

Adaptation and Mitigation as Sustainable Development Strategies in the Context of Vietnam

Anh Quynh Vo

E-mail: voquynhanh1206@gmail.com

Accepted for Publication: 2023
Published Date: October 2023

Abstract

Climate change is happening rapidly due to a lack of sustainable development globally. This article explores how mitigation and adaptation as a combined strategy can improve the development trajectory to become more sustainable, starting from changes in developing countries. Using Vietnam as an example, the article will discuss how these strategies could be implemented, taking into account environmental and socio-economic factors.

Keywords: Sustainable development, Mitigation, Adaptation

1. Introduction

Since the Industrial Revolution, the development of cities has been overly dependent on the use of fossil fuels and the depletion of our natural resources [1]. As a result, we have seen an increase in severe weather events, affecting the livelihood of those living in disaster-prone areas and, overall, adding to the pressure of maintaining economic development for the future (figure 1) [2]. Especially for developing countries, climate change can negatively impact the growth of developing countries by increasing the pressure on the availability and distribution of resources, with rapid urbanization becoming more common [1]. As the effects of climate change become more apparent, we must change our approach to sustainable development.

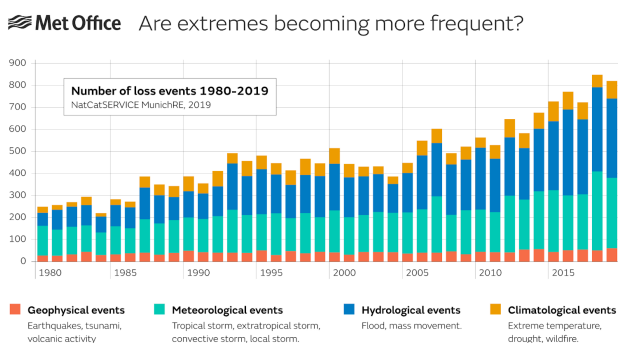


Fig. 1. Frequency of severe weather events from 1980-2019 [2]

However, radically changing human behavior is not easy as it involves changing daily habits and the way of life people are used to and have benefited from for so long. Economic, environmental, and social factors need to be considered to change how we structure and develop urban and suburban areas [3]. This is a critical consideration for developing countries whose economic development is on the rise. Social change can influence social power structures and impact the livelihood of economically disadvantaged communities. Thus, a new approach combines environmental responsibility and climate responsiveness to ensure these countries' steady and sustainable development. This article discusses mitigation and adaptation as integrated sustainable development strategies and their possible application to Vietnam.

1.1 Mitigation and adaptation as strategies

We must first define these terms to understand mitigation and adaptation as sustainable development strategies. Mitigation refers to preventing further negative environmental impacts, whereas adaptation refers to the protection against the effects of climate change [4]. While these two strategies have often been treated as substitutes for each other, mitigation and adaptation, when combined, can fill gaps within the other strategy. Mitigation, as a strategy, will slow down the rate of climate change, enabling countries to develop in a sustainable manner. However, it lacks consideration for the livelihood of vulnerable communities impacted by climate

change. In reality, while we can slow down the rate of climate change, we will not be able to completely prevent the effects of climate change, such as severe weather events. Vulnerable communities will continue to pay a disproportionate price for the current climate externalities if there are no adaptation strategies to support these communities [3].

Adaptation strategies do not only protect the livelihood of disadvantaged individuals, but they also ensure equity within sustainable development by providing that:

- 1) Rural and disaster-prone areas can also develop despite environmental challenges.
- 2) Cities can continue to develop without threat from climate change [5].

Similar to mitigation, adaptation cannot suffice as the only strategy because, with adaptation, the problem of rapidly increasing climate change persists.

Therefore, to account for the strengths and limitations of both strategies, long-term mitigation measures should be used in conjunction with short-term adaptive strategies. Although easier said than done, the successful application of mitigation and adaptation as a combined strategy can resolve the conflicts between the deterioration of the environment and increasing socio-economic pressures [1].

2.1 Application

Currently, there is a large gap between academic arguments and reality. Radical systematic change is not easy and requires more than just technical solutions. Adopting a mitigation and adaptation sustainable development strategy is to also consider social, cultural, economic, and political factors [6]. While it is difficult for developing countries to implement these strategies due to concerns, it has been recognized that developing countries play a determining role in the success of global climate change policies and sustainable development approaches [4].

To look at real-life applications, we can use Vietnam as an example of how integrating mitigation and adaptation strategies could help tackle environmental and economic pressures within the country.

2.1.1 Understanding the situation in Vietnam

To do this, we must first understand the situation in Vietnam. Vietnam is a developing Southeast Asian country with a high vulnerability to climate change due to its coastal location. While its two main cities, Ho Chi Minh City and Hanoi, continue to develop rapidly, many of the rural communities around the Mekong Delta remain vulnerable due to

agricultural losses due to climate change [7]. Flooding happens yearly in Vietnam, washing away people's homes, belongings, and businesses. With agriculture being a source of income for many in these rural areas, flooding leaves many people to rebuild their lives and socio-economic status every year. On top of that, flooding is only becoming more severe, adding to the urgency for change [8].

Even though there is strong economic development in Vietnam's major cities, the cities face challenges due to rapid urbanization. These cities are considered "sinking cities" as sea levels continue to rise, and the environment is stripped of natural resources and replaced by one concrete structure after another (figure 2). Ho Chi Minh City and Hanoi are trapped in damaging cycles where the cities will develop economically and attract more people, causing increasing pollution. The pollution in these two major cities has reduced the quality of life for many of its residents and added to the collapse of rural areas [7].

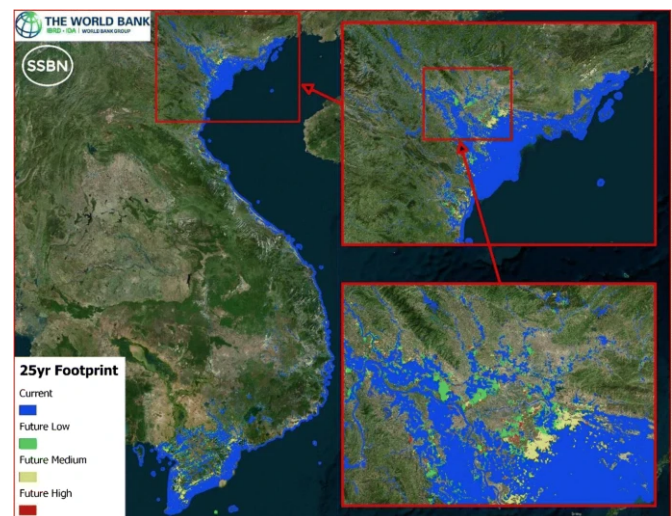


Fig. 2. Hazard map for flooding in Vietnam [9]

These problems exist because the process of developing Vietnam's cities does not mainstream climate change into urban planning. Cities are developing economically; however, the development is unevenly distributed throughout the country, and there is a lack of consideration towards sustainable development due to the overemphasis on economic growth [8].

2.1.2 Application of Strategy in Vietnam

To solve the rapid urbanization problem in Vietnam's dominant urban centers and sustainably develop the country in equity, the focus of sustainable development should be shifted towards minor cities. This is because bringing radical changes to the habits and development strategies in Hanoi and Ho Chi Minh City would be difficult, and minor cities

would also benefit from a more stable rural population to prevent rural collapse [7].

In minor cities, it is essential to implement sustainable urban planning early on. Urban planning should aim to distribute urban functions amongst green spaces. One way to achieve this could be to identify inner city and suburban areas to weave green spaces amongst urban functions that act as buffers to protect environmental resources [8]. This approach can be widely applied to low, medium, and high-density areas as an adaptation and mitigation measure. However, for successful urban planning, the implementation of this plan must be area-specific. Vietnam's towns, provinces, and minor cities can be categorized based on their geographical location/characteristics, such as seafont, littoral, and coastal mangrove towns [8]. Depending on the location, the area's urban planning focus can shift (figure 3).

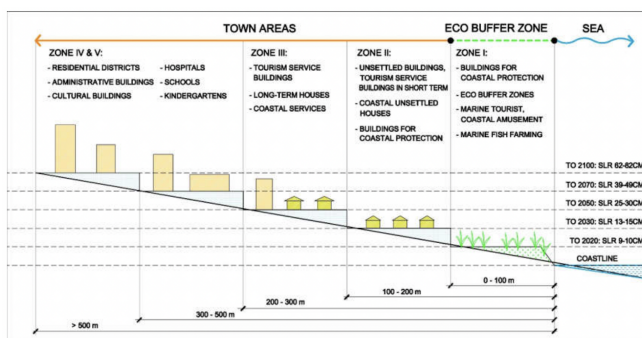


Fig. 3. Urban planning based on geographical location [8]

Specifically, it has been recommended that areas within 100 meters of the coastline should not have buildings due to sea level rise and high tides. Instead, the focus should be on coastal protection. As areas move further away from coastlines, the planning of buildings can begin. Ideally, long-term infrastructures such as hospitals, schools, and residential areas should start at least 300 meters from the coastline [8]. The categorization of infrastructures into different categories based on their purpose serves as both an adaptation and mitigation measure because it can:

- 1) Prevent further damage to coastlines (mitigation).
- 2) Protect people from the impacts of climate change (adaptation)

Areas prone to natural disasters should also focus on resilient architecture that can protect residents against weather events. These resilient infrastructures can reduce pollution during natural disasters due to the destruction of buildings and houses (mitigation) while protecting the livelihood of vulnerable communities (adaptation).

As a developing country, however, funding is an important consideration to implement these changes. Funding is needed from outside of the country, and within the country, the following considerations need to take place for the successful distribution of resources and power [10]:

- 1) Local institutions and communities need more access to finance and control over the adaptation action taken.
- 2) Including the voices of vulnerable and marginalized individuals in sustainability discussions to address social inequalities.
- 3) Build an understanding of sustainable development and climate change to foster collaboration.

The application of adaptation and mitigation into the development of minor cities and suburban areas in Vietnam can help reduce the economic gap between the rich and the poor. Furthermore, the steady growth of these minor cities can also reduce rapid urbanization in major cities as people will start to spread out to areas outside of Hanoi and Ho Chi Minh City for economic opportunities. The more stable development that takes place, the more development can happen in the long run and the more room to focus on innovative solutions to reduce climate change.

3. Conclusion

While the strategies and measures discussed above can improve sustainable development in not only Vietnam but also other developing nations, there needs to be more research to be done to bridge the gap between academic arguments and real-life applications. Also, while adaptation and mitigation will play a significant role in shifting sustainable development efforts, the measures discussed above cannot be the only measures taken for sustainable development to be successful. Instead, they should be implemented along with other solutions through careful research and consideration of environmental and socio-economic factors. Even though mitigation and adaptation as a solution cannot single-handedly tackle every issue with sustainable development and climate change, applying this strategy can create mindset shifts to gear development in the right direction for long-term benefits.

References

1. <http://www.taccire.sua.ac.tz/bitstream/handle/123456789/179/climate%20change%20and%20architecture.pdf?sequence=1>
2. <https://www.metoffice.gov.uk/weather/climate/climate-and-extreme-weather>
3. https://royalsocietypublishing.org/doi/full/10.1098/rsfs.2019.0138?casa_token=4RO2Fd9WwN0AAAAA%3AKHdta6Vd9zD7wszmAM49KHSq7fPdQMrgsYkJl1f1OaEo5qp1cHDnvaRze3CmznVVN4B-_8GAK7UOeg#d1e416

4. https://www.researchgate.net/publication/222371801_Synergy_of_Adaptation_and_Mitigation_Strategies_in_the_Context_of_Sustainable_Development_The_Case_of_Vietnam
5. <https://raf.arh.bg.ac.rs/bitstream/handle/123456789/1139/AnaPeric.pdf?sequence=1&isAllowed=y>
6. https://www.sciencedirect.com/science/article/abs/pii/S0921344921006091?casa_token=oWw_IcXqoIEAAAAA:RTVwNYZvV1W0oQiwjSjjuZkk2wRmOQTuqK4iv_oZDRt8KD21cBZ0EFrB3euynhiqu05iJLjIu7l
7. http://www.nicd.co.jp/vnnews/Jalel_Sager-Toward_Green_Resilience.html
8. https://repository.vnu.edu.vn/bitstream/VNU_123/136869/1/KY_20211110001659.pdf
9. <https://link.springer.com/article/10.1007/s41885-018-0035-4>
10. https://www.iied.org/principles-for-locally-led-adaptation?gad=1&gclid=Cj0KCQjwjt-oBhDKARIsABVRB0wogvPxO4yTn24_cIxlWwi2SQSMz9HJ549455REaS901BqpAB5bWwaAmjNEALw_wcB