

Moving the Forest Frontier in Peninsula Malaysia

Menggerakkan Sempadan Hutan di Semenanjung Malaysia

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Abstract

At the end of the nineteenth century almost the entire area of Peninsula Malaysia was forested. At that time the population of Peninsula Malaysia was relatively small. However, with the discovery of tin in 1850 led to the creation of new wealth and riches and this phenomenon not only attracted Chinese miners to work in tin mines but also triggered intense rivalry amongst Sultans, local chiefs and warring parties. At the height of the crisis the confronting parties seek the help from outside powers. Many local rulers and sultans seek the help of the British to resolve their problems. These situations have brought about the British intervention in states of Peninsula Malaysia. This paper will explore the factors contributing to the expansion of mining, agriculture, new settlement and township. The main driving factors were economic and wealth creation, global market demand and growing population. The paper will also illustrate the direction of retreating forest areas over the years.

Keywords

Forest, Peninsula Malaysia, commercial, product, development

Abstrak

Pada akhir abad kesembilan belas hampir seluruh kawasan Semenanjung Malaysia adalah hutan. Kawasan didiami terutamanya di sepanjang sungai-sungai utama dan penempatan di pantai. Semua perkampungan telah menjalankan aktiviti menangkap ikan oleh penduduk setempat manakala masyarakat lain sebahagian besarnya terlibat dalam kutipan hasil hutan dan berburu. Pada masa itu penduduk di Semenanjung Malaysia secara relatifnya kecil. Walau bagaimanapun, dengan penemuan bijih timah pada tahun 1850 membawa kepada penciptaan kekayaan baru dan kekayaan dan fenomena ini bukan sahaja menarik pelombong Cina untuk bekerja di lombong bijih timah tetapi juga mencetuskan persaingan sengit di kalangan Sultan, pembesar-pembesar tempatan dan pihak-pihak yang berperang. Artikel ini meneroka faktor-faktor yang menyumbang kepada perkembangan perlombongan, pertanian, penempatan baru dan bandar. Faktor-faktor utama ialah memandu ekonomi dan pewujudan kekayaan, permintaan pasaran global dan

penduduk yang semakin meningkat. Penulisan ini juga akan menunjukkan perubahan ke belakang kawasan berhutan selama ini.

Kata kunci

Hutan, Semenanjung Malaysia, perdagangan, produk, pembangunan

Introduction

At the end of the nineteenth century almost the entire area of Peninsula Malaysia were forested. The only inhabited areas were mainly along major rivers and settlements on the coastal regions. The villagers were mainly fishermen, hunter and gatherers of forest produce. They were involved in rice cultivation and grow herbs and fruit trees along the rivers and settlements. The Orang Asli particularly the Negritos were hunter gatherers and practices the nomadic way of life frequently shifting and moving their place of stay in the forest. On the other hand the Senoi and Proto Malays were traditionally shifting cultivators and regularly clear forest areas to plant and cultivate a variety of crops. The main crops were tapioca (*Manihot esculenta*) and hill rice (*Oryza sativa*). Other crops grown were sweet potatoes, maize, vegetables and fruit trees. Their diet was supplemented by roots, fruits gathered in the forest and hunting and fishing (Aiken et. al, 1982). It was recorded that many of the crops planted such as rice maize tapioca sweet potatoes have been introduced in relatively recent times (Dunn, 1975). The Malay settlements could be classified into three zones namely coastal and estuarine fishing villages, riverine settlements practicing wet rice growing and orchards or dusun, and a zone of shifting cultivation between the valley bottoms and the forested interiors (Aiken et. al, 1982)

The introduction of agriculture plantation for commercial purposes was mainly undertaken by Chinese and Europeans. The first crop to be grown commercially on plantation scale was pepper (*Piper nigrum*) in Penang Island in 1790. Within eight years 365 hectares of forest areas were cleared for pepper plantation and by 1802 the area increased to 891 hectares. However, by 1830s the pepper industry declined and many plantations were abandoned. These areas were later planted with cloves and nutmeg and by 1853 the planted were 3783 hectares mainly through forest clearance (Aiken et. al, 1982). Other than Penang, Johor became an important pepper growing area where they were planted together with gambier (*Uncaria gambir*). At the same time tapioca plantation became commercially important in the state of Malacca and Negeri Sembilan. Due to severe competition and declining prices the pepper, gambier and tapioca plantation were abandoned to make way for other promising crops such as rubber. Similarly other commercial plantation crops such as sugar cane and coffee also suffered setbacks due to diseases, falling prices and competition from rubber

and the area declined drastically and soon were replaced by more profitable crops. The area cleared for these plantations were mainly from the mangroves, peat swamp forest and Lowland Dipterocarp forests. These areas were also cleared for township and settlements.

First wave of forest clearance – tin mining

Ancient historical records showed that Peninsula Malaysia or Malaya was known as Golden Khersonese largely due to the presence of gold, tin and other minerals. (Wheatley, 1961). Early Arab travellers during the ninth century mentioned that tin was found in Peninsula Malaysia. In 12th century Chinese historian recorded that tin was mined in Kelantan and Pahang. However, tin as a traded commodity from Malacca was recorded by Admiral Cheng Ho during his expedition in 1400s. The Malacca Empire was conquered by the Portuguese in 1511 hence took control of the important trade route including the tin trade. Similarly when the Dutch took control of Malacca in 1641 they also control the trade.

Small scale tin mining were owned and undertaken by the Malays using simple method known as *dulang* washing mainly in Perak and Selangor. In 1850's, with the increasing demand for tin globally and the discovery of rich tin deposits in Larut, Kinta Valley and Klang Valley triggered intense rivalry amongst Sultans, local chiefs and other interested parties. Many local chiefs and rulers seek the help of the British



Figure 1 Tin Mining Areas Peninsular Malaysia
Source: Yip 1968 page 26

to solve their problems. These situations have provided opportunities for the British intervention in the States of Peninsula Malaysia particularly Perak and Selangor which were the main tin production areas. Tin became an important trading commodity by nineteenth century. The British employed Chinese to work in the tin mines to increase the production level to meet increasing demand in the world market. All the productive tin mines were found on the western region of Peninsula Malaysia. It has been estimated that about 45 percent of the country's tin production were from Kinta Valley in Perak (Sulong, 1982). Other important areas are in Selangor and Negeri Sembilan mainly in Kerling, Bentong, Machis, Kuala Lumpur, Ulu Langat Dengkil, Seremban and Jelebu. Other tin mines were found in Kuantan –Kemaman area and South east of Johore. Hence, Peninsula Malaysia became the world largest tin producer in the world. The tin industry continued to be an important export earner to the economy. The annual average tin production between 1950 to 1985 was 62000 tonnes. The tin market became very unpredictable due to strong competition and depressed prices led to the collapse of the world tin market in 1985. As a consequence many tin mines were closed and ceased operations from 450 active mines in 1985 to only 23 in 2004. The distribution of tin mines and the areas involved is shown in Figure 1.

Second wave of forest clearance – rubber plantation

The introduction of rubber to Peninsula Malaysia began when Henry Wickham send 22 seedlings to Botanical Garden in Singapore. From this batch a total of nine seedlings were sent to Kuala Kangsar, Perak in 1877 and was planted in the compound of the Residency. In 1888 H.N Ridley was appointed as the Director of the Botanical Gardens. He undertook a series of tapping experiments in order to improve the production of latex for the rubber trees. With the introduction of new tapping technique as well as the invention of pneumatic tyres and the growth of car and aircraft industries led to increase demand for rubber products. These circumstances have encouraged and accelerated planting of rubber. At the same time, Ridley was very concern that most of the lowland forest would be cleared for rubber plantation. He initiated the gazettelement of forest reserves and some of the remaining forest reserves in Selangor and Malacca were attributed to his efforts.

The commercial planting of rubber was mainly in Malacca and Selangor. In 1895, Tan Chang Yan a tapioca planter established 43 acres of rubber plantation at Bukit Lintang Malacca and was regarded as a pioneer of commercial rubber plantation (Drabble, 1973). There has been great interest among the British and European companies to grow rubber on a commercial scale. The area under rubber plantation increased rapidly from 2,400 hectare in 1900 to 882,700 hectare in 1920 and further increase to 1.54 millions hectares in 1960. The detail of the rubber planting for 1900 to 1960 is shown in Table 1.

Table 1 Rubber Plantation Areas 1900 to 1960 ('000 Hectares)

Year	European Estates	Asian Smallholders	Total
1900	2.4	-	2.4
1905	18.6	-	18.6
1910	152.6	66.4	219.0
1915	288.1	233.9	522.0
1920	478.4	404.3	882.7
1955	815	607	1422
1960	783	765	1548

Source: Drabble J.H 1973 and Statistic Department

Early rubber estates were own by the European and the Chinese with little participation by small holders however after 1910 the small holder rubbers plantations began to play important role in rubber production by 1960 the rubber area under estate and smallholder almost reached same level in term of areas. By 1985 rubber areas under smallholders was 1.5 million hectare compared 429,000 hectares by estates. At the time of independent the Malaysian economy was largely based to on the export of rubber and tin and other natural resources. The areas develop for rubber plantation it shown in Figure 2.

Third wave of forest clearance – land development

After the May 13th 1969, racial disturbance the government formulated new approach and dimension to the economic policy in the country. Under the New Economic Policy which was launched during the Second Malaysia Plan 1971-1975 stressed the importance of achieving two-pronged strategy of poverty eradication and restructuring of society irrespective of races. This was achieved through land development for agriculture crop. One of the approaches adopted was the more effective utilization of one of her rich natural resources, the soils of the forest land. This resulted in large scale conversion of lowland Dipterocarp forests for agricultural development mainly for rubber and oil palm plantations.

The Land Capability Classification was formulated to provide guidance for land use in Peninsula Malaysia (Lee and Paton, 1971). The land was classified based on mineral potential, soil suitability and forest productivity. They were divided into five categories: Class 1 land suitable for mining, Class II and III land for agriculture, Class IV for production forestry and Class V for protection forest. In the 1970, when the Land Capability Classifications (LCC) was completed it was estimated that about 9.11 million hectares of Peninsula Malaysia were forested, of which 3.36 million hectares were suitable for agriculture, leaving 5.75 million hectares available for forestry that is, land in Class IV and V (Anon, 1979). In the 1977, a re-examination of the data reduced the total area of forested land to 7.2 million hectares, and the forest area suitable for agricultural development was 2.02 million hectares.

Table 2 Malaysia: New Land Development, 1971 to 1995 (ha)

Agency	Hectares			
	1971-80	1981-85	1986-90	1991-95
Federal Programmes				
FELDA	373,705	161,600	105,139	14,930
FELCRA	50,710	31,100	-	-
RISDA	31,463	9,770	-	-
State Programmes	155,662	158,000	21,227	27,240
Joint Venture/ Private Sectors	120,047	57,100	6,626	151,050
Total	866,058	417,570	132,992	193,220

Source: Second, Third, Fourth and Fifth Malaysia Plan

From 1971-1990 a total area of 1.4 million of land was develop for agriculture crops. However the bulk of the areas were developed during the first ten years from 1971 to 1980 mainly during the Second and Third Malaysia Plan. Land Development and rural settlement was carried out by a number of government agencies led by Federal Land Authority (FELDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), Rubber Industries Smallholders Development Authority (RISDA) and The State Economic Development Corporations (SEDCs). FELDA alone has develop 685,444 hectares from 1971-1990. The land developments were undertaken within the regional land development projects. These were mainly Jengka Triangle (110,000 hectare), Pahang Tenggara (DARA) 1.01 million hectare, Johor Tenggara (KEJORA) 277,000 hectare, Terengganu Tengah (KETENGAH) 402,200 hectare and Kelantan South (KESEDAR) 1.07 million hectare. All the areas involved in land development were converted from forest land for agriculture development mainly rubber and oil palm plantation. These development also involved the establishment of township and infrastructure development mainly road construction. Figure 3 shows the area forest area cleared for agriculture development.

Last forest frontier – Central forest spine

The National Physical Plan (NPP) provides the strategic spatial planning policy guideline on the direction and broad pattern of land use and physical development and conservation of Peninsula Malaysia (FDTCP 2010). NPP recognised that Environmental Sensitive Area (ESA) shall be integrated in the planning and management of land use and natural resources.

NPP also recommended the establishment of a Central Forest Spine (CFS) to form the backbone of the Environmentally Sensitive Area Network. The CFS includes the forest area within the groups of forest complexes namely Banjaran Titiwangsa – Banjaran Bintang – Banjaran Nakawan, Taman Negara – Banjaran Timur, South East Pahang, Chini and Bera Wetlands, and Endau Rompin Park – Kluang Wildlife Reserves. The CFS shown in Figure 4.

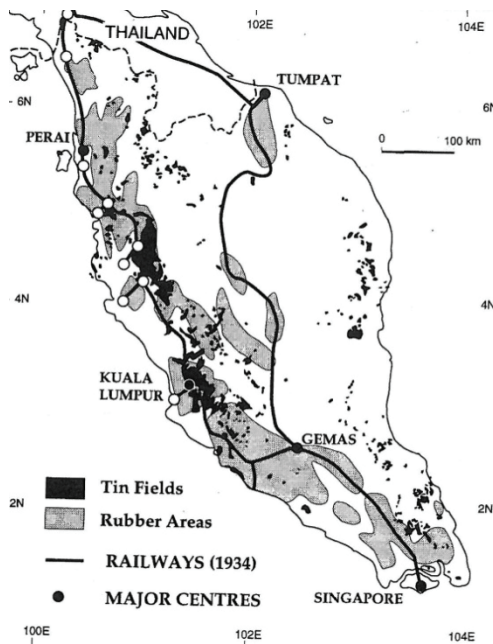


Figure 2 Tin and Rubber Areas Peninsula Malaysia
 Source: Amirjit & Metcalfe (1999)

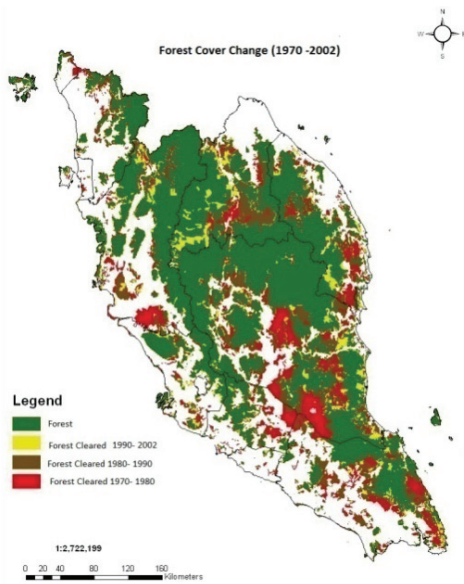


Figure 3 Forest Cover Change (1970-2002)
 Forest Department Peninsula Malaysia

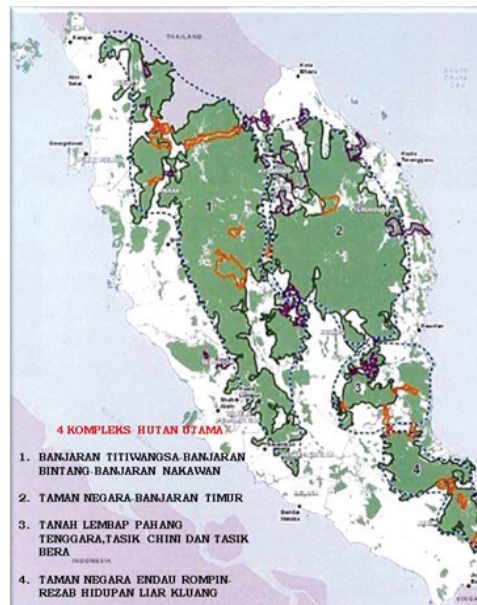


Figure 4 Central Forest Spine (CFS):
 National Physical Plan 2 (2010)
 Federal Department of Town and Country Planning

Table 3 ESA Management Criteria

Rank	Environmentally Sensitive Areas	Management Criteria
ESA Rank 1	Existing and proposed Protected Areas. Importing small habitats, outside the PA system: Turtle landing sites, salt licks, important plants areas, limestone outcrops and natural wetlands of high conservation value. Catchments of existing and proposed dams. Areas above 1,000m contour.	No development, agriculture of logging shall be permitted except for ecotourism ² research and education.
ESA Rank 2	All other forests and wetlands outside of Protected Areas. 500m buffer zone around Rank 1 areas ³ Areas between 300m – 1000m	No development or agriculture. Sustainable logging and ecotourism may be permitted subject to local constraints.
ESA Rank 3	Marine Park Island. 500M buffer zone around Rank 2 areas ³ Catchments of water intake and groundwater recharge zones. Areas between 150m -300m contour, all areas with erosion risk above 150ton/ha/yr. All areas experiencing critical or significant coastal erosion.	Controlled development whereby the type and intensity of the development shall be strictly controlled depending on the nature of the constraints.

The National Physical Plan (NPP) identified forest fragmentation as a ‘major threat to the conservation and maintenance of biodiversity’ and recognized that ‘conserving forest lands would be integral to optimizing the use of land in the country’ and that ‘the multifunctional role of the forest lands should be enhanced through the recognition of the central forest spine and programmes to create linkages and corridors to the more isolated reserves’. In essence, connecting these fragmented forests is important to secure mutual co-existence and benefit for development and conservation (NPP, 2005).

The main purpose of ecological corridor was to provide forest cover, food, water, protection from dangers and minimal disturbance for the species that use them. The design of the corridors should be appropriate to the species that use them. Two types of Ecological Corridors, i.e. primary linkage or secondary linkage, have been created in CFS. Each corridor can take the form of either a contiguous linear corridor (i.e. unbroken stretches of forested habitats connecting Forest Island) or “stepping stones” (i.e. patches of suitable habitats).

Primary linkage (PL) is identified in areas where it is crucial to re-establish forest connectivity in order to achieve the main Central Forest Spine link. These areas are inevitably located between the most important blocks of forests. Primary linkages are normally linear corridors, and cater for movement of large mammals.

Secondary linkages (SL) are complementary to the primary linkages. They are identified in areas where it is unfeasible to create a primary linkage due to physical, land use, biological and socio-economic constraints such as vast areas of non-forested land or long distances between forests, or high human population and activities, but it is still important to maintain some level of connectivity, albeit weaker, between forests.

Past, current and future trend in land use

Initial attraction of resource exploitation was for spices namely pepper, nutmeg, gambier and cloves. The collection and gathering of spice was established at a few well developed areas along the west coast of Peninsula Malaysia. Over time as the demand for spices increased causing the rise in harvesting rate, and consequently the resources became depleted. This provided the opportunity for the introduction of commercial practices into spices cultivation. The forested land surrounding the areas was cleared for plantation activities. Forest clearance was however localized around these areas and the overall impact was very minimal.

The discovery of tin set the stage for further intrusion into the interior forested areas. Capitalizing on the well lay-out infrastructural facilities within the area, roads, and railroads were extended into the tin mines to transport tins to the ports. In the process, forested lands were converted and timber was extracted for use as railway slippers and poles for mining. The open cast mining method practiced for the extraction of tin left permanent scare to the landscape. The cleared forest area gave rise to soil erosion and siltation. This problem further exacerbated by the tin processing method which relies on large quantity of water. The wastewater which was high in total suspended solids was then released into the rivers. This siltation problem was very visible in state of Perak, Selangor and Pahang where mining activity was intensive. The problem of siltation seriously reduces the level of biodiversity in the rivers. Furthermore, flooding was a normal consequence of siltation. The flooding of many lowland areas especially the lowland forest reduced the level of biodiversity and changes the species composition in that area.

The introduction of rubber as a commodity crops into Peninsula Malaysia signal the beginning of large scale conversion of forest area into agricultural land. Taking the advantage of the infrastructural facilities financed by the tin mines, rubber plantation established itself rapidly. The colonial administrator in effort to promote the growth of mining and agriculture industries laid down the foundation for large scale natural resources exploitation by introducing land tenure system allowing individual ownership of land thus contributing to speedy alienation of land for large scale agriculture and mining activities. As a result, these economic activities surrounding land-based resource exploitation grew rapidly and became deeply entrenched in the Malaysian economy.

When Malaysia gained independence, the nation's economy was largely dependent on tin and rubber which contributed to 76 percents of the total export earnings in 1961 (Ooi 1963). During 1970 to 1990 Malaysia under took new economic strategy to reduce vulnerability of depending export on tin and rubber it. Firstly, it diversified and expanded its agricultural resource-base by increasing the replanting and new planting of rubber, the new planting of oil palm, the extraction of hardwood timber, the opening up of new paddy areas and by the improvement of irrigation and drainage facilities. Secondly, beverages, textiles, transport equipment, chemical and non-metallic products, all of which had previously been imported. As a result, Malaysia was able to

continue to increase its agricultural exports and at the same time to decrease its import of rice and consumer goods.

Furthermore, during the period massive land development for agriculture was implemented through many regional development projects in this regard most of the available and suitable land was cleared for the planting of rubber and oil palm. These afford has uplifted well being of rural communities there by reducing the poverty level in rural area.

Over the past 50 years, Malaysia has developed rapidly to become an industrialised nation. So the economy of the country has been diversified from relying tin and rubber to manufacturing and export oriented products. However it must be bone in mind that future development will not be base on large scale land base development as the future land are mainly in the steep and mountainous region of Peninsula Malaysia which are the refuge for wildlife and biodiversity conservation and water resources.

Conclusion

Over the last century Malaysia have develop and transform itself from natural resource based economy relying many on tin and rubber in the first half of 20th century to a modern and industrialised nation. Future economic development will not be extensive land based but will be of industrial and innovation, knowledge driven. As the remaining land area are restricted to the Central Forest Spine (CFS) as identified by the National Physical Plan which are steep and mountainous and are limited for any big scale agricultural development. At the same time the CFS are crucial for the water supply, biodiversity conservation and wildlife habitats. These areas are also and environmentally sensitive hence must be conserved and protected for the future of Malaysian generations. It must the realised that the majority of CFS areas are in the gazetted permanent forest reserve

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