



Issue Attention Cycle in Greening Industrial Estates: A Case of Industrial Evolution in Rayong Province, Thailand

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ABSTRACT

Industrial estates in developing countries were built to attract foreign investment under national financial policies. To maintain national competitiveness, the government must unavoidably yield some environmental limitations to draw capital into the country. It is, therefore, important to consider the environmental impact of the industrial estate. This study aims to find an appropriate place, time, and people for driving environmental measures of Industrial Estate evolution based on the press constantly reporting on situations of the specific industrial estate. Two influential English newspapers in Thailand from 1997 to 2020 were studied qualitatively for their news and press coverage. During the exploration period, There were a variety of issues (n = 240) that contained adapted content "Environmental Measure and Industrial Estate", and all of the findings were read. The study found that Map Ta Phut industrial estate was the best-case scenario which has a high controversy in news and press coverage. Multiple periods were suitable to push the environmental measure. People's Networks and non-governmental organizations (NGOs), both local and international, were key stakeholders in providing financial support, collecting scientific evidence, conveying information, and connecting to social networks throughout the world to bring government institutions to justice.

1. INTRODUCTION

Foreign direct investment (FDI) is predicted to increase dramatically, particularly from developed-country multinational businesses. This foreign direct investment benefited both the investor and the investment recipient due to the lower production costs, economic expansion, and domestic consumption. As a result, the trend of foreign direct investment is expected to continue in the future. The government, on the other hand, should develop procedures or legislation to regulate the marketing system and production of such investment activities over the long run. Those regulatory reforms for the businesses are mostly unable to include the environmental costs.

The "Environmental costs will grow with the degree of environmental deterioration" former World Bank director Lawrence Summers highlighted the benefits of multinational firms in developing countries [1]. As a result, the investments and productions are shifted from nations that are already dealing with environmental challenges to countries where the problem has not yet emerged. It's another approach to minimize money in the production process.

The government's incentive in developing countries, on the other hand, maybe found in the fact that industrial estates are being created to attract the foreign currency inflows through the investment of multinational businesses, to become a foreign market export hub. In this situation, the environmental conditions are being reduced to support manufacturing costs and the country's competitiveness by preventing cash outflows to the competitor countries based on a national financial plan that has yet to be approved [2]. For example, the industrial sector receives a 25% tax reduce for investments that result in economic growth. These tax benefits apply to the first 50 million Baht invested and are spread out over a 5-year period [3].

Due to the aforementioned problems, it becomes a race to the bottom by focusing only on economic growth and not considering environmental and social factors. The more aggressive pressure to attract foreign investment, the weaker environmental restrictions became [4]. One could wonder if any environmental measures can be adopted to mitigate the consequences of industrial estates in developing countries. This research aims to examine the coverage of news and

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articles from two important English newspapers to offer suggestions for driving the environmental measures of industrial estates. The three analytical areas were employed based on the social mechanism: the location where the measures were implemented, the suitable time for implementing the measures, and the role of stakeholders in advocating such environmental measures.

2. MATERIALS AND METHODS

2.1. News and Coverage Methodology

In research on the role of headline news in influencing the public, two primary channels of impact have been discovered [5]. The repeated press coverage that influences the key results of a given topic and raises awareness of a certain issue [6]. For example, the most frequently cited instances are the rise in climate change coverage throughout the last century, which has been connected to increasing public attention to climate change in both positive and negative ways [7]. The importance of news coverage reporting is investigated by documenting the annual newspaper of coverage-focused publications over the last decade, comparing them to general trends, and analyzing various factors that influence the rise and fall of interest in press coverage. Furthermore, a specific coverage portrayed in the news has an impact on people's perception and participation in it. The major organization of news and press picked and stressed the aspects of a narrative such as scenes, their characters, and actors to assess the content of news coverage [8].

Thus, the environmental measure communicates how and why a problem should be seen as a concern; how it should be handled, who can take responsibility for it and is there any implicit part of human cognition for organizing and contextualizing events [9]. In this study, those analysis aspects of the literature will be adapted to examine the environmental measure of the Industrial Estate by concentrating on the place, time, and stakeholders who engaged in these economic adjustments to get early insights into the nature of news coverage. This particular topic and methodology (Focused news and press coverage examination), represents an academic gap in Thailand that has never been addressed before.

2.2. Data Collection

From January 1st, 1997, to December 31st, 2020, two decades review technique was used to discover relevant English language publications. The newspapers were chosen based on some aspects, including 1) the national focus, to examine how environmental issues in the Industrial Estate were being covered in newspapers with a national readership; 2) considered the most influential newspapers in Thailand based on English language, circulation, digital accessibility, and influence. Environmental measures of the industrial estate were identified in two major publications

(the Nation and Bangkok Post); 3) referred to a wide range of political views [10]. Data on the relevance and framing of environmental measures at the industrial estate was collected consistently through newspaper websites and categorized by coding/highlighting the important words.

2.3. Data Analysis

Almost twenty-three years' time frame mirrors the findings that news and press coverage mostly mentioned to the Map Ta Phut Industrial Estate about the environmental measures of its formulation at that time. Map Ta Phut Industrial Estate covers all the criteria above and allows the study of the news and press coverage across the course of its rise in environmental policy. Thus, "Map Ta Phut Industrial Estate" and "Environmental Measure" become the keywords for searching to prevent trigger inaccuracies and political interference.

The first search yielded 750 results. Based on articles that focused on environmental measures in the Map Ta Phut Industrial Estate, the title and opening paragraph of each news and press coverage were then evaluated to determine if they were eligible for inclusion. 240 articles were read in their entirety (n=240), including 69 articles in Bangkok Post and 171 articles in the Nation. Text analysis was also used to combine the common and specific issues of place, time, and people to drive the environmental measure of the industrial estate in Thailand [11].

3. RESULTS AND DISCUSSION

3.1. Place for Driven the Environmental Measures

The industrialization policy and plan emphasized the need of import substitution and industries focused on exports. As a consequence, the majority of growth in industrialization occurred in and around the Bangkok Metropolitan Region (BMR) as the most economically advantageous site for substituting imported goods and export-oriented businesses [12]. A variety of news and media coverage indicates that the Eastern Economic Corridor (EEC) region has developed into a key industrial estate area. The foreign investments including Japan from Mitsubishi Chemical, Monsanto, and Yamato Kogyo, were transferred to the Map Ta Phut Industrial Estate. Although Thailand's neighbors, especially Vietnam and Indonesia, have policies that encourage the development of industrial estates as well, it was not as flexible as the Thai laws and regulations. Both prime ministers Mr. Chuan Leek Phai and Thaksin Shinawatra had strategies to boost investment for the east coast regions. The extension strategy of the Map Ta Phut Industrial Estate was included in the national urban plan 2006 [13]. This eventually resulted in much news and media coverage of environmental problems in Map Ta Phut industrial estate.

3.1.1. Significant Clues from Map Ta Phut Industrial Estate

Based on the articles in the Bangkok Post and The Nation, it

is clear that the litigation at the Administrative Court about the environmental case was not found in any other areas except the case of the Map Ta Phut Industrial Estate.

In 2009, the contents mostly were the Administrative Court's decision on the Map Ta Phut Industrial Estate case, the Court released an order under the 2007 Constitution, Article 67, paragraph 2, suspending 76 projects in Map Ta Phut Industrial Estate. Those 76 projects and activities have had significant negative effects on the environment, natural capital, and human health. In 2010, the National Environmental Board (NEB) declared that Map Ta Phut must be a pollution control zone area. It made the authority to assess emissions control policies transferred to the head of the local government, while the provincial governor was in charge of developing policies and planning for pollution management facilities. It became an opportunity to gain subsidies to carry out environmental conservation and natural resource management following the Pollution Control Department's guidelines. The transition authority from the designation of this pollution control zone to the local government ensures that pollution control policies were implemented substantially. However, there was a question why only Map Ta Phut Industrial Estate was declared as the pollution control area by the Central Administrative Court?

An article in Bangkok Post newspaper in May 2009 entitled "Cleaner Air in Map Ta Phut" stated that almost 40 types of volatile organic compounds (VOC) were found in Map Ta Phut Industrial Estate. Also, it has been discovered that there are almost 20 types of deadly carcinogens by the International Cancer Research Agency (IARC), which exceeds the safety standards of the Pollution Control Department. The report from the National Cancer Institute still found that the cancer incidence rate in the Map Ta Phut Sub-district area was 3-5 times higher than in other areas. Land and groundwater in Map Ta Phut the Industrial Estate were contaminated with lead, copper, mercury, nickel, and arsenic compounds. The research from Silpakorn University in 2008 identified the genetic changes in frogs and mussels caught nearby Map Ta Phut Industrial Estate. This scientific evidence about the impact on public health and the environment was suitable to use as a reference to declaring the pollution control zone in the Map Ta Phut Industrial Estate area. However, there was a high cost of these scientific data collections. It became an obstacle for gathering scientific data in other areas.

3.1.2. Scientific Evidence

From the situation above, the Health Impact Assessment (HIA) was first considered due to the health system reform in 2000. The Health Assembly (HA) was founded in 2001 to serve as the driving force behind Thailand's public health system. HA means a process by which people and government agencies are involved to share knowledge and lead the public policy recommendations for the health and

well-being of people. The meeting must be organized systematically and participatory. The 2007 Constitution, Article 67, and the National Health Act 2008 supported this public health system. However, the main problem of this public health system was related to preparing an analysis report the same as the environmental impact assessment report in the prior session. In the situation where this measure does not apply, HA needs to serve as the main driving force for the preparation of the HIA Report under the public health reform system [14].

When the flow of development at Map Ta Phut Industrial Estate was investigated, it was determined that the area had been significantly contaminated since 1997. There were records of illness among teachers and students in the region in the following years [15]. In addition, a survey conducted by the Ministry of Public Health and Japan International Cooperation Agency (JICA) in 2001 found that the programs and activities in the Map Ta Phut Industrial Estate had a direct impact on people's health [13]. There was an incident in 2003 where one high school was forced to relocate due to odor emissions. Not only the private sector but also the government had started to consider the effect of industrial projects and operations on health issues up to the present. There was a study on respiratory disease, allergies, and rashes, including water and air allergies, and found the physical effects of Map Ta Phut primarily emit chemicals at night [16]. Industrial plants release more gas during the rainy season with the hope that rainwater can wash out poisonous gasses. Finally, Rayong Provincial Public Health Office expressed the disease statistics from 2006 to 2015, the respiratory disease was the most common category in Rayong province, with 310,295 people. Air pollution was a significant cause of morbidity. Moreover, the number of respiratory diseases had risen from 569 patients in 2002 to 613 patients in 2003, and 696 patients in 2004. It shows that the respiratory illness rates in Rayong province were significantly higher than the national average [17].

After the year 2004, an independent organization in the public sector began to pay attention to the Map Ta Phut Industrial Estate. Also, the government has begun to recognize and accept the pollution problem in the area, even the scientific evidence collection was initiated and continued by using low-cost weather sampling methods through tin cans. People in the EEC region agreed to sue the National Environment Board under the National Health Act 2550, Article 11, which states that

"Any person or group of people has the right to seek an assessment and engage in the health impact assessment resulting from public policy. Before the authorizing or execution of any project or operation that may affect one's health or the environment, a person or group of persons has the right to request facts, explanations, and reasons from the government department" (National Health Act 2007, Article 11).

Based on the statements as defined in Article 11 of the National Health Act of 2007, it has established a framework in Map Ta Phut Industrial Estate to support the preparation of HIA and EIA reports via the HA. As a mechanism in which the people are genuinely engaged, this HIA report covered the natural, social, and economic considerations. When compared to the Suvarnabhumi Airport HIA report, this method was the most essential procedure for determining the best time for all sectors to be addressed the Map Ta Phut industrial estate's environmental problem.

3.2. Time to Drive Environmental Measures

Since 1982, the Eastern Seaboard (Eastern Seaboard) of Thailand has been dominated by Japanese monetary policy. The majority of Japanese financing has gone to infrastructure projects in industrial estates along the east coast. In 1985, 39 percent of loans were made under the Eastern Seaboard Development Program, 38 percent in 1986, and 65 percent in 1990 [18]. The programs were completed in 1990, the tendency to promote environmental measures was in the following year. Many factors can push environmental measures; however, two important factors were the decentralization and political era that impact the controversy of environmental measures in the Map Ta Phut area which will be described in the following sections.

3.2.1. When the Information on Environmental Problems of Map Ta Phut Industrial Estate was disseminated

Local governments in Thailand have full authority and legitimate power, as well as a high level of local participation. From a previous study in the comparison of

public participation between Thailand and others, it was found that Thailand required people to take part in the scoping stage, determining stakeholders' stage, and freely public hearing which differed from others that fix the format of listening to the public opinions and relied on the pattern [19]. As a result, the decentralization at the municipal administrative level in Thailand has the potential to enact environmental policies and influence public perception at all levels. There was a study on "Revisiting Downs' Issue-Attention Cycle: The Public Opinion", which split the attention into five stages [20].

1. Pre-problem: when a problem with the environment has already arisen but is yet not in the general/public interest
2. Alarmed Discovery, Euphoric Enthusiasm: when people are aware of the problem after a period of severe and continuous impact.
3. Realizing the Cost: when people are aware of the "cost" used to solve problems.
4. Gradual Decline of Interest: when national interest levels begin to decline.
5. Post-problem: when the attention to the problem is gone, but attention will suddenly return when serious environmental events occur

This research used the issue of the attention cycle to support the analysis of English-language newspapers in Thailand [21].

In Figure 1, postings in both newspapers have increased since 2007, declined in 2008, then returned to a significant rise in 2009 and 2010. After that, in 2011, the number of

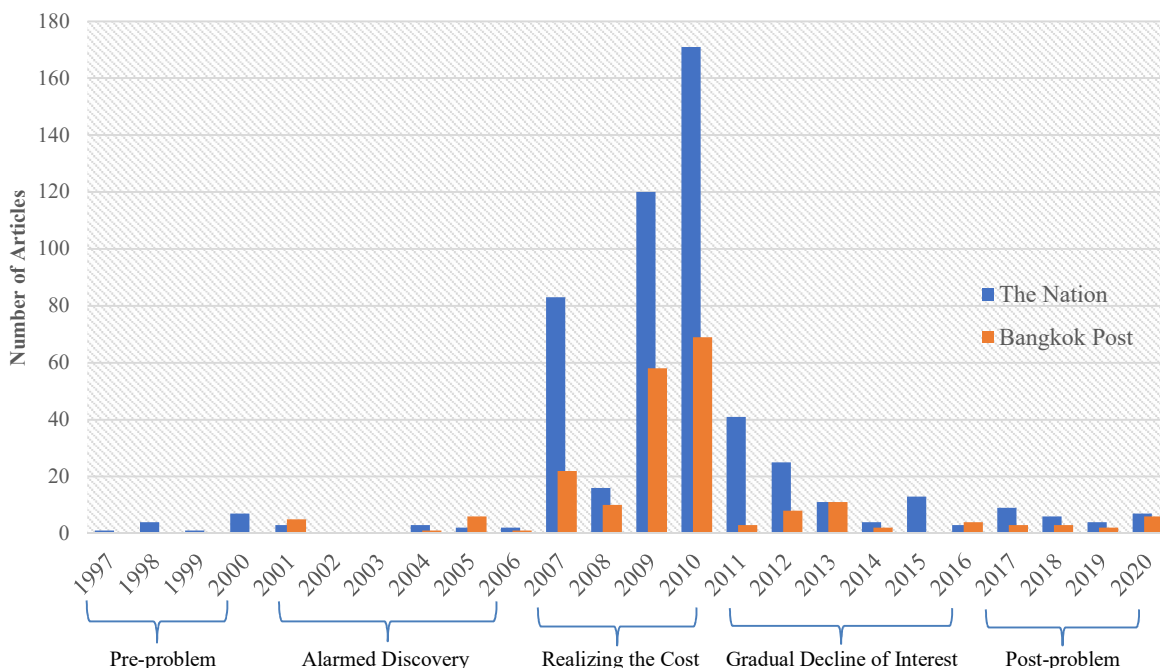


Fig. 1. Number of Focused Articles on Map Ta Phut Industrial Estate.

publications dropped once again. During the mentioned period above, the Ministry of Natural Resources and Environment (MNRE) has approved a plan to mitigate and manage pollution in Rayong Province since March 2007. The NEB set the pollution control area in April 2009. Furthermore, in August 2010, the MNRE identified 11 categories of risk businesses as being the source of environmental and health hazards. Since 2010, public interest at the national level and numerous environmental actions at the local level have remained active.

In the second decade, it was found both Bangkok Post and the Nation have dramatically decreased publishing. Most news and coverage were not a serious issue on the environmental situation of the Industrial Estate. These online media have proved the cycle of attention of people on a specific topic and area. People will pay attention to the problem suddenly when serious environmental situations occur in the post-problem period. The next section will further discuss the mechanisms that contribute to the implementation of environmental measures according to the laws and regulations of Thailand under the Constitution of the Kingdom of Thailand 2007.

3.2.2. When the Administrative Court's Awakening

This segment aims to address the issue of why people's attention levels have risen exponentially from 2007 to 2009. The substance of the Bangkok Post and The Nation newspapers need to be examined.

From 2007 to 2011, the Bangkok Post newspaper published 157 stories on environmental problems in the Map Ta Phut Industrial Estate, 59 of which were linked to the Administrative Court as a news story in 2009. For the Nation newspaper, it had published 433 articles about the Map Ta Phut Industrial Estate and environmental issues, with 138 of those articles referring to the Administrative Court. As a result, the public interest in the environmental issue of Map Ta Phut Industrial Estate has had a clear interaction with the administrative court since 2009. If considering the number of articles monthly classification of 2009 only, it will be found that both newspapers were related to the movement content of the administrative court in the following cases;

- In the 2007-New Constitution; the new Constitution in Article 67 amendment from the Constitution of 1997 Article 56, paragraph 2.
- In 2009-Unconstitutional Judgment; a temporary order to suspend 76 projects that have a serious impact on environmental quality under the Map Ta Phut Industrial Estate.
- In 2010-restart of the suspended projects; re-orders for suspending violent 65 projects and except for 11 projects in the transport category, under the Map Ta Phut Industrial Estate.

It can be concluded that the filing of a lawsuit in administrative court has increased the number of journal

stories and general awareness of the Map Ta Phut Industrial Estate's environment. The locals and civic associations in Map Ta Phut Industrial Estate district had failed to negotiate with the local government and politicians, so they decided to file a case further against the NEB in the Administrative Court [13]. The judgment that decided on the fundamental provisions of the 2007 Constitution, Article 67, paragraph two, had a fascinating substance. The specifics of this decision will be discussed in the next segment.

3.2.3. When the Politics Impact the Environmental Measure

The policy and legal system for environmental protection is a very important factor, it accelerates the interest of its impact and applies eventually. For a better understanding of the cause and effect of the industrial estate, laws and regulations were needed [22]. After the coup in Thailand by the democratic regime's reforming committee in September 2006 with the provisional government of General, Surayut Chulanon selected a total of 35 members for the Constituent Assembly to act as the 2007 Constitution drafting committee. The 2007 constitution differs from 1997 in several ways which address the question of civil liberties and citizen protection to defend their environment and local resources in Article 67, paragraph 2 of the 2007 constitution.

Implementation of projects or activities that may cause serious impacts on communities in terms of environmental quality, natural resources, and health, cannot be done. Unless the impact on environmental quality and health of people in the community is studied and assessed. The process must be established to listen to the opinions of the public and stakeholders first, also including the independent organization which consists of representatives from private organizations on environment, health, and representatives of higher education institutions that manage environmental education, natural resources, or health to make a commentary before doing so. (Constitution of the Kingdom of Thailand, B.E. 2550 (2007), Article 67, paragraph 2)

If compared with Article 56, paragraph 2 of the Constitution of 2540 (1997), which has some different content.

Implementation of projects or activities that may cause serious impacts on communities in terms of environmental quality, natural resources, and health, cannot be done. Unless the impact on environmental quality has been studied and assessed. The process must be established to listen to the opinions of the public and stakeholders. First included the independent organizations that consist of representatives from private organizations on health, natural resources, and higher education institutions that manage environmental education, health, and

natural resources to make a statement before doing so as provided by law.

Through amending the constitution on this subject, the 2007 constitution removed the word “by law” which is quite a political decision-making to start the immediate effect of social unrest issues. It differs from the 1997 constitution in the mentioned word which refers to the National Environmental Quality Promotion and Conservation Act, 1992, by Article 46 to 51 that the Minister of Natural Resources and Environment by the approval of the National Environment Board has the authority to determine the type and size of the project or businesses of government agencies. The state enterprises must prepare the EIA report according to Articles 47 and 48. This issue leads to unconstitutional judgment in the era of P.M. Samak Sundaravej. The central administrative court issued a temporary order to relieve the pollution project and activities that have a serious impact on the environment under the construction in Map Ta Phut Industrial Estate. It was up to 76 projects that were temporarily held until the court had a ruling except for the project or licensed activities. Later, the P.M. Abhisit Vejjajiva restarted those suspending violent projects or activities again and announced the exception for 11 projects in the transport category from the total of suspended projects of the prior government era.

Thus, those listed Acts (1997 constitution refers to Environmental Quality Promotion and Conservation Act 1992) were used to describe the standards and rules for the EIA report. To avoid the gaps in law and regulation from several political eras, the 2007 Constitution removed the phrase “as provided by law” which could not be completely fulfilled the enforcement under the 2007 Constitution because the EIA report was prepared in compliance with other laws “The Promotion and Conservation of National Environmental Quality Act 1992”. It resulted in the ongoing litigation in environmental cases to the Administrative Court since 2007. After realizing the place and time for driving the environmental measure from the pool data of news and media coverage, the last important sector was the people which mostly found the group of NGOs to support the situation of Map Ta Phut industrial estate.

3.3. People in Advancing Environmental Measures

Scientific evidence helped to win a lawsuit against government authorities over the emissions issue in Map Ta Phut Industrial Estate. A group of domestic activists outlined the procedures for gathering this evidence in this section. Considering the detail in Bangkok Post and The Nation newspapers, it can be quoted to the common and linkage process of working together method by activists in two major steps:

3.3.1. Domestic Activists who drive the Scientific Evidence

In September 2009, the People's Network (B) and (C) in

Bangkok collaborated with the Network of People Sector (A) who were living in the EEC region to file a lawsuit against the National Environment Board. Later, Rayong Province's Administrative Court directed the National Environment Board to designate Map Ta Phut Industrial Estate as a pollution control zone. It was counted as a victory for the complainants following the movement of the People's Network A, assisted by Lawyers Group (D) in Bangkok. The Central Administrative Court ordered the temporary suspension of 76 petrochemical industry projects in October 2009, based on Article 67 of the 2007 Constitution. After the government's appeal was filed, the Supreme Administrative Court revised the order for the remaining 65 projects, and activities were on hold. The main activists who responded to the continuous impact of the industrial estate were local activists sponsored by NGOs in Bangkok and international NGOs for gathering people to protest in front of the Ministry of Industry Bangkok.

The local people, with the help of NGOs, expedited the declaration of Map Ta Phut as a pollution control area, which was a valiant act. Especially when residents and NGO supporters had not obtained a response from the National Environment Board regarding the pollution control issue. They brought a complaint to the Administrative that the National Environment Board failed to perform its duties. The court finally agreed and declared Map Ta Phut a pollution control area eventually.

Furthermore, scientific evidence showed that Map Ta Phut Industrial Estate and the surrounding areas were suffering from a significant pollution crisis. To prepare the HIA report, the information was fact-based and collected by the People's Network B with the help of educational institutions and scholars. From 2004 to 2009, the People's Network B employed an American survey firm E to assess the volume of air emissions through the collaboration of people's networks F and G as NGOs in Europe and the United States. Finally, before filing a lawsuit to the Administrative Court, a report has been made to collect the results of the scientific evidence and disclose the facts reports to the public about the severity of pollution problems in Map Ta Phut Industrial Estate. It could be said that these arrangements have resulted in a positive response from the government litigation by people.

3.3.2. Global Network that Connects the worldwide Issues

The establishment of good relationships with the F and G NGOs has enabled the people's network B in Bangkok to gather information and provide awareness to local people. Between July and November 2004, the following information was derived from the review of survey results and the public hearing of network B in five areas of Map Ta Phut Industrial Estates. The data was collected by a California-based American survey firm. The Map Ta Phut Industrial Estate included 67 types of volatile organic compounds (VOCs) and 20 types of sulfur compounds. The

tools used for collecting the survey samples and the method of analysis were based on the standards of the US Environmental Protection Agency (US EPA). Apart from using it as scientific evidence, it can also be used to compare with the survey results of the Thai government. Later, the People's Network B collaborated with the NGO Network F and G to explore air pollution in the form of a people participation process from 2004 to 2009 for creating a body of knowledge about facts and the issue of air pollution to people that can effectively improve their quality of life concretely. For instance, revealing the carcinogenic value which is significantly higher than the standard of developed countries to all stakeholders. NGO networks F and G play an important role in the knowledge expansion about air pollution surveys in the form of full people participation.

When looking at the history of collaboration between the NGO Network F and the People Network B, it can be seen that it started in 2004 with the start of an air quality survey in five areas with people's involvement. The money came from the NGO Network G. The cooperation of these three groups is not limited to Map Ta Phut Industrial Estate residents, but also includes educational institutions and academics. In 2005, Chulalongkorn University hosted a public forum to inform academics and educators in Bangkok about the findings of an air quality survey. The findings of air quality surveys have also been published in Thai language books and the English paper "Thailand's Air: Toxic Cocktail," showing the carcinogens in the air include benzene, PVC (Polyvinyl Chloride, PVC), chloroform, and volatile organic compounds (VOC). That is 60 to 3,000 times higher than the EPA level in the United States [23]. In 2009, p-Xylol, Toluene, and Nitrogen Dioxide were not included in federal safety guidelines after a real-time surveillance scheme was used (Bangkok Post, 23 October 2018).

The survey of air pollution in this form of people participation is a scientific exploration that has implicated the knowledge transfer to people in the area. The NGO Network F started in the United States in 1995 and has gradually gained experience through work in South Africa, Spain, India, and the Philippines. In addition to the knowledge transfer, People's Network B is also receiving funding assistance from the NGO Network G. Meanwhile, the NGO Network G has listed the honorable committees from the People's Network B. It can be seen that People's Network B has funding from a global network. Also, the group is affiliated with an international network. To eliminate persistent toxins, or the International POPs Elimination Network (IPEN). In 2004, it aimed to reduce the use of polluting chemicals by 2020. Suddenly in 2006, there was a pioneer group establishing a network to eliminate persistent toxins in Thailand called the Thailand POPs Elimination Network.

4. DISCUSSION

Based on the empirical result of the analysis (Place, Time, and People), the linkage in driving environmental measures can be described as follows:

4.1. Interconnection of Mechanisms for Driving Environmental Measures

An acute increase in the level of public interest in environmental problems which is discussed before about the appropriate time, requires the decentralization of the local authorities, the awakening of the Administrative Court, and the clear principles and rules for the preparation of the EIA and HIA report based on the 2007 Constitution. It becomes a starting point leading to a successful lawsuit against the government agency. However, under the uncertain circumstances of the political era, pushing the preparation of both EIA and HIA reports in Map Ta Phut Industrial Estate as a case in which all stakeholders agree that this area is experiencing pollution problems can lead to the fact-based collection of scientific data for serving as evidence in many lawsuits. As a result, activists in the country play a critical role in contacting social networks throughout the world to secure effective financial assistance as well as technology transfer for the implementation of domestic operations. These collaborations have led to success in pushing the environmental measures from the government agencies under the changing constitution situation in Thailand. It considers these relationships sequentially, was synthesized the correlation, and classified them into three main variables that have an impact on environmental measures as follows:

- Exogenous variable; after the coup in 2006-2007, members of the Constituent Assembly amended the constitution to use the phrase "as defined by law". It has nothing to do with environmental problems, people's health in the Map Ta Phut Industrial Estate, or even the pollution problem in the targeted city. It becomes the cause as a change agent to impact the powerfully the environmental measure.
- Endogenous variable: This aspect will influence the formulation of the HIA report and link to evidence on air quality, with all stakeholders agreeing that Map Ta Phut Industrial Estate is a polluted region. Building partners and network for controllable costs, improve the quality of life, and prevent the health impact of community around Industrial Estate [24].
- Complementary variable: It is the result of financial assistance, which includes the transition of technologies to gather scientific evidence through a global social network of domestic activists. The activists' actions have had a considerable influence since 1957, and they have created a network that now connects individuals from all over the world [25].

4.2. Synthesized Variables Manifestation

This section will discuss the association of interconnection mechanisms in the previous topic to the mentioned problems in the beginning part.

The first addressed as exogenous was the "Politics of Environmental Impact" from the mechanisms discussed in the previous section, which may be arguments that the suspension of projects and activities that have severe impacts on the environment and health, is the result of the amendment of the constitution in several political eras [12], [21]. In response to these political circumstances, the NEB approved a resolution in August 2010 to list the categories of industries that have a significant influence on both the environment and human health. Also, it was announced as the Ministerial Regulation from the MNRE on 31 August 2010. The Industrial Estate Authority of Thailand (IEAT), which oversees many complementary industrial estates throughout Thailand, including Map Ta Phut, devised a plan to create an ecologically friendly industrial city the same year. The government has an opinion survey from 6 industrial estates in the Eastern Seaboard area and hired the New Energy and Industrial Technology Development Organization (NEDO) to design an environmentally-friendly industrial city. These movements were the consequences of the Map Ta Phut litigation case. Therefore, it concluded that the analysis of the above social mechanisms has continued impacts on other areas as well.

Based on the endogenous variable, it was explained through the number of articles in 2011 that have decreased significantly, the situation of environmental problems in Map Ta Phut Industrial Estate has entered the Realizing the cost phase. This is the period when people are aware of the "cost" used to solve the problem that happened in Map Ta Phut Industrial Estate [1]. Also, it must pass the audit of the EIA and HIA reports by an independent committee. If an independent committee has been approved correctly under the rules and regulations, it may lead to the closure of the lawsuit against government agencies. However, the problem that cannot be solved is the health damage to the people living in the Map Ta Phut Industrial Estate. There was a "high cost" of solving this problem, but the public interest in the Map Ta Phut environmental problem is gradually declining in this situation. Thus, if the health problem is not resolved concretely, it may lead to duplicate problems coming up again.

Finally, the complementary variable was stated by the environmental lawsuit recurs multiple times, it may increase investment risk in the view of foreign investors and may cause the country to lose its competitiveness in the region [4]. Moreover, when the level of public interest in environmental and health problems of people who live in the Map Ta Phut Industrial Estate decreased steadily, it was difficult to solve concretely. Adapting the domestic mechanisms may not be active enough. To define the scope and accelerate this high-cost problem's solution, it needs to

rely on the drive outside the country. Thus, Japan has been the main funder since the Industrial estate formation [12], [16] through the Official Development Assistance (ODA) project for the development of the Eastern Seaboard. It was an appropriate actor to drive the social mechanism for solving the health problems of the people in the Map Ta Phut Industrial Estate as found from the press and coverage.

5. CONCLUSIONS

Economic growth in developing countries has led to an increasing trend of foreign investment to attract capital based on financial policy. The industrial estate has been set up as a framework for enforcing the strategy. However, to retain national competitiveness and prevent the capital flow to other countries, the Government must eventually be flexible on environmental policies and reduce production costs. It can be said that most developing countries lack the impulse to drive environmental measures in the industrial estate area. This study aims to find an appropriate time, place, and stakeholders for driving environmental measures of Industrial Estate evolution based on the press and news coverage constantly reporting on situations of the specific industrial estate. Documentary research was applied to find an empirical result

The study found that under the uncertain circumstances of the political era, finding the "Right Place" is needed to lead to the fact-based collection of scientific data for serving as evidence in many lawsuits. Map Ta Phut Industrial Estate was recruited as a location case in which all stakeholders agree that this area is experiencing pollution problems. People's Health Assembly (HA) or another called the activists who were choosing Map Ta Phut industrial estate as a concrete study area relies on the rights stated in the National Health Act 2008, Article 11 to require the preparation of HIA reports from the industrial estate. After collecting scientific evidence in Map Ta Phut Industrial Estate, it eventually announced a pollution control zone in 2009. The "Right Time" for driving the environmental measures consists of 1) when the environmental problems of Map Ta Phut Industrial Estate were disseminated to the locals, 2) when it related to the administrative court, 3) when the politics impacted the environmental measure. An achievement of prosecution against government agencies could not have happened if they lacked the main role of important "Right Actors". People's Network B collects a large amount of information and connects to social networks around the world for financial support. Through the cooperation of the people sector, NGO F and G disseminate knowledge and generate effective data collection on air pollution. Findings of the right place, time, and actors from the press and coverage contribute to the policymaker for planning the environmental prevention and measure of the growth of industrial estate, especially the developing countries and the economic zone which will emerge along the border of the country to respond to the financial policy.

Actually, during a period when print media purchases were dropping, it had an impact on news and article publication. This is a limitation discovered in the literature. However, it was revealed that many online newspaper articles are frequently sourced from the print media, particularly the influential press sampled here. It indicated the continued importance of newspapers in influencing how the public perceives the Map Ta Phut industrial estate's environment as a problem. Furthermore, the difficulty of monitoring environmental measures searching from the press and media, as well as the variety of language used to refer to 'environmental measure,' may reveal a million extents of reporting. To reduce this bias, after the large list of key terms has been identified, proportioning the precise location 'map ta phut' in which environmental measures are referred to in newsprint will assist to manage the data systematically. When picking those with a clear emphasis, it will be easier to identify and describe the 'place, time, and actor' factors that will drive the environmental measure for industrial estate study. As one of the first studies to investigate the representation of environmental measures for an industrial estate in Thailand's media. Also, the findings are restricted in their ability to produce insights into the environmental concerns in the specific industrial estate that are discussed more broadly in the public realm. To develop further, the press and coverage receiver should be studied to the level of interest and the motivation to track the interest issue for driving the change in society.

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REFERENCES

- [1] Toussaint, E., 2007. Climate: Sorcerer's apprentices at the World Bank and the IMF. The CADTM International. Retrieved December 10, 2021, from http://www.cadtm.org/spip.php?page=imprimer&id_article=2398
- [2] Sassen, S., 1999. Globalization and its discontents, New York Press, USA
- [3] Intarajinda, R.; Bhasaputra, P., 2012. Thailand's Energy Conservation Policy for Industrial Sector Considering Government Incentive Measures. GMSARN International Journal 6., 67 - 78
- [4] Vogel, D., 1995. Trading Up: Consumer and Environmental Regulation in a Global Economy, Harvard University Press, USA.
- [5] Liu, X.; Vedlitz, A.; Alston, L. 2008. Regional news portrays global warming and climate change. Environ. Sci. Policy 11, 379–393.
- [6] Boykoff, J., 2012. US media coverage of the Cancun climate change conference. Ps-Polit. Sci. Polit. 45, 251–258.
- [7] Shehata, A.; Hopmann, D.N., 2012. Framing climate change: a study of US and Swedish press coverage of global warming. Journal. Stud. 13, 175–192.
- [8] Bennett, W.L., 2002. News: The Politics of Illusion. Longman, White Plains, NY.
- [9] Asplund, T.; Hjerpe, M.; Wibeck, V., 2013. Framings and coverage of climate change in Swedish specialized farming magazines. Clim. Change 117, 197–209.
- [10] Ahchong, K.; Dodds, R., 2012. Anthropogenic climate change coverage in two Canadian newspapers, the Toronto Star and the Globe and Mail, from 1988 to 2007. Environ. Sci. Policy 15, 48–59. Amundsen,
- [11] Ford D. J.; King D., 2015. Coverage and framing of climate change adaptation in the media: A review of influential North American newspapers during 1993–2013. Environmental Science and Policy. Vol. 48, p. 137-146
- [12] Pansuwan, A; Kityuttachai, K., 2009. How is Thai Industrial Location Policy Get Beneficiary under GMSECs? GMSARN International Journal 3. 165 - 170
- [13] Funatsu T., 2011. Thai Environmental Policy at a Turning Point: Environmental Suit in 2009, In Terao Tadayoshi (ed.) International Comparative Study of Environmental Policy-Making Process. Japan Association for Asian Studies, pp. 65-79
- [14] Health Public Policy Foundation., 2008. Thailand's HIA Development Report 2007-2008, Chiang Mai, Wanida Press.
- [15] Miyoshi, Y., 1999. Post Evaluation of Map Ta Phut Industrial Development, Retrieved on October 2018, from http://www.jica.go.jp/activities/evaluation/oda_loan/after/1999/pdf/jigo99_15
- [16] Pratumpitak, S., 2018. Impacts on communities resulting from the establishment of Map Ta Phut Industrial Estate in the Eastern Coastal Area Development Project: the case of Map Ta Phut Municipality, Mueang District, Rayong Province. Pathumthani University Academic Journal, Vol. 10, No. 2, p. 82-89
- [17] Sukkamnerd, D.; Nantawarakarn, S.; Chuenjit, W., 2008. Pollution, Health, and Map Ta Phut Industrial Estate. Health Policy Foundation
- [18] Ariga, K.; Eshima, S., 1999. Comprehensive Impact Assessment of Eastern Seaboard Development Plan in Thailand. Kaihatsu-Kinyu Kenkyu Shohou. 2: 41-69
- [19] Kanthomturapot, K.; Piyachan, K.; Wibunpolprasert, S. 2020. Comparison of Public Participation in Environmental and Health Impact Assessment between That and Other Countries, Journal of Politic and Governance, 10: 108-126.
- [20] Petersen, K., 2010. Revisiting Downs' Issue-Attention Cycle: International Terrorism and U.S. Public Opinion. Journal of Strategic Security 2(4): 1-16. DOI: <http://dx.doi.org/10.5038/1944-0472.2.4.1>
- [21] Fukuda, H., 2009. Metrical Analysis of Japanese Newspaper Articles on Global Warming. 8th Annual Conference of Japanese Society for Science and Technology Studies.
- [22] Erdiwansyah, A.; Gani, M.H.; Rizalman, M.; Sarjono, R.E., 2022. Policies and laws in the application of renewable energy Indonesia: A review. AIMS Energy, 10(1): 23-44. DOI: 10.3934/energy.2022002
- [23] Campaign for Alternative Industry Network, Greenpeace Southeast Asia, and Global Community Monitor. 2005. Thailand's Air: Poison Cocktail, Exposing Unsustainable Industries and the Case for Community Right to Know and Prevention. Campaign for Alternative Industry Network,

- Greenpeace Southeast Asia, and Global Community Monitor
- [24] Jotaworn, S.; Nitivattananon, V., 2021. Municipal Solid Waste Management for Coastal Tourism Destinations in Eastern Thailand: Challenges and Opportunities. *GMSARN International Journal* 15, 259-268
- [25] Makita, T., 1999. From New Deal to International Development: The 1950's Ford Foundation's Activity in Indonesia, Annual Conference of Japan Association for Asian Studie.