ENVIRONMENTAL ISSUES IN VIETNAM'S SOUTHERN KEY ECONOMIC ZONE AFTER TEN YEARS OF DEVELOPMENT

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This paper aims to analyze the current pollution of water, air and solid waste in the provinces and cities of the Southern Key Economic Zone (SKEZ). Based on its findings, some suitable solutions will be suggested to ensure SKEZ's sustainable economic development in and the harmony between economic growth and development, resulting in a healthy living environment.

Keywords: environment, environmental pollution, SKEZ

1. Overview of SKEZ

Ten years after the initiation of *Đổi mới* (Renovation), in late 1997 and early 1998, several provinces were selected to establish KEZs in order to accelerate the country's overall growth and create a link and coordination in socio-economic development among EZs. A KEZ can have ability to realize breakthroughs, stimulate national socioeconomic development with great and steady speed, enhance the living standards and attain social equality. The establishment of KEZs serves practical needs in general and the economy's requirements in particular.

Specifically, in the years 1997 – 1998, three Decisions were made on the founding of three national KEZs, namely Northern KEZ (Decision 747/1997/QĐ-TTg), Central KEZ (Decision 1018/1997/QĐ-TTg) and SKEZ (Decision 44/1998/QĐ-TTg).

According to Decision 44/1998/QĐ-TTg, SKEZ is comprised of four provinces, namely HCMC, Đồng Nai, Bình Dương, and Bà Rịa – Vũng Tàu. Five years later, in July 2003, three more provinces (Tây Ninh, Bình Phước and Long An) were added to SKEZ according to Announcement 99/2003/TB-VPCP dated July 2, 2003. Tiền Giang Province was supplemented two years afterwards in September 2005 according to Official Document 4973/2005/CV-VPCP from the Government Office, raising the total number of provinces to eight. However, the heart of SKEZ consists only of four original localities: HCMC, Đồng Nai, Bình Dương, and Bà Rịa – Vũng Tàu.

Socioeconomic development in KEZs in general and SKEZ in particular has been progressing rapidly and steadily due to appropriate guidelines given by the government and efforts by provincial authorities, enterprises and residents. During their development, KEZs have deployed their advantages by creating their own strength with an open economic structure and connecting domestic and foreign market demands. This not only speeds up economic structure changes but also supports the macroeconomic stability, especially providing support for and stimulating socioeconomic development of neighboring provinces.

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Since its establishment, SKEZ has become one of Vietnam's fastest growing EZs, significantly contributing to the country's economic growth by making the best use of its resources and potentials in terms of geographical location, natural conditions, and infrastructure, etc. SKEZ is also a pioneer in modernization and industrialization nationwide as well as in some major fields. It helps enhance the quality of national competitiveness, takes the lead in global economic integration and motivates development of the Eastern South Region. In the government's viewpoint, SKEZ deserves high investment to become one of the most dynamic and fastest growing EZs nationwide, take the lead in major sectors and enhance efficiency and competitiveness of the economy. [1]

Despite its achievements, the increasingly strong development of industrial production in SKEZ has caused a severe environmental pollution on the whole area.

2. Methods of evaluating environmental pollution in SKEZ

- Statistics: collecting and processing environmental statistics of SKEZ after 10 years of development. It is comprised of:

+ Sociological investigation which aims at finding environmental issues and gathering opinions or advices from local authorities and residents.

+ Networking method is used for determining direct and indirect impacts, and secondary and mutual impacts.

+ Rapid environment assessment method based on WHO pollution index is applied to estimate the quantity of pollutants resulting from construction and implementation of projects.

+ Synthesizing and comparing method: combining gathered data and comparing them against Vietnam's environmental standards and criteria, thereby assessing the background environmental quality at research sites and proposing solutions for diminishing adverse impacts on the environment.

3. Facts of environmental pollution in SKEZ

a. River water pollution:

The Đồng Nai River system is composed of main tributaries and branches such as Đa Dung – Đa Nhim – Đồng Nai Rivers, La Ngà River, Bé River, Sài Gòn River, and Vàm Cỏ River. This is the main water supply for living activities and production in 12 provinces, namely HCMC, Đồng Nai, Bình Dương, Bình Phước, Bà Rịa - Vũng Tàu, Lâm Đồng, Đak Lak, Đak Nông, Ninh Thuận, Bình Thuận, Tây Ninh, and Long An. According the Office of Environmental Protection under the Ministry of Natural Resources and Environment, some water bodies such as Cam Ly Falls and especially upstream Trị An Lake see a decrease in dissolved oxygen (DO) concentration to a record low that stretches about 10 km from La Ngà Bridge along with strong smells coming up from the water surface.

Reports from the HCMC Department of Natural Resources and Environment show that water degradation is more severe in downstream Đồng Nai River system. At the HCMC-based stations of Phú Cường, Bình Phước and Phú An, water pollution caused by organic matter, oil, and microorganism constantly rises, up to hundreds of times higher than acceptable standards, which made it unsuitable for public use. Particularly, Thị Vải River has a 10km-long dead section in which the water is heavily contaminated with organic matter, turns brown, and emits heavy odor at low and high tides. DO frequently measures under 0.5mg/l at which point no living thing can survive. Microorganism pollution goes beyond allowed standards by hundreds of times. What is most alarming, Vedan and Mỹ Xuân Ports see mercury content exceed allowed

[1] PM Decision 44/1998/QĐ-TTg dated Feb. 23, 1998 on the Master Plan for SKEZ Socioeconomic Development up to 2010, p. 2

standards by 1.5 to four times and zinc content by three to five times [2].

At monitoring stations at the upstream sections of Sài Gòn and Đồng Nai Rivers, the concentration of oil and coliform exceed allowed standards. The same situation is also found at other stations where coliform concentration is beyond allowed standards by 1.6 to 4.2 times, and oil concentration up two to three times. What is most concerning is canal and underground water. Microorganism pollution is heavy at most canals while underground water show more conspicuous signs of microorganism pollution. The situation is even worse at dead sections of Suối Cai – Xuân Trường Stream, Ba Bò Canal and Thị Vải River [3].

According to environmental experts, water pollution is mainly caused by industrial parks (IPs) where effluent is not properly treated before being discharged into rivers. Up to 2008, there were 56 IPs and export processing zones (EPZs) in SKEZ including 10 IPs and three EPZs in HCMC, 19 IPs in Đồng Nai, 16 IPs in Bình Dương and eight IPs in Bà Rịa – Vũng Tàu, not to mention the amount of untreated sewage from residential areas dumped into rivers. The daily volume of industrial effluent discharged into Đồng Nai River stands at 111,600 m^3 along with tens of tonnes of harmful chemicals. Moreover, the size and speed of industrial development on the river rises by over 15% per year. Experts emphasize that if no action is taken to protect the environment, the Đồng Nai River system will receive another 1.73 million cubic meters of wastewater from residential areas and 1.54 million cubic meters of industrial effluent after 2010, not to mention increasing pollution threats posed by industrial production outside centralized IPs. We can say without exaggeration that the life of over 20 million residents in SKEZ is seriously threatened. If nothing is done about this situation, economic profits surely cannot make up for environmental costs.

b. Industrial and medical sewage pollution:

Until 2008, seven out of 13 IPs and EPZs in HCMC that lacked centralized wastewater treatment plants (CWTPs) were Vĩnh Lộc, Tân Thới Hiệp, Cát Lái, Bình Chiểu, Hiệp Phước, Tây Bắc Củ Chi and Tân Phú Trung IPs. Four of them have started building and installing WTPs that can be put into operation next year. There are six other IPs and EPZs with operational CWTPs. Three out of the six meet A-degree standards while the others meet B-degree standards. Their total treating capacity is 40,000 m^3 (but only half of it satisfies sewage disposal standards).

Altogether, about half of HCMC-based IPs have yet to completely construct centralized and inter-enterprise WTPs (currently, sewage only gets raw treatment before being dumped into ditches and rivers). In fact, CWTPs in many IPs fail to connect with all enterprises in the IP while many enterprises only operate their treatment systems when inspectors come. Furthermore, some degraded and below-standard WTPs are badly affecting CWTPs. In late 2008, the HCMC Department of Natural Resources and Environment conducted an inspection on 31 enterprises in the IPs and found that pipelines in 19 of them were not arranged properly, so their effluent might cause pollution, and seven were fined for their violations[4].

Regarding medical premises, only five out of 19 central-level public hospitals are equipped with WTPs, but three of the plants are below standard. Three hospitals have their WTPs checked before putting them into operation, two are investing in the construction of WTPs and one has their WTPs repaired. Among municipal public hospitals and medical centers, 10 facilities set up projects and proposed plans for

[2] 2008 Environment Report by HCMC Department of Natural Resources and Environment

[3] See *Sài Gòn Giải Phóng*, June 22, 2007.

[4] 2008 Environment Report by HCMC Department of Natural Resources and Environment

construction of WTPs, 14 petitioned for construction of new WTPs, 15 for repairs of old WTPs and 23 for outlays on maintenance of WTPs. Concerning private hospitals, 20 out of 24 concerns have WTPs, but 11 of them are below-standard plants. Among the remaining four facilities, one is testing its WTP before operation and two are building WTPs [5].

Up to 2008, Đồng Nai Province has had 19 IPs approved by the government, but only nine had CWTPs in operation. Their average daily wastewater volume is about 60,000 m^3, only a small amount of which is treated before being discharged into rivers. Effluent treated by enterprises in IPs with no CWTPs is in large volume, contains a wide variety of pollutants, and is directly degrading water quality in the zone. Tardiness in developing WTPs has enormously deterred the effort to reduce environmental pollution caused by industrial effluent.

c. Air pollution:

In HCMC, air quality is passable with concentrations of SO_2, NO_2 and PM 10 dropping by 1.34 to 1.44 times, and only ozone concentration rising by 1.2 times. However, high-traffic areas see increases in major emission levels such as CO up 1.44 times and PM 10 up 1.07 times. Even worse, lead concentration is found rising by 1.25 times according to observational results.

Regarding Đồng Nai province, its IPs have a good air quality with basic pollution indicators such as floating dust, SO_2, CO and noise levels being controlled within ambient air quality standards. Generally, the air quality has been showing positive progresses, which proves effectiveness in enforcement of environmental regulations on IPs and efforts by local enterprises in preventing and treating pollution as well as in protecting the environment.

Meanwhile, urban areas in Đồng Nai witness signs of slight air pollution in which noise levels and especially floating dust exceed allowed standards while other pollution indicators are kept in check. The rise of floating dust in urban areas results mainly from vehicle emissions and dust formed by construction activities.

d. Pollution from solid waste:

Solid waste from residential areas in SKEZ are now in large quantities, but garbage collection service can only handle it to a certain extent, from the highest of 60% in HCMC to the lowest of 48% in Đồng Nai. The amount of hazardous solid waste in urban garbage of the zone accounts for a high proportion, particularly in HCMC.

Additionally, the volume of industrial solid waste all over SKEZ is recorded at 571 tonnes per day or 208,425 tonnes per year. HCMC makes up the biggest volume of solid waste at 150,380 tonnes per year and the highest ratio of solid waste to one unit of area at 38.7 tonnes per km^2/year. The annual amount of hazardous waste in SKEZ varies from 30,000 to 200,000 tonnes with oil-containing waste accounting for the biggest share.

To increase garbage treatment capacity for HCMC-based Tây Bắc Solid Waste Treatment Complex, Lot 1 of the Landfill 1A has come into operation since March 2007 with a capacity of 3,000 tonnes per day. Meanwhile, Lot 2 is being examined and outlined by HCMC Environmental Company before being submitted to the former HCMC Investment Fund for Urban Development for loan. Other projects for production of compost from garbage (Vietstar Co., Saigon – Earthcare Joint-Venture Co., Việt Ý Co., Tâm Sinh Nghĩa Co., Ltd. and Thành Công Co.) are undergoing investment procedures. Đa Phước Complex for Solid Waste Treatment – Cemetery – Mud Treatment was put into operation in July 2007. As for Đông Thạnh Landfill Site, the HCMC Department of Natural Resources and Environment in coordination with some other divisions developed CDM project. In brief, development of projects for solid waste treatment in the city is progressing so slowly that they have badly affected the process of treating an increasing volume of household waste in recent years.

[5] See *Sài Gòn Giải Phóng*, June 22, 2007

In 2008, all districts of Đồng Nai ascribed the responsibility for collecting and transporting garbage to local private companies for treatment of household waste. However, the garbage collection and treatment was not hygienic and transportation mode was outdated and inconsistent. Statistics indicate that the total volume of household waste in urban and industrial areas of the province is estimated at 900 tonnes per day[6]. The figure will be much bigger if the volume of household waste from rural areas is taken into account.

However, the volume of household waste from the whole province is dumped in open landfills using manual methods that are ineffective and below the standards approved for hygienic landfills. In many districts, especially rural ones, the habit of dumping household waste in their orchards or nearby forests is still widespread. Even worse, some households are throwing away their waste into the streets or nearby ditches, severely polluting the surroundings. Projects to develop hygienic landfills are facing difficulties and obstacles. Until late 2008, Đồng Nai has not yet established an agency responsible for managing and operating hygienic landfills.

4. Suggested solutions

a. Strengthening the state control over environmental protection:

It is necessary to emphasize the importance of state control over environmental protection. Therefore, provinces in SKEZ should increase inspection and supervision and impose severe punishments for offenses related to environmental protection. There should be close coordination between provincial authorities to obtain a consistent action plan to solve inter-provincial environmental problems such as protecting water environment in Đồng Nai River, cutting water pollution in Thị Vải River, and processing industrial hazardous waste, etc.

b. Preventing harmful effects on the environment:

Environmental protection should be mainly based on efforts to prevent and limit adverse effects on the environment. Consequently, local authorities should insistently require measures to protect the environment from all investment projects before granting license, and then, when conditions are favorable, limit and ban projects that may produce severe impacts on or pose latent risks to the environment. Furthermore, industrial concerns that fail to meet environmental standards should be prohibited from operation.

Fundamental investigations should be promoted to pinpoint the sources of pollution, especially in key areas. It is also advisable to establish Centers for Environmental Monitoring and Technology to monitor, analyze, evaluate and forecast changes in environmental elements, thereby suggesting timely measures to block sources of pollutants and rescue and handle environmental incidents. Additionally, application and development of clean and eco-friendly technologies should be encouraged. Finally, it is of necessity to research and apply pollution treatment technologies particularly in centralized IPs and urban areas.

c. Promoting public participation and applying economic measures in environmental protection:

Favorable conditions for participation of organizations and individuals, especially producers, in environmental activities should be created. Encouragement should be given to potential suppliers of environmental protecting services, particularly waste collection, recycling and treatment.

Aside from administrative measures and educational probation of environmental protection, economic measures should also be employed. This should be done on the principle that "Anyone who does harm to the environment must pay compensation." Moreover, all environmental regulations should be observed regarding paying environmental fees for wastes, paying deposit to environmental restoration fund

[6] 2008 Report of Đồng Nai IP Management Board

for mining activities, paying damages for activities causing harms for the ecosystem, etc.

d. Promoting investment in environmental protection:

It is essential, as required by Resolution 41-NQ/TW of the Politburo, "to eradicate the overestimation of socioeconomic development and underestimation of environmental protection and regards investment in environmental protection as a solution for sustainable development." Moreover, an increase in public expenditure on environmental protection should be considered so that it will account for no less than 1% of total budget spending. This rate should also be raised in accordance with economic growth, according to instructions by the Politburo (in Resolution 41-NQ/TW) and the Prime Minister (in Decision 34/2005/QĐ-TT dated Feb. 22, 2005). There is another need to take measures to exploit private investment and financial support from international organizations in environmental protection. Funds for environmental protection should be employed effectively and economically by prioritizing construction of environmental infrastructure, promoting activities of the Environmental Protection Funds, enhancing environmental monitoring and supervision, and boosting public awareness of environmental protection.

Environmental protection is an obligation that not only plays a significant part in guaranteeing public health but also greatly contributes to socioeconomic development in KEZs. This responsibility is so complicated and urgent that it requires attention and instructions from authorities, strict state control, active participation of the Fatherland Front and relevant agencies as well as reponse from the residents in SKEZ. Additionally, a detailed action plan should be made immediately for making postive and dramatic changes in environmental protection. Finally, a resolution should be proposed to turn SKEZ into an EZ with sustainable development that ensures the harmony of economic growth, progress, and social equality, resulting in a good living environment■

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