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CHANGING PLACE: PALM OIL AND SENSE OF PLACE IN BORNEO

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Abstract: The conservation of tropical ecosystems is complex and contested, not least in terms of cultural and political perspectives between developed and developing nations (Bawa & Seidler, 1998; Colchester, 2000; Brosius & Hitchner, 2010). In Sabah, on the island of Borneo, Malaysia much of the forest has recently been converted to oil palm plantations. The plantations cover vast areas and leave relatively little space for native flora and fauna. Whilst efforts are underway to enhance biodiversity within the plantations, there is no clear consensus as to how this might best be achieved and this has led in part to divisions opening up amongst stakeholders (Othman & Ameer, 2009). A range of Non-Governmental Organisations (NGOs) working within Sabah endeavour to conserve threatened biodiversity; at the Governmental level there are significant drivers for development and economic stability; while the plantation owners are trying to improve their yields and increase their global market. There is also increasing consumer pressure in Europe and North America linked to concerns about the survival of iconic rainforest species such as orang-utans. This paper considers these issues within a context of globalisation and profound economic and social change within Malaysia.

Key words: Oil Palm, Sense of Place, Landscape Change, Plantation Agriculture.

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Introduction

Large scale human disturbance, most of which has happened in the last 10 years, has lead to a situation where only 11.6% of Malaysia's forest remain intact (Bhagwat & Willis 2008) and 70% of the total area set aside for agriculture, some 6.6 million ha, has now been planted with oil palm. This has created a new, largely homogeneous landscape, with fragmentation of natural forest and correspondingly low levels of biodiversity (Bruhl et al. 2003; Koh & Wilcove 2008). These changes have also impacted on meanings of place. As Teo & Huang (1996, 310) indicate, place is an 'active setting which is inextricably linked to the lives and activities of its inhabitants'. Place is also about situated social dynamics and is multi-dimensional, holding different meanings for different stakeholders. Rapid conversion of land from primary rainforest to oil palm plantation has not only changed the ecology of the area but has influenced the way that the land is

governed, leading to conflict and unrest. In particular, where the rights of local indigenous communities have allegedly been ignored, there have been re-occupations of land and violent protests, which have led to allegations of the unwarranted arrest, abduction and killing of protesters (Gerber, 2010; Wakker, 2005).

Borneo, the world's third largest island, includes three separate countries. The Malaysian states of Sabah and Sarawak occupy most of the Northern quarter of the island, whereas the four Kalimantan provinces belonging to Indonesia dominate the southern parts of the island. The Sultanate of Brunei is located centrally on the northern coast of the island, occupying less than 1% of the territory. Malaysia has undergone an economic revolution since 1970 with poverty rates falling from 49% to less than 5% in 2007. This has largely been based upon development of manufacturing in peninsular Malaysia and the growth of agricultural exports (such as palm oil and rubber) in East Malaysia (Balasubramaniam, 2006; Jomo & Hui, 2005; Gomez & Sundaram, 1999; UNDP 2007a). Despite this, there is significant rural poverty associated with the reliance on agriculture in Sarawak and Sabah. Economic development in these regions is likely to

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continue to be based on plantation agriculture and the further exploitation of natural resources, which almost inevitably leads to environmental degradation and impacts on native fauna and flora. For example declines of up to 75% have been reported for both bird and butterfly species richness (Peh et al, 2005).

The oil palm (*Elaeis guineensis*) is central to contemporary economic development in Malaysia. It is native to West Africa and was introduced to the then British colony of Malaya in the early 1870s. In 1917, the first commercial planting took place at the Tennamaran Estate in Selangor with seeds sourced from Indonesia. This initial plantation laid the foundation for subsequent oil-palm plantations and development of a palm oil industry in Malaysia which can be divided into several phases beginning with the experimental phase from the late 1800s until 1916 (Rasiah 2004). The colonial private estates and plantation phase commenced in 1917 and lasted until 1960 (three years after Malaya became an independent nation in 1957). At this stage plantations were much smaller and covered a much smaller area of land. The third phase started in the 1960s in response to the Government of Malaysia's diversification policy to reduce the national economy's dependence on rubber. Following a recommendation of a World Bank mission in 1955, the Government started promoting the planting of oil palm. From this point onwards oil palm plantations started to expand across Malaysia and change the natural features of the environment.

According to Harvey (2001) people's identity and sense of place are constructed through their environment and their experiences within it. Over the last 50 years or so there has been such rapid change in Sabah that the cultural associations with the landscape may have contributed to one of the greatest shifts in sense of place within living memory. The dominant ecosystem before the drive to plant oil palm was tropical rainforest. Whilst it was used by local tribes such as the Dayak for subsistence purposes, it retained a local distinctive character based on some of the most diverse forest on the planet. In contrast, the very worst palm oil plantations are monocultures covering thousands of hectares. Whilst the land is still covered primarily in woody biomass, the ecosystem shift from 'natural' to agricultural has been rapid and extreme – with a corresponding loss of the natural markers of place, i.e. tropical rain forest and the species that exist within this environment (Nevin et al, 2012). There is evidence from elsewhere that such rapid change can undermine the cultural and spiritual values associated with landscape (for example, Ghimire & Pimbert, 1997; Chapin et al, 2000; Pretty & Smith, 2004).

Agnew (1987) describes the meaning of both location and locale of place, where location refers to the actual location of the place and the locale refers to characteristics that make it what it is. Indeed, interest in indigenous cultures has often focused on their sustainable interaction with the ecosystems they depend (or depended) upon (Vescey, 1980). The removal of (predominately indigenous) people from the lands that they traditionally inhabited combined with a wholesale change in that environment (Cooke, 2002) has inevitably changed meanings of place. Cultural identities strongly linked to natural systems have had to adjust to this new landscape. Moreover, this oil palm landscape is not going to go away, at least not in the short to medium term. Biodiesel consumption is estimated to reach 277 million tonnes per year in 2050; this will need an additional 114 million ha of land to produce the oil crops (Koh 2007, 1373). The Malaysian palm oil industry is now a vital part of the domestic economy, the most widely used oil in the global edible oils market and the biggest agricultural contributor to the Malaysian economy. Approximately 13% of Malaysia's land mass and 60% of its agricultural land is being used to grow oil palm (Economic Planning Unit, 2006). In 2007, the industry's assets were valued at approximately RM 85 billion (US\$ 25 billion) and around 860,000 people (including some indigenous peoples) were directly or indirectly employed in the industry (Ministry of Plantation Industries and Commodities 2007). Export earnings for all oil-palm products (including palm oil, palm oil cake and oleochemicals) were a record RM 45.1 billion (US\$ 13 billion) in 2007.

This paper seeks to explore the changing nature of place in Sabah, Borneo within a context of globalisation and profound economic and social change within Malaysia. It is linked to a doctoral study of oil palm and biodiversity funded by the UK Energy Research Council.¹

Methods

Individual and group semi-structured interviews, conducted by the authors in Sabah, Borneo in 2008, were used to scope stakeholder perspectives of current and potential conservation strategies within oil palm plantations. We used a knowledge mapping approach to speak to a range of professionals involved at various levels with oil palm management, conservation and indigenous rights. We accept that this approach has limitations, not least that we were unable to speak to people working or living within or nearby to plantations, but we nevertheless contend

¹ The views presented in this paper do not necessarily reflect those of the funding agency.

that this approach offers a useful ‘snapshot’ of oil palm governance in Sabah.

The interviews were conducted from August to November 2008 in Sabah, held either at the interviewee’s place of work or at a pre-arranged meeting place. A total of 12 respondents were recruited (via a snowballing approach) to the study, including 2 officials from a government environmental protection department, 5 managers from 2 oil palm plantations (1 individual interview and 1 group meeting), 1 university ecologist and 4 representatives of Non-Governmental Organisations (NGOs) (3 environmental NGOs and 1 community-based NGO concerned with indigenous rights). These respondents could be loosely termed as conservationists (representatives from the government departments, NGOs and the university academic – Bo1, Bo2, Bo3, Bo6, Bo7, Bo8 & Bo9) and producers (oil palm plantation managers – Bo4 and group meeting Bo5). Interviews were analysed using the grounded theory – constant comparison method, where each item is compared with the rest of the data to establish and refine analytical categories (Pope et al. 2000). Atlas Ti was used for data exploration and storage.

Results

The meaning that different stakeholders within the palm oil industry give to rainforest and oil palm, in effect the ‘landscape,’ includes multiple perspectives based on the economic, social, and environmental factors indicated above. Despite concerted efforts by environmentalists to raise awareness of environmental damage, deforestation continues across the tropics (Hansen et al., 2008). This has occurred against a backdrop of increasing evidence of the important of tropical forests for the provision of environmental goods and services and corresponding advances in the way in which the value of tropical forest can be included in total economic valuations (Merlo and Croitoru, 2005; Pearce, 2001), too often the benefits of maintaining rainforest are felt globally whilst the costs are borne locally.

Some small holders and national companies have benefitted from high economic returns once natural forest has been cleared and converted to agricultural land. Thus producers have been willing to increase the areas of land under production, and governments have often supported this action with the added incentive of subsidies. Economically there are few alternatives in Sabah; there is a strong and growing market demand for these products. Additionally, these products are bought and sold on a global scale and a global consensus towards sustainability rather than just western concern will be required for broad

scale conservation to be effective. Natural rainforest is typically an incredibly biodiverse ecosystem, containing some of the most endangered species on the planet (Myers & Mittermeier, 2000).

As stated earlier, the ecosystem shift from ‘natural’ to agricultural has led to a loss of the natural markers of place in Sabah, i.e. tropical rain forest and the species that exist within this environment, including iconic species such as orang-utans.

The oil palm industry is responsible for the loss of between 50 – 90% of the orang-utan population...the population crashed when oil palm expanded so we know it is a result of the plantations. (Bo1)

The oil palm industry frequently accuse conservation NGOs of not considering the importance of palm oil from an economic perspective, whilst the industry itself has been accused of failing to appreciate the threat to the region’s biodiversity (Bhagwat & Willis 2008). Indeed, to many conservationists, oil palm is ‘the enemy’, and there have been a number of high profile campaigns by leading conservation and environmental NGOs against the expansion of oil palm in the tropics. However, western conservation strategies can sometimes conflict not only with the values of large corporations but sometimes also with local indigenous communities (Fabricus et al, 2007). To a farmer or any large agricultural business, an area of rainforest is often valued in terms of clear cutting for production (Pearce, 2001).

In Western Europe, traditional low intensity agriculture often promotes high levels of diversity, or favours site specific rare taxa (Robinson and Sutherland 2002). Yet active conservation of biodiversity has often been confined to protected areas even though they cover as little as 10% of the earth’s surface. Most wild plants and animals live outside protected areas, often in agriculture dominated landscapes: about 30% of the global land surface is occupied by crop and managed pasture land (Wood et al 2000). In Sabah, for example, it has been estimated that 60% of the orang-utan population lives outside of protected areas, more widely in Borneo it is estimated that 98% of this habitat will be gone by 2022 (Ancrenaz et al 2005, Nelleman et al., 2007).

The attitudes towards conservation of those in close proximity to wildlife habitats are strongly linked to the problems associated with wildlife (Newmark et al 1993, 177; Newmark et al 1994, 249). If biodiversity and native forest are to be effectively protected and if there is to be some retention of the elements that provided the ‘traditional sense of place’ then it is crucial to have cooperation with the local indigenous communities and agricultural managers. It may be

possible that by combining the two elements a stronger case for both cultural and biodiversity conservation can be made in a way that provides benefits for growers as well. According to an indigenous right NGO (Bo7), the capacity for conflict exists as a result of land developers and local indigenous communities not working together:

The local communities see it as disturbing they feel marginalised by all this and this is when conflict happens especially area that they have been occupying for generations and the government just declare it as sold to other companies.

The demographic context for this change has been rapid population growth, both in Malaysia and in Sabah. Between 1970 and 2000, the population of Malaysia increased more than doubled, from 10.7 million inhabitants to 23.3 million. During the same period, however, the population of Sabah increased four-fold, from 654,000 to 2,656,000. Much of this increase came from migration, both from West Malaysia and from other countries, notably the Philippines and Indonesia (Lim 2005). Approximately 25% of the Sabah population are non-Malaysian in part due to the high percentage of immigrant workers on oil palm plantations who are predominantly Indonesian. The population can be divided into two groups, the lowly populated, highly tribalized groups of the interior, and the relatively dense agricultural populations along the coast and the lower floodplains of the major rivers. The main indigenous communities² are Kadazandusuns, Murut, Rungus and Bajau. There are more than 50 ethnic groups in Sabah (Lasimbang and Moo-Tan 1997) and the Kadazandusuns alone comprise more than 30 different groups (Tombung 1990). Other groups in Sabah include the Chinese, Bruneians and Indians.

One of the most well known indigenous groups in Borneo is the Dayaks, who primarily practice shifting cultivation. As Khatwani (2005) notes, the term 'Dayak' is a collective and often confusing term for hundreds of groups on the island of Borneo related to one another by language or culture. Traditionally Dayaks practice a form of slash and burn shifting cultivation. They produce rice but also continue to use the rainforest for a major source of livelihood. As such, there is a strong connection between people's knowledge of nature and their relationship to place (Bell et al, 2008). It is also important to note,

however, the millennia-old involvement of the Dayak in international trade, historically in non-timber forest products, and for the last two centuries or two in cultivated rubber, among other commodities (see van Van Klinken, 2004). Whilst Dayak history is complex and contested, a deep understanding of forest, river and land remains important for Dayak culture and is linked to a sense of connection to place.

As an exemplar of change in Borneo, It is clear that development is having an effect on Dayak culture. There are an estimated 4 million Dayak left throughout Borneo (Djuweng 1999, 105). Whilst there was undoubtedly an impact on biodiversity from their shifting agriculture, this was sustainable in the long term. However, increasing demands for palm oil would seem to be a death knell to this way of life. Pressures from recent modernisation and a shift towards western consumer culture, particularly in more urban areas of Sabah have left a rapidly changing environment where 'modern' standards and consumerism replace the desire for land, forest and river.

Everybody is still on an ego trip somewhere and there are only very small pockets of [indigenous] people in very confined locations or isolated individuals that have actually found their way to live their life in a better way with less of this [consumerism]. Otherwise we still have a huge marketing and advertising industry that plays with this and fuels the desire every hour of every day. Whether it is the printed media or on TV [it says] do this and then you will satisfy such and such a desire. What are you going to do? Are you going to ban the advertising and marketing industry? Are you going to make an example of all these people? Who is going to feed them? At a philosophical level you can come down and say that these are some of the problems and we can solve them, but is that realistic? (Bo2)

In Sabah, a respondent from an indigenous right NGO (and himself a member of an indigenous tribe) describes how local indigenous people value the land and use it in a sustainable way:

Within indigenous knowledge we have a concept because there have been hunters and gatherers and subsistence they have this concept called Gumpy Guna 'Use and Protect' this value is held by indigenous people for generations. When people become commercialised a lot of that value has been forgotten so what we try do is revive that kind of knowledge and if the Government can recognise us in schools it will be good. From olden days we were taught by our elders but because we become greedy and we want to sell and get money and we don't care. That is also a problem and the local communities must also try and strengthen the value within the community because we have more to gain (Bo7).

² We fully accept that this is a contested term. Our use here follows the United Nations (2004) definition of indigenous communities as 'those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them.'

Of course, both plantation companies and smallholders make productive and to some extent sustainable use of the land, the difference is both the scale of operations and the way in which society values the resulting landscape. Value is a contested term in relation to natural environments, not least because a stakeholder's spatial, temporal and socio-cultural distance from a resource will alter perceptions of value; for example, the cultural and spiritual value indigenous communities associate with an ecosystem may well differ from those of visitors, industry and government. The recent trend towards placing economic value on natural resources (for example, TEEB, 2011) can, therefore, be problematic because for many stakeholders ecosystem importance transcends fiscal value; environmentally destructive behaviour may be justified by short term fiscal rationality for an individual, even when, in the long term and for wider society, it might entail counterproductive outcomes. For example, Bo7 also describes the connection and affinity that many local indigenous people hold towards biodiversity:

Our life is so connected and intertwined with biodiversity with the environment because our language is connected to a lot of the environment so we lose the environment we won't be using these words anymore and our children will forget. The second one is our knowledge of medicine and animals and if we lose those we lose all that scientific knowledge and that way of life.

Despite an increasing recognition of the value of local knowledge, there is still a tendency for governments, policy makers, industry and conservation scientists to fail to recognise the value of natural resources from the perspective of local and indigenous communities (Blewitt, 2010, Trigger, 2008). Yet there are many reasons to believe that ecosystem services would be better valued and protected where people regain some sense of place (Borgstrom-Hansson & Wackernagel, 1999).

As already indicated, however, the difficulty in Sabah is that sense of place is rapidly changing. Indigenous groups now represent a small percentage of the population of Sabah, which has a recent history of large-scale migration. Many residents do not have a history or long association with any part of the island. For some residents, particularly recent migrants, the landscape of Sabah is largely agricultural in character because that is all *they* have known, and oil palm represents their day to day reality. A conservation respondent (Bo6) notes that:

[I've] never known anywhere like Sabah, where some people just treat land as a tradable commodity [outside of the indigenous peoples] there isn't much affinity

[with the land] and there are people quite happy to sell the land and move if it suits their interests.

There is also evidence of land being seized or taken from smallholders in exchange for various kinds of economic inducements, including direct compensation, a share in the profits of the scheme, and labour opportunities (Hall, 2011). McCarthy (2010:838) states that (in relation to Indonesian Palm Oil schemes) a 'lack of secure and enforceable rights over both private and village common land weakened the landowners' bargaining position and left them vulnerable to elite manipulation during the processes where informal' and fuzzy' rights were translated into formal legal entitlements'.

Schama (1995, 15) writes of 'landscapes as tools that 'can be self-consciously designed to express the virtues of a particular political or social community'. Lee (2007, 88) notes that through interactions with the land people shape their surroundings according to intentional patterns of use in the future as well as the past. Such change opens spaces for new actors in the landscape by 'obscuring or removing the cultural markings of those that had previously claimed to be of the place.' (Furlong, 2006, 50). Indeed, the lack of a felt continuity between people and nature is important in terms of limiting attachment to place (Bell *et al* 2008, 277). In this way the conversion of primary forest through to palm oil makes sense as a process of reshaping the land to suit hegemonic interests.

In Sabah this is true in part, though there are people who have been less willing to give up their land and who have come under pressure to release their assets for development by others. Certainly there has been some conflict over the acquisition of land for conversion into plantation crops, and an emphasis on developing the land for agriculture:

Actually we didn't want to give up the land, we wanted to keep it like a forest but according to the land ordinance we have to develop it otherwise the government will take back the land. They will penalise, therefore we have to develop the land. (Bo5)

The drive towards economic regeneration and the insatiable demand for palm oil from the food and chemical industries has meant that many local indigenous people feel marginalised on their own land. Jessop *et al.* (1993; cited in Furlong 2006, 47) note the disconnection between powerful 'strategic groups', who are able to orientate themselves into the environment they wish to manage, and the concerns of less powerful local indigenous communities. Limited access to the forests that previously supplied all of the requirements for the Dayak people means that this type of livelihood remains barely possible. The issue of local indigenous rights over land

ownership is seen as increasingly problematic. An indigenous rights respondent (Bo7) describing the situation in parts of Malaysian Borneo stated:

On the Government record the Department of Land State, they put it as state land, owned by the state. On this land there are communities and these communities have been there for a long time... land is given to a company without realising that there are people living there, and this is where conflict comes in.

Moreover, if the indigenous communities are given land there is a problem of how much land they need (Bo7):

Yes, mainly it's how the local community see the territories, like the community that go in circles, here it might be the farmland and even this pathway that they walk, it doesn't mean it's just their territory, it might be they were hunting here, gathering some medicine here, but they lose all that. How big is your territory, they always ask that question.

There is also a drive within the oil palm sector for larger economies of scale that allow for processing within the plantation. This has two impacts on local indigenous people. Firstly it requires that wherever oil palm is present, there is the demand for almost wholesale conversion within the area. Secondly it makes it almost impossible for small-scale growers and marginalised communities to become players in the oil palm industry. As one academic stated:

It is good to have land but you need the capital to actually develop the land and if you are a native tribal then no bank is going to give them credit... you have no means of developing the land if you are actually poor. So what is the use of that land to them, this is what they think (Bo9)

Therefore it is very difficult for small-scale growers to become key players in oil palm; instead the conversion of land to oil palm often means that there is no alternative other than to work in the oil palm industry for low pay. Indigenous communities in particular lose the resource that is associated with their former way of life and gain little or nothing from the presence of the oil palm. A community worker (Bo3) summarised this situation by stating that:

We have many communities who are facing a lot of problems as a result of the plantations. They need the forests but when it comes to plantations they don't see that, hence the conflict.

There is an apparent lack of comprehension of the scale of oil palm conversion and a lack of realisation of what selling land actually means for the future of the landscape.

[People] will just sell up and think in the same way as before. I mean, these people will migrate, they will move to an area for which they do not have a contract. I don't think they could comprehend what the selling of their land actually meant; [They thought] 'so what, we will live over there', they couldn't comprehend that over there would not exist anymore. (Bo7)

There are therefore concerns from some in the environmental sector that the oil palm industry needs to be better regulated and controlled in the future. For example, a respondent from the Malaysian Environment Protection Department (Bo1) notes that:

Sabah has the largest plantation areas in Malaysia...having such big plantations areas it converts some of the forest areas into mono crops and Sabah is a place where it is famous with eco tourism, so expansion in my personal opinion perhaps needs to be controlled because we already have enough... maybe in the future the level of oil palm has to be controlled otherwise we cannot afford to have Sabah to be all development. We need forest for fresh air, for water and for biodiversity.

However, it remains relatively easy in Malaysia to convert land from natural forest to other uses. As an example, state land earmarked for development can be 'alienated' and held in private ownership by corporations and individuals (Marsh & Greer 1992). The owner of the alienated land is required to supply a certified copy of the land title to the authorities in order to get a licence for timber harvesting. As alienated land is meant to be clear-felled for development purposes, no minimum felling diameter is imposed (though if the land area exceeds 500 ha, it is subject to environmental impact assessment (Mannan & Yahya 1997). Between 2000 and 2005, 26 Form 1 Licences were issued for timber harvesting on private alienated land, covering a total area of 30 302 ha (Mannan & Yahya 1997).

Yet in many ways the industrialisation of agriculture and the subsequent shift away from a subsistence economy in Borneo is simply a reflection of what has happened in the rest of the world. It is easy to criticise the oil palm plantations, but if it were not oil palm, the suspicion is that it would be other agricultural crops, grazing or unsustainable logging. As a respondent (Bo6) from a environmental NGO stated regarding the maintenance of traditional rural life

There is a big sense of romanticism in this, that if you keep out the oil palm everything will be alright... that is not the case.

Conclusions

Massey (2002) emphasizes place as 'a doing'. However, place-based knowledge is neither static nor bounded (Bell *et al* 2008, 277). It is clear that the rate of change in modern Borneo has been dramatic, and whilst conversion to oil palm in Malaysian Borneo has recently slowed, in Indonesian provinces it continues apace. In the future it is unlikely that much of this oil palm will be removed for either social or environmental reasons.

For many residents of Sabah oil palm is very much part of their day-to-day reality; part of their connection to place. As already discussed, it is through interactions with the land that people shape their surroundings according to intentional patterns of use in the future as well as the past (Lee, 2007, 88). As numbers of indigenous peoples reduce and migration to Sabah from elsewhere in Malaysia (and further afield) continues, oil palm will increasingly become 'the landscape' of Sabah.

Knowledge, understanding and some aspects of culture will inevitably become lost in this transition. The irony is that conservation science is moving towards widespread acceptance that understanding local people and their relationship to natural environment is as important as biological information on species (Xu *et al*, 2006). For conservation to be successful it must connect deeply with everyday lives, histories and experiences.

Finally, what does this mean for the future of the natural environment of Sabah? Perhaps the answers to living with this change lie within the dialogue between stakeholders. From a purely biodiversity perspective it is difficult to accept that there is such a thing as a 'wildlife friendly' oil palm plantation. However, in the course of this research we have visited plantations that are striving to minimise their impact on biodiversity by establishing conservation areas that go beyond the spirit and letter of any current sustainability criteria. When compared to Western farming practices many of the oil palm plantations have undertaken more environmental initiatives in a shorter space of time.

The development of a modern society in Malaysia means that the natural ecological balance is changed forever and people and places have changed with them. Whilst people can adapt and change rapidly, biodiversity cannot. As such there is a desperate need for multidisciplinary studies that encompass the needs of all local people (spanning recent migrants through to indigenous groups), the economy and the biodiversity, not only of Borneo but also of SE Asia as a whole. Only then can sustainable compromises be reached and natural resources conserved for the future.

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