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FLOOD RESILIENCE STRATEGIES: SUSTAINABLE LAND AND WATER DEVELOPMENT
A COMPARATIVE CASE STUDY IN SINGAPORE AND JAKARTA

A Proposal: 1 November 2016

To the research team selection committee:

In 2010, more than 40% of the world's population lived within 100 kilometers of a coastline, and today, more than a billion people live in low-lying coastal regions. As Asian megacities, most of which are located along coastlines, continue to grow, the number of at-risk people living in urban coastal environments is increasing dramatically. Climate change has caused—and will continue to cause—rising sea levels, stressing urban constructed seawalls designed for a time of lower water levels. Additionally, climatologists expect more severe rainfall events due to climate change. Without a significant update to drainage infrastructure, these rainfall events will lead to more—and more severe—floods in urban areas. These threats combine to stress existing water catchment and (both natural and built) protection infrastructure, indicating impending flooding disasters for Asian megacities and the millions who live in them.

Indonesia's largest city and economic powerhouse, Jakarta—and the general metropolitan region of Jabodetabek—has seen rapid urbanization and population growth in the past decades. On the path towards becoming a global city, though, the protection of environmental resilience has often been somewhat of an afterthought. Urban and suburban expansion have led to the widespread conversion of water catchment natural space to paved surfaces. Rivers have been "normalized," straightened and lined with concrete. Coastal dykes are insufficient. There has been severe land subsidence, which has caused some parts of the city to sink as much as 28 centimeters per year. These issues combine to exacerbate flooding events, causing decreased water drainage and increased water pooling.

The exigence of this flooding problem, then, is clear: this is a matter of life-or-death—and economic livelihood—for the millions of people in Jakarta, Indonesia, and the entire Southeast Asian region.

Singapore, ranked the "Greenest City in Asia," on the other hand, has worked for decades towards sustainability. Its visionary government looks to provide a high-quality living environment for its citizens with the goal of making a "City in a Garden." As a result, open park space, green infrastructure construction, recycling rates, and the availability of public transportation have each increased in the past decade. Singapore faces similar risks to Jakarta: a coastal megacity home to millions of people, the city state will see rising sea levels and an increased risk of severe rainfall and flooding events. Its commitment to water catchment green space expansion, though, combined with a high level of central planning, have perhaps made Singapore a model of sustainable and resilient economic growth in the region.

The megacities of Southeast Asia are home to millions of people facing increased risk due to climate change, and adapting resilience to these major challenges is vital to the prosperity and survival of these cities and their citizens. To that end, I write to propose a research project to accompany the Dialogue of Civilizations trip to Singapore, Jakarta, and Bali with the Northeastern University Scholars Program during May and June of 2017. My project would attempt to answer the question: ***What are some methods which allow urbanization and economic growth to proceed compatibly with sustainable, resilient, and responsible land development?***

Researching climate change and preparing resilience adaptations are inherently interdisciplinary pursuits; fittingly, the interdisciplinary project I propose could offer valuable insight into the interconnected topics of resilient green infrastructure and sustainable development policy in two major cities at different stages of the development timeline. The comparative case study analysis would begin in Singapore by examining its riversides, park space, and other permeable water catchment areas. I would examine Singapore's announced commitment to sustainability and green infrastructure, evaluating its progress made towards becoming a "City in a Garden," including how the national government, with full control over the city, can exert its influence in ways other urban governments in the region cannot. (It may be interesting as well to examine how the higher level of energy use usually associated with increased economic development has an impact on the city's goal to be a model of sustainability.) After a week in Singapore, I would travel to Jakarta and examine, similarly, its riversides, expansion of urbanized land, green spaces, coastlines, reservoirs, and political landscape. Focusing on land cover, growth and development, and flood resilience preparation, a thorough comparison of the two cities would improve understanding of development in the region more broadly, including some identified best practices of sustainability and political, economic, and social barriers to their implementations in other locations.

While my research topic remains focused on the cities of Singapore and Jakarta, the trip would also provide an introduction to Bali. It is in Bali's Benoa Bay that the Indonesian government has planned a large reclamation project for resorts and upscale shopping malls, displacing in the process fishermen whose livelihoods depend on bay access. In Jakarta and other megacities, those urban poor who live along river banks have for years been evicted in the name of development, but sustainable riverside redevelopment does not have to work against the urban poor living there. Accordingly, I hope to investigate resilient, sustainable, *and responsible* land development in these locations.

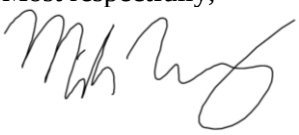
This project will include several methods. In the months before departure, I will perform an extensive literature review of the existing body of work regarding sustainable and resilient land development in cities, especially Southeast Asian ones. Additionally, I will discuss the topic with experts at Northeastern University. (I have met already with Professors Thomas Vicino, Gavin Shatkin, Alessandra Renzi, and Jennie Stephens in preparation of this proposal, and several have expressed willingness for continued involvement with this project.) In preparation for departure, I will identify specific sites of interest in the cities. Upon receipt of the trip itinerary, I will formulate a detailed plan of site visits to identify visible vulnerabilities and attempts to enhance resilience to flooding. Indeed, arriving in these cities with a focused research question, a detailed project itinerary, and an extensive background understanding of the issues will ensure the time I have in the region is maximized. Finally, I will likely attend a conference organized with Dr. Auroop Ganguly regarding urban flooding in Jakarta, providing a relevant pedagogical experience regarding the city and the broader region.

I hope to produce a literature-informed research report, in addition to a poster demonstrating my findings. Informed by first-hand experiences, pictures, site studies, and stimulating discussion with a robust cohort of expert contributors, I hope to add new knowledge to the existing pool regarding methods and implementation of resilient and sustainable land and economic development in the face of increased urban flooding risk throughout Southeast Asia and the world.

I am so appreciative for all the work the organizers of this and past trips have done. I remain eager to assist in the planning process in any way, and, as always, I offer my ideas, enthusiasm, and time to the preparation of this experience.

Thank you so much for your consideration.

Most respectfully,



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