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Uncovering the Legacy: Assessing the Environmental Impact of Vietnam's Post-1980 Economic
Reforms

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Background

Vietnam, a rapidly developing country in Southeast Asia, is facing significant challenges of resource depletion and environmental degradation, which are primarily caused by manufacturing, extraction of natural resources, agricultural production, and urban development. This paper attempts to examine the impact of economic reforms post 1980s on the environment.

"Doi Moi" is a Vietnamese term that translates to "renovation" or "reform" and refers to the economic reforms that were implemented in Vietnam in 1986 after the country suffered from an economic crisis. The reforms aimed to transition the country from a centrally planned economy to a market-oriented economy, and also enable the country to focus on increasing economic growth especially on exporting industries, and reducing poverty through encouraging private investment and increasing foreign investment. Under "Doi Moi," the government introduced several policies and measures to encourage foreign investment and trade, increase the efficiency of state-owned enterprises, and promote the development of the private sector. These policies have led to significant economic growth, but the rapid economic growth also had significant environmental consequences, with increased resource consumption and environmental degradation. The government therefore responded by introducing policies and regulations aimed at reducing pollution and conserving natural resources.

Manufacturing is one of the primary drivers of environmental degradation in Vietnam. The country has become a hub for textile and garment production, with the industry accounting for approximately 20% of the country's exports. This growth has led to an increase in demand for raw materials, such as cotton and synthetic fibers, which has put pressure on natural resources and ecosystems. Moreover, the manufacturing process itself is often energy-intensive and generates waste, leading to pollution of air, water, and soil. Overall, the country has experienced significant industrialization in recent years, with the manufacturing sector growing at an average rate of 9.7% per year from 2011 until 2023.

Another factor contributing to environmental degradation in Vietnam is the extraction of natural resources. The country has abundant natural resources, including minerals, coal, oil, and gas, which are important for its energy security and economic development. However, these natural resources have been heavily exploited and have significant environmental impacts, including deforestation, water pollution, and soil degradation. Especially the mining industry, which is a major source of pollution and deforestation, leading to soil erosion and the loss of biodiversity. Agricultural production is also significantly contributing to environmental degradation since it accounts for a significant portion of the country's economy and employment. However,

the intensification of agricultural production has led to the depletion of soil nutrients, loss of biodiversity, and pollution of waterways through the use of pesticides and fertilizers. Moreover, the expansion of agricultural land has led to deforestation, especially in the uplands, where forest land is often converted into cash crop plantations. In addition, this can also lead to the loss of important ecosystem services and biodiversity.

Urban development is another driver of environmental degradation in Vietnam. Rapid urbanization has led to the expansion of cities and the development of infrastructure, including roads, buildings, and industrial parks. This has led to increased demand for energy, water, and other resources, leading to air and water pollution and increased waste generation. Moreover, the construction of infrastructure and buildings often leads to land-use changes, causing loss of biodiversity and soil degradation.

Finally, climate change is a significant cause of resource depletion and environmental degradation in Vietnam. Due to its geography, Vietnam is highly vulnerable to the impacts of climate change, mainly because of the diverse topography, extensive coastline, location on the path of typhoons and large population living in poverty. The impacts of climate change include sea-level rise, increased frequency and intensity of extreme weather events such as storms and floods, and changes in temperature and precipitation patterns. These impacts can lead to the degradation of natural resources, including coastal ecosystems, and can have significant social and economic consequences.

In response to these challenges, the Vietnamese government has introduced policies and measures aimed at reducing pollution and conserving natural resources. For example, the government has established the legal framework for environmental protection in Vietnam and has introduced regulations aimed at reducing air and water pollution. The country has recognized the importance of sustainable development and also made progress in renewable energy development, with significant investments in solar and wind power. The government has encouraged the adoption of sustainable agricultural practices, such as organic farming and integrated pest management.

In conclusion, Vietnam's "Doi Moi" economic reforms have contributed to resource depletion and environmental degradation in the country. The expansion of manufacturing industries, extraction of natural resources, intensification of agricultural production, rapid urbanization, and the impacts of climate change are all factors that have had significant environmental impacts. It is important for Vietnam to develop sustainable development strategies aimed at addressing these challenges, but further prioritize and ensure the protection of natural resources and ecosystems, while also supporting economic and social development.

Key issues and challenges

Following Vietnam's economic reform in 1980, there were several significant key issues that negatively impacted their climate and environment. These include issues such as severe climate change, deforestation, air pollution, and water pollution. However, due to limited investment from the government, resources, and enforcement of environmental law, Vietnam has become more vulnerable to ecological changes.

Vietnam's economic performance after the Doi Moi is considered successful, whereby ; the poverty rate was reduced and GDP per capita increased significantly. A lot of human capital and infrastructure has been invested which created rapid growth in population and a significant increase in human activity. The emission of pollutants and concentration of greenhouse gasses in the atmosphere increased from human activities, leading to anthropogenic global climate change which can negatively impact the ecology and economy, especially in a country with poor adaptability and valuable to natural change like Vietnam. The changes in Vietnam' climate, temperature and weather, are presenting an average increasing trend according to the data collected from 1960 to 2011 , reflecting the trend of global climate warming. This change also leads to the fluctuation of precipitation patterns, extreme weather events, and sea level rise which can cause many problems such as floods, drought, and natural disasters.

Vietnam's forest cover between 1992 and 2005 experienced a resurgence from the results of forestry policies and many forestry products such as timber, rubber, and palm oil became one of the most important export products of Vietnam. Nonetheless, after the economic reforms, economic growth created a negative impact on the environment, higher demand for crops, forestry products, and more trees were cut down. Moreover, the higher demand in agribusiness for consumption and raw material production transformed some areas of forest into agricultural areas to increase the productivity of crop production. These occurrences led to deforestation, making Vietnam face problems of landslides from heavy rains, which killed many people and damaged highways and roads.

Economic and industrial growth has also created a lot of deterioration in the air quality in Vietnam. As the country's transport network and the people's wealth expanded, the number of cars increased, leading to an increase in traffic congestion around the country and creating a higher rates of carbon dioxide emission which contributes to the country's major air pollution problem. Also, the increase in the consumption demand due to economic growth made the farmer choose to burn the fields which require less time than using harvesting machines to speed up their production. Furthermore, after the *Doi Moi* reform, Vietnam experienced a significant surge in electricity consumption and created lots of greenhouse gas emissions from the manufacturing process of this electricity because it is mostly generated from the burning of coal-fired plants and

oil.

Likewise, water pollution was considered a crucial environmental problem in Vietnam during the post-war period. As a result of rapid urbanization and industrialization, the increase in production has polluted the waterways in the country. Not only the waterways were polluted, many of their sewage and industrial waste water were not treated properly. Due to the lack of water treatment facilities, this led to many places with untreated wastewater that was released into the rivers and other waterways. The pollution harms many ecosystems such as aquatic species and affects the fishery industry as well. In addition, for the people living near the canal, the contamination of the water affects the quality of water from drinking, farming and also for other agricultural uses.

Soon after the Vietnam war ended in 1975, the government shifted its focus towards rebuilding the country's infrastructure and the economy. However, due to the lack of investment from the government, resource limitations, and weak governance, Vietnam faced tremendous pressure to take critical actions on environmental policies during the 1980s. The lack of investment in environment protection causes significant environmental challenges such as air pollution, soil degradation and also potential habitat loss.

First and foremost, the absence of investment in conservation efforts led to the loss of many important habitats, wetlands, and coastal mangroves. This is one of the main challenges to cope with the environmental degradation from urbanization and industrialization. After years of conflict and destruction in the country, the government's main focus on the post-war period was economic development, not environmental issues. They wanted to build a more stable economy and infrastructure in order to support a larger scale of economic activities. During that time, environmental protection wasn't seen as one of their priorities compared to other issues. After the war, Vietnam was faced with a large amount of debts that was from the foreign aid provided by other countries. This puts them in a difficult place to invest whether to invest more in the environmental sector or not. Furthermore, the emphasis on economic development was extremely high which made many production sectors exploit the natural resources which then later on lead to degradation of the environment.

Moreover, after the war, the Vietnamese government faced a shortage of resources. They faced the widespread destruction of infrastructure such as buildings, roads, bridges, and have also made damages to the natural resources. Their transportation system was completely cut off and disrupted. This makes trading and the transportation of goods across the country extremely difficult, making large parts of the country face the lack of resources. All of these excess demands and factors made it difficult for Vietnam's government to prioritize environmental protection during the post-war period.

It is apparent that Vietnam's weak legal framework was one of the challenges to deal with its environmental problems. The country after the war was considered in its worst where it faced limited resource problems, unemployment, and corruption. Many of the officials overlook environmental problems and prioritize industrialization instead. As a consequence, the neglect from the government led to a failure in constructing strong policies to regulate and enforce environmental standards effectively. However, after the 1980s, Vietnam did establish specific environmental initiatives such as the Green Revolution program as a way to revolutionize agriculture and to reduce the use of chemical fertilizers.

Government Strategies, Policies and Legislation

Climate change has been recognised since the 1960s to the world, then in 1998 the Intergovernmental Panel on Climate Change (IPCC) was established to study climate change caused by human activities. Vietnam also issued the preliminary national initiative in December 2003, with the list of greenhouse gas emissions, mitigation options in the energy, forestry and agriculture sectors, and adaptation. After that in 2008, Vietnam launched the National Target Program to Response to Climate Change (NTP-RCC). This program's Strategic objectives are to assess climate change's impacts on region in specific periods and develop feasible action plan to effective respond to climate change in each short-term/long-term periods to ensure sustainable development of Viet Nam, take over opportunities to develop towards a low-carbon economy, and joint international community's effort to mitigate climate change impacts and protect global climatic system.

The National Target Program affected economic, society, and environment by strengthening the capacity to take initiative in adaptation to climate change to prevent economic damages; reducing negative impacts on health and disease spreading; improving life quality, security and safety; promoting social equality; controlling the rate of greenhouse gas emissions; mitigating climate change impacts on living environment and ecological systems including reducing air and water pollution, cleaner industrial production, and safer agriculture production. However, this policy needed to be more supplemented, improved, and formulated, as it was stipulated without sufficient legal backup to adjust all operations and no concrete institutions of coordination.

Forest Protection and Development Law (1991) aimed to regulate the use of forests, protect land from deforestation, and promote sustainable forest development. The state is committed to formulating forest protection and development investment policies that are closely integrated with other social and economic policies. They encourage organizations, families, and individuals to economize land and afforestation on barren land and barren mountains, and expand land leases,

mortgages, and other methods of afforestation. Furthermore, The state will issue tax relief and exemption guidelines for forest growers and will provide financial institutions with plantation funds at preferential interest rates with grace periods or credit terms appropriate to the different species of plants and the ecological characteristics of each region.

The state forest right includes the capacity to determine the purpose of forest use by approving and enacting forest protection and development plans, as well as setting forest use quotas and forest use conditions. Moreover, The state regulates the benefit sources of forest use by collecting forest use taxes and forest lease fees and by levying taxes on the transfer of forest use rights and the transfer of ownership of planted production forests. This act is effective because all people shall protect forests and strictly abide by the forest protection regulations in accordance with the law. Any person who destroys forests, damages forest resources, illegally acquires, sells or trades forest products shall be prosecuted according to the law.

However, there are still weaknesses in the implementation of forest protection and development plans, including inappropriate and ineffective coordination of forest protection and development plans at the municipal level, limited human capacity, and no expense.

Vietnam is dealing with air pollution using the National Strategy for Environmental Protection to 2030 with a vision until 2050, in which the Government sets targets to prevent the increasing trend of environmental pollution, solve urgent environmental problems, and step by step improve and restore the quality of the environment including air quality. Government plans to eliminate fossil-fuel vehicles, tighten emission controls, and add more green spaces to urban areas. Furthermore, they aim to accelerate the construction of public transportation systems, mass passenger transport, and limiting the utilization of private means of transportation. Nonetheless, the construction of the metro system is still in process and the greener transportation such as electric vehicles is still in the beginning period, the government is yet to issue an attractive policy.

Organizations and individuals have a right to use and enjoy water resources and production. At the same time, we have a legal responsibility to protect water as a resource and to prevent, combat and overcome its harmful effects. The State protects the legitimate interests of organizations and individuals in the development and utilization of water resources. This resulted in Vietnam enacting the Law on Water resource, 1998. This law regulates the management, protection, use and utilization of water resources, as well as the prevention, control and overcoming of adverse effects of water.

The state adopts a policy to efficiently manage, protect and utilize water resources to prevent water-related harm and provide water for the economy and people's livelihoods. Moreover, States should also raise the capacity of forecasts about rising water, floods, droughts, and other harms caused by water, and implement policies on water resource tax exemption and reduction in

areas with particularly difficult socio-economic conditions and water shortages.

In addition, the law prescribes administrative sanctions for those who commit acts of seriously degrading water sources, failing to comply with the instructions of competent state agencies when there are incidents of water sources, sabotage destroying irrigation works and violating other requirements of the Law on Water Resources will result in disciplinary action.

Conclusion

As Vietnam is growing and developing, the country is also facing significant challenges of resource depletion and environmental degradation due to manufacturing, extraction of natural resources, agricultural production, and urban development. This paper examined the impact of economic reforms post 1980s on the environment, particularly the Doi Moi reforms, which encouraged foreign investment and trade, increased the efficiency of state-owned enterprises, and promoted the development of the private sector. The reform has led to significant economic growth, but also had significant environmental consequences, such as increased resource consumption and environmental degradation. The government has responded by introducing policies and regulations aimed at reducing pollution and conserving natural resources.

After the reforms in the 1980, Vietnam there faced several negative impacts related to climate and environment such as severe climate change, deforestation, air pollution, and water pollution. However, Vietnam still has some challenges that make the country vulnerable to ecological changes which are insufficient government's investment, limited resources, and limited implementation of environmental regulation.

In order to cope with the negative externalities, Vietnam's government launched programs and laws to ensure sustainability. For instance, they tried to deal with climate change and pollution through the National Target Program and the National Strategy for Environmental Protection. While introducing Forest Protection and Development Law and Law on Water resource to manage deforestation and water pollution respectively. As a result of implementing these policies, Vietnam able to alleviate economic damage and other negative impacts on health, and promoting well-being.