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BIOBANKING SCHEME FOR FOREST CONSERVATION IN PENINSULAR MALAYSIA: A BRIEF APPRAISAL

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ABSTRACT

Tropical rainforest in Peninsular Malaysia is home to a highly diverse flora and fauna. The biodiversity and sustainability of the forest are highly potential to mitigate climate change and its adverse consequences. Although Malaysia is committed to preserve the forest in recognition of the important services, the threat against the forest of degradation and even deforestation for demand of other prevailing interests remain. Bio banking scheme has been one of market-oriented mechanisms which have been suggested to fund towards ensuring the sustainability of the biodiversity in Malaysia. By examining the experience of biobank for forest or environmental conservation, this paper considers issues and challenges in the creation of such biobank in Peninsular Malaysia as proposed in a study. For this, it considers two existing schemes of biobanking, one is implemented in the New South Wales, Australia, and the other is in Sabah, Malaysia, the Malua Biobank. The main features of these two schemes are examined and the issues faced are considered in the context of the Peninsular Malaysia. Creation of such biobank is significant to promote for further efforts in finding alternatives in forest conservation.

Keywords: *Forest conservation, Biobanking scheme, Waqaf, Malaysia*

Introduction

In view of decreasing quality and width of forest covers around the world, various efforts have been implemented in many countries around the world to slow down activities affecting the forest quality. An example is funding for biodiversity through market-oriented mechanisms such as payment for ecosystem service and bio banking scheme.

Tropical rainforest in Peninsular Malaysia, being one of the oldest tropical rainforests in the world, is undeniably significant. It is home to a rich diversity of plants and animals which are highly potential to mitigate climate change and its adverse consequences. In addition to the extraction of various resources for production, forest also plays an important role in providing other ecosystem services. A mangrove forest for instance, a type of forest in the peninsular, offers nursery habitats for various species, of fish and shrimps, commercial and non-commercial. This type of forest is also an important habitat for both local forest birds and migratory birds. Forest also provides space for recreational activities such as fishing, bird watching and wildlife observation and aquaculture activities such as cockle culture and fish cage culture. It also serves as an effective protection against coastal erosion and acts as an effective coastal carbon sink (Ammar, Dargusch, & Shamsudin, 2014).

Although Malaysia is committed to preserve the forest in recognition of its important service (Ujang, 2016, Nov 17), the threat against the forest of degradation, and deforestation for demand of other prevailing interests, remain (Masum, Mansor, S. A., Lim & Hossain, 2017; Aisyah, 2015). For instance, Ratnasingam et al., 2015 reported that forest transition process necessary for expanding the areas of forested land appears difficult to be achieved as it may be hampered by economic development in the agricultural sector; land conversion for industrialization and settlement. expansion of wood-based industry; as well as employment opportunities in the wood-based sector. Since the 20th century, urbanization, agriculture, logging, increasing populations and modernization resulted in the cutting of trees for food, raw materials and land areas expansion. Consequently, the areas of forested land steadily diminished at an increasing rate (Ratnasingam et al., 2015).

Furthermore, protecting the biodiversity and the conservation activities in the forest requires a substantial amount of funding. Whilst the vital source of funding to the forest conservation in Malaysia is mainly from the government funding, supported by philanthropy-based funding such as private foundations, charitable trusts, and conservation NGO, they are not sufficient to finance actions necessary to substantially reduce biodiversity loss and forest cover. Therefore, additional funding mechanism is necessary.

In response to this concern, there is a proposal that a forest bio banking scheme is created, suggested to be funded by a mechanism of *waqaf* in the Peninsular Malaysia as an effort for conservation of forests and its biodiversity. *Waqaf* is an Islamic concept akin to perpetual endowment of wealth for the benefit of human beings and the environment. The study proposed that *waqaf* fund is created for the benefit of forest conservation by using a bio banking scheme. The money from the *waqaf* fund is to be invested in activities related to the forest conservation such as tourism activities and the proceed from the investment may provide a form of return to the state authorities (Yaakob, Zakaria, Supaat, Wook, & Mustafa, 2018; Yaakob et al., 2017).

By examining the experience of biobank for forest or environmental conservation in two other jurisdictions, this paper considers issues and challenges in the creation of a biobank for conservation in Peninsular Malaysia. For this, it considers two existing schemes of biobanking, one is implemented in the New South Wales, Australia, and the other is in Sabah, Malaysia, the Malua Biobank. The main

features of these two schemes are examined and the issues faced are considered in the context of the Peninsular Malaysia.

Biobanking scheme for environmental conservation

Biobanking scheme for conservation or biodiversity banking is also known as biodiversity trading or conservation banking, biodiversity mitigation banks, compensatory habitat, set asides and biodiversity offsets. This kind of scheme comprises conservation activities that compensate for the loss of biodiversity with an aim to maintain biodiversity of the environment. Typically, this involves land protection, restoration, and enhancement.

The framework established allows biodiversity to be reliably measured and places a monetary value on ecosystem services. In other words, this scheme is a market-based solutions which the main aim is to improving biodiversity. Under the concept, governments may favour the scheme as a way to encourage companies to contribute to conservation which will benefit the local communities from rehabilitated sites and additional conservation outcomes (Burgin, 2008).

Specifically, biobanking scheme works by generating tradable Biodiversity Conservation Certificates (BCCs) which each certificate represents an area of rehabilitation and protection of High Conservation Value contiguous forest. The sale of the certificates makes the restoration and conservation of such areas commercially viable and therefore sustainable (Burgin, 2008).

The scheme, which originates from an approach by the United States for wetland mitigation in the 1970s, has been part of legal frameworks in many countries including Canada and Australia, and in the Europe. Biodiversity offset was also accepted as a method for governments to meet their commitments under the Millennium Development Goals and the Convention on Biological Diversity (Burgin, 2008).

Biobanking scheme in New South Wales, Australia

The biobanking scheme, known as Biodiversity Offsets Scheme, in the New South Wales, Australia, is presently regulated by the Biodiversity Conservation Act 2016 (BCA 2016), a legislation recently enacted. It came into force in 25 August 2017. Prior to the current legislation, the scheme was governed by the Threatened Species Conservation Act 1995 and the Threatened Species Conservation (Biodiversity Banking) Regulation 2008.

Generally, the landowners who agree to improve and protect biodiversity assets on their property through a biobanking agreement can earn biodiversity credits under the scheme. The credits can be used to offset the adverse impacts on biodiversity values because of development. The credits can also be sold to those seeking to invest in conservation outcomes i.e., philanthropic organizations and government agencies (State of NSW, 2012).

The scheme comprises several important elements, i.e., the establishment of an area as a biobank site; the creation of biodiversity credits and the trading of the credits; as well as the establishment of a Biobanking Trust Fund.

a. Establishment of biobank site

A biobank site is established by way of agreement between the Minister for the Environment and the landowners on any land. The agreement aims for conservation of the area of land made as biobank site to offset the impacts of development on biodiversity values. It is attached to the land title which is generally perpetuity in nature.

The agreement specifies most importantly 2 aspects. First, the management actions that are to be undertaken by landowners to improve or maintain biodiversity values on a particular biobank site. These include controlling grazing, leaving fallen timber on the ground to provide shelter for small mammals, controlling pests and weeds, and plant regeneration. Second, the number and class of biodiversity credits that may be created, and the duration of creation.

b. Creation of biodiversity credits and the trading of the credits

Biodiversity credits are created based on the management actions that are carried out or proposed to be carried out in the agreements. This is determined by certain assessment methodology known as Biobanking Assessment Methodology. The credits, once created, can be traded, retired, cancelled, or sold to generate funds for the management of the site.

The Biobanking Assessment Methodology provides for the measurement of the proposed changes to the ecological communities and habitat, as specified under the agreements, and this will translate into biodiversity credits. It determines:

i. the number and type of credits that may be created for particular management actions; and
ii. the number and type of credits that must be retired to offset the impact of a development and ensure that it improves or maintain biodiversity values.

The methodology is based on the biometric and threatened species tools originally developed for use under a repealed legislation, Native Vegetation Act, which was used in rural areas by Catchment Management Authorities and landholders.

c. Biobanking Trust Fund

A biobanking Trust Fund is established and managed by a fund manager appointed by the Minister. When a biodiversity credit is first transferred, such as by way of sale, from one landowner to another, a specified amount, as specified in the regulation and the agreement, is to be paid into the fund. The money is held on trust for the landowner to assist with the cost of carrying out the management actions, as set out in the agreement.

With respect to the enforcement of the responsibilities created by the agreements, under the BCA 2016, the Minister has power to order a landowner to carry out work at their own cost if the work is needed to rectify any breach of the Biobanking Agreements.

Any person may bring proceedings in the Land and Environment Court to remedy or restrain a breach of a Biobanking Agreement. The court may award damages if the proceedings are brought by the Minister.

In serious circumstances, the Minister may also apply to the court for the land to be transferred to the Minister or another person or body nominated by the Minister. These include the circumstances in which there is a serious risk to biodiversity values protected by the agreement; there is no reasonable likelihood of the landowner complying with the agreement; frequent contraventions or unreasonable and persistent delay in complying with the agreement.

Malua Biobank in Sabah

Located in the Malua Forest Reserve, Sabah, Malaysia, Malua Wildlife Habitat Conservation Bank or known as Malua Biobank, was established with aim to conserve and rehabilitate the previously logged-over commercial forest. Covering the size of 34 000 hectares, Malua Biobank was established to improve the protection of threatened wildlife in the area including the prevention of illegal hunting.

Different from the biobank schemes in the NSW which commonly involve private landholding, the Malua Biobank is a collaboration of public and private entities including non-governmental organisations. It is a joint venture between the Sabah State Government, Yayasan Sabah and Eco Product Fund, a private US equity fund that invests in environmental markets.

Similar to the biobanking scheme in the NSW, the Malua Biobank project involves the creation of certificates known as 'voluntary biodiversity conservation certificates. Each certificate represents the value for the restoration and protection of $100m^2$ of the MFR. The certificates are open for sale to companies and individuals and the proceeds are paid to the management during the set-up phase and for a perpetual charitable trust known as Malua Trust. It also generates return for the private investors and the Sabah Government. The trust will receive an annual income to cover for the long-term management of the area, and restoration activities of the degraded logged over forest significant to support the wildlife living in the forest reserve apart from the forest service as carbon sink for carbon dioxide sequestration (Halley, 2015).

To allocate certain areas of forests in the Peninsular Malaysia for conservation of its biodiversity value, supported with a biodiversity banking system may complement the existing inadequate funding in Peninsular Malaysia. Biodiversity offsets have emerged as innovative and forward-thinking solutions to overcome conservation–development issues in industrialised, developing, and emerging economies in many nations. Biodiversity offsets have emerged as innovative and forward-thinking solutions to overcome conservation–development issues in industrialised, developing, and emerging economies in many nations. (Rajvanshi, 2015). It has also been successful in in term of conservation of biodiversity values particularly in countries with well-regulated framework such in the New South Wales.

Similar outcome has also been seen in in the biodiversity banking system, which is based on voluntary market such as the Malua BioBank. Halley's report on the Malua BioBank (Halley, 2015) shows that an increased funding from the project has allowed for greater efforts for conservation, including increased monitoring, protection, and research. The protection of the area was strengthened with the change of its status from a commercial forest to a fully protected forest. There has been an increase in the number of activities to reduce poaching and hunting which is a continuous threat against the wildlife living in the area. This includes monitoring, reducing access via roads and patrolling along boundaries. Research carried on under the fund has also contributed data necessary for a better management of the conservation activities (Halley, 2015).

The project has also led to a greater engagement with palm oil companies, which have plantations surrounding the forest reserve to cooperate for protection of the boundaries of the reserve. In a way, the project allows the oil palm industry to green its supply change offsetting the use of previously forested areas by contributing towards forest conservation for a business gain.

Challenges

An issue pertinent in setting aside a particular area of forests as a biobank site is its implication on states revenues. For many states in the Peninsular Malaysia, forest is one of the main sources of their income. Preventing logging, for instance, to preserve the biodiversity values of the forests may significantly affect the states' income and thereby may not sit well with the states' needs which dependence on bio-resources is disproportionately high. To address this, it is important that the estimated return from the fund for the states commensurate with the value of the income that is expected from the conventional use of the forests.

Experience of Malua Biobank in Sabah, for instance, albeit assessed from the limited report obtained so far (Halley, 2015) is apparently not encouraging. The return, which relies on the sale of biodiversity credits is dependent on the perspective and acceptance of the palm oil companies, the main prospective buyers, towards sustainability and conservation. As the system is based on a voluntary market for biodiversity credits, the willingness of the palm oil companies to self-regulate and contribute to sustainability is significant. Therefore, commitment from the relevant industries is important to make the system works. The situation may also be expected in the Peninsular Malaysia.

As Halley (2015) suggested in her report, in the absence of a voluntary market, a legal framework may be developed to provide for a 'no net loss' policy for forest and the use of biodiversity offsets. Offsets are being globally accepted as development-led conservation actions as an incentive for biodiversity conservation through business initiatives (Rajvanshi, 2015), similar to the practice in the NSW. On this system, revenues sourced from the use of forest such as logging for instance, must be compensated by the purchase of the biodiversity credits. Therefore, further research must be done to conduct a cost analysis to determine the minimum compensation required to offset the production revenue currently derived from production in a particular area of forest proposed as a biobank site. This is important to ascertain whether the scheme is financially viable to be strategically used to support the conservation of the area of forest. Furthermore, political willingness on the part of the state authorities and an assurance in respect of the state's revenues are also important variable.

To achieve the objective of forest conservation, site selection for a biobank should only be confined to permanent reserved forest and protected areas. Forested areas under private company ownership may also be a positive prospect for site selection. These might be in the form of existing forest patches within an oil palm tree plantation; and forested areas which are reserved for river buffer zones.

Site selection is critical. A project area with clear and well defined sociological, economic, and ecological structure will ensure that the mechanism can be developed under an optimum and controlled environment. It can eventually lead to the establishment of a formidable foundation which can potentially be replicated elsewhere. It can result in a mechanism that can deliver benefits sustainably and within a reasonable time frame (Ammar et al., 2014).

Besides, another issue that needs to be considered is the non-compliance with agreed conditions seen in many jurisdictions in which the system is in practice (Burgin, 2008). Gibbon and Lindmayer (2007) for instance found that that there has been continued degradation and native vegetation clearance despite enhanced legislation to reduce clearance rates. To ensure compliance, monitoring and enforcement requires substantial financing which must be included in the cost analysis (Burgin, 2008). Continuous commitment of governments in terms of training, implementing, and monitoring over the long term is also necessary (Burgin, 2008). This perhaps could be addressed with strategic cooperation involving relevant stakeholders including the non-governmental organisations such as the case in Malua BioBank.

Another issue raised by Halley is the prejudice against the 'for-profit' investment in conservation which may also affect the sustainability of the project. This relates to the perception of the society which is significant to be considered in the development of such program in Peninsular Malaysia.

Conclusion

Biobank scheme has been in practice mainly in developed countries. It has been used to offset the use of land, resources, and environment, to reduce the loss of biodiversity which are significant for environmental sustainability. This scheme is therefore an important mechanism to be considered as an effort for conservation of the highly rich tropical forests in the Peninsula Malaysia. It may also

supplement the current funding. This could result in better sustainable outcomes for the forest area and its stakeholders.

Whilst the Biobank scheme in NSW is well regulated upon a longstanding practice, the Malua Biobank is a voluntary system operated under a joint-venture arrangement between public and private entities. Even without statutory provisions, the experience in Malua Bank has shown a positive outcome in term of the conservation of the biobank site, although a clear regulatory framework is necessary for the long-term sustainability of the scheme.

On the other hand, issues such as the implication on state revenues, support and commitment of the relevant industries and public acceptance are crucial for further investigation to assess its viability in the Peninsular Malaysia. More importantly, cost analysis must be conducted upon selection of a suitable site as a testing model. With respect to the use of *waqaf* as a funding mechanism of the biobanking scheme, it requires a specific consideration. This commentary is however a purely desk study conducted by analysis of the available literature. Therefore, further research should be done to consider the marketability of the biobank scheme in the Peninsular Malaysia, vital to ensure the long-term sustainability.

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