

PROMOTING THE ROLE OF STATE MANAGEMENT AGENCIES IN ENVIRONMENTAL MANAGEMENT AND PROTECTION FROM IMPACTS OF INDUSTRIAL PARKS IN THAI NGUYEN PROVINCE

MA. Do Quynh Hoa

dghoa@ictu.edu.vn

TNU-University of Information and Communication Technology, Thai Nguyen, Vietnam

Abstract

These days environmental protection has become a crucial and global issue. In our country, this has not only become the cause of the Party and entire people but also a fundamental and inseparable part of policies and plans for socio-economic development of the country and each each locality. The increasing speed of economic development and industrialisation has brought about many benefits such as higher living standards, better education and health, and longer life expectancy. However, this is accompanied by environmental degradation, which has become a very heavy responsibility for the state role from the central government to local authorities in controlling the impacts of environmental pollution from industrial parks. In this paper, we analyse the role of the state management agencies in controlling pollution from industrial parks in Thai Nguyen province.

Keywords: *Environment, Industrial Park, State Management*

1. Introduction

When talking about the Vietnamese environment, some international experts normally argue that issues of environmental crisis have been ignored in the academic literature. Vietnam is vastly mentioned as a bright spot in terms of economic development and poverty reduction. After just over two decades of industrialisation, the number of poor people has decreased significantly and the living standards of the majority of people have been improved. However, citing environmental pollution data, Ortman (2017) makes a very rigorous assessment that the natural environment has been traded off, even sacrificed for economic goals. The environmental state management agencies in Vietnam is completely powerless to enforce its laws and to make those who pollute the environment take their responsibility. We argue that such assessment is a bit too strict and not paying attention to the specific context of Vietnam. The Party, State and Government of Vietnam have devoted a lot of enthusiasm and early attention to environmental issues in the process of industrialisation and modernisation. This is clearly demonstrated through the process of perfecting environmental management institutions and commitment to the implementation of sustainable development goals.

2. Methods

In this article, the author uses the method of meta-analysis to fully understand the connotation of the term the role of the state in environmental protection.

In addition, the author uses the case study method to examine the actual implementation and operation of industrial parks in a specific area, especially considering the case of Thai Nguyen province to see the role of state management in environmental protection in industrial zones in Thai Nguyen province. In addition, the author also uses the method of logical reasoning to identify problems that are still limited in environmental protection in industrial zones in Thai Nguyen province; then propose some solutions to improve the efficiency of state management in environmental protection in industrial zones in Thai Nguyen province in the coming time.

3. Results

3.1. Legal framework on environmental protection

** Advances in buiding capacity of environmental management institutions*

Table 1.1. Legal framework for environmental protection

Year of issuance	Laws
1991, 2004, 2017	Law on Forest Protection and Development, Law on Forestry
1993, 2000, 2008	Petroleum Law
1993, 2005, 2014	Environmental Protection Law
1998, 2012	Law on Water Resources
2003, 2017	Fisheries Law
2013	Law on natural disaster prevention and control
2008	Law on Biodiversity
2010	Law on Economical and Efficient Use of Energy
2010	Law on Environmental Protection Tax

Source: Stephan Ortman (2017) and supplimented by author

Vietnam is a latecomer but has soon learned and absorbed environmental management knowledge from previous countries and made much progress in building environmental protection institutions. First, Vietnam's progress and achievements are reflected in the number of laws, policies and regulations on environmental protection made and compiled by the government. Since 1993, the Government has made and proposed to the National Assembly for approval of the Law on Environmental Protection. In 2005 and 2014, the Law on Environmental Protection continued to be revised, supplemented and perfected. In addition to the Law on Environmental Protection, in the early 1990s, the

Government developed other basic laws which have been passed by the National Assembly such as the Law on Forest Protection and Development, the Land Law, the Petroleum Law, the Minerals Law and Law on Water Resources. The Laws on Protection of Natural Resources and Environment are continuously revised, supplemented and updated according to the domestic and international development context. Up to now, the legal framework on protection of environment and natural resources in our country has fundamentally been relatively adequate and comprehensive.

In addition to the basic environmental protection legal framework, the Government of Vietnam has shown itself to be an active government, acting for the environment through national strategies and action programs on environmental and resource protection from the very beginning of the reform period. In 1986, with the support of international experts, the Vietnamese government developed a national strategy on environmental protection. This strategy is the basis and foundation for the development of national laws, strategies and plans on environmental protection. Since 1986, the Government has developed and issued three national strategies for environmental protection and many other plans and strategies that incorporate environmental protection (table 1.2). Since 2012, the Government has committed and developed a green growth strategy for the period 2011-2020, with a vision to 2050.

Table 1.2. Environmental strategies and plans to protect the environment

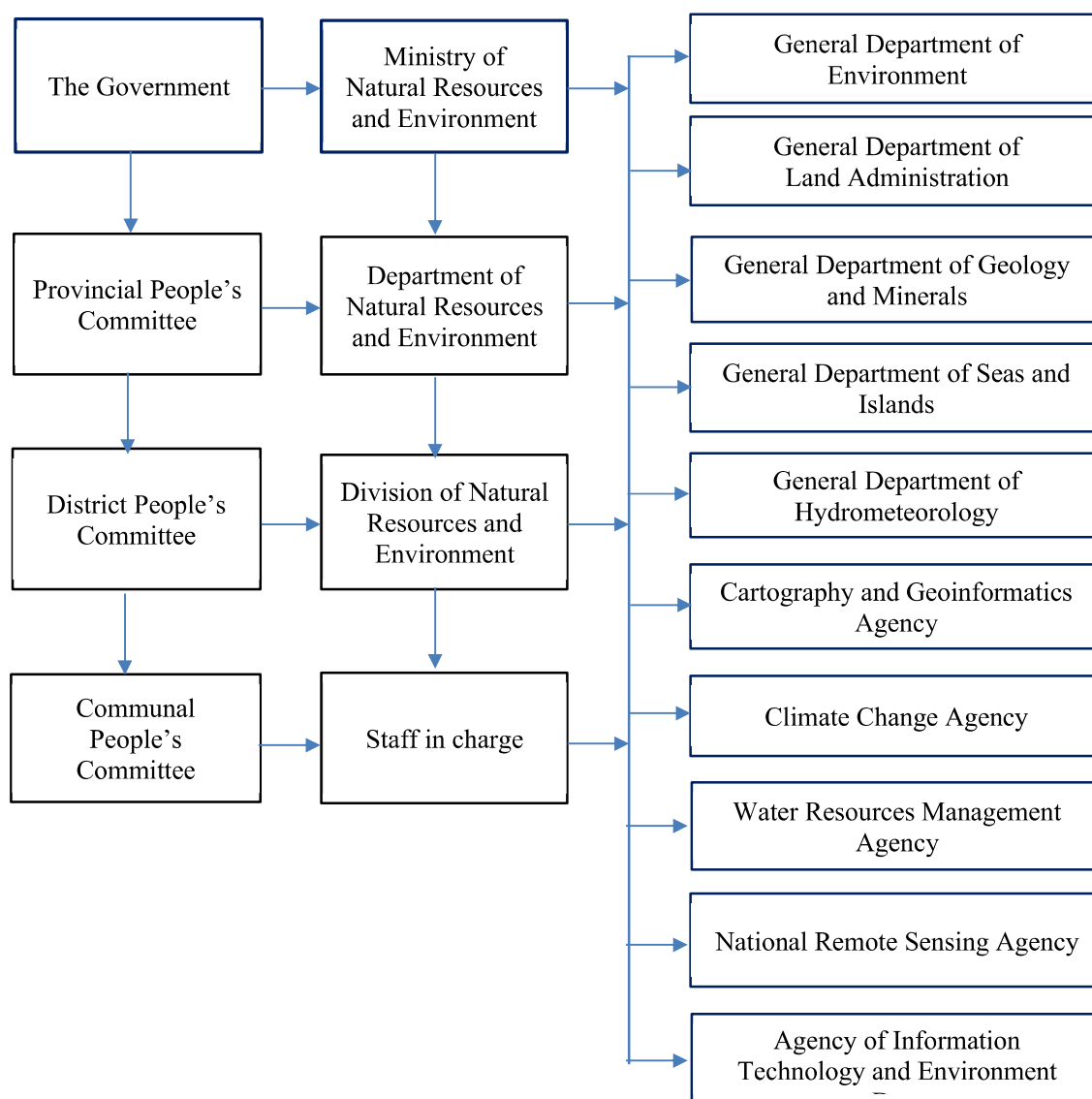
Year of issuance	Names of strategies, plans
1991	National environmental protection strategy for the period 1991-2000
1992	National plan on environment and sustainable development for the period 1991-2000
1998	Plan to implement Directive No. 36 of the Politburo on strengthening environmental protection in the period of industrialisation and modernisation of the country
1998	Water resource development plan to 2000 and vision to 2010
1998	Strengthening environmental protection in the period of industrialisation and modernisation
1999	National strategy for environmental protection 2001-2010
2003	National strategy on environmental protection to 2010 and vision to 2020
2004	National action plan for cleaner production
2007	Strategic orientation for sustainable development in Vietnam (Agenda 21)
2011	Sustainable development strategy, 2011-2020

2011	National strategy on climate change
2012	National strategy on environmental protection to 2020 and vision to 2030
2012	National strategy on green growth for the period 2011-2020 and vision to 2050
2017	National action plan to implement the 2030 Agenda for Sustainable Development

*Source: Stephan Ortman (2017) and supplemented by author
- Resource and environmental protection and management system*

Besides the advancements in the legal framework for environmental protection, the environmental protection system is constantly being improved. Since 1992, the environmental management system under the Ministry of Science, Technology and Environment has been established. In 2003, the Ministry of Natural Resources and Environment was established on the basis of general departments: the General Department of Land Administration, the General Department of Meteorology and Hydrology and the Environment Agency. By 2017, the Ministry of Natural Resources and Environment has a structure including 5 general departments, 5 agencies. Several new units were established such as General Department of Seas and Islands, Climate Change Agency, Remote Sensing Agency. Besides, the Ministry of Natural Resources and Environment also has public non-business units and enterprises including two centers, five specialised research institutes, two universities and three companies. At the provincial level is the Department of Natural Resources and Environment, at the district level is the Division of Natural Resources and Environment, and at the commune level, there is full-time staff in charge. Moreover, in the Ministries and sectors, there are departments or officers in charge of the environment to monitor and manage environmental issues related to the fields of expertise. Since 2006, in order to strengthen the capacity to manage and handle violations related to environmental protection, the Government has proposed and the National Assembly approved the establishment of the Environmental Police Agency to prevent environmental crime, which is increasing in the process of industrialisation, modernisation and international integration.

Figure 1.3. The Natural Resources and Environment Management System in Vietnam



3.2. Industrial parks in Thai Nguyen

The whole province has planned 06 industrial parks with a total planning area of about 1,420 ha, including:

Song Cong I Industrial Park is planned 195 ha for lease

Yen Binh Industrial Park is planned 400 ha for lease

Nam Pho Yen Industrial Park is planned 120 ha for lease

Diem Thuy Industrial Park is planned 350 ha for lease

Song Cong II Industrial Park is planned 250 ha for lease

Quyét Thang Industrial Park is planned 105 ha for lease

Song Cong II Open Industrial Park (Under planning, scale 300ha).

Phu Binh Industrial Park - Urban – Services (Under planning, scale 900ha)

Cummulatively, the industrial parks in Thai Nguyen province have reached the coverage rate of industrial land area of 61%. It is accumulated by the end of September 2020 that in industrial parks in Thai Nguyen province, there are a total of 236 projects with valid investment registration certificates, including 119 FDI projects with a total investment registered capital is \$8,438.3148 million and domestic-investment-capital 117 projects with a total registered investment capital of VND 15,611.2109 billion.

Regarding the socio-economic development orientation of Thai Nguyen province, according to the Task of planning Thai Nguyen province in 2021-2030, with a vision to 2050 approved by the Prime Minister in Decision No. 664/QĐ - TTg dated May 20, 2020 and according to the Resolution of the 20th Thai Nguyen Provincial Party Congress for the 2020-2025 term and the Action Plan to implement the Resolution of the 20th Thai Nguyen Provincial Party Congress for the 2020-2025 term, Thai Nguyen province will plan a key economic development area in the South, including the localities of Pho Yen, Song Cong, and Phu Binh as urbanised, industrial and service areas. Correspondingly, in the planning period from 2021-2030, with orientation to 2050, industrial parks in the province are mainly planned in these three localities.

3.3. The work of protecting the environment from the impacts of industrial parks of the provincial government over the years

- When carrying out the construction of industrial parks, the authorities in Thai Nguyen province always ensure the motto: the planned area is suitable, synchronous with the surrounding terrain, does not change too much of the current situation, ensures ecological landscape; protects the land and water resources by only exploiting surface water, not the groundwater and complies with discharge conditions.

- Regarding environmental protection against wastewater: wastewater in the production process of factories in industrial parks is treated locally at factories, then collected and further treated at centralised wastewater treatment stations of the industrial parks. In these stations, industrial wastewater will be treated and cleaned to reach the requirements specified in column A of the National Technical Regulation on Industrial Wastewater QCVN 40:2011/BTNMT before being discharged into the environment. With such a solution for drainage in and around the factories, the negative impacts on soil quality will be minimised.

- The protection of the soil environment is carried out by the following measures: to ensure that rainwater in the industrial parks, especially in production areas with many

chemicals, does not flow into the surrounding soil to damage the soil. Solid waste from industrial production and daily consumption of the industrial parks is collected and transported to the collection area of all kinds of solid waste in the industrial parks. Then, this waste will be transported, sorted and treated according to regulations.

- The process of planning and implementing projects ensures the compliance with the provisions of the Law on Water Resources like compliance with the prevention of pollution, degradation and depletion of water sources, compliance with overcoming pollution incidents and restoring polluted and depleted water sources; compliance with the protection of the quality of domestic water sources and with discharge of wastewater into the source, and registration for issuance of permits for exploitation and use of water resources. Industrial wastewater after treatment must meet the standards and regulations before being discharged into the receiving source according to Regulation 40:2011/BTNMT and the discharge into irrigation systems must meet TCKT 01:2018/TCCL standards in Decision No. 150/QĐ-BNN-TCCL dated January 15, 2018, without affecting the environment, irrigation canal system, lakes and dams near the industrial parks and people's daily life. Moreover, there are plans to use, protect or relocate, return irrigation systems (lakes, dams, pumping stations, canals and ditches ...) according to regulations to ensure irrigation for agriculture production; ensure the compliance with irrigation planning and relevant regulations.

- The work of information propaganda and awareness raising on environmental protection continues have been promoted. Thai Nguyen Management Board of Industrial Parks has issued a plan and organised propaganda, dissemination, guidance and taken notices of the situation of environmental protection at each enterprise that has been put into operation in industrial parks. Thereby, Thai Nguyen Management Board of Industrial Parks has guided businesses strictly implement the requirements of environmental protection such as the investment, construction, and renovation of environmental protection works, the making environmental protection projects and plans; the connection of rain water and wastewater; measures to collect, classify and treat industrial waste; the register book of owners of hazardous waste and waste sources; difficulties and problems that need to be solved in terms of environmental protection.

- The mobilising businesses to join hands to protect the environment is enhanced and its quality is improved. Annually, the Management Board has mobilised cadres, civil servants and public employees together with leaders and employees of enterprises to join forces to respond and support "Volunteer Saturday", "Environment Day", "World Environment Day", "World Cleanup Day", "National Week of Clean Water and Sanitation". All together have cleared up trees, collected garbage, trimmed ornamental plants, dredged sewers, manholes for rainwater, wastewater of industrial parks.

- Leading and directing activities have been in a timely and effective manner. The promulgating plans and implementing urgent tasks and solutions on environmental protection in the spirit of Directive No. 25/TC-TTg dated August 31, 2016 of the Prime Minister, Directive No. 22/CT-UBND dated October 4, 2016 of the Chairman of Thai Nguyen Provincial People's Committee has been done. A draft regulation on coordination of environmental protection in industrial parks with relevant localities and units in the spirit of Decree 82/2018/ND-CP dated May 22, 2018 of the Government has been compiled. Annually, about 450 documents (plans, guidelines, official letters, decisions, reports,...) are issued to strengthen the state management of environmental protection.

- Environmental monitoring in and around industrial parks is carried out regularly and signing a contract with capable monitoring units to monitor the current environmental status of Diem Thuy Industrial Park with frequency of 4 times per year at approved locations in order to assess the level and causes of air pollution, noise levels in and around the industrial park, and quality of wastewater and surface water has been carried out. Correspondingly, there are active directions for businesses specialising the industrial park infrastructure to strictly implement periodical monitoring at approved locations, promptly take measures to protect the environment in industrial parks when there are signs of pollution.

- Inspection and supervision have been always focused and ensured the compliance with regulations. Annually, the inspection plans for enterprises in the industrial parks and the coordination with relevant units set up inspection teams and take samples of waste discharge at enterprises to assess environmental protection have been done.

- Participation as a member of the delegation to inspect the implementation of the law on environmental protection at enterprises in the province developed and led by the General Department of Environment, the Department of Natural Resources and Environment; participation as a member of the Council for assessing environmental impact reports, plans and projects on environmental protection of new projects which have just put into operation in industrial parks; coordination with the environmental police division of the provincial police and functional branches in inspecting the implementation of the law on environmental protection of enterprises in industrial parks.

4. Discussion and Conclusion

4.1. Discussion

The achievements in making environmental management institutions of the Government in general and the government of Thai Nguyen province in particular are abundant, but the environmental pollution around the industrial parks of the province is bad, even worrisome. A number of foreign studies have assessed the state of environmental pollution in Vietnam as an environmental crisis and considered it the clearest evidence for

the failure of the government in environmental management and protection (Ortman et al. 2017). However, among the current limited issues in environmental protection and management, we only mention a few of the emerging challenges and limitations in Thai Nguyen. Below is a summary of some issues related to the state management in environmental protection in Thai Nguyen province including the control of environmental pollution in industrial parks, industrial clusters, and craft villages, the inspection, examination and handling of violations on environmental protection; handling thoroughly units causing serious environmental pollution and controlling residual polluted areas.

Firstly, a difficulty in solving environmental pollution is that since the units were established and operated for decades ago, so the production lines are outdated, followed by the system of asynchronous environmental protection works including seven units with wastewater discharge volume of more than 1,000 m³ per day and night This is not to mention the waste volume of two metallurgical plants with production scale of more than 200,000 tons per year and one acid factory with an output of more than 10,000 tons per year. To monitor the waste discharge of these units, the Department of Natural Resources and Environment of Thai Nguyen province has coordinated with each unit to install an automatic and continuous environmental monitoring system and run pilot tests. This has increased the total number of units implementing water and air automatic and continuous monitoring systems to 11 units, of which data of six waste sources are transmitted to the Department. The remaining units continue to integrate with the Department's automatic monitoring system to regularly and promptly control waste sources.

Secondly, one of the production activities with high risk of causing environmental pollution is the mining of minerals and construction materials with nearly 100 licensed organisations and 195 mining licenses, mainly exploiting limestone, sand and gravel, leveling soil, antimony, barite, kaolin, lead, zinc, coal and iron. Especially, there are 10 licensed gold mines. The process of mining minerals as well as construction materials has more or less affected the natural environment as the wastewater from the drying of the mining pit, the water washing the surface through the mining area, the waste dump areas and wastewater from the ore washing process; dust, emitted gas from transportation, loading and unloading, drilling and blasting, accidents caused by landslides or waste dumps. In addition, there are 15 industrial clusters planned in the province with enterprises who are investors in infrastructure construction without centralised wastewater treatment system, but mainly the secondary units themselves invest in separate waste treatment systems. Related to the natural environment, there are 220 traditional craft villages, of which more than 198 craft villages grow and process tea, the rest process forest products and food.

Thirdly, for waste management: Regarding ordinary industrial waste: about 1,000 tons is generated per day mainly in some operating industrial parks and Thai Nguyen iron and steel industrial park, of which Samsung Company and satellite units generate 600 tons

per day, Thai Nguyen Iron and Steel Company generates 240 tons per day. Most of the industrial waste generated is reused, collected and treated. However, there are still some units that are not conscious of environmental protection, and there is a situation of illegal waste discharge. *Regarding hazardous waste:* In 2020, the whole province has 245 units that are granted hazardous waste source owner books, in which the largest source comes from Samsung Company (accounting for about 30% of the total amount generated). Most of the generated hazardous waste is collected, treated or contracted with a functional unit in accordance with regulations. There is no illegal discharge of hazardous substances into the environment. The control and supervision of waste transportation and treatment activities of the units (especially the units outside the province that carry out solid waste treatment for Samsung Company and satellite companies) still face many difficulties.

In the province, currently there are 188 investment projects in industrial parks, 121 of which have been put into operation including: 48 projects in Song Cong I Industrial Park, 55 projects in Diem Thuy Industrial Park, 13 projects in Yen Binh Industrial Park and 5 projects in South Pho Yen Industrial Park. Of the total 121 investment projects in the above mentioned industrial parks, 65 projects are subject to make environmental impact assessment reports; 56 projects are subject to make environmental protection plans. Up to now, 59 out of 65 projects have been approved for their environmental impact assessment reports and detailed environmental protection projects; six out of 65 projects have been put into operation but have not been yet approved their environmental impact assessment reports or environmental protection projects; 37 out of 56 projects have been confirmed with environmental protection plans. The new completion confirmation rate reached 63.6%, while 36.4% of the projects have been into official operation but have not yet been confirmed for completion. Currently, only two out of 19 operating industrial parks have wastewater treatment systems with the amount of about 500 m³ wastewater being treated centrally per day. For industrial parks without an investor, the wastewater treatment is mainly built and operated by enterprises themselves. The total amount of wastewater generated and discharged is estimated from 1,000 m³ per day and night; emissions according to the Appendix attached to the Government's Decree No. 38/2015/ND-CP.

Fourth, according to the provisions of Decree No. 38/2015/ND-CP dated April 24, 2015, in Thai Nguyen province, there are 07 units with wastewater discharge volume of over 1,000 m³ per day; two metallurgical units with scale of more than 200,000 tons per year; two thermal power plants and five units of cement production; one acid factory with over 10,000 tons per year. Most of these units have been established for a long time and the system of environmental protection works is not synchronized, so this is one of the environmental hot spots in the province.

Fifth, the inspection, examination and handling of violations of environmental protection: In 2017, the General Department of Environment inspected the observance of the

law on environmental protection in Thai Nguyen provinces from September 18, 2017 to November 17, 2017 of 19 units in Thai Nguyen province and issued eight decisions on sanctioning administrative violations in the field of environmental protection for violating units in Thai Nguyen province, with a total fine of 2,052,860,500 VND. The inspection results show that there are nine out of 19 inspected units discharging wastes (wastewater, exhaust gases) in excess of technical regulations into the environment. In addition, some units are inspected for violations on management of hazardous wastes and for not having a certificate of completion of environmental protection works, improperly performing the contents of the EIA report/environmental protection project/commitment to environmental protection and there is no automatic monitoring system as prescribed. The inspection delegations organised in 2020 by local authorities: During the reporting period, all levels and sectors in the province organised more than 500 periodical and irregular inspections and checks on the observance of the law on environmental protection; conducted the specialised subject on guidelines for confirmation of the completion of thorough treatment of pollution, certification of completion of environmental protection works, approval of environmental protection and restoration projects, verification of voters' opinions and petitions. Accordingly, 130 units have been handled for administrative violations on environmental protection with a fine of nearly 6 billion VND; in which 14 cases of illegal dumping and discharging into rivers and streams were detected and handled with the fine of VND 2.5 billion.

Sixth, the thorough handling of units causing serious environmental pollution: For factories belonging to Thai Nguyen Iron and Steel Joint Stock Company, the situation of environmental pollution has not been thoroughly handled, especially at Steel Plant, Mechanical Joint Stock Company, Thai Nguyen Steel Rolling Factory, Iron and Steel Alloy Joint Stock Company. Gas sample analysis results show that most metallurgical units in Song Cong 1 Industrial Park and Shinwon Company had an interest in investing in the installation and operation of a system to treat dust and gas emissions into the environment at the time of inspection meeting the permitted standards. There was one enterprise in Song Cong 1 Industrial Park that was detected to have the dust concentration in the exhaust gas exceeding the standards. Air pollution and environmental pollution caused by smoke and dust released into residential areas near these factories are always pressing public opinions. Correspondingly, Thai Nguyen province has directed functional sectors to urgently handle and solve "hot spots" of environmental pollution caused by mining and industrial production activities. The provincial Department of Natural Resources and Environment has strengthened their inspection, examination, and periodic monitoring of wastewater and gas emissions at large industrial facilities, closely supervised the implementation of environmental impact assessment reports of enterprises, coordinated with functional

agencies to resolutely sanction acts causing environmental pollution, suspended operations of enterprises causing the serious and prolonged environmental pollution.

4.2. Conclusion

Some suggestions for improving the efficiency of state management for environmental impacts from industrial parks in Thai Nguyen province

Firstly, solutions on science, technology and environment:

The province needs to support interest rates on termed loans for businesses with technological innovation programs. It is necessary to promote the process of socialisation of science and technology non-business units in order to move towards establishing science and technology enterprises to better perform the role of technology transfer units; step by step create local technology markets; develop policies to support enterprises to innovate and use modern technology, apply scientific and technological advances, improve productivity and quality of products, goods and services and establish industrial property rights in the province. Moreover, the establishment of relationships between enterprises and scientific research institutions to develop production should be done. The province also need to spend a part of the budget to support research and application of new technologies. Finally, the province need to take measures to limit the use of outdated equipment, machinery and means of production with outdated technology having bad impacts on the environment.

Second, solutions to environmental protection

It is necessary to link industrial development planning with environmentally sustainable development, closely combine the investment in renewal of production equipment with modern solid waste and industrial wastewater treatment technology in order to provide useful solutions to protect the environment. Besides, regular monitoring and inspection of production units in compliance with regulations on environmental protection must be done. Synchronous investment for construction of concentrated environmental treatment works together with enhancing education, training and raising awareness on environmental protection for employees, business managers, management boards, state officials on industrial environment should be carried out. Stakeholders need to fully enforce legal regulations in new investments in industrial constructions and exploiting, processing and using works of natural resources. It is necessary to make a plan to protect the environment and strictly organise its implementation, especially pay special attention to environmental protection in industrial parks and clusters.

Another solution is to conduct a specific assessment of the environmental status of industrial parks, clusters, and operating production units, assess pollution caused by exhaust gases and industrial wastes, emissions and dust of vehicles, pollution levels of water sources, etc. to have a general treatment plan in the locality as well as in each area. Besides, it is

needed to periodically monitor and analyse the composition of hazardous wastes.

Before construction, investment projects and factories must commit or make a report on environmental impact assessment before being granted investment and construction permits. Industrial parks and clusters must invest in a waste treatment system so that treated waste reaches the prescribed level before being discharged into the environment. For projects and factories which have been granted construction investment permits must conduct periodic environmental impact assessments in accordance with the provisions of the Law on Environment.

Drainage planning for industrial parks must take into account specific water drainage sources. It is necessary to apply two wastewater treatment systems: the on-site water treatment system for each factory and the general treatment system of the industrial park.

Third, it is necessary to renew the development thinking and approach in resource management and environmental protection towards a comprehensive and sustainable approach, eliminate the local approach to resource management and environmental protection. In particular, it is necessary to consider the task of environmental protection as an important task of the province in order to realise the goal of sustainable development.

Fourth, it is necessary to reform the administrative system for environmental management in the direction of leanness, efficiency and quality with a clear assignment and division of responsibilities between the provincial and district environmental management agencies. In addition, it is advisable to increase civic and social criticism to the province's policy and management effectiveness on environmental issues, and to reform the administrative system in the direction of focusing on reforming services and interactions between the government and citizens and businesses towards a modern and convenient market to reduce the cost of time and money. The administrative agencies need to promote businesses that are responsible for the social community and the country. Regularly, stakeholders need to update technology in the direction of green, saving resources and protecting the environment. The provincial government needs to improve the capacity of the environmental management system by strengthening research, updating and applying modern technological solutions in monitoring and evaluating the current state of the environment.

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