

EE361



Group assignment

Managing Impacts of Deforestation, Air, Water and Solid Waste Pollution in Vietnam

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Background

Vietnam is a developing country located in Southeast Asia with a population of over 98 million people. The country experiences monsoon seasons, with heavy rains and flooding occurring in some areas. It faces many significant challenges of environmental problems which are mainly caused by rapid economic growth. Environmental issues such as water pollution, air pollution, deforestation and waste management due to industrialization, economic growth, and transportation. These have an effect on high costs on productivity, human health, and the economy, making it necessary for the government to create policies and regulations to address these issues. Therefore this report will provide key issues, causes and how the government addresses these problems from the year 2000 to present.

The causes of environmental problems are a critical issue in Vietnam for several reasons. Firstly, Industrialization has increased, resulting in two decades of strong economic growth. Industry's share of gross domestic product reached 40%. The growth of it. Secondly, urbanization in Vietnam is one of the world's fastest urban transitions taking place in Vietnam. It is the primary driving force behind economic growth. In 2021, 37.1% **[Appendix 4]** of people in Vietnam lived in urban areas and the number of people tended to leave agriculture for industry and services expected to increase every year. Thirdly, Vietnam is highly vulnerable to natural disasters such as floods and landslides, which can be exacerbated by these such as deforestation and soil erosion. Lastly, encroachment and intensification of agriculture that occur from the high intensity of land used and excessive use of agricultural inputs to achieve high yields have led to soil erosion, reduced soil fertility, and contamination of groundwater and surface water. The use of suboptimal irrigation techniques and the lack of incentives for farmers to adopt sustainable natural resource management practices further exacerbate these problems.

Vietnam's rapid economic growth, industrialization, and urbanization have resulted in numerous environmental issues, including air pollution and water pollution, deforestation, and waste management challenges. The country is also highly vulnerable to natural disasters, which emphasizes the importance of addressing these issues to reduce the risks and impacts on the population and economy. Urbanization and economic growth have led to the rapid depletion of natural resources, which further exacerbates waste management and pollution challenges such as air pollution and water pollution. Vietnam is among the ten most affected by these pollution and it affects the country's economic growth and can reduce agricultural productivity and tourism revenue. Encroachment and intensification of agriculture lead to the pressure to develop land and convert lands into cropland has also resulted in deforestation. Unsustainable

exploitation of natural resources such as sand, fisheries, and timber could negatively affect long-term growth prospects, and climate change poses significant risks to the country's population and economy.

To address these challenges, Vietnam has made several commitments at the UN Climate Change Conference in Glasgow, including an ambitious target of reaching net-zero emissions by 2050. The government has released National Action Plans to cope with increasing public interest in environmental quality, covering areas such as air quality, water conservation, and plastic waste pollution. Vietnam has committed to international agreements and protocols aimed at addressing environmental problems, such as the United Nations Framework Convention on Climate Change and the Paris Agreement. The government has also implemented policies to support the growth of renewable energy sources and to increase responsibilities for environmental protection.

Vietnam is facing severe environmental challenges, including air and water pollution, waste management problems, and deforestation, primarily due to rapid economic growth, industrialization, urbanization, and encroachment and intensification of agriculture, and vulnerable to natural disasters. Therefore, addressing these environmental challenges, the government needs to develop sustainable policies that prioritize the protection of natural resources while supporting economic growth and public health.

Key Issues and Challenges:

Deforestation

Deforestation in Vietnam is caused by a combination of factors, including logging, agriculture expansion, infrastructure development, and illegal logging. According to data from Global Forest Watch in **[Appendix 5]**, Vietnam lost 179,000 hectares of tree cover in 2020, which is a 7.8% increase compared to 2010, equivalent to a 15% decrease in tree cover since 2010. The main driver of deforestation in Vietnam is the expansion of agriculture, particularly the cultivation of cash crops such as coffee, rubber, and cashew nuts. Small-scale farmers often use slash-and-burn techniques to clear land, which leads to soil erosion and nutrient depletion. Infrastructure development, including road construction and dam building, also contributes to deforestation in Vietnam. For example, the construction of the Son La hydropower dam in the northwestern region of the country led to the flooding of 3,000 hectares of forest. Illegal logging

is also a major problem in Vietnam, with organized criminal groups often involved in the trade of illegal timber. According to a report by the Environmental Investigation Agency, Vietnam is one of the largest consumers and exporters of illegal timber in the world.

Deforestation in Vietnam has had a significant impact on the country's environment and economy. According to a report by the Ministry of Agriculture and Rural Development, deforestation has contributed to soil erosion, flooding, and water pollution, as well as a decline in biodiversity. In 2020, the impact of deforestation was particularly evident during the flooding season, which was more severe than in previous years. The loss of forest cover meant that there was less vegetation to absorb rainfall and prevent soil erosion, leading to more frequent and severe floods. Deforestation also has economic consequences for Vietnam, as the country's forests provide important resources such as timber, non-timber forest products, and ecosystem services such as carbon sequestration and watershed protection. The loss of forests can therefore have a negative impact on local communities and the national economy.

Air Pollution (PM2.5)

Air pollution made Vietnam suffer due to the worst air pollution that has been recorded so it is still a significant problem in Vietnam especially Hanoi, where it is the most polluted city. The causes of air pollution come from many different reasons including 1.vehicle emissions which is the main cause since the number of vehicles is too much excessing on the road and most of them are old so they produce the weak emission which affects the level of the air pollution contributing to the severe air pollution. 2. industrial activities which are located in the cities, however, people encourage them to move away from the city center. 3.construction which creates a huge amount of dust. 4.burning of waste and biomass which are used by the hundred of thousands of people living in the big city. 5.the change of season which can affect the air quality because of the dry season, which typically runs from November to April,so there will be less rain to wash away pollutants and result in higher levels of air pollution.

One of the most crucial air pollution is fine particulate matter (PM2.5) which is contributed by the rapid growth of urbanization and industrialization making Hanoi, as the fastest developed city, ranked world's seventh most polluted city. PM2.5 is a harmful pollutant that can penetrate deep into the lungs and cause a range of health problems, including respiratory and cardiovascular diseases. According to the World Health Organization (WHO), air

pollution in Vietnam is responsible for a significant number of premature deaths each year. Around 70,000 deaths in 2017 were due to the bad air quality. Moreover, air pollution also causes Vietnam's GDP to fall since the foreign investors and tourism are less likely to invest/visit where there is the problem of the air pollution which is the environmental standards.

In the year 2019 from **[Appendix 2]**, compared to other cities, Hanoi, the capital city of Vietnam ranked world's most polluted. According to a report from Swiss air quality monitor (March 2020), IQAir AirVisual, the city's worsening air quality saw its average PM2.5 level climb to 46.9 micrograms per cubic meter of air last year from 40.8 in 2018. In accordance with the 2019 Global Air Quality Report, Hanoi has surpassed Beijing, China, which was the world's most suffocating capital just a few years ago, for the first time. The average PM2.5 level in the Chinese capital city, which is 42.1, has increased from eighth to ninth on the list.

Water Pollution

Water pollution is a significant environmental problem in Vietnam. Many people rely on contaminated water sources for their daily needs and have also contributed to the spread of waterborne diseases, such as cholera and typhoid fever, which are a significant public health concern in Vietnam. Groundwater that is pumped from private tube wells has replaced surface water that was dug from shallow depths as the primary source of water for the rural population. There is evidence of arsenic pollution in the drinking water in the area surrounding Hanoi in the Northern region of Vietnam. Because exposure to high amounts of arsenic may cause a variety of health issues, including cancer, and neurological disorders, the presence of arsenic in this area poses a significant threat to the approximately 7 million people who live in this region. Natural disasters such as floods and typhoons can also contribute to water pollution in Vietnam by washing pollutants into water sources and disrupting infrastructure for waste management and treatment.

According to a report by the Ministry of Natural Resources and Environment, around 70% of the surface water sources in Vietnam are polluted to some extent, with many rivers and lakes heavily polluted. The main sources of water pollution in Vietnam are industrial activities, domestic sewage, and agricultural activities, such as the use of pesticides and fertilizers. Water pollution in Vietnam is caused by a variety of factors, including industrial and agricultural operations, urbanization, and insufficient waste management infrastructure. Pollutants are

frequently released into bodies of water by industrial operations such as manufacturing and mining. Heavy metals, organic compounds, and other toxic pollutants can destroy aquatic life and offer health concerns to individuals who drink contaminated water.

Waste Management

In Vietnam, waste is typically disposed of in landfills or burned, with only a small percentage being recycled or reused which can contribute to air and water pollution. Improper waste disposal practices, such as open dumping and burning, also contribute to health hazards so waste management is a significant environmental challenge in Vietnam, with increasing amounts of waste generated due to rapid economic development and urbanization.

The following figure from **[Appendix 3]** illustrates the Ministry of Industry and Trade's projections of domestic solid waste generation, which show that the growth of solid waste from the urban and industrial sectors is particularly significant by 2025, with the annual amount of municipal solid waste expected to exceed 50 million tones and industrial solid waste expected to reach nearly 30 million tones. This brought negative impacts on the environment, public health, and the economy. It can cause environmental pollution, spread diseases, harm natural ecosystems, and reduce quality of life.

However, despite these efforts, waste management remains a significant challenge in Vietnam. Many landfills are overloaded and poorly managed, leading to the leakage of hazardous materials into the surrounding environment. Informal waste collectors, who are often marginalized and work in unsafe conditions, play an important role in waste management but face significant health and safety risks.

Government Policies and Regulations

To address these environmental problems, the government of Vietnam needs to set up policies and regulations. These policies and regulations can help to cope with key challenges and also help to protect ecosystems and biodiversity by promoting sustainable use of natural resources and reducing pollution. Moreover, setting up policies and regulations to deal with environmental problems can also help Vietnam to meet its international commitments, such as

the United Nations Sustainable Development Goals. These are some regulations that the Vietnamese government implements to cope with the issues.

1. Environmental Protection Law: Vietnam's Environmental Protection Law(EPL) was first enacted in 1993 and has since been amended in 2005 , 2014, and 2020. The law provides a legal framework for the protection and management of the environment, including air, water, soil, and biodiversity. It also outlines the responsibilities of the government, organizations, and individuals in protecting the environment and promoting sustainable development in Vietnam. One of the major provisions of the EPL is the requirement of environmental impact assessments (EIAs) which is the process to identify and mitigate possible impacts of any project that has the potential to cause significant environmental harm. Moreover, The EIAs process involves the assessment of potential environmental impacts and requires a monitoring and reporting of environmental conditions to ensure that the regulations are being followed. The EPL further specifies fines, license revocation, and possibly criminal prosecution as sanctions for breaking environmental laws. In addition, the law offers compensation for harm brought on by environmental contamination, with polluters being legally responsible for environmental damages.
2. Forest Protection and development program: Vietnam has implemented policies to protect its forests. The government has established a national forest protection and development fund and has implemented programs to promote sustainable forest management and reduce deforestation. In 2019, Vietnam's forest coverage reached 42.4%, up from 28.3% in 1990, according to the Ministry of Agriculture and Rural Development. In addition to its efforts at reforestation, Vietnam put regulations into action to lessen deforestation and forest degradation. The Payment for Forest Environmental Services (PFES) program is one such law that compensates forest owners and managers for the environmental benefits that their forests provide, such as carbon sequestration and water management.
3. Sustainable Development Goals: Vietnam is committed to achieving the United Nations Sustainable Development Goals (SDGs). The SDGs provide a framework for sustainable development that includes goals related to the environment, such as clean water and sanitation, clean energy, and responsible consumption and production. For instance, SDG 6,Clean water and Sanitation. According to the cooperation between UNICEF and the government with an intention to become defecation free by 2025 and to reach a

better condition of clean water and sanitation for all by 2030. In order to achieve these goals, the National Programme of Water Safety Plan was established. It is the programme which develops to address the challenges of providing safe drinking water, terminating open defecation, and sustainably-managed sanitation systems.

4. Renewable Energy Development: Vietnam has set a target to increase the share of renewable energy in its energy mix to 15% by 2030 and 25% by 2035. The government has implemented policies to promote the development of renewable energy, such as feed-in tariffs for solar and wind power. Feed-in tariffs (FiTs) are government-provided incentives to promote the use of renewable energy sources such as solar and wind power by ensuring that renewable energy producers earn a guaranteed price for the electrical power they create, which is typically higher than the price given for conventional energy sources. As a result, Vietnam has seen a rapid growth in renewable energy investment, particularly in solar power. Additionally, The increased capacity for renewable energy has led to major environmental benefits, such as lower greenhouse gas emissions and air pollution.
5. Environmental Education: The government has implemented national policy that highlights raising awareness and responsibility for environmental protection. Vietnam integrates environmental education into all levels of its formal education system. The national government organizes workshops for senior education administrators to raise consciousness and promote support education for sustainable development in education legislation and initiatives at the provincial and national levels. Moreover, the national obligation focuses primarily on participating youth and teenagers in conservation problems, encouraging the public to engage in environmental actions and encouraging inclusive participation in conservation initiatives by political and social institutions, civil society organizations, and the media. Consequently, the environmental problems in Vietnam will be sustainably alleviated because we think it is the most effective solution because the Vietnamese people are well aware of their existence and condition of environmental problems.

Conclusion

Deforestation, air pollution, water pollution and waste management are all significant environmental problems in Vietnam. However, the most serious problems are air pollution and water pollution **[Appendix 1]**. For air pollution, Hanoi, the capital city, faces a severe air condition and it has fatal impacts proving by the number of premature deaths due to the air pollution each year. For water pollution, many people living in Vietnam unavoidably rely on contaminated water for their daily needs which can cause them many serious diseases.

After facing many environmental issues, the government of Vietnam has established various policies and regulations to alleviate these problems from the individual level onto the national level. By implementing many policies, Vietnam can be a more sustainable country and more credible in the eyes of the international perspective. Based on our report, overall policies bring more effectiveness and development to Vietnam in many dimensions. For instance, renewable energy development in Vietnam might not only solve the environmental problem by reducing greenhouse gas emission, but it can also raise an incentive to invest more in renewable energy which could lead to higher aggregate output and productivity to the country.

Vietnam still has many challenges that are hard to solve environmental problems such as the rapid growth of urbanization , industrialization, vulnerability to natural disasters ,Infrastructure development ,and emissions from vehicles and burning of waste ,which are the causes of every issue that we provided in the report . In order to achieve sustainable development and protect the wellbeing of Vietnam's population , It has to follow effective policy, maintaining its natural resources, encouraging sustainable economic growth, promoting public awareness , improving education ,improving infrastructure ,and it is necessary to make sure that economic expansion is balanced with social development and environmental conservation.

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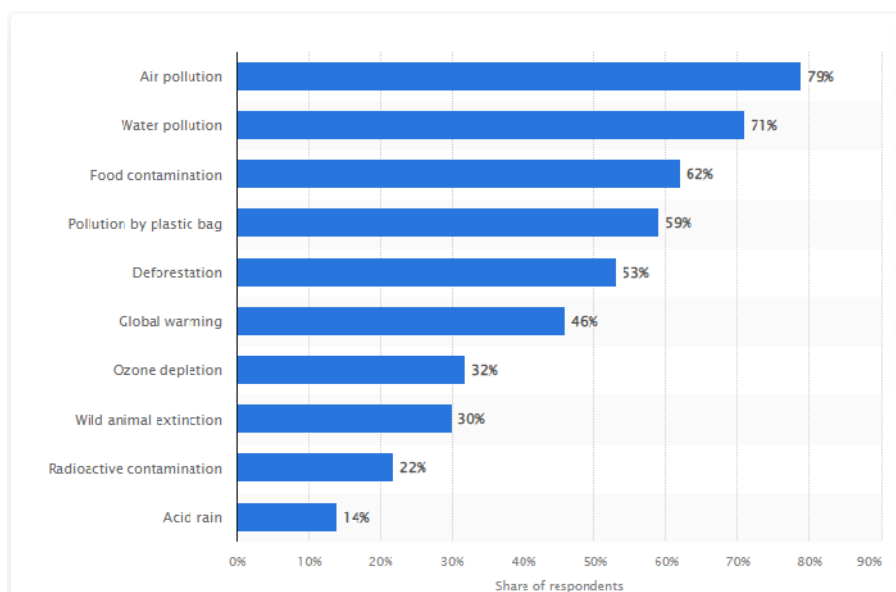
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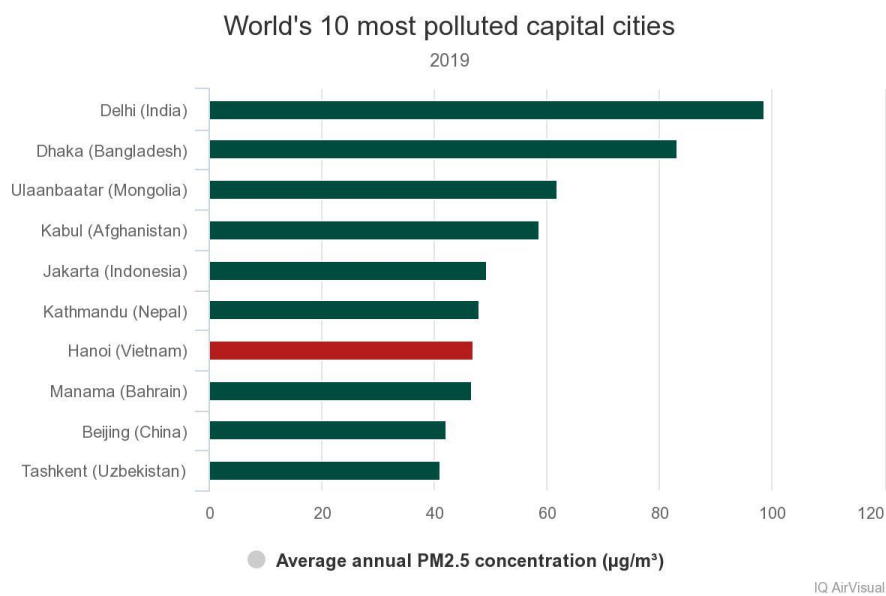
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Most concerned environmental issues among people in Vietnam in 2021



Appendix 1

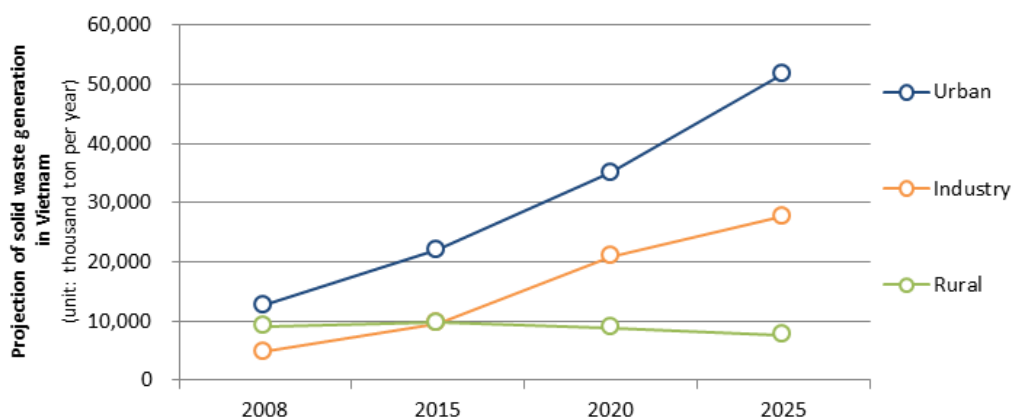
<https://www.statista.com/statistics/1209633/vietnam-most-concerned-environmental-issues-among-people/>



Appendix 2

<https://en.vcci.com.vn/hanoi-ranked-worlds-seventh-most-polluted-capital-city-in-2019>

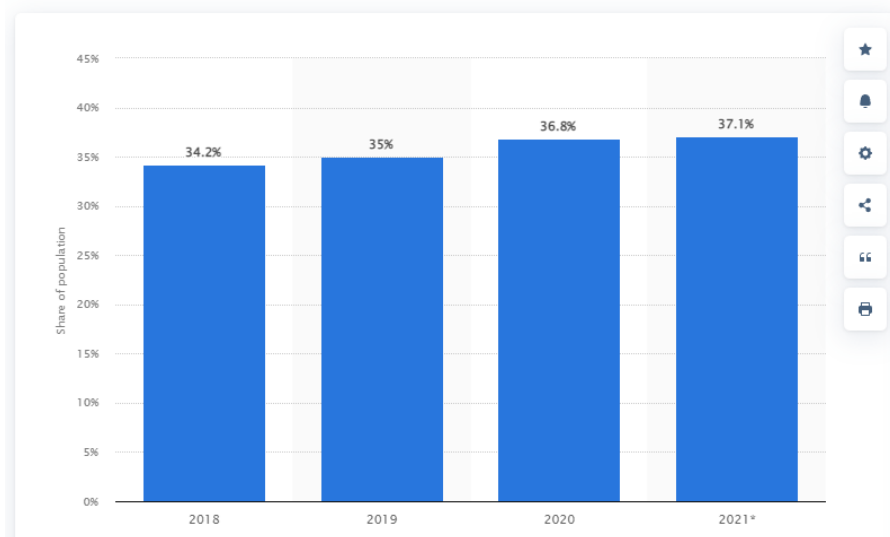
Projection of solid waste generation in Vietnam (2008-2015)



Appendix 3

<https://envilience.com/regions/southeast-asia/vn/vn-waste>

Share of the urban population in Vietnam from 2018 to 2021



Appendix 4

<https://www.statista.com/statistics/761134/share-of-urban-population-vietnam/#:~:text=In%202021%2C%20the%20population%20living,percent%20of%20the%20total%20population.>

