



HUTAN HARAPAN ECOSYSTEM RESTORATION CONCESSION, SUMATRA, INDONESIA: A POTENTIAL OECD?

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ABSTRACT

Ecosystem Restoration Concessions (ERCs) offer an opportunity for Indonesia to complement its protected area network with conserved areas of high biodiversity value in forests designated for production purposes. Hutan Harapan is the first ERC, pioneering new ways of conserving Sumatra's lowland rainforest and its biodiversity for the long term. Although much of the 98,555 hectare concession has degraded secondary forest due to extensive logging in the past, it is rich in global biodiversity values. A management structure is in place to deliver well-defined conservation outcomes in terms of protecting globally threatened species and conserving key biodiversity areas (KBA) in a defined geographical space. Hutan Harapan's experience opens up the opportunity of being assessed as an 'Other Effective Area-based Conservation Measure' (OECD). Furthermore, the policy framework supporting the establishment of Hutan Harapan ERC has a strong legal basis and has led to the establishment of more ERCs across the country. However, there are many challenges confronting Hutan Harapan ERC such as encroachment, forest fires, illegal logging and financial sustainability, which are similar to those confronting protected areas elsewhere in Sumatra and other parts of Indonesia. The ERC framework provides a means to addressing these threats since it recognises the complexity of the conservation issues. However, it will require a combination of long-term human and financial investments as well as collaboration with a variety of actors across multiple scales to sustain the conservation outcomes.

Key words: privately protected area, OECD, ecosystem restoration concession, forest concession,

ECOSYSTEM RESTORATION CONCESSION IN PRODUCTION FORESTS

Lowland rainforests in Indonesia and elsewhere in South-East Asia are threatened by logging, conversion and agricultural expansion while these habitats are generally under-represented in the protected area network (ref. Jepson et al., 2001, Laurance and Peres, 2006). Many remaining lowland forests are designated as production forests, but often have high biodiversity value. As a new instrument for managing natural forests, ecosystem restoration concessions (ERCs) offer an opportunity for biodiversity conservation within production landscapes (Burung Indonesia, 2016). When well situated, ERCs could deliver conservation outcomes in terms of conserving globally threatened species and their habitat. Key Biodiversity Areas (KBAs) that are not protected can be conserved by managing the site as an ERC. Biodiversity conservation can be part of the management objectives of an ERC while at the same time addressing other social and economic objectives.

First introduced in 2004, ERCs represented a break with previous management policies for Indonesia's production forests, which account for nearly half of Indonesia's forest estate. For three decades, the management of production forests had focused exclusively on timber exploitation. However, with the introduction of ERC licenses, designated production forest areas can now be managed for forest restoration, conservation and multiple forest use, rather than logging. ERC licenses are normally for a period of 60 years. In the case of Hutan Harapan, it has two licenses; the first license is for the southern part which is valid for 100 years, while the second is for the northern part which is valid for 60 years. This allows ERC managers to plan for the long term while presenting the possibility that conservation efforts in a production landscape have a better chance of success.

Unlike other types of forestry concessions, ERCs do not require harvesting of timber for commercial purposes resulting in a *de facto* logging moratorium at these sites.

With timber production no longer part of the management focus, ERCs have shifted the forest management paradigm from timber-based towards an ecosystem-based approach. This allows management to integrate the economic, social and ecological objectives as deemed necessary according to the site conditions and context. The sustainable utilisation of non-timber forest products (NTFPs) and environmental services are encouraged as a means to generate income.

HUTAN HARAPAN ERC IN SUMATRA

Hutan Harapan (lit. 'Forest of Hope') is the first ERC site in Indonesia established with a clear intention of conserving the remaining lowland rainforest in Sumatra. Identified as having two Important Bird Areas (IBAs), the site was selected in 2003 by BirdLife Consortium (Burung Indonesia, Royal Society for the Protection of Birds and BirdLife International) as a joint undertaking to conserve the remaining lowland rainforest and its biodiversity.

Situated in the southern part of Sumatra, Hutan Harapan is 98,555 ha of logged-over forest area, which is administratively under Jambi and South Sumatra Provinces (Figure 1). Two ERC licenses were secured in 2008 and 2010 respectively and are held by a company set-up specifically to manage Hutan Harapan. The two IBA sites in Hutan Harapan are also Key Biodiversity Areas (KBAs). Research data up to 2013 shows that Hutan Harapan is a habitat for over 1,350 species of plants and animals, of which 133 are globally threatened, including the Sumatra tiger (*Panthera tigris sumatrae*), Asian elephant (*Elephas maximus*), Malay tapir (*Acrocodia indica*) and Rhinoceros hornbill (*Buceros rhinoceros*). Despite logging in the past, more than 50 per cent of tree species in Sumatra can still be found in Hutan Harapan and almost half of the bird species known in Sumatra are present (Table 1).

Surrounded by monoculture plantations, both oil palm and timber, Hutan Harapan plays an important role in



Degraded but biodiversity rich secondary forest in Hutan Harapan
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maintaining ecosystem services including water supplies and carbon storage and sequestration. Although located in the lowlands, it protects the upstream of Batanghari Leko river system that supplies water to the neighbouring plantations and the larger population downstream.

The natural forest in Hutan Harapan is also of important economic, social and spiritual values to the Batin Sembilan Indigenous peoples. Many of them are still heavily dependent on forest resources for their food security and livelihoods. In addition, there are small areas of rubber-dominated agroforests that are managed by Melayu communities for their livelihoods; these groups have been living in the concession since the early 1900s.

Table 1. Comparison of species richness in Hutan Harapan and Sumatra as of 2013 Source: Ministry of Forestry and Ministry of Marine and Fisheries (2010); Ayat (2013) in Silalahi et al. (2017).

Taxa	Total no. of species (Sumatra)	Total no. of species (Hutan Harapan)	Percentage of Sumatra's species found in Hutan Harapan
Birds	626	305	48.7
Mammals	194	64	33.0
Reptiles	217	56	25.8
Fish	589	123	20.9
Tree species	820	446	54.4

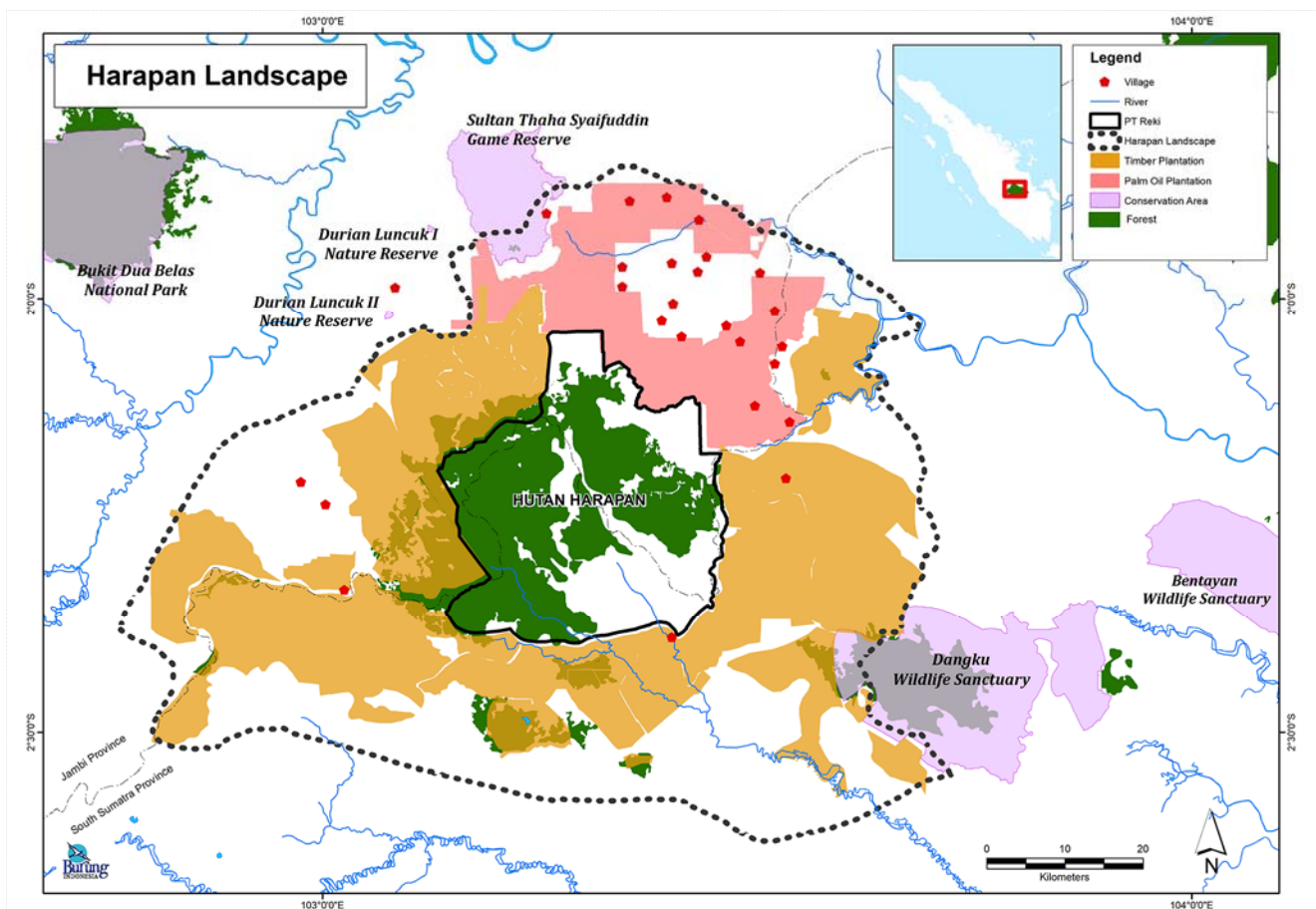


Figure 1. Hutan Harapan landscape

MANAGEMENT STRATEGIES

After more than two decades of logging by previous timber concessionaries, the forests in Hutan Harapan are no longer homogenous in terms of structure and composition. In parts of the concession, forests have been degraded and some areas have even been deforested. Of the 98,555 ha, to date, approximately 72 per cent or 76,918 ha remains intact with varying quality levels of forest cover. An estimated 21,000 ha (21 per cent) of the remaining concession area has been deforested from 2009 until today.

Considering the present land utilisation and the desired future conditions, Hutan Harapan's first strategy is to maintain the remaining natural forests within the ERC. A protected zone of about 45,246 ha (46 per cent of the ERC area) has been created as the core for this purpose in an area that still has good forest cover. The objective is to ensure that biodiversity is conserved and the ecosystem services are sustained. Therefore, protection is the main management intervention to ensure that disturbance is minimised so that the forests can

regenerate. These include activities such as fire prevention and mitigation, anti-poaching and illegal logging patrolling, as well as access control to prevent other illegal activities in the forested area.

Outside of the protected core zone, the area is dominated by degraded secondary forest and degraded land. This area has been designated for production or utilisation purposes. The main management objectives for this area are sustainable production of NTFPs, agroforestry systems and land-use stabilisation. As noted above, some of this area is occupied illegally by migrants and mostly planted with oil palm. While the long-term plan is to gradually replace the oil palm with agroforestry systems, it is expected that through partnership agreements with the community groups that have moved into the concession, further forest clearing for agricultural commodities within the ERC can be reduced and ultimately stopped.

MANAGEMENT CHALLENGES

In recent years, Hutan Harapan has invested considerable resources to stabilise land use which is

critical to sustainable management and biodiversity conservation. Illegal clearing of forestland to produce agriculture commodities, especially oil palm, is the biggest threat. Beginning in 2009, encroachment, sometimes on a large organised scale, has resulted in further degradation of an estimated 21,000 ha of the remaining concession area. It has been illegally occupied by migrants from other parts of Sumatra and Java, who aggressively encroached the concession area to plant an area of oil palm which now totals about 10,000 ha. This challenge, however, is not unique to Hutan Harapan. As Silalahi et al. (2017) noted, the large number of competing land claims on Indonesia's forestlands is a challenge for all protected areas as well as ERCs in meeting their biodiversity and conservation objectives. There is a 'land race' as various groups and stakeholders lay claim to the same pieces of land.

In order to stabilise land-use, boundary demarcation is being carried out in conjunction with establishing partnership agreements that are facilitated by the Ministry of Environment and Forestry. To date, Hutan Harapan has established 10 partnership agreements out of 20 planned agreements with the communities living

inside the ERC. These agreements, amongst others, outline the responsibilities of all parties, the community, company and government in conserving and protecting Hutan Harapan as well as identifying livelihood activities that are compatible with ERC restoration objectives.

Illegal clearing of forestland is also related to forest fires and land burning. This was evident in 2015, when about 13,400 ha (13 per cent) of Hutan Harapan was affected by fire. This figure does not necessarily represent forest loss due to fire, however, as the majority of the fires occurred in the encroached areas where the forest had been cleared or in areas without forest cover. The frequency and intensity of the fires in 2015, exacerbated by the El Niño conditions, were such that Hutan Harapan experienced fire damage greater than in previous years (Geh et al., 2018, in preparation).

Nevertheless, the challenges above also represent opportunities to build partnerships for sustainable conservation outcomes. Partnerships for collaborative land management are possible as long as the sustainable forest management objectives are taken into account.



Hutan Harapan maintains ecosystem services including water supplies, carbon storage and sequestration © Burung Indonesia/Aulia Erlangga;



Illegal logging and forest clearing are the threats for Hutan Harapan © Burung Indonesia/Aulia Erlangga

Preventing forest clearing, forest fires and eventually stabilising land-use requires significant resources as well as partnerships. Addressing the drivers of forest loss necessitates working with a range of stakeholders across the landscape. Indeed, the surrounding concessions have an interest in ensuring Hutan Harapan's ecosystem services are well maintained since it generates considerable benefits to the plantations through stabilising regional hydrology, containing pests such as wild boar or invasive species (Burung Indonesia, 2016).

Hutan Harapan is still struggling to develop a diversified portfolio of funding that will ensure financial sustainability. It is still heavily donor dependent to maintain its operations which now run to just over USD 1 million per year. Walsh et al. (2012) pointed out that ERCs are relatively new and as yet there is no evidence to indicate that they are financially viable in the long term. A number of studies (e.g. Bogor Agricultural Univ., 2009; Idris, 2010; Idris, 2011) recommended multi-product forest businesses to ensure their financial sustainability. But generating income from NTFPs, especially in degraded and secondary forests, requires

additional investment to develop the business and a bankable business plan to attract investors. Upfront payment of the license fee, land taxes and the other initial capital investments are costly for a newly established ERC that does not have a guaranteed income stream. Income from NTFPs may not be able to recover these costs in the short term, not to mention the ongoing operational costs. The carbon markets may provide a potential source of income as Indonesia's REDD-plus strategy acknowledges the role of ERCs in halting degradation and deforestation. Nevertheless, there will need to be more policy direction from government before it becomes a possible income stream.

CONSERVATION EFFECTIVENESS

Establishing Hutan Harapan as an ERC was necessary to conserve biodiversity in the remaining Sumatran lowland rainforest. Without this measure, the site would have been converted to other purposes, which would have likely involved monoculture cultivation such as timber and oil palm plantations with concurrent loss of biodiversity conservation. Despite the increasing pressure to convert forests to agricultural commodities in Sumatra, Hutan Harapan has been able to maintain

approximately 72 per cent of its forest cover for the last 10 years.

When ERCs first received legal recognition in 2004, the regulatory framework was heavily dependent on logging concessions regulations and as such did not reflect the particular management needs of an ERC. As a result it was difficult for ERCs to implement an ecosystem-based approach, and hence to monitor the conservation effectiveness.

The regulations are now catching up with the reality on the ground and ERCs can now set their management objectives based on an analysis of the economic, social and ecological challenges confronting the concession. Hutan Harapan has begun to put into place a monitoring system that will allow it to monitor changes in the forests and biodiversity outcomes in real time. The various monitoring tools such as, i) data from forest patrol units, ii) change alerts to detect changes in land-use, iii) drones to assess forest cover, iv) key ecological indicators for key species, especially the Sumatran tiger, Asian elephant and hornbills and, iv) the agroforestry programme, are all being integrated into a holistic information communications network in order to better monitor and respond to conservation needs.

POTENTIAL AS AN OECM

Although ERCs are not recognised as a category of protected area in Indonesia, their long-term management objectives support national (National Biodiversity Strategy and Action Plan, Species Action Plans) and international conservation targets through the Convention on Biodiversity (CBD). These include

maintaining natural forests, eradicating invasive species, connecting and protecting habitat, conserving species, managing and restoring essential ecosystems, supporting community livelihoods, enhancing ecosystem resilience as well as landscape connectivity (Burung Indonesia, 2016).

The creation of ERCs, such as Hutan Harapan, does not change the forest category, which remains as a production forest. If the ERC license expires or is revoked by the government, the management regime will be decided by the government, so sustainability is a key issue. To sustain its conservation outcomes, Hutan Harapan ERC is required to work on multiple fronts to address social challenges and financial feasibility. Some of the current management activities are not directly for, or reflective of, biodiversity objectives, but they are necessary for creating stakeholder support or financial sustainability to conserve biodiversity in the ERC for the long term. Indeed, political and policy support are needed for Hutan Harapan and the other ERCs to address some of these seemingly intractable issues.

The establishment of Hutan Harapan as an ERC provides an opportunity to manage one of the few blocks of remaining lowland forest in Sumatra for conservation in line with many of the criteria required for recognition as an OECM under Aichi Target 11 (Table 2).

CONCLUSION

The designation, establishment and management of ERCs, as piloted at Hutan Harapan, is proving to be an innovative and exciting opportunity to expand the conservation estate in Indonesia beyond the designated

Table 2. Hutan Harapan as measured against the draft OECM criteria (IUCN WCPA, 2018)

OECM Criteria	Hutan Harapan
Not recognised as a protected area	Under production forest category
Geographically defined space	Boundaries marked
Governed and managed	Hutan Harapan Partnership
Long-term	100 year concession for southern part and 60 year concession for the northern part; Legal basis
Effective in situ conservation of biodiversity	Objectives of conservation and sustainable use Includes KBAs Threatened habitat, endangered species Core protection zone
Sustaining conservation outcomes	Partnership has authority over area Partnerships with local government and communities Measures to achieve social and financial sustainability

protected area network. Following experiences in Harapan, fourteen other ERCs have been approved in Indonesia with a diversity of partners ranging from NGOs to private sector companies. The model is also being replicated elsewhere in South-East Asia with benefits for conservation of threatened lowland rainforest ecosystems and endangered species. Ecosystem Restoration Concessions as Other Effective Area-based Conservation Measures provide an exciting new model for reducing forest degradation and enhancing biodiversity conservation in the broader production landscape.

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RESUMEN

Las Concesiones de restauración del ecosistema (ERC, por sus siglas en inglés) ofrecen una oportunidad para que Indonesia complemente su red de áreas protegidas con áreas conservadas de alto valor de biodiversidad en bosques designados para fines de producción. Hutan Harapan es la primera ERC y pionera en la implementación de nuevas formas para la conservación a largo plazo del bosque lluvioso de tierras bajas de Sumatra y su biodiversidad. Aunque gran parte de la concesión de 98.555 hectáreas ha degradado bosques secundarios debido a la tala descontrolada en el pasado, es rica en punto a los valores mundiales de la biodiversidad. Se ha establecido una estructura de gestión para ofrecer resultados de conservación claramente definidos en términos de la protección de especies amenazadas a nivel mundial y la conservación de áreas clave para la biodiversidad (ACB) en un espacio geográfico definido. La experiencia de Hutan Harapan ofrece la oportunidad de ser evaluada como "Otra medida de conservación eficaz basada en áreas" (OECM). Por otra parte, el marco de políticas que apoya el establecimiento de Hutan Harapan bajo el esquema de ERC tiene una sólida base legal y ha llevado al establecimiento de más ERC en todo el país. Sin embargo, son muchos los desafíos que enfrenta Hutan Harapan; entre ellos, la invasión, los incendios forestales, la tala ilegal y la sostenibilidad financiera, que son similares a los que enfrentan las áreas protegidas en otras partes de Sumatra e Indonesia. El marco de ERC provee un medio para abordar estas amenazas habida cuenta de que reconoce la complejidad de los problemas de conservación. Sin embargo, para mantener los resultados de conservación se requerirá la combinación de inversiones humanas y financieras a largo plazo, así como la colaboración con una variedad de actores en múltiples escalas.

RÉSUMÉ

Les zones de Concessions de Restauration des Ecosystèmes (ERCs) offrent à l'Indonésie une opportunité de compléter son réseau d'aires protégées par l'ajout de zones conservées à haute valeur de biodiversité situées dans les forêts destinées à la production. Hutan Harapan est le premier ERC, pionnier de nouvelles méthodes pour conserver durablement la forêt pluviale de basse altitude et la biodiversité de Sumatra. Bien qu'une grande partie de cette concession de 98 555 hectares soit composée de forêt secondaire dégradée par l'exploitation forestière excessive du passé, elle est encore riche en valeurs de biodiversité. Une structure de gestion est en place pour fournir des résultats précis de conservation relatifs à la protection des espèces globalement menacées et à la conservation des zones clés pour la biodiversité (ZCB) dans un espace géographique défini. L'expérience de Hutan Harapan ouvre à cette zone la possibilité d'atteindre la classification d'«autres mesures de conservation efficaces par zone» (OECM). De plus, le cadre structurel qui soutient l'ERC de Hutan Harapan bénéficie d'une base juridique solide qui a permis à la création d'autres ERC à travers le pays. Cependant, de nombreux défis se posent à l'ERC de Hutan Harapan tels que l'empiétement, les incendies de forêt, l'exploitation forestière illégale et la viabilité financière, qui sont similaires aux défis auxquels sont confrontées d'autres aires protégées à Sumatra et en Indonésie en général. Le cadre de l'ERC, en tenant compte de la complexité des problèmes liés à la conservation, fournit un moyen de faire face à ces menaces. Cependant, il faudra une combinaison d'investissements humains et financiers à long terme ainsi que la collaboration de divers intervenants à plusieurs échelons pour maintenir les résultats de la conservation.