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The Southeast Asian haze crisis: lesson to be learned

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Abstract

The Southeast Asian region experienced the worst haze crisis in history in 1997. The haze crisis was caused by massive fires in several regions especially the Indonesian islands of Sumatera and Kalimantan. It was reported that about 5 million hectares of land were burnt in 1997/1998 [1]. The haze crisis severely affected the economy of the countries of the region especially with regards to tourism, transport industries and the general health of the people. It has also psychologically haunted the people of the region, fearing its recurrence. The haze problem in the Southeast Asian region was very closely connected to the regional government drive for economic development. Many large oil palm companies and corporations were said to be responsible for deliberately starting the fire because it was the cheapest means of clearing the land for the cultivation of crops. This paper reports the findings of a comparative study on the distribution of hotspots, which indicate the presence of fire in the four different regions. The difference between the distributions of hotspots in the four different regions was closely related to the level of economic development of the regions. The paper also discusses the roles of companies and corporations in the modern economic system and relates them to the philosophy of capitalism and a free market system and their impact on the environment. Finally it suggests a way to solve the fire and haze crisis in Southeast Asia and also a way to achieve sustainable development in the environment.

1 Introduction

1.1 Research issue

The fire and haze crisis in the Southeast Asian region in 1997/1998 has prompted the regional countries to formulate policies to control the fire and haze problem. However, so far the steps taken by the regional governments to stamp out fire and haze crisis have had minimal result [1]. The failure of the regional governments to control the fire and haze crisis were due to the lack of resources and expertise of the regional governments and political and administrative constraints [1]. Indeed, the fire and haze problem still persists today and occasionally becomes serious. It seemed that despite all the steps taken and the policies formulated, the haze problem continues to pose a major environmental problem in the region. David Viner of the Climatic Research Unit, University of East Anglia, UK, claimed that there are solutions to the problem. According to him, the fire and haze problem could be dealt with by stopping the burning of forest, using less polluting fuels and introducing clean air technology. However he admitted that it was difficult to implement.

In response to the fire and haze crisis which has caused massive transboundry pollution, a workshop by the Australian National University in collaboration with the Impacts Center For Southeast Asia (IC-SEA) and the Australian IHDP (International Human Dimension Program) was held on 24 July 1998. The workshop recommended 18 policy responses to the Science-Policy Working Group Meeting held in Bogor, Indonesia on 18–19 August 1998 [1]. The policies mainly focused on the management aspects of the fire and haze problem, but they did not address the root cause of the problem, which was very closely associated with the issue of large companies and corporations of the modern economic system that many claimed were responsible for the carnage.

2 Previous studies on fire and haze

2.1 Factors which led to the fire problem: the role of large companies

There have been many studies conducted by various researchers on the fire and haze crisis of the Southeast Asian region. Most of the studies focused on the factors and the impact of the fire and haze to the socio-economy of the region. Environmental crises are mainly caused by human factors such as lifestyle and behaviour. As long as human beings maintain their present behaviour, the crisis would not be able to be stamped out.

Gonner [2] claimed that there were two main factors which have caused the massive fire in Jempang, East Kalimantan. First, the fire was deliberately lit by oil palm plantation companies, who wanted to acquire lands from the local people who initially refused to sell the land. Second, the oil palm plantation companies resorted to burning the forest which has been cut down to clear the land because it was the cheapest and the fastest means of clearing the land for cultivation. Gonner's disclosure that companies purposely burned the land to

force the small holders to sell has actually highlighted the true nature of companies and corporations who were only interested in profit, reflecting the utilitarianism philosophy practiced by the modern economic system. The unethical means of acquiring land by large companies and corporations have been reported to occur around the globe especially in the developing world [3]

3 Study on the pattern of fire in the four regions in Southeast Asia

A study has been conducted by the author to see the distribution of hotspots which indicated the presence of fire in the four regions of in South East Asia. These regions were the Island of Sumatera and Kalimantan in Indonesia, the Eastern Malaysian state of Sabah and Sarawak as well as the West Malaysia. These regions could be considered to be the most important areas where large forest areas were cleared to make way for the oil palm plantations. The oil palm industries form one of the most important foreign exchange earners for Indonesia and Malaysia. Between 1992 and 1997, Indonesia's palm oil production increased by 32% and in 1997, exports of palm oil and palm oil products contributed over $1 billion to the Indonesian economy [1]

3.1 The aim of the study

The aim of the study was to identify the regions, which were most prone to forest burning. The identification of these areas is important in order to link economic development activities and environmental disaster. Much of the Island of Sumatera and Kalimantan as well as the Malaysian states of Sabah and Sarawak are forested areas and sparsely populated. The governments of both countries have embarked on massive cultivation of oil palm which was mainly carried out by private companies.

3.2 Method of the study

One of the ways to identify the distribution of fire was to count the hotspots monitored by the satellite. There were different satellites monitoring the fire in the Southeast Asian region. The hotspots which were monitored by the satellite National Oceanic and Atmospheric Administration (NOAA) were used as the raw data for this study. The hotspot images monitored by the NOAA-12 were obtained from the secondary sources which were available in the internet and The raw data in the form of daily number of hotspots for July, August and September 2001 were fed into the data sheet of SPSS. The monthly mean and means of means of the distribution of the hotspots were computed. The next step taken was by using ANOVA, an analysis by using one way ANOVA and LSD (Least Square Difference) for the Post Hock method of differentiating the significant difference, the significant difference between the distribution of the hotspots in four regions were computed. The results of the computation are as follows.

3.3 Results

The means and means of means of the monthly distribution of the hot spots in the four regions are shown in Table 1 and the significant different between the distribution of hotspots is shown in Table 2.

Table 1: Monthly means of the distribution of the hotspots in four different regions.

	Sumatera	Kalimantan	West Malaysia	Sabah & Sarawak
July	63.41	20.72	10.74	6.62
August	19.45	208.61	3.61	11.32
September	16.40	81.10	2.30	6.30
Mean of Mean	**33.09**	**103.47**	**5.55**	**8.08**

The mean of the means of hotspots indicate that the highest number of hotspots for the months of July, August and September 2001 was in Kalimantan (103.47) followed by Sumatera (33.09), Sabah and Sarawak (8.08) and West Malaysia (5.55). In term of size of the region, Kalimantan is the largest region, followed by Sumatera, Sabah and Sarawak and West Malaysia consecutively. In term of the size of the forest it follow the same pattern but in term of the economic development, it was the reverse. West Malaysia is the most developed, followed by Sabah and Sarawak, Sumatera and Kalimantan. Indeed, Table 1 indicate that the fire problem is proportionally related to the size of the region and the size of the forested area and inversely proportional to the level of the economic development of the region.

Table 2: The significant difference between the regions in term of the number of hotspots.

Difference between Regions		Mean Difference	Significant Difference
Sumatera	Kalimantan	-70.3900	.122
	West Malaysia	27.5367	.517
	Sabah & Sarawak	25.0067	.556
Kalimantan	Sumatera	70.3900	.122
	West Malaysia	97.9267	**.043**
	Sabah & Sarawak	95.3967	**.047**
West Malaysia	Sumatera	-27.5367	.517
	Kalimantan	-97.9267	**.043**
	Sabah & Sarawak	-2.5300	.952
Sabah & Sarawak	Sumatera	-25.0067	.556
	Kalimantan	-95.3967	**.047**
	West Malaysia	2.5300	952

Table 2 indicates that there are differences between the distributions of hotspots between the four regions. The difference of the distributions of hotspots between Kalimantan and West Malaysia (sd=.043) and between Kalimantan and Sabah and Sarawak (sd=047) and are very significant.

Table 1 and Table 2 show that the distribution of hotspots are very closely linked to the level of economic development. West Malaysia is the most developed region followed by Sabah and Sarawak, Sumatera and Kalimantan. There are more forest areas in Kalimantan and Sumatera compared to West Malaysia, Sabah and Sarawak. The forest area of Kalimantan and Sumatera provide more raw materials for the agro-forest industries. These include timber industries, pulp industries and oil palm plantations industries.

3.4 Discussion

The finding of the study shows that until the end of year 2001 large area under fire in Kalimantan has not been successfully contained. Study by Siegert and Ruckers [4] on the fire found out that there were extensive fire in East Kalimantan and it virtually destroyed the primary (lowland and swamp) forest of Mahakam basin. The area which has been affected by the fire in East Kalimantan alone was estimated to be about 4 million hectares, an area as large as Switzerland.

4 Between economic development and environmental crisis; 'torn between two lovers'

The developing countries are in dire need for foreign investments to improve their economy and the capitalists from the developed or more developed countries, because of the availability of cheap raw materials and labour invested in the developing countries. The investments would provide jobs to the people and subsequently improve the quality of life of the people. Indeed foreign investments have created job opportunities for the people but at the expense of the environment. Many companies were relocated the developing world since they were involved the high risk sectors such as those of in Bhopal, India, and the smelting plant in the Island of Leyte in the Philippines. These factories have indeed created serious air and water pollution in the areas. The tug of war between the need of jobs and the need for clean and safe environment in the developing world create a feeling of being torn between the two basic needs of human being, jobs securities and clean and safe environment.

However there are a lot of instances where the good intention of providing jobs and improving the quality of life were not achieved. The people became the source of cheap labour while the environment formed the sink for the pollutants produced by the investments. In the Southeast Asian region, there are a lot of investments, especially in the electronic sectors from different part of the developed world such as from the Western Europe, Japan and Korea. However the agro-forest industries are mostly from the companies originated from the Southeast Asian nations itself i.e. the sectors in which they are well at.

5 The agro-forests investments

The true nature of companies could be seen in the Indonesian investments. In Indonesia, where the fire and haze crisis originated, a lot of investments are made in the agro-forest Industries. According to William [5] one-third of the nation was subjected to commercial logging concession in which one-third of the land were being controlled by 10 companies closely tied with the former Suharto's government. In 1996, Indonesia became the world's largest plywood exporter [5]. Between 1992 and 1997, Indonesian palm oil production increased by 32% and in 1997, exports of palm oil and palm oil products contributed over $1 billion to the Indonesian economy. The government has a production target of 7.2 million tons of crude palm oil by 2000 based on a doubling of plantation area to 5.5 million hactres [6]

6 Maximising production, minimising the effort

In Indonesia, as much as 80% of the fire was deliberately started by the plantation owners which account for 43% of the fire and forest concession which account for 37% of the fire. Many of the companies involved in the burning by the plantation companies were regionally join venture, involving Malaysian and Singaporean interest. At least 18 Malaysian companies with joint venture plantation in Indonesia were suspected of starting the fire [7] Five Singaporean joint venture may also be involved [6] Some of the fire might also be deliberately lit so that companies could claim insurance or reforestation funds [6]. This fact points to the role of large plantation companies in creating the environmental crisis. The seriousness of the involvement of the companies and corporations prompted the United Nations' top environmentalist to issue a stern warning to publish the blacklisted which were responsible for sparking the fire in Indonesia and elsewhere in the Southeast Asian region [8]. It was also reported that the Indonesian government was set to prosecute 5 of the 16 plantation companies accused of deliberately setting fires to clear the land in Kalimantan [9]

Since it has been admitted that the large companies have their hand in the environmental crisis, ways and means of stamping out fire and haze problem have to be focused on the large companies and corporation which is one of the characteristic of modern market economy. Poole [10] in discussing the ethic of market economy emphasised that modern market economy practices the utilitarianism ethics. Korten [3] highlighted the issue more deeply, in which he touched the role of companies and large corporation in creating the increasing imbalance of income between the rich and poor nations, the rich and poor people as well as the environmental crisis.

7 Utilitarianism and modern market economy

The modern economic system which is based on capitalism and free market economy is grounded on the utilitarianism philosophy in which what good is associated with the maximisation of production and minimising the effort

involved. The modern economy stated that self interested behaviour is the dynamic force which harmonises the society akin to the gravitational force which harmonises the universe.

The causal link between self-interested behaviour and overall social well-being is only maintained as long as the self interest operate within the limits set by private property and contract Poole: [10]. It is not clear that individuals who are ruthlessly self-interested will respect those limit when the probability of gain outweigh the loss. The behaviour of the modern market economy could be witness in the wake of the fire and haze crisis in the Southeast Asian region. This can explain why in the case of the Indonesian fire problem, companies deliberately lit the fire because it was the cheapest and fastest means of clearing the land for cultivation despite their knowledge that the act would create the environmental crisis.

8 The way out of the problem

In view of the accepted fact that environmental crisis such as the fire and haze problem were caused mainly by companies and corporations in their drive to maximize production and minimize the effort, there is no other choice for humanity except to find the alternative. The modern economic system which is based on capitalism and free market economy cannot sustain the environment. So what are the choices? If we are prepared to have the unsustainable environment and continued disparity of income between the rich and the poor then we should stick to economic centered development, otherwise we should opt for human centered development.

The proponents of human centered development suggest the improvement of adult literacy and basic education, carry out radical land reform to create thriving rural economy based on small farm production, and supported the development of rural industries that produced things needed by small farm families which become the foundation of larger industries [3]

9 The Malaysian experience in the land development

In Malaysia, the government formulated a program known as the New Economic Policy (NEP) in 1972 due to the disparity of income between the majority agrigarian indigenous people and the immigrant. The government embarked on a development program, diverting from the laissez-faire economic system to government intervention. One of the efforts taken by the authority was to strengthen the Federal Land Development Authority (FELDA) which was established on 1 July 1956 in which hundreds of thousand hectares of jungle were cleared for oil palm, rubber and other cultivation in the effort to relocate the poor and landless families. In this scheme each landless family (known locally as pioneer) was allocated about ten acres (about three hectares) of land ready planted with the oil palm or rubber trees and the basic facilities such as houses, schools, health care and son forth. The pioneer role was to take care of the already cultivated land and they were given monthly allowance to sustain their

living while waiting the cultivation to bear fruits. The products such as oil palm fruits or rubber are sold to the government owned companies which manufacture the product either for local consumption or for export. Another agency which plays an active role in encouraging the people participation in rubber industries is the Rubber Industry Small Holders Authority (RISDA). Both government agencies have successfully improved the living standard of the participants without causing adverse environmental damage and the success could be due to the people participation in the projects. The Malaysian oil palm and rubber plantation are mostly own by small holders but the Indonesian counterpart, they are mostly owned by large companies and corporation which account for 48% of the total area while 33% are owned by small holders and 19% owned by the state. [11] In contrary, the majority of the Malaysia oil palm and rubber plantations belong to the small holders. Table 3 shows the ownership of oil palm and rubber plantation in Malaysia.

Table 3: Planted area of main crop in Malaysia.

Region	Year	Rubber		Oil Palm	
		Estate/ Companies	Small holding	Estate/ Companies	Small Holding
West Malaysia	1994	269.7	1,162.9	837.7	1.020.0
	1995	250.4	1,133.9	876.0	1,020.0
	1996	218.7	1,120.4	906.0	1,020.4
	1997	195.4	1,111.4	912.0	1,044.5
	1998p	177.7	-	962.2	1,024.9
Sabah	1994	4.5	88.7	270.3	182.1
	1995	4.8	88.7	323.5	194.6
	1996	5.3	88.7	425.2	200.8
	1997	5.3	88.7	468.9	203.3
	1998p	4.1	-	626.8	215.7
Sarawak	1994	0.8	211.5	46.3	55.6
	1995	0.5	230.2	55.9	62.8
	1996	a	232.4	71.0	68.8
	1997	a	234.2	74.9	72.1
	1998p	-	1.62	162.4	86.1

a, statistic is combined between Sabah and Sarawak, p for provisional statistic
Adapted from YEARBOOK MALAYSIA 1999

Table 3 shows that the oil palm and rubber plantations in West Malaysia are owned by small holders. Small holders owned 80% of land cultivated with rubber and 53.30 % land cultivated with oil palm. However in Sabah and Sarawak, companies own more land cultivated with rubber and oil palm plantation.

10 Concluding remark

One of the way to solve the fire and haze problem is to carry out land reform in which the governments of the regions emphasized more on the participation of the people in the rubber and oil palm plantation. They should encourage the small holders rather than the large companies and corporation. The small holders could be educate to be more productive and more environment friendly. The role of the government is to educate, give incentive and assistance to the small holders.

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