

# BAGO

## MYANMAR



### 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.

### CITY DESCRIPTION

**Bago** is the capital of the Bago Region and the fourth largest urban center in Myanmar. Located just 80 kilometres northeast of Yangon, Bago is likely to experience associated urbanization and industrialization. The city is rapidly urbanizing, most notably along the Yangon-Mandalay Highway. Regional investments include a Special Economic Zone (SEZ), and Hanthawaddy International Airport project, which will replace the Yangon Mingalardorn airport as the primary gateway to Myanmar. Bago has a history of dealing with natural disasters. The city is located on the banks of the Bago River, and is prone to extreme and recurrent flooding in the monsoon season, including flash and river floods. Earthquakes have been historically recorded to seriously affect the region. On top of these risks, climate change is expected to put extra stress and have negative impacts on water balance and water availability, and bring about extreme events such as floods and droughts on the Bago river basin.

## URBANIZATION AND REGIONALIZATION

➡ Set at a strategic point and easy to access via road and rail, Bago is a local trading center for the region. The Yangon-Mandalay Highway runs through the town and Bago has developed an elongated shape as urbanization expands rapidly following the highway. The Shwehle Railway also runs through the city North-South.

➡ Since the early 1990s there have been plans to construct Myanmar's largest airport - the Hanthawaddy International Airport - east of the city. Upon completion, the Hanthawaddy International Airport is expected to be the largest and most modern airport in Myanmar, replacing the Yangon Mingalardorn airport as the primary gateway to Myanmar. However, the project has changed hands multiple times and completion has recently been pushed back to 2022 (Myanmar Times).

➡ Bago is only 80km northeast from Yangon and experiences associated urbanization and industrialization due to its proximity to the larger city. Bago is surrounded by Special Economic Zones (SEZ), also called Industrial Parks or zones, including iLand Industrial Park to the north, the Thilawar SEZ to the south and multiple smaller SEZs around Yangon. There are plans to build both highway and high-speed train infrastructure to connect Yangon to the new airport. These additional transportation infrastructures would also make it easier to access Bago. Due to the high and rising cost of land in Yangon, many companies are considering moving their operations to Bago and the iLand Industrial Park which is only 30km north of Bago city.

➡ Currently, Bago is the fourth largest urban center in Myanmar and still expanding. It also has the 6th highest population density in the country with 382 people per square mile. It is growing at an average growth rate of 1.52% per year.



*Photograph by Taylor Martin*

## CLIMATE CHALLENGES

➡ In this century, the average, annual temperature in Bago is expected to increase. The maximum cold season temperature is expected to rise by 1.5 to 2.5 degrees Celsius. Average precipitation is projected to increase through the 2050s, then decrease in the later half of the century<sup>1</sup>.

➡ The city of Bago occupies the low land plains of the Bago-Sittaung river valley. The Bago River is the main drainage system that flows across the city, as well as being the city's main source of fresh water. Because of its proximity to the river and low-lying area Bago frequently suffers from both sustained and flash flooding. Historically, flooding has caused widespread evacuation and necessitated disaster relief from both the government and international organizations.

➡ Climate change is expected to have negative impacts on both flooding and drought in the Bago River basin. Monsoon season storms could potentially increase in strength, while the hot season drought becomes longer and more extreme. Additionally, climate change is expected to reduce clean water availability for the inhabitants of Bago.

➡ Faced with the reality of environmental hazards in a rapidly urbanizing area, local government actors recognize the need to make Bago city more resilient. They are a member of various international projects on disaster reduction, such as the Myanmar Action Plan on Disaster Risk Reduction (MAPDDR 2009-2015), and have planned a series of vulnerability assessments. It is unclear how effective these measures will be and what measure of regulation local government has over the development of the SEZ.

## URBAN CLIMATE VULNERABILITY

The rapid urbanization of Bago has mixed implications for the region. The increased economic activity created by large development projects has the potential to supply jobs and a new source of income to local communities. Additionally, the infrastructure built to accommodate the SEZs may also benefit residents, such as improved roads and increased connectivity to the rest of the country and region. However, as the many industrial parks and SEZs in the region continue to drive urbanization and industrial growth, there will be increasing stress on Bago's resources and systems.

This urbanization-induced stress can create more vulnerabilities for the inhabitants of Bago, such as a lack of access to clean water if the Bago river becomes contaminated due to factory or other industrial runoff. Additionally, an influx of foreign workers drawn by the SEZ may prevent local workers from benefiting from SEZ jobs and also cause drastic changes in the local, social demographic. Local communities also become vulnerable to displacement and loss of livelihood as large areas of land are bought up by foreign development in the creation of SEZs. The current trajectory of Bago's urbanization is one of the contributing factors to the city's urban climate vulnerability.

To respond to these challenges, the government of Bago has been actively participating in disaster risk reduction initiatives. However, it is still unclear if these plans will hold any weight against the development goals of large companies and foreign investment, goals that rarely consider climate risks. The increasing unpredictability of weather patterns and severity of both drought and floods caused by climate change is only one factor that places increasing stress on the communities of Bago. The potential inability of local government to respond adequately to rapid urbanization and industrialization, as well as similar regional trends of rapid urbanization and weak governance, are institutional vulnerabilities for the communities of Bago. Future research should include a focus on the impact of urbanization on local actors' livelihoods, and also investigate the effectiveness of

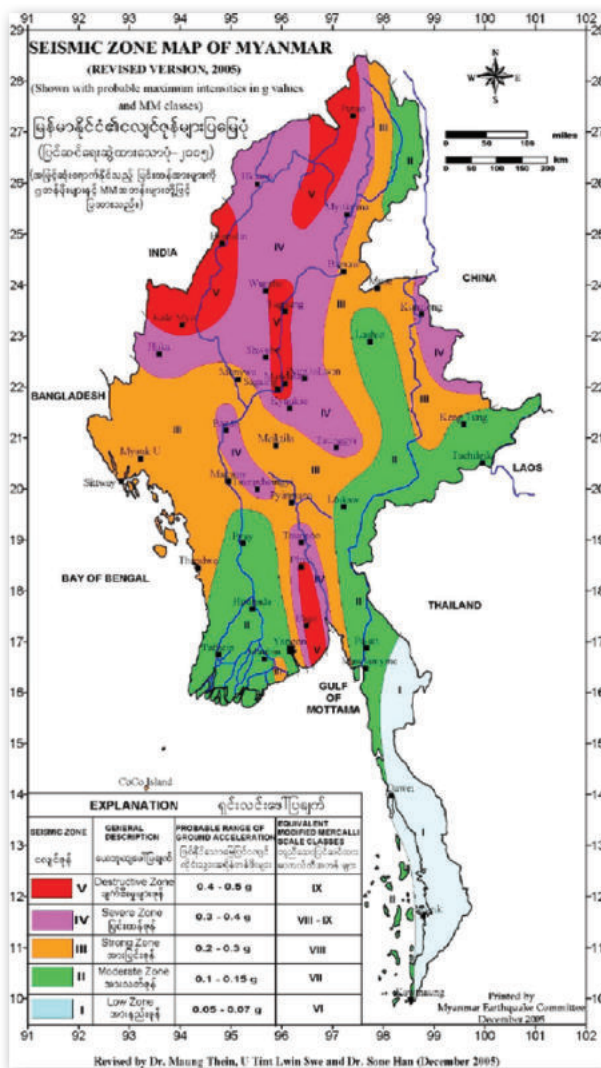


Figure 3 Source: [https://www.researchgate.net/profile/Soe\\_Thura\\_Tun/publication/263873098/viewer/AS:294848033771520@1447308657749/background/12.png](https://www.researchgate.net/profile/Soe_Thura_Tun/publication/263873098/viewer/AS:294848033771520@1447308657749/background/12.png)

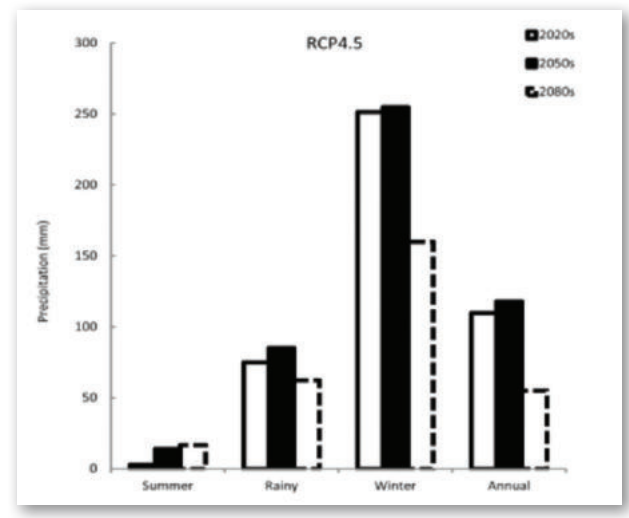


Figure 1 Projection of average seasonal and annual precipitation changes<sup>2</sup>

<sup>2</sup>Htut AY, Shrestha S, Nitivattananon V, Kawasaki A (2014) Forecasting Climate Change Scenarios in the Bago River Basin, Myanmar. J Earth SciClim Change 5: 228. doi:10.4172/2157-7617.1000228

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