NINH BINH
VIETNAM

Figure 1 *Trang An,*
Source: http://meracushotels.com/wp-content/

CITY DESCRIPTION

Ninh Binh is a city located to the south of Vietnam's northern delta, between the Red and Ma rivers. About 100 kilometers from Hanoi, the city is easily accessible by road and rail transport, and is an important transport point from Northern, Central and Southern Vietnam. Home to the Trang An scenic landscape complex that is recognized as a World Heritage site, Ninh Binh is an international tourism destination in Vietnam. Investments in tourism and industrial zones as well as inland port expansion are contributing to the city's rapid urbanization. As a coastal province, Ninh Binh is included in the list of five provinces most vulnerable to climate change in northern Vietnam. Flooding occurs annually, including severe and acute flooding that results in the destruction of homes, property and livestock, and contributes to the lack of a clean water supply. To cope with the compounded dangers of climate change and urbanization, Ninh Binh has developed Provincial Climate Change strategies.

UCRSEA

The Urban Climate Resilience in Southeast Asia Partnership (UCRSEA) is a five year-program led by the Thailand Environment Institute and the University of Toronto in collaboration with academics, researchers, civil society workers, government officials and students from the Mekong Region and Canada.

As Southeast Asia is one of the most rapidly urbanizing regions of the word with increasingly apparent threats from climate change, UCRSEA recognizes that cities in the region face changing risks and vulnerabilities. The program aims to advance the understanding of contemporary urbanization in Southeast Asian cities, build bodies of knowledge that will contribute to policy change, and provide spaces for informed public dialogue.

UCRSEA activities are concentrated in eight cities. The city briefs serve as an introduction to the UCRSEA focus cities and summary of our preliminary findings. Each of the eight cities was chosen because it was a secondary city with important regional connections facing challenges from both urbanization and climate change.

As the project progresses, UCRSEA will release subsequent versions of the city briefs that reflect our updated research findings and share our improved understanding of the implications and interactions of urbanization and climate change.

URBANIZATION AND REGIONALIZATION

- Ninh Binh city accounts for 90% of the total population in Ninh Binh province. According to an ambitious urbanization master plan, the urban population of Ninh Binh city and other adjacent towns (Tam Diept, Nho Quan, and Phat Diem) is expected to double by 2030.

- One of the main attractions that draws tourists to Ninh Binh is the Trang An World Heritage site. Ninh Binh city is only 100km from Hanoi by highway so it is easily accessible for travelers. It is also reachable by rail as one of the four stations on the North-South railway line is in Ninh Binh.

However, along with being an international tourist destination, Ninh Binh also draws economic revenue from being an important transport point for cargo between Northern, Central and Southern Vietnam. The Quang Ninh – Quang Binh coastal shipping route, which opened in 2014, expands the capacity and connection of various inland and seaports, including Ninh Binh. This port expansion project is expected to facilitate the transport of large-volume freight, especially super-heavy goods from the north to central Vietnam, where the large industrial parks are located. As one of the ports along the Quan Ninh – Quang Binh shipping route, Ninh Binh can expect to see an increase in activity and passing freight.

If Ninh Binh continues to follow its current trajectory and grow both the tourism and heavy industry sectors, the career opportunities for the local residents will shift dramatically. The expanding market for jobs in tourism and industry will pull more people to move into the city and transition away from agricultural livelihoods.

Figure 2 *Trang An, Source: http://dulichcauvong.vn/*

CLIMATE CHALLENGES

As a coastal city located in a low lying area near the Red River Delta, Ninh Binh is one of Vietnam's most vulnerable cities to climate change. Most of the population of Ninh Binh province is clustered in the delta area with an elevation that is very close to sea level.

Figure 3 *Flooding in Ninh Binh after tropical storm Mirinae, Source: Thao Hoang*

Given its location near the delta, Ninh Binh is very vulnerable to flooding. In 2008, there was widespread flooding all over Vietnam, including acute flooding in Ninh Binh province that required disaster relief efforts to respond to the destruction of homes, property, loss of livestock and the lack of clean water supply. In July 2016, typhoon Mirinae caused widespread destruction in Ninh Binh with torrential rain causing flooding and winds gusting up to 90km per hour that downed trees and power lines across the city[1].

Currently, severe storms along the Hoang Long River and East Sea causes flooding every year. Given the changing weather patterns and rising ocean temperatures caused by climate change, the timing and strength of the storms and floods are increasingly difficult to predict. Faced with this reality, Ninh Binh developed the Provincial Climate Change Strategies, and taken other steps such as increasing the number of military and police staff on duty during the flood season, and reinforcing the physical infrastructure, such as reinforcing dikes and dredging the Hoang Long river to facilitate clear water flow. However, there is still a lack of clear climate change data on Ninh Binh; this is a gap that should be addressed through future research.

[1]http://e.vnexpress.net/news/news/hanoi-issues-flood-alert-as-typhoon-mirinae-pounds-northern-vietnam-3443420.html

URBAN CLIMATE VULNERABILITY

Ninh Binh draws upon both the tourism and industrial industries to fuel its rapid urbanization. As the city grows, it will place greater stress upon its natural resources; local residents may become more vulnerable to clean water shortages and pollution from multiple construction projects. Expanding the city limits may also mean that homes and other property moves into more and more flood prone areas, putting residents and property owners at increased risk of flood damage. Large-scale construction projects may also increase the surrounding area's vulnerability to flooding if the debris from construction blocks dikes or canals, or if new concrete surface areas prevent water from being absorbed into the ground, thus causing flash flooding. If local actors' livelihoods are constantly negatively affected by property and income loss due to flooding, it will be difficult for them to build sustainable livelihoods or communities.

Figure 4 *Fallen trees in Ninh Binh after tropical storm Mirinae, Source: Thao Hoang*

As Ninh Binh becomes more dependent on regional connections and trade, it has both the opportunity for economic growth and also the risk of cascading negative effects from the region. Becoming reliant on the tourism industry is both profitable and also risky. Local workers may face competition as migrant workers flock to the city drawn by the promise of employment. Additionally the population increase fueled by migrating workers will only exacerbate the problems of resource shortages and add stress to existing systems.

Figure 5 *Trang An, Source: UCRSEA Website*

Due to its vulnerable location in a low-lying coastal area, Ninh Binh has had to face the reality of climate change and the local government has developed short-term strategies for surviving the flood season. However, temporary measures such as increasing military and police presence after severe floods do not address fundamental challenges or provide sustainable solutions. Whether Ninh Binh can implement longer-term solutions through their Provincial Climate Change Strategies remains to be seen. Future research should include a focus on the impact of urbanization on local ecosystems and thus on local actors' livelihoods, what level of influence local actors have over the development and disaster response policies, and also the effectiveness of local government in dealing with both urbanization and climate change related challenges.

Figure 6 *Trang An, Source: UCRSEA Website*

UCRSEA is supported by the International Partnership for Sustainable Societies (IPaSS) Initiative, funded by the International Development Research Center (IDRC) and the Social Sciences and Humanities Research Council of Canada (SSHRC).