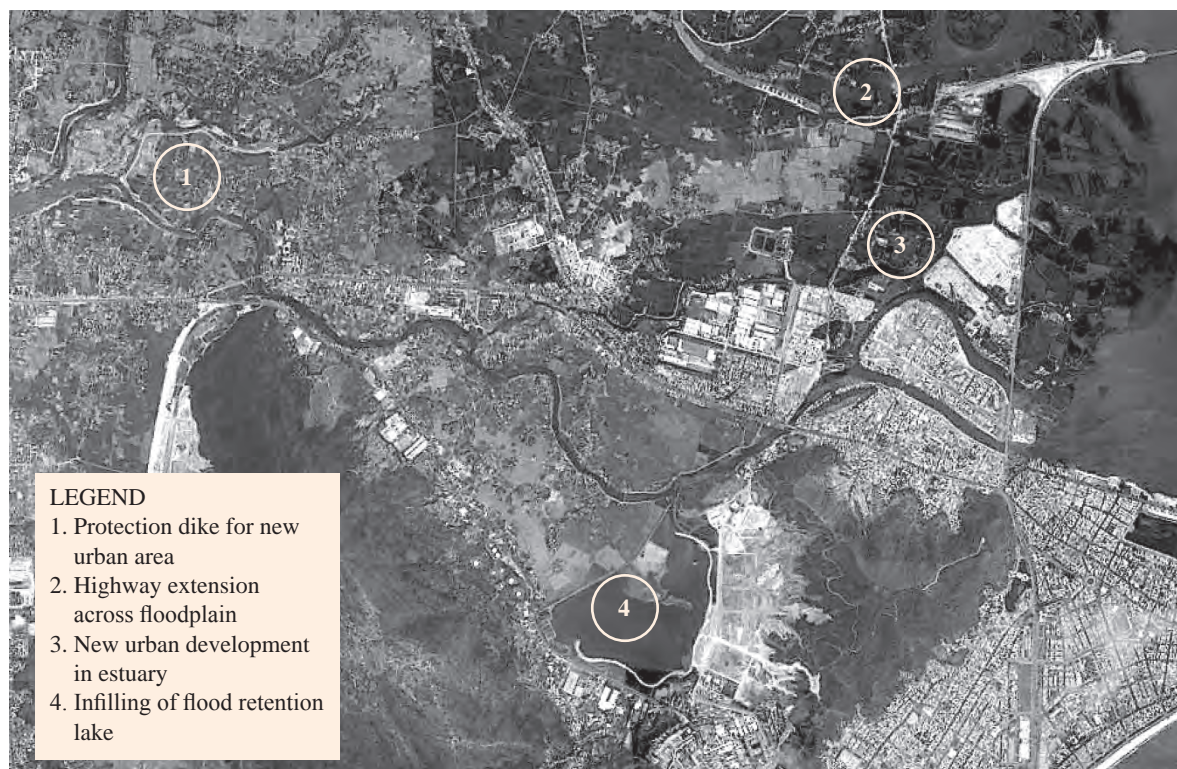
The consulting firm chosen to develop Quy Nhon's revised master plan to 2035 attempted to find a balance between the urban development targets and goals noted by the Department of Construction and the concerns expressed by environmentalists, disaster management specialists and citizens. As the planning process got under way, nearly every person interviewed for this case study expressed some level of concern over the capacity of the Department of Construction to learn from past floods, adjust growth targets, and plan urbanisation in ways that do not increase climate risk. Much of their criticism focused on lack of collaboration. A senior Department of Construction officer noted he was 'constantly talking to staff in DONRE, DARD, Transport, Trade and Industry, Tourism and Culture, and Ports' (Interview, 31 October 2013). His point was that planning, by nature, is a collaborative, expert driven-process. Others interviewed for this study, however, perceived the DOC's ability to work collaboratively in a different light. At a fundamental level, many within the provincial administration felt that they were not included as active partners in that they were only asked for their opinions after plans were prepared. As a senior officer in the provincial Department of Natural Resources and the Environment remarked,

they develop their plans first, then *xin ý kiến* (ask people's opinions). That is not collaboration. Collaboration is like a *tổ công tác* (working group) in which people discuss their perspectives on an issue, then develop a proposal, and finally divide tasks. The DOC tends to collect data and work alone, and then hold a meeting in the People's Committee to discuss the results. This is the main reason for low-quality output.

(Interview, 1 November 2013)

This problem extends into decisions over individual projects. Environmentalists and disaster specialists interviewed for this research have expressed both concern and surprise at projects that have appeared in locations they regard as high risk without consultation or assessment. This includes a new urban development in Van Ha village, site of the worst flooding in 2009, a new urban area under construction in the coastal marshes where the Ha Thanh River enters Thi Nai lagoon, extension of national Highway 19 across the Ha Thanh River floodplain, and new construction and infilling around Phu Hoa Lake, the city's natural flood retention basin. In many cases, they have learned about these projects only through reading about their approval in the local newspaper, or stumbling into them as they travel around the city.

Figure 6. New construction in the Ha Thanh River floodplain



Source: Google Earth

Surprises such as these make environmentalists within the provincial administration sceptical with regard to the DOC's discipline in managing urban development in the low-lying areas of Tuy Phuoc. In fact, lack of discipline in managing urban development was the second most frequent complaint offered by environmentalists within the province administration. As noted above, the DOC recognises the need to plan for development of urban clusters in the floodplains rather than large, contiguous urban areas. A pattern of development based on urban clusters would create an extended city composed of urban and rural areas rather than a compact city composed of a concentrated urban area surrounded by agricultural suburbs. This pattern suits the environment and, in fact, is consistent with current settlement patterns. While the appropriateness of the model is widely recognised, many of the people interviewed noted that such a strategy would be hard to enforce. The DPI staff member quoted above noted that 'plans are treated like guides, not laws, so it is quite likely that if investors request an exception [to build outside one of these designated urban clusters], they will get it' (Interview, 1 November 2013). A consultant working in Quy Nhon also emphasised the difficulty enforcing plans. 'The only way to develop this area is with "urban clusters." Unfortunately, this approach is hard to enforce because planners are not the decision makers ... variances are given for special situations on the advice of leaders' (Interview, 5 November 2013).

The pressure to develop land will increase if or when the city is upgraded to central management status. This status will signal large and small real estate developers that the central government has designated Quy Nhon as a regional centre comparable to Da Nang, Hai Phong and Can Tho, three cities in which huge profits have been made through development of ports, industrial zones, resorts and residential areas. The establishment of boundaries around this new city will also have the effect of producing an artificial land scarcity that further pressures development of vulnerable land, as has occurred in Da Nang (Tran and Tran, 2015).

An expansion of administrative duties that would result from reclassification as a centrally managed city is the third concern expressed by people interviewed for this case study. The human resources of the province are already limited. In some cases, competent people who are placed in leadership positions within provincial and city departments must rely on inexperienced junior-level staff to carry out project work. In other cases, qualified administrators who have been placed in leadership roles have no professional expertise in the field they administer. Many noted that this situation will get worse as the city expands, requirements on the current management system increase, and new staff are hired. As the director of a provincial land-management agency noted, ‘when a city grows organically, management capacity grows with it. When it leapfrogs from one administrative level to the next, the new requirements are generally beyond existing capacity’ (Interview, 30 October 2013). This lack of administrative capacity will have a profound effect on the administration of the master plan, creating opportunities for variances early on that will have perverse effects on flooding and options for climate change adaptation.

9 Summary and conclusions

We began this comparative study with an observation that risks associated with climate change are dynamically tied to the process of urbanisation in Vietnam. At one level, this is entirely to be expected. As cities grow both in size and wealth, the costs of the impacts of natural disasters increases. Climate change adds to those impacts, and therefore the costs. This relationship is clearly identified in the IPCC report on extreme events (Tran and Neefjes, 2015). We have, however, attempted to dig below these observations through a political economy analysis that asks how political and economic processes interact to support or impede collective action on climate change within the context of urban planning. We have noted in this report how the national urban development strategy, socio-economic development planning, and spatial planning have combined with opaque procedures and weak systems of accountability to create perverse incentives for urban growth. These perverse incentives¹⁹ shape how wealth is created, by whom, and for what purpose, but also, because they undermine autonomy of the state to act for the public welfare, hamper action on climate change. Below, we summarise some of the main challenges that have emerged from this collaborative study, and point to policy directions that would help to address them.

The land law, especially the 2007 revisions, gave national and local authorities a great deal of discretion in determining whether and how land can be reallocated. In the 1993 land law, for example, any conversion of agricultural land greater than 2 ha required the Prime Minister's approval. The 2003 revision removed this constraint while limiting conversion to the national interest – principally national security and infrastructure development. The 2007 revisions expanded the state's rights to expropriation and reallocation to include economic development projects and construction of residential areas in urban and rural zones (Labbe and Musil, 2014). This right now supersedes formal processes for project approval and the revision of master plans – and allows real estate developers in both state and private sectors to conspire with local authorities for private benefit in the name of national interest. In Hue city, it was discovered after his retirement that the Chairman of the Provincial People's Committee, who approved a major urban development project that has caused serious flooding in adjacent residential areas, was also an investor. In the Da Nang case, we have noted how a former provincial People's Committee Chairman gave his approval for construction in the low-lying areas of Cam Le district before a plan was submitted. In the Vingroup case, the golf course was approved by a senior government official in advance of a feasibility study or plan. Such cases have become so common that they undermine the legitimacy of the state and limit the efficacy of even the most comprehensive urban planning processes.

The discretion that the 2007 land law allows state authorities needs to be removed or restricted to the former assumptions of national interest. We do not expect such a move to end collusion and corruption, given the profitability of urban land conversions. It will, however, delegitimise discretionary approval, and while it may drive collusion underground, it will also criminalise it.

We have referred to master plans as 'aspirational' and 'rigid' and the process of master planning as 'opaque' and 'expert driven'. We have noted how criteria for urban upgrading within the national urban development strategy have been integrated into both socio-economic development planning and urban spatial plans. We have also seen how this process has led to inefficient state investments, collusion with real estate developers, and increased climate risk. Having noted

¹⁹ A perverse incentive is an incentive that has an unintended and undesirable result that is contrary to the interests of the incentive makers.

these weaknesses, however, we do not argue that there is no place for master planning. Rather, we believe that master planning needs to be more strategic and should:

- Proscribe specific kinds of urban development only in those cases that clearly threaten public safety;
- reflect real collaboration with other agencies;
- consider feasibility, financing, and sequencing; and
- perhaps most importantly, be conducted in an open and accountable process that considers the diverse needs of current and future residents.

We have seen how better research and evidence can improve planning outcomes in Can Tho, Quy Nhon and Da Nang. In Da Nang in particular, we have seen how hydrologic studies can improve planning. We suggest that relevant hydrologic studies be prepared for every update of a master plan, and furthermore, that there should be a national flood mapping programme to identify and prevent further encroachment on floodplains and retention areas. We recognise that this is both a political and technical task given that urbanisation has already affected flooding patterns, that acceptable risks are often determined arbitrarily, and the fortunes of individuals, corporations and the state are tied up in land development. Nevertheless, if flood mapping became a regular process, with public access to the outcomes, then flooding could be considered in investment decisions, and in particular, financial institutions could apply better risk assessment and due diligence.

We have noted that the technical standards used in urban planning are rigid and lead to a lack of innovation in the face of a changing climate. For example, two of the authors of this report, Stephen Tyler and Michael DiGregorio, participated in the development of the MOC's guidelines for integration of climate change into urban planning (VIUP, 2014). They were unable to persuade MOC staff to address flood risk other than by the prescriptive standards used by the Ministry of Agriculture and Rural Development. Under this approach, the heights of dikes, and the heights of new urban areas relative to them, is set on the basis of the maximum recent flood plus 20–80 centimetres depending on the level of flood protection desired. This standard guarantees that as each new project is built, previous projects become more vulnerable to flooding and residents of existing settlements in the flood plain suffer the most. In Da Nang in particular, residents of existing settlements have experienced unprecedented flooding up to 4 metres in depth – roughly equivalent to the fill height of nearby new urban area. In Quy Nhon, successive developments in the floodplain in Nhon Binh ward have been elevated slightly higher than the previous, making the earlier areas more susceptible than the latter (DiGregorio and Van, 2012).

Technical standards can be loosened in specific areas of cities and towns that are vulnerable to climate change as a means of encouraging innovation in climate change adaptation and mitigation. This may include:

- limited development of floodways, for example, permitting uses that do not impact flood discharge capacity, like football fields, hiking trails, farms and fishponds;
- innovative restoration projects, like the use of wetlands for wastewater treatment;
- reorganisation of dense slum neighbourhoods through, for example, land readjustment that create buffers between housing areas and potential flood hazards; and
- development of coastal or sloping lands that reduce climate impacts through innovative approaches to drainage, runoff and erosion control.

Increasingly, performance-based approval guidelines rather than prescriptive standards will be needed, along with improved monitoring and public reporting, to ensure that developers can respond to these challenges using verifiable and creative approaches, while being held accountable for outcomes.

Finally, we return to the issue of incentives. We have noted that perverse incentives within the urban planning system have resulted in ineffective state investments. In Quy Nhon, for example, we have seen the growth biases embedded in Binh Dinh province's socio-economic development plan and its master plan for the city lead to expensive and ineffective investments in, for example, the Nhon Hoi export processing zone (in the absence of anchor investors), a national science complex (in the absence of a research university), and preliminary approval of a proposal to construct Vietnam's largest oil refinery (in the absence of either a deep water tanker port or oil field). In Cai Rang District, Can Tho City, we have

noted the clearance of land well ahead of need, a patchwork of occupied, vacant and unfinished urban and industrial zones, and plans to continue expansion. Such cases are present everywhere in Vietnam. Planning failures such as these are often blamed on the transition between prescriptive state planning and demand-driven market-based planning (Wilson, 2013). We prefer the conclusions drawn by Labbe and Musil (2014) that the shift in urban governance does not reflect an attempt to align with market liberalisation. Rather, the urban planning system is

the outcome of an endogenous and open-ended experiment, conducted in more or less coordinated ways, by actors who operate within the contingencies of local history and politics. We interpret this evolution as a response, not only to the new economic circumstances brought about by the *đổi mới* reforms, but also to pressures from local political and economic actors seeking to further their interests and to secure their position in the emerging order created by these same reforms.

(Labbe and Musil, 2014, p. 1158)

In this context it is easy to understand how incentives embedded in the national urban development strategy, socio-economic development planning and urban master planning can combine with Vietnam's lax controls on land reallocation, to create both national and localised public–private growth coalitions around private economic interests. The result, as documented in our case studies, is higher costs to the public, in the form of inefficient and incomplete infrastructure investment; higher flood damages; and undermining of long-term socio-economic development. Many of the prescriptions for improving the system – better coordination among ministries, more focus on strategy, market demand and staging of urban development, increased public participation in the planning process, less rigid technical specification to encourage climate change adaptation and mitigation, among others – are of little consequence when inside deals for personal benefit can undermine even the best plans.

Getting the incentives right, while not a precondition of reform, are thus the keys to improving implementation. This is because the origins of failure rest in an opaque and unaccountable planning system inherited from socialist technocratic practice that has given way to deal making between state actors and private real estate interests in order to advance both the state's target-driven urban development agenda and the speculative financial interests of the key players. We can anticipate, with this alignment of interests between powerful political and economic interests, that this situation will be resistant to proposed reforms.

Ultimately, however, the situation is politically and economically unaffordable. With an emerging urban middle class, and rising expectations for public security and safety in state-sanctioned urban development areas, the political costs of failed urbanisation will grow. And given the immense financial burden the country is facing for essential urban infrastructure in the next decades, private and multi-lateral lenders, and the Ministry of Finance, will become increasingly intolerant of wasteful infrastructure investment.

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