

BATTAMBANG CAMBODIA



CITY DESCRIPTION

Battambang is situated 300 kilometres from Phnom Penh in the northwest of Cambodia. Being the main hub of the Northwest and a vital link from Thailand to Cambodia, Battambang is experiencing rapid urbanization through many government-supported economic development and infrastructure projects. At the same time, three protected areas in Battambang are increasingly under threat from



land concession for large-scale agricultural land development. Along with land clearance for cash crops and commercial farming, flooding has become more intense and seriously affects the entire province of Battambang. Battambang city is part of the Asian Development Bank's (ABD) Greater Mekong Subregion Southern Economic Corridor Towns Development Project, and one of the towns for the pilot program for Climate Resilience for Cambodia. The planned development includes flood control, waste water systems, river embankment protection and sanitary landfills. Battambang will serve as a model for sustainable town development in Cambodia, especially for other towns surrounding Tonle Sap Lake and the Mekong River.

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 world 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.

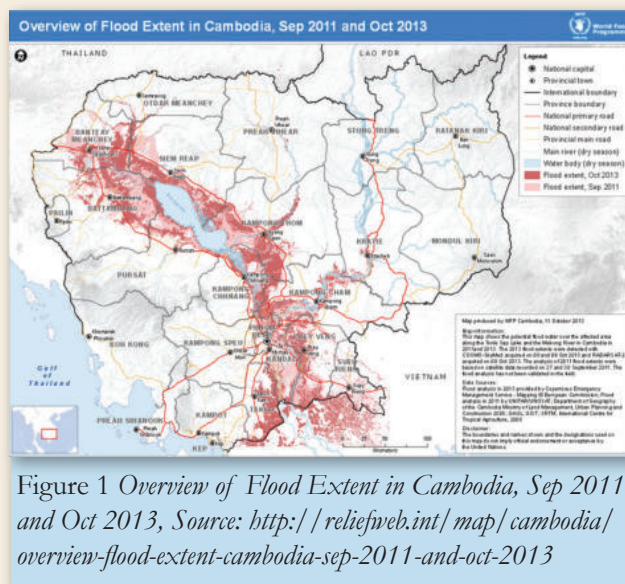
URBANIZATION AND REGIONALIZATION

➡ Battambang is the second largest city in Cambodia after Phnom Penh and the main economic hub of Northwest Cambodia, connecting the entire region with Phnom Penh and Thailand. Built on the banks of the Sangke River, the town of Battambang is situated at the junction of National Road (NR) 5 and NR 57 and the northwestern branch of Cambodia's national railway system, making it an ideal economic and trade center.

➡ Cambodia took out a loan from the ABD in 2010 to repair the railway line that runs through Battambang, which will potentially increase domestic trade within Cambodia and also international trade with Thailand. Currently, NR 5 is under construction to increase the number of lanes. There is also planned further development of inner and outer ring roads, which will connect NR 57 with more areas of the city, and also decrease congestion on both NR 57 and NR 5 around the urban center of Battambang. These projects indicate a governmental investment in Battambang's continued urbanization and growth.

➡ As the region continues to develop as a trading and economic hub, it can be expected that the rate of urbanization will only increase. Overall, the population of Battambang municipality is projected to increase to 212,309 by 2030, up from 157,749 in 2015¹. The infrastructure of the city is growing rapidly to keep up with the increase in population.

➡ Battambang is the first Cambodian municipality to have a master plan of urbanization from 2008-2022 (supported by the ABD, Cities Development Initiative for Asia, and German International Corporation). Battambang has also received some funding from the Ministry of Environment for developing a solution for waste management. Battambang has the opportunity to be a demonstration site for the Greater Mekong Region for planning and developing a climate change resilient urban center.



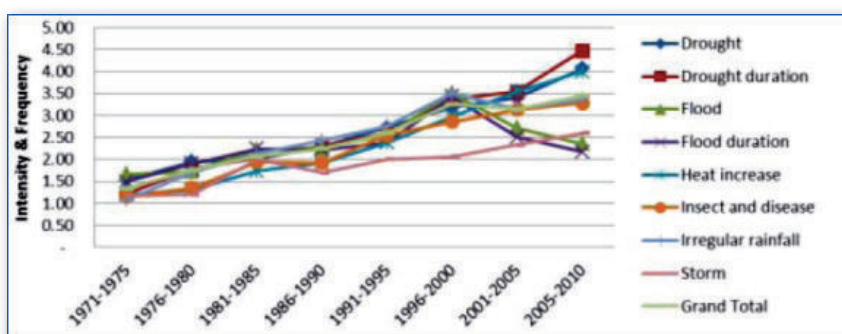
CLIMATE CHALLENGES

Effects of climate change in Battambang include:

➡ changes in temperature patterns – an increased number of hot days per year, which accelerates ground dehydration

➡ changes in rainfall patterns – shorter and more intense wet season coupled with a longer and dryer dry season

➡ the changes in temperature and rainfall is predicted to lead to more intense flooding and unpredictable onsets of the wet and dry seasons²



Battambang has historically suffered multiple instances of severe flooding. Since 2000, floods have occurred with increasing frequency and intensity. In particular, there was very severe flooding in 2011 and 2013 that devastated much of Battambang. If the developers of Battambang do not take the changing weather patterns into consideration, the city, and municipality, will continue to be at high risk from natural disasters.

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

²Cambodian Ministry of Environment, Vulnerability and Adaptation assessment for key sectors including Strategic and Operational Recommendations, 2013

URBAN CLIMATE VULNERABILITY

Battambang is emerging as a key economic hub of Northwestern Cambodia with the potential to increase trade both domestically and internationally. While urbanization provides many opportunities, it also influences the climate vulnerability of the city and its inhabitants. As Battambang grows larger and more urbanized, it also becomes more vulnerable to flood damage. There are some reports that the development of the railway even caused an increase in flooding because drainage canals were blocked by sediment displaced by the new construction. Additionally, roads built without proper drainage infrastructure serve as impromptu dams for floodwaters and can increase property and home damage. Poor government regulation of large-scale construction makes local communities more vulnerable to development related problems.

Similarly, a failure of government to prioritize the preservation of natural resources can lead to a shortage in critical resources such as land and water. Battambang's participation as a pilot city in Cambodia's Climate Resilience program indicates at least a willingness to work towards urban climate resilience. There are also a number of protected areas in the Battambang region, such as the Roneam Dousar wildlife sanctuary and Sam Lout Multiple Use Area and Tonle Sap Multiple Use Area. However, these areas are increasingly under threat of encroachment by large-scale agricultural development and have already lost more than 50% of their land to commercial farming. If there is no regulation or enforcement of regulation, more and more fertilizer and other toxic runoff will enter the watershed and degrade the water resources.

Additionally, social changes that stem from urbanization can have impacts on both the societal and infrastructure levels. As Battambang becomes increasingly connected to cities in the region and continues to grow as an economic hub, more and more people will be drawn into the city by the promise of work. This competition may make it difficult for local people to find well paying and stable employment, thus affecting their livelihoods. The rapidly growing population will also put an increased stress on the resources and infrastructure systems of Battambang and may lead to system overload and failure.

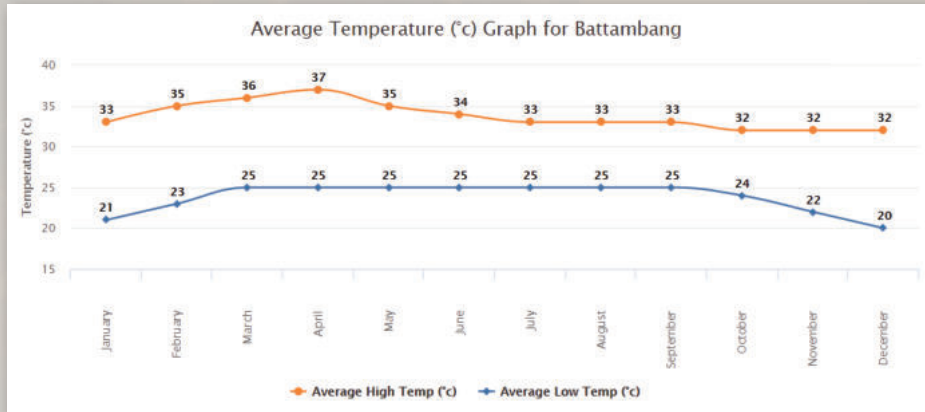


Flood Management System, Photo Credit: Try Thuon



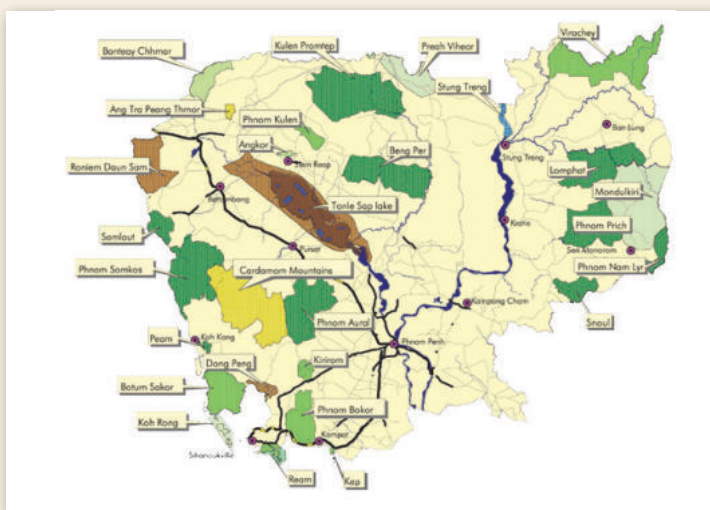
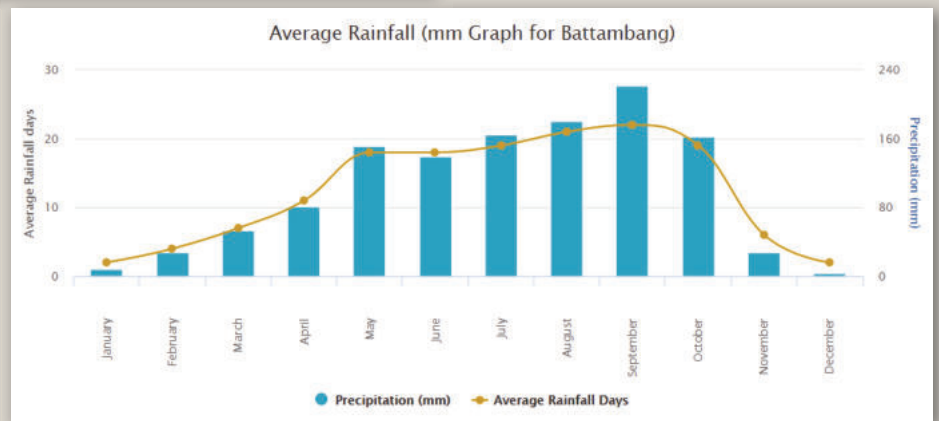
Battambang Landfill, Photo Credit: Try Thuon

In the future, as climate change leads to more severe and unpredictable rainy season storms and as the city continues to grow, Battambang will face increased risk of flood damage. Effective flood management strategies and water resource management are key issues for Battambang's future success. Continued urbanization and rapid population growth that does not address these issues will exacerbate the current problems and place the inhabitants, buildings and resources of Battambang at greater risk. Future research should include a focus on the impact of urbanization 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.

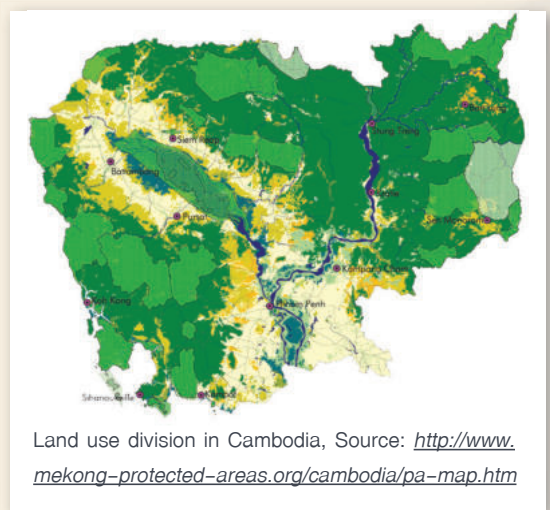


Graphs:

- Rainfall & temp:
<http://www.worldweatheronline.com/battambang-weather-averages/batdambang/kh.aspx>



Protected areas in Cambodia, Source: <http://www.mekong-protected-areas.org/cambodia/pa-map.htm>



Land use division in Cambodia, Source: <http://www.mekong-protected-areas.org/cambodia/pa-map.htm>

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