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Vol. IV/ No. 8 | November 2023

Sinking Coastal Cities as An Urgent Issue in the Southeast Asia Region and the Need for the Transnational Resilient City

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Summary

Sea level rise is a real threat that can sink several cities in the coastal area of Southeast Asia region (ASEAN). This threat is not only experienced by small cities, but also threatens large cities and even those with the status of capitals of ASEAN member countries such as Jakarta, Bangkok, Hanoi, Manila, and Singapore. Unfortunately, this issue is only seen as part of the natural impact of the global warming phenomenon and the steps taken still appear sporadic according to the capacity of each country/city. Therefore, seriousness is needed in responding to this issue, one of which is by building cooperation and multilateralism in the form of a City Resilient Network against the threat of sinking coastal cities in the Southeast Asia region (ASEAN).

Keywords: *ASEAN, land subsidence, sea level rise, sinking coastal cities, transnational resilient city networks.*

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The Threat of Sinking Coastal Cities in the Southeast Asia Region

Sinking coastal cities is a real threat for cities in the coastal areas of Southeast Asia region. Based on the research results from Singapore's Nanyang Technological University (NTU) published in the scientific journal *Nature Sustainability*, they found that many densely populated coastal cities worldwide are vulnerable to sea level rise because large amounts of their land are sinking, and Southeast Asia's coastal cities are sinking fastest (Tay, et al., 2022). This threat is not only experienced by Small Cities (populations between 20.000 to 50.000 people) such as Ko Lanta (Thailand), Kuala Kedah (Malaysia), and Kaimana (Indonesia), but also by Medium Cities (populations between 50.000 to 100.000 people) such as Mueang Krabi and Hua Sai (two districts in Southern Thailand). As well as the Big Cities (populations between 100.000 to 1.000.000 people) such as Mawlamyine (Myanmar), Pak Phanang (Thailand), Vung Tao (Vietnam), Klang (Malaysia), Cebu (Philippines), and Pekalongan (Indonesia).

However, it also threatens the existence of Metropolitan Cities (population of around 1.000.000 people) such as Pattaya (Thailand), Haiphong (Vietnam), Davao (Philippines), and Semarang (Indonesia). Even Megapolitan Cities (population of more than 5.000.000 people) such as Yangon (Myanmar), Ho Chi Minh City (Vietnam), Hanoi (Capital of Vietnam), Bangkok (Capital of Thailand), Singapore (City-State), Manila (Capital of the Philippines), and Jakarta (Capital of Indonesia) are the area most affected by sea level rise. In fact, Jakarta as the largest city in Southeast Asia with a population of 34.54 million people and as the diplomatic capital of ASEAN is the fastest-sinking city in the world. If this goes unchecked, parts of the megacity could be entirely submerged by 2050 (Lin & Hidayat, 2018). The impact of this phenomenon has severe consequences, from problems with food production, through mass migration of people, to the threat to unique ecological areas (Piotr Michalak, 2021). This is of course detrimental in terms of security, economic, political, and socio-cultural to all countries in the region.

In general, many people believe that the cause of sinking coastal cities in Southeast Asia region is sea level rise due to the melting of icebergs at the Earth's poles after the world experienced what we know today as global warming, or caused by other parts of the Climate Change phenomenon. They also believe that land subsidence is another driving factor of sinking coastal cities in the Southeast Asian region based on natural and anthropogenic activities. On the geotechnical aspects, land subsidence is caused by various natural activities such as tectonic movements, natural soil consolidations, and the rupture of the earth's plate over periods. Meanwhile, the anthropogenic factors are rapid urbanization and population growth. It's encouraging an increase in the need for clean water in large quantities (housing, skyscrapers, apartments, industrials, and high-density offices). Meanwhile, some cities experience problems in terms of clean water infrastructure capacity, where the number of expansions of clean water pipelines lags behind the growth in population and other city buildings (Hasibuan, et al., 2023). On the other hand, the constraint of scarcity of clean water sources which has an impact on the affordability of piped water services is also a problem, since these conditions encourage people to consume groundwater and have long-term consequences for land subsidence below sea level.

Sporadic Actions by the City Government in Southeast Asia

Several ASEAN member countries have indeed built policy frameworks or concrete actions to respond to the sinking coastal cities issue. Even these policies and actions have been built up to the city government level. For example, the government of Jakarta (Capital of Indonesia) has implemented policies related to the allocation of green open spaces to absorb floods and to limit large-scale extraction of groundwater to prevent land subsidence. Apart from that, the government of Jakarta is also taking real action in the form of building a sea wall, improving piped clean water services, engineering rivers, cleaning slums, building concrete embankments, dredging waterways frequently and developing mangrove forests (Renaldi, 2022). The existence of these policies and real actions is indeed a positive thing that should be supported. However, there are weaknesses when each city government whose territory is threatened by the sinking coastal cities issue has different regional resources. Regional resources referred to here can be in the form of leadership quality, the strength of the bureaucratic system, budget allocation, as well as the ability and willingness to develop networks or cooperation (adapted and modified from the concept of regional resources according to Pluijm & Melissen, 2007).

Of course, there are differences in regional resources between cities in developed countries and cities in developing countries, or even cities that are still in the same country have differences in regional resources based on their regional classification and political position. For example, the Government of Bangkok has proposed a number of solutions, including the construction of a green belt barrier, water gate, and levees (Bangkok Post, 2021). The government also has already banned groundwater pumping in the central city to help control of land subsidence (Fuchs, 2010). A specific law namely the Groundwater Act was enacted in 1977, where the most affected areas were designated as Critical Zones and the city government was given more control over private and public groundwater use in these areas (Erkens, Bucx, Dam, Lange, & Lambert, 2015). Such policies and actions can be carried out by the government of Bangkok in its capacity as a Megapolitan City and Capital of Thailand. However, it is different from suburban cities such as Mueang Krabi, Ko Lanta, Pak Phanang, and Hua Sai which are located in Southern Thailand. Basically, they face challenges in the form of communication, data and information, also early warning system and compensation (Langkulsen, et al., 2022).

Meanwhile, Singapore as a developed city-state has taken several concrete anticipatory steps. First, nature-based solutions namely preserving or restoring mangrove and corals. Second, hard infrastructures namely protect about 70% of Singapore's coastline with vertical seawalls, sloping seawalls, stone revetment walls, and composite stepped seawall. Third, a new land reclamation method namely raised the minimum land reclamation levels from 3m to 4m above mean sea level and poldering. Fourth, climate science namely the design of sustainable ecosystems to integrate human society with the natural environment. Fifth, allocate coastal and flood protection fund, also investing in studies and research programmes (The Straits Times, 2022).

The Need for the Transnational Resilient City Networks

No country in the world today can deny the significance of global environmental problems because no country can solve the challenges and problems that exist individually. International cooperation,

even multi-stakeholder global partnerships – involving non-state actors (business and industry groups as well as civil society, in particular) has therefore become a necessity. Therefore, one of the efforts that is needed is also the activeness of the governments of affected cities to network with each other transnationally, so as to form a network of city cooperation across national borders and between actors aimed at resilience from the threat of sinking coastal cities. There are five rationalizations, why affected cities should start networking? First, as revealed by Meadowcroft (1999) that the city is structurally the unit of government that is closest to the community, so that the city government deals directly with the real problems faced by its citizens, that one of which is the issue of sinking coastal cities. Second, cities are experiencing three phases of global transformation namely globalization, urbanization and decentralization, so that city governments have legitimacy and modality at the sub-national level to take over the problem of sinking coastal cities from the central government. As Carter (2001) said that it easier for city governments to build partnerships with various community groups on an ongoing basis, so that they are expected to be more effective in carrying out the development process.

Third, the number of cities (especially cities affected by the issue of sinking coastal cities) is greater than the number of countries in ASEAN, so city governments need to think beyond international relations traditional state centrism. Fourth, the strategic position or role of cities at the global level has been recognized by the international community and the United Nations for solving global environmental problems. Isnaeni (2013) said that the existence and strategic role of city government has been recognized since the Earth Summit in Rio de Janeiro in 1992 stated explicitly related to development and environmental relations which are basically rooted in local actions, so that cities are key players in achieving the sustainable development agenda. Fifth, as previously explained regarding differences in the capabilities of cities and the existence of sporadic policies in responding to the issue of sinking coastal cities, networking is important to increase prevention and response capabilities together (cooperation and multilateralism) as fellow sub-national entities within ASEAN member countries. Thus, the strength of the network between cities in ASEAN on the issue of sinking coastal cities should have been more crystallized, and ASEAN's institutional mechanisms should provide a platform for this purpose.

Suggestions for Future Research

Since its founding in 1967, ASEAN has always emphasized the role of the central (national) government in policy formulation and implementation. ASEAN's institutional structures and mechanisms still need to fully provide space for cities or regional governments to act as agents of change, dynamists, and collaborators for ASEAN connectivity. In fact, compared to the number of countries in ASEAN (11 countries), the number of cities (especially those categorized as secondary cities) is much greater. For example, Indonesia has 514 regencies/cities. So far, ASEAN already has a blueprint for sustainable green infrastructure and a sustainable urban strategy. Apart from that, there are now several cross-border city networking platforms (multilateral networking) in the Southeast Asia region such as the ASEAN Smart Cities Network (ASCN), C40 Cities, UNESCO Creative Cities Network (UCCN), International Council for Local Environmental Initiatives (ICLEI), United Cities and Local Governments (UCLG), and so on. Regarding these networks, it is necessary to carry out further research to find out how each network responds to the issue of sinking coastal cities. Or also

what is the state of play by Southeast Asian cities affected by the sinking coastal cities issue in several key multilateral networking.

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