

# **Impact of Agricultural and Non-Agricultural Activities on Malaysia Agricultural Resource Base and Environment**

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## **ABSTRACT**

Human activities on the earth, either agricultural or non-agricultural gave multiple adverse impacts and are affecting the agricultural resource base and environment. For Malaysia per se, its' land surface was once almost entirely covered with forest. However, from year to year, Malaysia lost substantial forest cover (millions of ha) as a result of rapid development activities, be it agricultural or non-agricultural. Many of the countries do recognize the true economic value of environment but failed to manage it for future mainly due to economic reason. Malaysia is truly blessed with lots of natural treasures and we can continue to enjoy these only with proper management. Despite a relatively positive environmental record, Malaysia faces problems of deforestation, pollution of inland and marine waters, soil and coastal erosion, overfishing and coral reef destruction, along with air pollution, water pollution etc. If these problems not being tackled, our agriculture resource base and environment will have to 'compensate' in kinds.

## **INTRODUCTION**

Deteriorating sustainability and biodiversity because of uncontrolled development as well as urban sprawl and encroachment on wetlands, forests and environmentally sensitive areas, is alarming and jeopardising valuable

ecological services such as clean water and clean air. Malaysia agricultural resource base and environment were not spare from the dilemma. In this paper, we will look into the major contributors of the agricultural activities as well as the non-agricultural sectors which lead to the land quality and environment degradation.

## **DISCUSSION**

### **i. Agricultural Activities**

The main impact comes from palm oil which was highlighted by many NGOs and parties engaged in environmental issues. In year 2013, the total area that had been cultivated for palm oil was 5.23 million hectares, an increase of 3% from 2012 (refer Figure 1). There are many environmental concerns that linger with the existence of oil palm plantations such as deforestation, biodiversity, sustainability, traceability, indiscriminate burning, carbon sequestration and destruction of local community (<sup>1</sup>MPOB, 2014). Large-scale conversion of tropical forests to oil palm plantations has a devastating impact on biodiversity. <sup>2</sup>For example, nearly 80 mammal species are found in Malaysia's primary forests. In contrast, disturbed forests have just over 30 mammal species, while oil palm plantations have only 11 or 12. Similar species reductions occur for insects, birds, reptiles and soil microorganisms.

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<sup>1</sup> Malaysia Palm Oil Board (MPOB) - the custodian of Malaysia palm oil industry

<sup>2</sup>Wakker, 1998 & Clay, 2004 – "Lipstick from the rainforest" & "World Agriculture & Environment"

<sup>3</sup>Research by WWF showed that a variety of large mammals coexist in Peninsular Malaysia, Sumatra and Borneo (precisely the areas where oil palm plantations are expanding). These included tigers, elephants, Sumatran rhinos, orang-utans, sun bear and so on. Some of these species simply can't live in the types of disturbed areas (in oil palm plantations). Others, like elephants and orang-utans can but are considered a pest as they eat oil palm fronds and seeds, and so are often killed. Indeed, the palm oil industry is one of the most important factors for the dramatic reduction of orang-utan populations in Borneo.

Logging, both legal and illegal, has long been recognised as one of the major threats to the survival of the species. But few people know how closely oil palm plantations follow logging operations. Plantations move in once the logging stops, removing forever the forests and replacing the world's most species-rich habitat with a monoculture biological deserts where only few species can survive. Illegal logging in protected area is a major issue but affected forests can recover if allowed to. The total clearance of forests, ultimately for the planting of oil palm is in fact incorrigible. In addition, it destroys previous local economies, which are often based on the sustainable harvesting of non-timber forest products, such as seeds, honey, rattan, medicinal plants and fruit. In many cases, indigenous peoples were leaved no choice but to surrender their land and undertake poorly paid work labouring on the plantations, yet the establishment of a new plantation does not necessarily guarantee employment for the local people.

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<sup>3</sup> World Wide Fund for Nature (WWF) – an environmental conservation organization

## Oil Palm Planted Area By Category (% of Hectares) December 2013

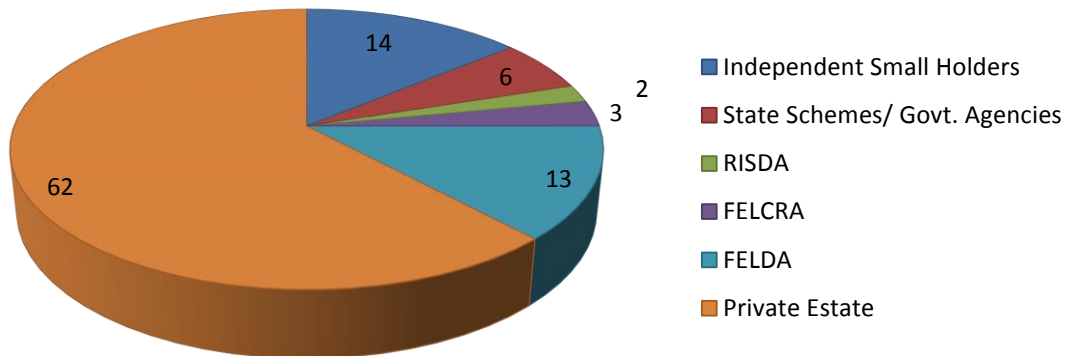


Figure 1: Distribution of palm oil plantation holders in Malaysia at December 2013. Source: MPOB (2013)

As we know, peat-swamp forests play a major role in carbon sequestration. This forest type is being promoted as a carbon sink and used in international carbon offset agreements, while palm oil is concurrently publicised as a carbon emission-reducing fuel. It is sad to witness the peat-swamp forests were cleared and are increasingly becoming prime targets for oil-palm expansion like what happened in Sabah, Sarawak and some places in Peninsular Malaysia. It is crucial that the expansion of oil palm plantations or whatever crops production for the sake of food security does not lead to the clearance of peat forests as it is proven to have multifunction besides can mitigate the global warming.

Meanwhile, whenever or wherever the massive agricultural production projects took place (for example MUDA, KADA, KESEDAR, FELDA, FELCRA), the land degradation problem will happen not just restricted to

sloping or upland areas like Cameron Highland and Lojing Highland. Lowland and irrigated land are also susceptible to degradation from two sources: on-site fertility decline due to over cropping and the deleterious effects of upstream erosion. Other damages associated with intensification in lowland agriculture include nutrient decline, salinization, acidification, groundwater depletion, and the water pollution consequences of agricultural runoff. Excessive use of every inch of land even at the sensitive areas, to get highest possible production was the aim of the majority agencies or farmers but the adverse effects always being neglected to the extent somehow jeopardizing our agriculture resource base and environment.

Apart from that, the waste from the processed oil palm fresh fruits also poses a great risk to the environment if it is not handling following the guidelines. The type of waste produced are oil palm trunks (OPT), oil palm fronds (OPF), empty fruit bunches (EFB), palm pressed fibres (PPF), palm shells and <sup>4</sup>palm oil mill effluents (POME) (Abdullah, N. and Sulaiman, F., 2013). These materials provide a huge solid waste disposal headache if it is not recycled or transformed into other products. By the introduction of zero burning in oil palm management, the carbon influx into the air which is closely linked to global warming was reduced. Meanwhile, the reuse of EFB, palm oil residues and treated POME as fertilizers and soil amendments in some extent likely to reduce the usage of fertilizers and chemicals which causes poisoning and leaching of nutrients to water supplies and soil quality.

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<sup>4</sup> Palm oil mill effluents (POME) - waste water discharged from the sterilization process, crude oil clarification process and cracked mixture separation process.

## **ii. Non-Agricultural Activities**

Industrialization is a central feature of economic growth as well as what we experienced in Malaysia. Since most industry is concentrated in and around cities, urban population growth rates increased tremendously. As a consequence spatial concentration of industry, air, water and solid waste pollution problems are most acute in cities such as Klang Valley, Johor Bahru, Bayan Lepas etc. The impact of these pollutants on agriculture resource base and environment are potentially large. While water pollution in urban areas became a serious problem, especially in cities where infrastructure, including that for provision of clean water and disposal or treatment of sewage and storm water runoff, has lagged behind growth in demand, the supply of clean water turned to be a nightmare for residents in Klang Valley recently whereby water rationing had to be implemented for few months long. This crisis definitely further aggravated our agriculture resource base and environment as insufficient of water resource will not only cause the soil to be infertile but destroy plants and microorganisms which were essential to the balance of ecosystem. Accordingly, much larger numbers of people in Malaysia are affected by natural resource depletion in the forms of deforestation, land degradation and diminution of watershed functions which link to the basic need of get enough water, constant supply of water and good water quality.

The next non-agricultural activity which affects Malaysia agriculture resource base and environment is the urbanisation whereby more and more housing scheme and commercial projects are being built to cater the growing demand. Our population is currently stood at 27 million and gearing towards

Vision 2020, the population is expected to be higher. Research shows that the world population is likely to grow by 30% between 2000 and 2025 and by as much as 50% between 2000 and 2050 (United Nations Secretary-General's High-Level Panel on Global Sustainability, 2012). As a result, many agriculture lands (even with the very good productivity) were sacrificed to give way to the expansion of residential areas, mega projects, infrastructures etc. Soils are more or less vulnerable to erosion according to combinations of slope and soil type, and the soils of tropical Asia, including Malaysia are particularly susceptible in this way (FAO 2000; Doolette and MacGrath 1990). Every year, many millions of tons of productive topsoil in Malaysia are lost from our fields. On-site, soil loss from fields carries away nutrients and organic matter and thus diminishes the productivity of agriculture. Some of the soil transported merely moved to other agricultural locations. It is not only lost to agriculture but becomes a source of pollution when large fraction ended up deposited in streams, lakes and coastal waters.

Last but not least, being a non-agricultural activity, the building of dams in Malaysia is another big threat to agriculture resource base and environment. The purpose for the dam was to meet growing demand for electricity but the devastating impacts is far beyond the economic evaluation or as written in the Environmental Impacts Assessment (EIA) report. For example, the Bakun Dam will put 700 km<sup>2</sup> of land under water - equivalent to the size of Singapore. The rainforest of this part of Southeast Asia has some of the highest rates of plant and animal endemism, species found there and nowhere else on Earth. In addition, more than 9,000 indigenous peoples who lived in the area to be flooded required the relocation. Concerns were raised also about amount of

virgin tropical rainforest which had to be cut down, possible dam collapse issues, increase in diseases with water-borne vectors (malaria, filariasis etc) and sediment accumulation shortening the useful lifespan of the dam. When a dam is constructed, be it for hydropower or water supply, the destruction is highly visible. But the environmental impacts of a dam stretch much further downstream than the location of the actual dam site. Among few negative impacts of dam construction are migratory fish species blocked from their spawning and feeding sites, degradation of water quality, disrupted the transport of sediment along the river and emission of climate-changing greenhouse gases.



Figure 2: Bakun Dam in Sarawak, Malaysia. It was named as *"The Most Destructive Dam in Malaysia"*



## **CONCLUSION**

Economic growth and environmental damage are associated and may be deemed as inevitable. This is clearly seen in the diverse experiences of Asian economies over recent decades, including our country which aims to achieve Vision 2020. If we continue to exploit our natural resources excessively without looking into its overall cycle, a disaster is waiting. Pure social and environmental negligence for economic return is too costly. For sure, environmental damages are not equally distributed across households but rely on access to resources as well as capacity to mitigate damages and location. In Malaysia, if the natural resource base is being rapidly depleted, most of the adjustment costs certainly fall on rural or poor populations. Prevention is always better than cure. Therefore, protecting the fragile ecosystem is of utmost importance. By knowing the facts that we will eventually suffer from ravaging the environment, we have to blame no one but ourselves.

The conservation of the world's intact ecosystems, the establishment of ecological sustainability boundaries, and investment in ecosystem restoration should be supported by all nations over the world, including Malaysia. It is better that instead of unlimited exploiting the agriculture resource base and environment, current land uses or relevant technologies should be improved. Again to emphasize, economic valuation (merely monetary return) is not a panacea for decision-makers facing difficult choices. Although the project may show a substantial net benefit and would be deemed highly desirable in efficiency terms, the costs or any adverse impacts which arise sooner or later must be taken into consideration.

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***Thank you.***