Published December 2017

INSTITUTE FOR SOCIAL AND ENVIRONMENTAL TRANSITION-INTERNATIONAL

POLICY BRIEF

Quy Nhon, Vietnam

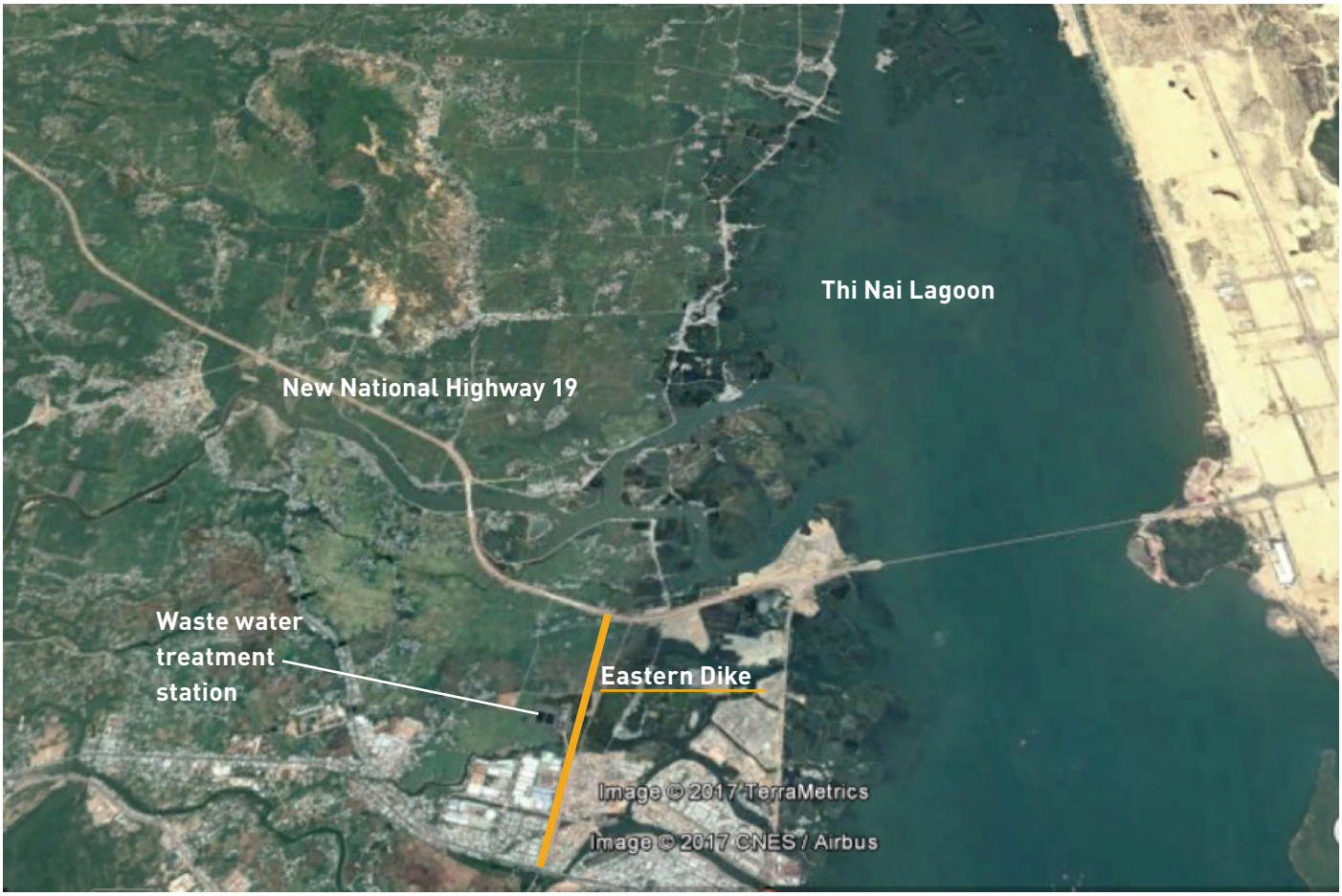
REDUCING FLOOD RISK IN QUY NHON CITY

Author | Stephen Tyler, ISET–International


Photo: Thanh Ngo, 2015. ISET-Vietnam

KEY FINDINGS

- Urban planning and development practices in Quy Nhon do not pay sufficient attention to flood risk and drainage requirements. The result is that new construction on the periphery of the city frequently increases the damage from flooding in nearby urban areas. This increases costs for local government, businesses and residents, and reduces the resilience and sustainability of urban development, making the city **less attractive** for investors.
- The provincial government wants to promote Quy Nhon's city rank in order to receive more funding, staff and authority from the central government. But the effort to promote city rank can lead to overly ambitious and unrealistic expansion plans, and wasteful public spending on unnecessary infrastructure.
- Urban infrastructure, such as roads or fill for new construction, is built to designated technical standards with very little consideration of its impact on drainage in surrounding areas or on future construction.
- Despite regulations to the contrary, natural drainage networks, flood channels and flood retention areas are often filled by official development authorized by construction plans. This increases the risk of flooding in other parts of the city during extreme events.
- Small scale detailed construction plans are often prepared quickly to meet the needs of investors, without adhering to the conditions in urban master plans. Local construction plans that do not follow the master plan reduce the value of the planning process and cause inconsistent development and greater expense for local government.
- These problems are mostly caused by weak procedures for planning and coordination of urban development, and cannot be solved only by improving technical standards
- In the future, urban flood risk will likely become worse because of more frequent extreme precipitation events and rising sea levels caused by climate change.



Introduction

In October 2009, Typhoon Mirinae struck central Viet Nam, and led to very high rainfall in the upstream areas of the Ha Thanh River near the city of Quy Nhon. In the two wards of Nhon Binh and Nhon Phu on the edge of Quy Nhon city, this upstream rainfall triggered disastrous flooding with little or no warning to residents. Throughout Binh Dinh province, 22 people lost their lives, and in Nhon Binh and Nhon Phu property damage and loss of livestock was severe. Since that flood event, the provincial and district government have undertaken a number of urban development initiatives in collaboration with various international organizations, including ISET. These initiatives have included a detailed study of the 2009 flood event (DiGregorio & Van. 2012)

Other actions include an update of the city's Master Plan, undertaken by the French urban planning firm AREP; an urban drainage Plan taking into account climate change produced in collaboration with GIZ incorporating the recent World Bank drainage investment project; the nationally funded Eastern Dike project to upgrade and restore the main dike system along the river and Thi Nai lagoon; and two projects funded by Rockefeller Foundation and implemented in collaboration with ISET: one dealing with mangrove restoration along the shores of the Thi Nai lagoon, and the other with community awareness raising and flood early warning systems in Nhon Phu and Nhon Binh. The Department of Transportation also built a major new highway across the floodplain to connect the industrial zone of Nhon Hai with the central highland provinces of Kon Tum and Gia Lai. In addition, ISET organized training and capacity building in spatial analysis for several technical departments of local government. In addition to these special studies and projects, the Department of Construction has approved a number of detailed local

Eastern Dike. Photo: Thanh Ngo, 2015. ISET-Vietnam

plans for the area featuring particular development and investment projects. All of this activity was oriented to addressing flood risk and urban development planning in the floodplain of the Ha Thanh and Kon rivers.

This policy brief draws on these experiences, as well as on parallel studies undertaken in peri-urban areas of Can Tho, Da Nang and Hue cities, to summarize key findings about urban planning and flood risk management for Quy Nhon (Tyler et. al. 2016). Our recommendations are intended to support improved urban development practice in Quy Nhon and in Binh Dinh province so that the city may achieve its goals of green, resilient and high quality urban development in order to continue to attract investors and ensure the future security and quality of life of residents.

Brief Description of the Problems

Quy Nhon City, especially its low-lying urban wards (such as Nhon Binh and Nhon Phu) face increased risk of flooding due to construction in areas which should be protected from development as floodways or flood retention areas. New construction in these low-lying areas typically lacks sufficient drainage, and introduces linear infrastructure such as roadways that block overland surface flows, increasing flood water depth and worsening flooding (DiGregorio and Van, 2012). Recent construction projects such as SOS Village, Quang Trung University, Nhon Binh Industrial Zone, and wastewater processing plant are located in floodways or in locations that were not approved in the 2004 master plan.

This situation is the result of several factors. Most important is that there is very little coordination in planning and implementation of urban development. Different agencies have different responsibilities, but the impacts of their decisions and plans affect each other. Yet there is no mechanism for coordination of planning across different technical agencies. Each agency prepares its own separate plans. Each technical agency has its own data and maps, but these are inconsistent with each other and often out of date. The district and provincial government agencies have very limited capacity for spatial analysis such as GIS. There is no common spatial data set that all agencies can update and use in planning. And there are no mechanisms to review contradictions in spatial plans between different technical agencies, and to coordinate investments across multiple sectors.

Elevation of National Highway 19. Photo: Tuan Nguyen. 2015. CCCO Binh Dinh

Another problem is that different technical agencies and plans have different, and often inconsistent policy objectives. For example, while DARD and DoNRE support plans to restore mangroves in Thi Nai Lagoon to protect the lagoon shore, the aquatic environment and livelihoods, DoC approves plans to fill some parts of the lagoon to build new urban zones. These strategies are contradictory: it is difficult to destroy lagoon ecosystems and restore them at the same time. Another example is the development of a drainage plan that proposes to use Phu Hoa Lake as a flood retention lake, capable of receiving runoff and drainage from the surrounding area. But this is inconsistent with a recently approved lakefront residential development, because the lake level would have to fluctuate significantly to provide meaningful flood retention.

The purpose of urban development master plans is to guide urban development so that it is integrated and sustainable. This means that detailed construction plans should be consistent with master plans, so that they harmonize with existing and future infrastructure and services. But when local construction plans are modified to accommodate investment proposals, instead of the investment proposals conforming to plan requirements, the resulting development may be inconsistent and inappropriate in comparison to the planned functions and infrastructure systems designed. An investment proposal for a new development in the middle of a floodway, or in an area designated for flood retention, will render the investment in drainage and flood control system ineffective, and create further potential damage in other places. This kind of inconsistent and fragmentary development reduces the value of property, reduces environmental quality, and ultimately discourages long term and sustainable investment.

Addressing the problems

The challenges of urban flood risk that we have identified in Quy Nhon and other case studies cannot be solved merely by changing technical standards. Nor can they be solved only by better plans. There are already many regulations and planning standards that require consideration of climate change and flood risk. While it may be necessary to strengthen some of these regulations and modify others, regulations by themselves will not

solve the problems either. Instead, new processes of coordination and enforcement are needed at the provincial level, combined with improved mechanisms for local government finance and greater awareness of changing flood risks by local scientific, technical and professional experts, communities and private developers. This policy brief presents some general suggestions for further more detailed consideration by local policy makers in Quy Nhon and Binh Dinh province. All these recommendations have been discussed with officials in provincial technical departments and presented in workshops over the past several years.

In order to reduce the risk of flooding that accompanies urban development in Quy Nhon, we recommend several reforms to provincial planning policies and practices.

1. Recent planning measures have already increased the protection for floodways and natural drainage areas in the floodplain of the Ha Thanh and Kon rivers, by diverting planned development to upstream areas. However, these improvements are weakened by the continuing barriers posed by key areas in the floodplain where drainage is already blocked or obstructed by recent development and infrastructure construction. Special drainage improvement measures should be implemented around these areas, and efforts should be made to restore drainage, lakes, and water flows with high quality engineered urban ecosystems. These improved plans for drainage, protection of floodways and flood retention areas in the floodplain must not be threatened with non-conforming local construction plans that allow development.
2. Policies to ensure consistency of urban development plans, from overall master plans to local area plans and detailed construction plans, should be reinforced by DoC. The role of planning at different levels, and the factors to be considered in developing plans, should

WHAT DO WE MEAN BY "*COORDINATION*"?

In Vietnam, government agencies operate on a command-and-control basis within their own jurisdiction. There are few mechanisms for coordination at the level of policy and implementation. As a result, the idea of coordination is not well understood because there is no experience with it. Government organizations misinterpret coordination to mean "control". For example, in the proposed new Planning Law, coordination would be achieved by giving control to DPI. This becomes problematic very quickly as one department has limited expertise and authority over another, and this misunderstanding contributes to the failure of coordination roles. But coordination in urban planning does not mean control. Coordination includes the following functions:

- Technical support and capacity building to key stakeholders to ensure shared understanding of planning concepts, standards, tools and impacts of urban development;
- Convening stakeholders for planning consultations;
- Support for sharing technical and spatial data and related analytical tools;
- Comparing assumptions, procedures, and priorities between different sectors to ensure consistency;
- Facilitating planning and follow-up processes to be led by other technical departments (e.g. by providing tools, trainings, hosting meetings, process guidance);
- Ensuring good communications between parallel planning efforts in different departments or working groups;
- Monitoring progress of planning and implementation;
- Reporting to senior city leaders and heads of departments on issues related to coordination and urban development outcomes.

be clarified and made explicit. If construction plans differ from master plans, this should require review and revision to the master plan before approval.

3. Coordination of urban planning and development should be strengthened, through establishment of an Urban Development Management Board (Ban Quản lý Phát triển Đô thị), reporting directly to a Vice-Chairman of the People's Committee, to consult with city leaders, technical agencies, investors, local residents and ensure that approved plans are appropriately implemented. This management board should include senior representatives of DoC, DPI, DoT, DARD, DoNRE and could have the following functions:

    a. Assemble, verify and share spatial data for use by all technical agencies, including base maps, land use, urban master plans and construction plans, transportation and other infrastructure plans in digital formats.

    b. Coordinate the review and approval of all spatial plans in all technical departments, including urban development, construction, infrastructure, transportation, drainage, irrigation, dikes, agriculture, forestry and land use plans, to ensure that they are mutually consistent and that all conflicts and contradictions are resolved.

    c. Develop shared spatial planning and analysis tools for decision support in all technical departments, using common data sets, assumptions and modeling capabilities. These tools should be used to assess development plans and compare options, and to work with investors and developers to ensure their proposals are consistent with master plans and infrastructure plans.

    d. Ensure that small scale local construction plans or development and investment plans are consistent with overall master plans, and that where revisions to master plans may be needed, that these are carefully reviewed and assessed by all relevant technical agencies and stakeholders, with concerns and contradictions resolved prior to approval, especially for their impacts on infrastructure and flood risk.

    e. Promote capacity building for technical staff in multiple departments in GIS, data management, spatial analysis, and coordination skills.

    f. Ensure that plans and decisions of the Board are published and that public information is provided describing the rationale for decisions, to strengthen accountability of decision makers.

4. Develop local policies, legal procedures and physical boundary markers on site to identify and protect river channels, floodways, surface water drainage systems, and flood retention areas, so that these cannot be filled and developed in future.

5. Develop local policies and land use plans to support recovery and restoration of flood protection ecosystems in the city and surrounding areas, and ensure these are implemented in coordinated fashion by the multiple agencies involved.

6. Monitor climate hazards and experience from extreme events in the city and in other similar locations in Viet Nam, and update plans for flood protection, accommodation and urban development as more experience and climate data becomes available.

These proposed local policy measures will be difficult to implement without support from national policy and policy guidelines from national organizations. In addition, technical departments and professional staff will need to adjust their current practices and embrace new ways of thinking about these problems. This will require the development of new skills, new knowledge, and new relationships. Private developers and investors also need to understand these changing requirements and adjust their expectations in order to play a positive role, rather than an obstructionist or negative role, in implementing new practices. Finally, community awareness raising and education will support greater engagement of vulnerable populations to contribute to assessment of climate risks, and to hold practitioners accountable for the quality and

outcomes of their planning decisions. We explore the contributions to be made by each of these stakeholder groups to reducing flood risk from urban development in Quy Nhon.

National Policy Issues

The proposed local policy changes are consistent with many national policies, especially on integrating climate change into development decision making. However, there are also national policy measures related to urban development that require clarification or revision to support the needed reforms to enable better planning and coordination at the local level. In terms of climate change, the National Strategy on Climate Change (NCCS; Decision No. 2139) issued in 2011 required all provinces to prepare Climate Action Plans. Under the provisions of the Prime Minister's Decision 2623/QD-TTg (31/12/2013) undertaking urban climate change risk assessment and integrating climate change risks into urban planning and urban development program is considered as one of the main focus areas of urban planning. The proposed local policy measures described above would support implementation of these national policies.

However, national policy for the ranking of cities is problematic. City rank is an important determinant of city government status. By applying to receive a higher rank designation, cities can gain budget, staff, and authority. The policy criteria for promoting cities to a higher rank currently focus on quantitative measures of population and infrastructure, which provides an incentive for cities to hastily expand boundaries and over-build infrastructure that is not yet needed. This process can lead to higher costs, uncoordinated development, and greater flood risks. National criteria for promoting cities to a higher rank should be modified to include not only quantitative measures of population and infrastructure, but also qualitative measures of the implementation of good practices. Cities should be able to demonstrate that they are already implementing the policies described above, for coordination of planning, protection of urban lands from development in high-risk areas, and that they are implementing their disaster risk reduction and climate action plans.

In relation to urban development and planning policies, more attention should be paid to the role and scope of urban master plans. Long-term urban master plans are sometimes very detailed in their specification of type and scale of development. It is important to balance detailed guidance on land use type, zoning, scale of development and infrastructure requirements, with enough flexibility to allow for the evolution of investment priorities and property markets. If master plans are too rigid or specific, some of their provisions will simply be ignored. To make it easier to accommodate changing conditions for economic development, investment and demographic growth over the life of master plans, they should be oriented to general development guidance. The regular urban master plan review process should include input from different technical departments and public consultation. Master plans should provide clear direction on long-term issues, such as land use patterns, major infrastructure development, industrial zone location and scope, flooding and climate risks, and protection zones, as well as clarity on staging of development in the short term. Public engagement should be part of the master planning process to explain the nature, scope and timeline of proposed development and any short term implications for displacement / compensation in response to approved construction activities.

Urban construction regulations already require that detailed construction plans should be hierarchically consistent with higher level area plans or master plans. When smaller scale plans diverge from the constraints of the master plan, it is easy for conflicts and contradictions to emerge with drainage and flood control plans. To avoid these problems, detailed construction plans should always be reviewed by planning experts and certified by legal authorities as consistent with master plans, or requiring review and revision of master plans. These plans should include specific provisions for gradually staging infrastructure construction, especially drainage, in new urban zones as demand for new residential, commercial or industrial facilities grows. The plans and sequential staging of gradual urban development should be widely shared with the public, so there are no surprises for residents or developers. Construction approvals should

specifically refer to the conditions imposed by detailed construction plans, and if these are not followed, the builder should be legally liable for the cost of corrective measures or damages. All stakeholders should be clear in their expectations that plans will be enforced and followed. In particular, flood protection and drainage plans that include provisions to reduce runoff and minimize impermeable surfaces should be a compulsory component of all plans at all levels, and their provisions should become top priorities for investment, and inspection. Construction that fails to meet planning requirements should be subject to legal enforcement and penalties at the initiative of local government, or following investigation of formal complaints launched by neighbouring land users.

Urban development practice should be reinforced by guidelines and training with the clear support of national policy officials. Each lower, more detailed level of planning should be **consistent with the plan above.** Higher level plans that need to be revised should first be reviewed by experts from multiple departments and by the affected communities, to provide new information to justify changes. Construction plans and infrastructure design should accommodate the surrounding systems, and integrate with neighbouring sites to minimize impact instead of simply following technical standards.

Technical departments and professional organizations

With an increase in the need for integration of climate risks in planning for all departments, technical agencies should familiarize themselves with how climate risks are changing, and how that affects their operations. **Planning for climate change is the responsibility of all technical departments,** as it will affect planning and operational decisions and risk management for each of them. Most technical units do not understand how climate risks are changing, and that planning decisions based on historical climate are no longer effective.

Improved coordination and collaboration between technical agencies requires new skills. Instead of focusing on following technical standards and controlling decision-making, technical departments will need to improve their ability to share information, to assess options, negotiate solutions to complex problems under uncertain conditions, and to make trade-offs to design creative solutions. Skills in communication, facilitation, negotiation and information sharing will need to be strengthened. Professional organizations can support training and capacity building to enable the application of these new skills.

Planning Educators and Trainers

Professional education for urban planners currently emphasizes technical standards and master plan design. But in order to support proposed changes to planning regulations, professional education at universities and among professional associations should develop content that addresses functional performance of urban systems (e.g. flood protection, flood accommodation, slope stability, riverbank protection) instead of narrow technical requirements. Resilient performance of urban systems may be achieved in a variety of different ways, and meeting minimum technical requirements (such as for ground elevation) does not always address the problem effectively.

Private sector developers

Private investors and property developers should have increased awareness of changing flood risk, and should avoid sites that are likely to become increasingly hazardous. They should improve their knowledge of green infrastructure and low-cost measures to reduce surface runoff through improved design and protection of natural features in urban sites. Reducing flood risks can improve the quality of urban environments and the value of property investments by making it safer and more attractive for residents. Developers should educate themselves about such design features and protect from climate hazards in order to satisfy regulatory and planning requirements, but also to reduce risk and improve value for customers. Developers also should be aware that the proposed policy changes would mean tighter controls and enforcement of planning guidelines, and they should develop appropriate expectations.

Communities and local organizations

Decision makers at all levels of government, as well as local business enterprises and community organizations, need to be aware of changing climate risks. Planning, information-sharing, risk assessment and disaster risk reduction all need to incorporate strong community engagement in order to be effective. This not only requires communication and interaction from local governments and technical agencies, but it also requires vulnerable communities and related local organizations to become better informed and better organized to respond. Increased community awareness, and increased capacity to organize effectively and to communicate the impacts of changing risks, will be important to strengthen city planning. Community members and organizations should press for opportunities to review plans and to question the impacts of urban development. They should be able to question developers and planners about their assumptions and risk assessments. They should be satisfied that information is readily available to respond to their concerns.

REFERENCES

DiGregorio, M., & Van, H. C. (2012). *Living with floods: A grassroots analysis of the causes and impacts of Typhoon Miranae.* Hanoi, Vietnam: Institute for Social and Environmental Transition-International. http://i-s-e-t.org/resources/major-program-reports/floods.html.

Tyler, S., Tran, V.G.P., Nguyen, T.K.H., Huynh, V.T., Tran, V.D., Nghiem, P.T., Nguyen, N.H., Nguyen, T.A.N., Tran, T.N.H., Le, T.T., Tran, K.D., Nguyen, T.T., Dang, H.L. (2016). *Urban Development and Flood Risk in Vietnam: Experience in Three Cities.* Report prepared for the Rockefeller Foundation. Hanoi, Vietnam: Institute for Social and Environmental Transition-International. http://i-s-e-t.org/resources/working-papers/urban-development-and-flood-risk-in-vietnam-experience-in-three-cities.html

For more information about this paper, please contact:

ISET-International

Stephen Tyler at stephen@i-s-e-t.org

Phong Tran at phongtran@i-s-e-t.org

Funded by the Rockefeller Foundation

The ROCKEFELLER FOUNDATION