

Kapuas Hulu

A background analysis to implementing integrated landscape approaches in Indonesia

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Introduction

This chapter focuses on the study area for the Collaborating to Operationalize Landscape Approaches for Nature, Development and Sustainability (COLANDS) initiative in Indonesia.

COLANDS in Indonesia has embraced Integrated Landscape Approaches (ILA) as a holistic approach to integrate and bridge multiple interests and demands (Reed et al. 2014). The approach was designed on the basis of models and concepts that emerged from the conservation community in an effort to balance nature and biodiversity protection with the development needs of the people who live within, or in proximity to, conservation areas (Reed et al. 2016; Sayer et al. 2013).

ILA principles emphasize the importance of collaboration at all levels and scales to facilitate stakeholders' negotiation of conservation-development trade-offs (Sayer et al. 2013). Acknowledging that trade-offs are the norm (Sunderland et al. 2008), ILAs aim to draw out conflicting objectives and seek more equitable alternative futures such that there are 'more winners and less losers' (Sayer et al. 2015). Utilizing ILA principles, COLANDS – which also includes initiatives in Ghana and Zambia (Chapters 8 and 9) – aims to bridge stakeholder objectives across multiple sectors.

The selected area of interest, Kapuas Hulu regency¹, is located in Indonesia's West Kalimantan Province, and is one of the last areas in Indonesia with large areas of forest, which are mostly designated as protected areas. To strengthen this conservation role, Regency Regulation (*peraturan daerah* or, for short, *perda*) no. 20/2015 stipulates Kapuas Hulu as a 'conservation regency'² to show the government's commitment and special attention to its conservation efforts. At the same time, it is confronted by rapid industrial plantation development expanding from the west of the province (Laumonier et al. 2020a).

Kapuas Hulu covers an area of 3,116,300 ha, administratively divided into 23 sub-districts (*kecamatan*).³ Each sub-district covers several villages and is led by a sub-district head (*Camat*). Kapuas Hulu has a population of 263,207 people of various cultural and religious backgrounds (BPS-Kapuas Hulu Regency, 2020). Socio-economic development is largely dependent on the primary and secondary sectors (i.e. extraction and transformation of natural resources) with the agriculture, forestry and fisheries sector and the construction industry being the two largest contributors. Each sector added about 22 % to the annual GDP in the years between 2016 and 2019 (BPS-Kapuas Hulu Regency, 2020). Manufacturing is another important economic sector, contributing 11 % to the economy (BPS-Kapuas Hulu Regency 2020).

Despite ongoing deforestation, approximately two-thirds of forest and associated biodiversity remains mostly intact. Regency spatial planning for 2014-2034 (RTRW Kabupaten) states that approximately 53 % of the total land is allocated as protected areas⁴ which include two national parks: Betung Kerihun (816,693 ha)⁵ and Danau Sentarum (127,393 ha).⁶ In addition to national parks, a state forest area of about 461,470 ha includes protected forests and customary forests (KPHP Model Kapuas Hulu, 2015). Kapuas Hulu is also one of the Kalimantan regencies that belongs to the 23 million hectares-large 'Heart of Borneo' landscape initiative, which ecologically connects forest landscapes across Malaysia, Brunei Darussalam and Indonesia.

The crux of the issue appears as the interests of development and of conservation have an almost similar priority in the study area. Stakeholders have different agendas

1 Regency (*kabupaten*) is a second-level administrative division of Indonesia, directly administrated under a province. Both regency and city are at the same level, having their own local government and legislative bodies. Under law 32/ 2004, local governments now play a greater role in administering their areas.

2 Initially in May 2003 the Head of Regency declared Kapuas Hulu as a Conservation Regency, through Bupati Decree No.144/2003. The Perda no 20/2015 elevates the status of Conservation Regency. Perda, based on the Indonesia's national legislation, needs consensus from the Regional House of People's Representatives (DPRD), therefore is stronger than a Bupati decree. A Bupati decree can be replaced by a new Bupati.

3 Sub-district is the third-level administrative subdivision, below regency or municipality. The local term *kecamatan* is used in the majority of Indonesian areas, except in Papua, West Papua (district) and the Special Region of Yogyakarta (*kapanewon* and *kemantren*).

4 Protected forest based on Government Regulation 47/1997 on National Spatial Plan article 10. Protected forests are areas that provide protection for their subordinate areas; and areas that include local protected areas; nature reserve areas; nature conservation areas; cultural heritage areas; areas prone to natural disasters; and other protected areas.

5 Based on Ministerial Decree SK 3073/Menhut-II/KUH/2014.

6 Based on Ministerial Decree SK 4815/Menhut-II/KUH/2014.

and interests to fulfil. This chapter will discuss the challenges in the field and the opportunities that exist in realizing a balance of development and conservation in harmony with the welfare of local communities.

For the Indonesian sites, we focus on two sub-watersheds of the larger Kapuas Basin, i.e. the Labian-Leboyan sub-watershed in the corridor area between Betung Kerihun and Danau Sentarum national parks; and the Seriang sub-watershed. In these sites we study the landscape-scale and governance challenges, with the aim to identify the potential to bridge and reconcile conservation and development interests across different stakeholders and jurisdictions.

10.1 The study area

COLANDS Indonesia has focussed on Labian-Leboyan and Seriang, the two sub-watersheds of the main Kapuas watershed in the area. The interconnectedness of upstream and downstream activities in the watershed influences livelihood sustainability, biodiversity and the environmental stability of the entire Kapuas Hulu landscape.

Upstream, the dominant population is comprised of three main Dayak ethnicities; Iban, Embaloh, and Kantuk. The three live around the hilly area adjacent to Betung Kerihun National Park (BKNP). Their livelihoods rely on cultivation, such as swidden dry paddy fields, rubber farming, and the hunting and gathering of forest products (Colfer et al. 2000). Downstream, specifically within and adjacent to the Danau Sentarum National Park (DSNP), the area is dominated by Malay communities that rely on fisheries for their own consumption and for their livelihoods through commercial trade (Dudley 2000; Giesen and Aglionby 2000).

These sub-watersheds are located about 200 km from the regency capital city, Putussibau, and about 700 km to 800 km from Pontianak, the provincial capital. Each river and watershed covers several regencies, sub-districts and villages. The Labian-Leboyan River starts north of the Mensiau village of Batang Lupar sub-district and flows through four villages until it reaches the most downstream village, the Malay village of Nanga Leboyan of Selimbau sub-district where the river blends into the lake in the eastern of DSNP. The Seriang River goes from the Seriang village of Badau sub-district to Pulau Majang farther downstream, and ends in the lake at the west of DSNP. Both rivers stream across the lakes leading into the Kapuas River, contributing to the largest watershed in West Kalimantan. During the wet season, the Danau Sentarum Basin functions as a water catchment where the overflow from the two rivers feeds the lake that streams further into the Kapuas River (Giesen 1987; Harwell 2010) (Figure 10.1).

Comparisons between the two sub-watershed land cover made between 2010 and 2019 showed significant differences between them. While one sub-watershed remained unchanged, the other experienced substantial forest clearing for agro-industrial expansion, development of infrastructure and growth of community agricultural plots. Government bodies, communities and NGOs have made several efforts to keep the remaining forest intact and to conserve biodiversity, while improving the wellbeing of

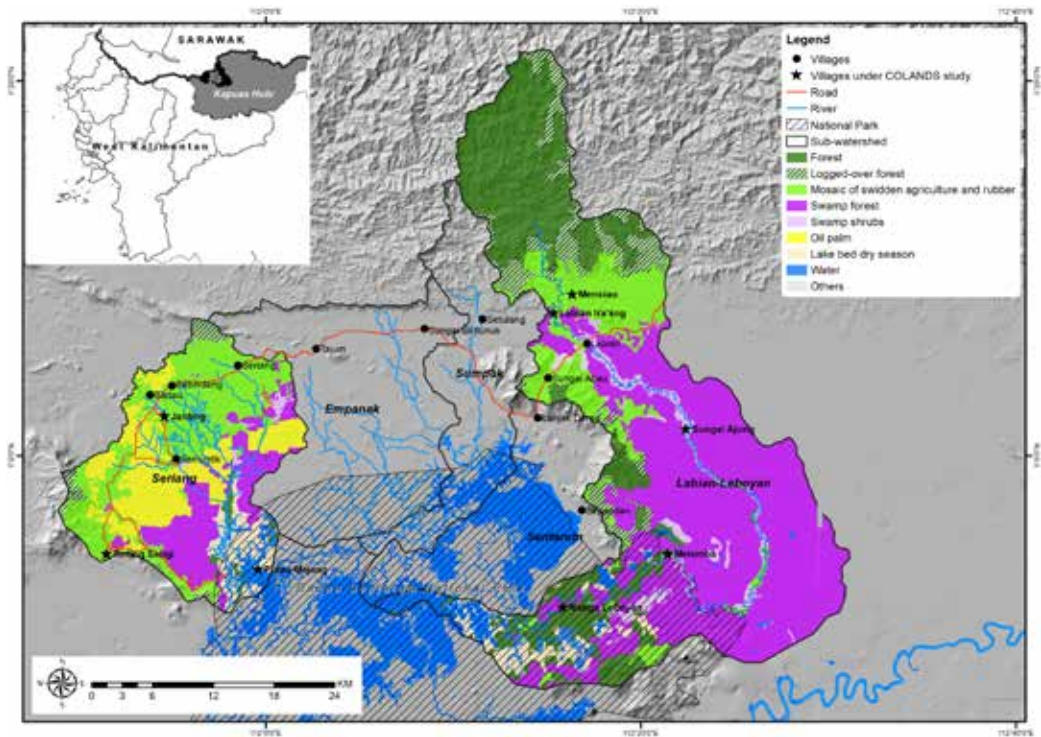


Figure 10.1. Situation map, vegetation and study sites in the sub-watersheds Labian-Leboyan and Seriang

Source: Laumonier et al. 2020b

local communities. Initiatives include establishment of village forests (*Hutan Desa*),⁷ development of alternative livelihoods through agricultural assistance, community empowerment, and multi-stakeholder forums for community development and environmental protection. However, several challenges remain, such as complex tenure arrangements and overlapping jurisdictions and responsibilities.

Advocating for a holistic approach toward integrated landscape governance requires facing the complexities that arise from a diverse range of actors, land uses and interests. ILAs therefore focus on managing for an adaptive capacity and applying an iterative process to address the inherent complexity within the system (Freeman et al. 2015). Thus, working at the watershed level is practical in order to identify and reach stakeholders – both at village and related regency levels.

There are a number of reasons for selecting the area. The first is because of its location in a major conservation area with the two sub-watersheds near the BKNP, the DSNP downstream, and the corridor between the two national parks. In the spatial planning

⁷ Village Forest (*Hutan Desa*/HD) is one of the Indonesian Social Forestry schemes, together with four other schemes: Community Forestry (*Hutan Kemasyarakatan*/HKm), Community Plantation Forest (*Hutan Tanaman Rakyat*/HTR), Customary Forest (*Hutan Adat*/HA) and Forestry Partnership (*Kemitraan Kehutanan*) (<http://pkps.menlhk.go.id/>).

document, one location falls within the sub-district of Batang Lupar, which is almost entirely designated as conservation and protection area; the other in Selimbau and Badau, almost all of which are designated as ‘land for other purposes’.

Second, governance in the two sub-watersheds has an impact on the larger landscape; that is, the regency and the main Kapuas watershed. The two sub-watersheds are indirectly connected to the Kapuas Basin, home to the longest river in Indonesia (Giesen 1987). Third, swamp forest in the Seriang sub-watershed is under pressure from expanding large-scale oil palm plantations. In spatial planning documents, a large part of the area is allocated for “other land use”; i.e. areas designated for agro-industries, *agropolitan*⁸ approaches and *minapolitan*⁹ approaches for both large-scale and community agricultural use.

Seriang, in the Badau sub-district administration area, is designated for oil palm plantation development. It is also close to one border post (PLBN or *Pos Lintas Batas*) designated to become an official Malaysia-Indonesia international entry port. Dry port development, an inland terminal for agricultural produce, is planned there to support the trans-shipment or logistics for large-scale industries such as oil palm. One impact of this development may be the transformation of the traditional mosaic landscape of swidden, fallows and watershed protection areas to a mono-culture oil palm plantation.

The Labian-Leboyan and Seriang landscapes have unique geomorphologies, from tropical mountainous range in BKNP to wetlands and peat in the DSNP Basin. This fluvio-lacustrine basin is flooded during wet seasons as excess water from interconnecting rivers fills some 80 lakes. These lakes partially or fully drain during dry periods (Anshari et al. 2001). Within the wetlands, several hills rise up to 120 m and 370 m, and the whole basin is surrounded by mountainous, steep and dissected ranges up to 2000 m (Giesen and Aglionby 2000).

Within the study site, there are various types of vegetation, influenced by the topographical differences. The surrounding hills are the domain of the *Dipterocarp* rain forests (Whitmore 1984), the unique southeast Asian rain forest rich with many commercialized hardwood species (Ashton 1988), and that provide crucial canopy structure for orang-utan, and other wildlife habitat (Caldecott and Miles 2005). Part of the wetlands is a very old tropical peatland (Anshari et al. 2004; Manuri et al. 2014). The wetlands are dominated by various freshwater and peat swamp forests, including stunted forests (Giessen 2000), which are adapted to high fluctuations of inundation throughout the year.

Overall, the climate is equatorial. The mean annual temperature is 27.2°C (lowest monthly mean 22.1°C and highest 31.9°C), for a mean annual precipitation of 4,154 mm (driest annual mean 2,673 mm, wettest 5,550 mm) (www.worldclim.org 2018) with an annual average varying between 120 and 310 rainy days. The wet season lasts from November to April, the dry season from May to September. Mostly during El Niño periods, the area regularly faces seasonal droughts.

8 The agropolitan approach is used in an area to strengthen agriculture, animal husbandry and fresh-water fish production.

9 Minapolitan is an area for economic development in marine and salt-water fisheries.

10.2 Landscape challenges

10.2.1 Environmental challenges

The study area faces several environmental challenges. First, the Seriang landscape experienced high levels of deforestation during the past ten years. About 11,500 ha – one-quarter of the total area (44,000 ha) – has been converted to oil palm plantations since 2000 (Laumonier et al. 2020b). In Labian-Leboyan, land clearing also occurs, but at a slower rate compared with Seriang. For generations, local residents have used swidden agriculture for upland paddy fields, and there are a number of established plots for individual oil palm plantations (Anandi pers. obs. 2020). Furthermore, fragmented forest and peatland conversion along the Labian-Leboyan corridor, due to human activities such as road networks, livelihoods, and settlements, threaten the habitats of endangered wildlife, particularly the Bornean orang-utan (*Pongo pygmaeus*) (Prayogo et al. 2016; Russon et al. 2001; Wulffraat et al. 2014).

Second, declining water quality and water that appears muddy due to sedimentation, have plagued the two sub-watersheds. This is primarily due to water pollution from fish poisoning and the use of agriculture chemicals (pesticides), which has become a growing concern to the DSNP area where it causes deterioration in fish habitat (Giesen and Aglionby 2000; Heri et al. 2010; Roslinda et al. 2012). Traditionally, the Dayak communities upstream have fished for their own consumption, using a particular tree (*tuba* or *tubai langkong* - *Barringtonia sarcostachys*) whose root bark is crushed to release a toxin and then tossed in the water. The poison causes a temporary numbing effect on the fish, without impacting the overall water quality. However, over time, the use of natural roots became less attractive for fishers and chemical poisons are now used instead. Chemical poison is easier to access and affects more fish in a short period of time (Giesen and Aglionby 2000; Heri et al. 2010; personal interviews with fishermen at Tinting Seligi, Nanga Leboyan and a farmer at Labian village between 2019 and 2020). Sedimentation from oil-palm plantations also has a negative impact on water quality (Muhyidin 2017), as does the swidden agriculture in the upstream area (Labrière et al. 2015), which has a negative effect on the hydrology of the sub-watersheds (Lusiana et al. 2008). Some community members are concerned by erosion and sediment-loaded water due to the swidden cultivation upstream – especially dry paddy fields along the riverbanks (interviews with head of village Labian Iraang August 2019; mid-age woman in Labian Iraang March 2020).

Third, poor waste management in the downstream area has led to increased garbage disposal in the Danau Sentarum Lake; notably, plastic trash (G. Hartono Danau Sentarum and Betung Kerihun national park officer February 2020).

10.2.2 Social challenges: multiple stakeholders with competing claims and agendas

Entrenched power struggles exist between communities in the two sub-watersheds, based on territorial claims and competition over natural resources, exacerbated by new demands from government and corporations. Building social cohesion and enhancing

efforts to better balance conservation and livelihood interests is therefore needed. Customary leaders play an important role in this respect. In the current administrative structure, villages consist of several hamlets, which are defined and organized based on a longhouse or fisher group working area. In addition to the head of village and the village administration, it is important to engage with the customary leaders in the hamlets. However, competing claims over natural resources and territories exist even within a longhouse. Despite kinship, it is common to find competition and differences of interests among households (Wadley and Eilenberg 2005). This social challenge related to competing territorial claims is also addressed in Section 10.2.4 on landscape governance challenges.

10.2.3 Economic challenges

About 60 percent of economic activity in Kapuas Hulu regency is related to agriculture (including oil palm plantations), forestry, hunting and fisheries (BPS-Kapuas Hulu Regency, 2018, 2020). In both Seriang and Labian-Leboyan, subsistence livelihoods are characterized by fisheries and hunting, and dryland farming of crops such as rice, cassava, maize, and vegetables (BPS-Kapuas Hulu Regency 2019b; Shantiko et al. 2013; Sunkar and Santosa 2018). Rice harvesting is primarily for subsistence, while other products such as rubber, fruits, *tengkawang* (illipe nut), and pepper (Shantiko et al. 2013) offer sources of income. Rubber and pepper are important cash crops; hence, the value attached to maintaining their cultivation. Despite this, low market prices have made these crops less attractive in the past two years (Anandi, pers. obs. 2019 and 2020). For example, rubber fetches only IDR 6000-7000/kg (less than USD 0.50) and a massive decline has been reported in pepper prices since 2018, to about IDR 24,000/kg (USD 1.50) from 120,000/kg (USD 8).

In Seriang, oil palm plantations have significantly changed the pattern of economic activities in the communities, providing an important source of household income (Leonald and Rowland 2016; Shantiko et al. 2013). Employment opportunities are increasing, particularly for paid employment, while the plantations also provide a boost to entrepreneurial activities such as shopkeeping (Muhyidin 2017). Nonetheless, the majority of the oil-palm labor force work as daily laborers (BHL-*buruh harian lepas*) due to their low levels of education.¹⁰ Usually, employment for local people is limited to low-level jobs, sometimes even invisible to the official employer, as in the case of 'kernel helpers'.¹¹ A daily plantation laborer earns a wage of about IDR126,000/day or the equivalent of USD 10/day for 25 working days in a month (interviews, head of village Tinting Seligi and head of village Seriang, August 2019).

Compared to Labian-Leboyan, Seriang has better infrastructure, with a paved road network to the centre of the sub-district capital and markets in Badau (BPS-Kapuas Hulu Regency 2019a). The telecommunications network is also well developed (BPS-Kapuas Hulu Regency 2019a) which is helpful for communities trading their produce.

10 In Kapuas Hulu, a high number of employed workers had only a basic education, having left school after a primary education (year 1-6) (BPS-Kapuas Hulu Regency, 2018).

11 A kernel helper is a person hired by the harvester to help achieve the company's daily quota. The harvester will share the daily salary with the helper.

However, due to unstable prices for agricultural commodities other than oil palm, many households in the Seriang sub-watershed combine their income from their own farms with wage labor at the plantations (Leonald and Rowland 2016; Anandi, pers. obs. 2019).

The Labian-Leboyan sub-watershed faces several economic challenges as access to telecommunication and transportation is very limited and basic. Four villages upstream are somewhat more accessible by gravel road; however, this road is damaged and access is difficult (BPS-Kapuas Hulu Regency 2019b; Anandi, pers. obs. 2020). Two villages downstream, which are located along the lake, can be reached by a speed boat during the wet season and by motorbikes during the dry season. However, the telecommunications network is weak, adding to the challenges faced by local people in selling their produce. Many upstream communities, therefore, rely on middlemen who regularly buy the produce in the villages to re-sell in Lanjak, Badau, Sintang, or Pontianak (interviews with community members in four villages between February and March, 2020). This puts farmers at a severe disadvantage, leaving them with little power to negotiate better prices, and allowing the middlemen to profit from the low prices they pay to the farmers.

Moving downstream to the Danau Sentarum, fishing is the main source of income for communities. Cash generation peaks during the dry season, when water levels fall and fish become trapped in smaller bodies of water, making them much easier to catch. During this “fish harvest” time, the lake area becomes crowded with permanent fishermen as well as seasonal fishers, mostly from outside of the lake area (Roslinda et al. 2012). These seasonal fishers come from nearby areas such as Selimbau, Suhaid and Lanjak (Heri et al. 2010). A problem arises during the wet season, when many fishers rear the Giant Snakehead fish (*Channa micropletes*, locally called *Toman*), which has an adverse impact on the overall ecosystem in Danau Sentarum due to its heavy consumption of smaller fish (Heri et al. 2010). It is a relatively lucrative venture, as the fish can mature in about twenty months. Based on an average of three cages, each with about 2,000 *Toman*, a farmer can make profit of about IDR 150 million (USD 10,250) in one harvest period.

Finally, employment opportunities in Malaysia and Brunei Darussalam remain an attractive source of income. After completing high school, both men and women will often go abroad to work as daily laborers (Shantiko et al. 2013; Wadley and Eilenberg 2005) albeit illegally, receiving a monthly salary of about MYR 1,500-3,000 (USD 350 to USD 700)¹² (interviews with several community members in Melemba, Labian Iraang, and Mensiau, between February to March, 2020). Particularly in Dayak villages in both sub-watersheds, about half the population lives abroad while the elderly, women and children remain at home. Women in the economically active age (15 years to 60 years) maintain the household and work on the family farm, cultivating crops and selling the harvest for their income (BPS-Kapuas Hulu Regency 2018).

This presents an additional challenge for project implementation, including the COLANDS initiative. Women in these circumstances have little additional time to actively engage in a project or initiative, leaving interventions to focus instead

12 MYR (Malaysian Ringgit) is equivalent to 0.33 Bruneian dollar (BND). The USD equivalent of 1 MYR is 0.23 (Currency Converter, 9 June 2020).

on individuals who are willing and able to commit time and have authority in the community. This, in turn, leads to the exclusion of women and other marginalized people, causing distrust toward the project implementers and among community members.

10.2.4 Governance challenges

Complex tenure arrangements

The major governance challenge in Kapuas Hulu concerns the co-existence of customary and government land tenure. Law No. 5/1990 on *Conservation of Natural Resources and Their Ecosystems*, and No. 41/1999 *Forestry Law*, regulate access to conservation and forest areas, and set restrictions on human and development activities. Both laws acknowledge the presence of Indigenous peoples and their customary land, and prohibit individual land ownership within conservation and forest areas. Communities living within forest areas have been struggling to adjust to these regulations.

Part of the customary arrangements concern historic agreements on “designated” community territory with Dayak sub-ethnicities, such as the Iban, Embaloh, Kantuk, and Malay groups (Sada et al. 2019). In the Dayak communities, each territory is led by a *Temenggong* (customary leader). The *Temenggong* institution was created by the Dutch in the 18th century (Eilenberg and Wadley 2009) and is still in use today. The current government administration refers to these territories as a sub-district (for Iban *Temenggong Batang Lupar* and *Temenggong Badau*) and sub-watershed (for *Embaloh Temenggong Benua Labian*).

The Embaloh people are considered the first settlers in Labian-Leboyan. In the 19th century, the Iban community migrated from the border area between Sarawak and Kalimantan to the current Labian-Leboyan area to take advantage of better livelihood opportunities. Within the same period, the Malay communities also started to migrate as temporary fishers in the same area. The Embaloh made agreements with the Iban and Malay regarding the location of settlements, rent and the utilization of land and natural resources for their livelihoods. It was, however, prohibited to sell land (Iban hamlet customary leader, Kanisius Kanai, interview March 2020; *Temenggong Tamambaloh Labian Antonius Pameang*, interview March 2020). These agreements were made verbally and only a few customary elders are aware of these unwritten arrangements.

Customary arrangements govern and regulate the utilization of forest land for livelihood, cultural and social purposes. The Dayak communities are organized around a longhouse, divided into compartments that each host a family (Sada et al. 2019). Each longhouse is connected to a territorial area and employs a customary governance system that regulates access to sacred and cultivation areas (Shantiko et al. 2013; Yuliani et al. 2018). There are individual and communal forms of land ownership, mostly marked by trees, a river, and other geographical features. Through time, longhouse members may migrate and establish new territories, yet ownership rights in the previous longhouse remain and are passed down to family members who decide to settle within the longhouse. This keeps existing territories intact, while new community territories continue to spread.

The Dayak and Malay concepts of land and resource territory are passed down through generations. The Dayak, for example, consider both a communal forest garden with durian and other fruit trees within their former longhouse area (*Tembawai* in Iban and *Belen Sau* in Embaloh) and old cultivation areas (*Damun* in Iban and *Belen Uma* in Embaloh) as valuable. Similarly, the Malays value the concept of working areas for fishers and honey farmers. The majority of Malay communities rely on two main livelihoods: fisheries and honey collectors during the off-season for fishing, which forms part of their identity. Initially, a working area was formed by a group of fishers with good working relationships that have selected an area to fish. The selected area would be considered as “owned” by the working group (about 10-15 members) for harvest during fish season. This area was seen as a temporary area to stay (*periau*) where each fisher of the group builds a temporary house to visit seasonally, but over time, families began to settle there permanently. More recently, the group working area has grown to include 20 to 50 households. The area became a hamlet, where each household has a strong family kinship with the early group of fishers. Such communities in each hamlet have detailed and up-to-date regulations at both hamlet and village level. Every three years, all members of the hamlet fisher family gather to discuss area regulations related to fishing, as well as the rights and responsibilities, and the types of sanctions for rule-breakers. This is an open, iterative forum where regulations are flexibly adapted, based on experience, needs and community consensus. These regulations are shared with other hamlets and neighboring villages to ensure they are respected (personal interview with the Nanga Leboyan customary leader, Semangit head of fishers, and an elderly women in Semangit, February 2020).

In the past, within the *periau* area, fishers also practiced semi-natural beekeeping for additional income. A beekeeping technique was applied called *tikung*, in which a board was installed in typical wetland low-lying trees such as “putat” (*Barringtonia acutangula*) one of many tree species dominating the *wetland* that attracts bees (de Jong 2000). The beekeeper owns the tree and it is passed down based on kinship. At present, a *periau* refers to an area of beekeeping that is managed by a group of beekeeping farmers (Ginting 2017; Roslinda et al. 2012). Every hamlet has a *periau*, and each with its own set of regulations. There are approximately 37 *periau* within the DSNP area that have joined associations (Aliansi Organisme Indonesia, 2012; personal interview with Suryadi, head of Periau for Semangit hamlet, February 2020).

Other than the customary arrangements mentioned above, a village concept is the most recent governance arrangement. Statutory village boundaries suggest clarity concerning borders and serve to resolve related conflicts. However, the formal concept of village that was primarily developed in the 1970s based on the situation in Java, therefore is different from the Dayak and Malay traditional concepts. In statutory terms, the village is the smallest government unit and led by the village head. A ‘village’ is a legal community unit that has the authority to govern and manage government affairs, local community interests based on community initiatives, original rights, and/or traditional rights (Village Law No. 6/2014). Each village within the study site consists of two or four hamlets. A hamlet (*kampung*) may refer to a longhouse territory for the Dayak customary groups (Iban, Embaloh, Kantuk), or a fishing working area, where each has its own customary governance arrangements. Commonly, villagers primarily identify themselves

by their hamlet rather than the village (Anandi, pers. obs. 2020). Due to their history, the customary areas of Dayak communities in particular were scattered over many places. As described previously, such scattering continues due to families separating and settling in various locations, while maintaining ownership rights in their hamlet of origin. As a result, customary areas do not align with statutory village boundaries and many customary areas are located in different villages.

Although village demarcation processes provide clarity for administrative village boundaries, this demarcation also causes a blurring of customary and statutory governance arrangements and boundaries that a landscape approach may overcome. This approach could bring neighboring villages together and help communicate communal land tenure arrangements and links to the initial territorial areas. The establishment of village boundaries and the existing practice of customary territories calls for open communication, and clear and accurate information sharing among stakeholders across all sectors in the landscape.

Overlapping jurisdictions

Implementing landscape approaches requires recognizing the various centres of decision-making, and the jurisdictions, duties, responsibilities and authority of governance institutions from national to village level. Overlapping jurisdictions are challenging in forest governance as they complicate communications and decision-making due to its multiple layers of roles and bureaucracies (Li 2007; Moeliono et al. 2017; Wollenberg et al. 2009). Forest and land governance in Indonesia has been structured through centralization policies during the New Order era – decentralization¹³ and re-centralization policies¹⁴ have resulted in a continuous tug-of-war over power and authority (Myers et al. 2016; Sahide et al. 2016).

Table 10.1 lists the various agencies in the two sub-watersheds; their jurisdictions and governance responsibilities; and the legal basis for their roles. The Ministry of Environment and Forestry (MoEF) holds most of the authority, albeit distributed over several agencies with distinct responsibilities, namely the Watershed Management Authority (BPDAS¹⁵), the Protected Forest Management Unit (KPH¹⁶) and National Park management office (Balai TN¹⁷). Within the MoEF, each agency reports to a different directorate that has various mandates and responsibilities on the ground. There are nine such directorates, including Forestry and Environmental Planning; Conservation of Natural Resources and Ecosystems; Watershed and Protection Forest Management; and Sustainable Production Forest Management.

13 Law 22/1999 and the revised version Law 32/2004 on Local Government wherein the central government gives the authority to the local government, highlighting the importance of democracy, community participation, equality and justice.

14 Law 23/2014 on Local Government has shifted authority over forest resources management from regency to province level.

15 BPDAS = Balai Pengelolaan Daerah Aliran Sungai (Watershed Management Authority).

16 KPH = Kesatuan Pengelolaan Hutan (Forest Management Unit).

17 TN = Taman nasional (National Park).

Responsibility for management of land for other purposes (*APL/Area Peruntukan Lain*) rests with several agencies led by regional development planning boards (BAPPEDA¹⁸) at provincial and regency levels. Another key actor at regency level is the Village Community Empowerment Agency (DPMD), which supports and supervises village development. Important actors at lower levels include the heads of sub-district and village officials. From a jurisdictional point of view, the distribution of responsibilities results in various approaches toward the development of each area. BAPPEDA, as the lead agency at regency level, oversees the landscape from a spatial planning perspective. It is responsible for coordinating the spatial land-use planning (RTRW¹⁹) where it addresses the allocation of areas for agriculture, water management, conservation and other land uses, based on national targets (RPJMN²⁰) (Interview with officers from Provincial BAPPEDA, February 2020).

The Watershed Management Agency (BPDAS) is responsible for managing the watershed, including securing the connection between upstream and downstream areas and overall watershed quality through activities such as rehabilitation and reforestation along the riverbanks (interview with a head of department of BPDAS, February 2020). BPDAS is also responsible for the management of the protected forest (HL= *hutan lindung*) area.

The National Park management office manages the designated national park areas, including human populations, nature, and wildlife therein. To this end, it applies a zoning system for the park area that regulates accessibility and restrictions. A long-term (ten year) and short-term (five year) management planning document serves as a guideline for operations.

The Forest Management Unit (FMU) works within state forests only. Similar to the National Park management office, the FMU applies a planning document and categorizes its working area based on a blocking system to indicate restricted areas and areas that are accessible for community activities. For example, a strict conservation area is designated as a 'core block' (*blok inti*); there is also a 'block for utilization' area (*blok pemanfaatan*), and a 'special' designated block (*blok khusus*) (Direktorat Wilayah Pengelolaan dan Penyiapan Areal Pemanfaatan Kawasan Hutan, 2012). At the same time, Law 6/2014 pertaining to villages stipulates that a village has the autonomy to manage its community and land area. Each village is allocated annual funding of close to IDR 1 Billion (USD 70,000) that can be used for village development, disaster preparedness, conservation, and supporting community livelihoods and well-being. Based on this law, the head of village has a stronger decision-making power regarding village development and projects and the financing thereof, compared to the National Park management office, FMU, BPDAS, and the regency government.

Based on customary territorial land governance arrangements, household and community properties may extend beyond village boundaries and into forest and

18 BAPPEDA = Badan Perencanaan Pembangunan Daerah (Regional Development Planning Board).

19 RTRW = Rencana Tata Ruang Wilayah (regional spatial land-use planning).

20 RPJMN = Rencana Pembangunan Jangka Menengah Nasional (National Medium Term Development Plan).

Table 10.1 Statutory authorities in Kapuas Hulu and their basis in Indonesian legislation

Authority and Initiative	Responsibility	Legal basis	Type	Coordinating agency
Regional level authorities/initiative				
Heart of Borneo with multiple authorities such as the HoB National Council in Brunei, HoB Working Groups in Indonesia and National Expert Group and Steering Committees in Malaysia	Policy reform, institutional and community capacity empowerment to support inter province and agency cooperation, protected area management, natural resources management outside the protected areas, institutional strengthening and sustainable financing	Declaration on Heart of Borneo Initiative. 12 February 2007 Government Regulation No. 26 of 2008 which initiated Heart of Borneo area as a National Strategic Area (KSN) in Indonesia.	Initiative Heart of Borneo, a trilateral agreement between Malaysia, Brunei and Indonesia	Ministry of Environment and Forestry, Heart of Borneo Task Force (at national, province, regency)
FORCLIME with multiple authorities; German government (GIZ -Technical assistance and (KfW -financial assistance), Indonesia Government (Ministry of Environment and Forestry and Forestry Agency)	Assist the Indonesian government to design and implement legal, policy and institutional reforms for the conservation and sustainable management of forests, at local, provincial and national level	Summary record of governmental negotiations (Indonesia and German) 2-4 November 2015	Initiative FORCLIME, bilateral cooperation between German and Indonesia Government	Ministry of Environment and Forestry, Ministry of National Development Planning (Bappenas), Forestry Agency
National level authorities				
Directorate General of Conservation Natural Resources and Ecosystem (KSDAE)	Evaluate the suitability of the functions and conditions of nature conservation area, coordination, provide information system for the management of nature conservation including the national park	Presidential Regulation Number 16 of 2015 about Ministry of Environment and Forestry Ministerial Regulation PermenLHK Number P.18/Menlhk-II/2015 Organization and Working Procedures of the Ministry of Environment and Forestry The designation of Labian Leboyan as Corridor Essential Ecosystem (KEE), for orang-utan in Kapuas Hulu, October 2017	Statutory regulation	Ministry of Environment and Forestry

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Table 10.1 Continued

Authority and Initiative	Responsibility	Legal basis	Type	Coordinating agency
Directorate General of Social Forestry and Environmental Partnership (PSKL) and Directorate General of Sustainable Production Forest Management (PHPL)	Management of the FMU, in particular the formulation and implementation of policies to a sustainable forest management and increase community participation in forest management, customary forest management, and environmental partnerships	Law: Forestry Law No. 41/1999 Presidential Regulation Number 16 of 2015 about Ministry of Environment and Forestry Constitutional Court Decree SK. MK No. 35/PUU-X/2012 on Customary Forest Ministerial Regulation: PermenLHK Number P.18/Menlhk-II/2015 Organization and Working Procedures of the Ministry of Environment and Forestry PermenLHK Number 32/2015 on Private Forest (Hutan Hak) PermenLHK Number 83/2016 on Social Forestry	Statutory regulation	Ministry of Environment and Forestry
Directorate General of Watershed and Protected Forest (DASHL)	Formulation and implementation of policy to improve carrying capacity in watershed and protected forest	Presidential Regulation Number 16 of 2015 regarding Ministry of Environment and Forestry Ministerial Regulation PermenLHK Number P.18/Menlhk-II/2015 Organization and Working Procedures of the Ministry of Environment and Forestry	Statutory regulation	Ministry of Environment and Forestry

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Table 10.1 Continued

Authority and Initiative	Responsibility	Legal basis	Type	Coordinating agency
Provincial level authorities				
Forestry Agency – Forest Management Unit	Forest management in West Kalimantan	Ministerial Decree SK Number 936/Menhut-II/2013, on changes to the Allocation of Forest Areas to Non-Forest Areas, Changes to Functions of Forest Areas and Designations of Non-Forest Areas to Forest Areas in West Kalimantan Province	Statutory regulation	Ministry of Environment and Forestry
Regional body for planning and development (BAPPEDA) at Province level	Coordinating body on development planning at provincial level, including policy formulation, mid-term development planning, budgeting, spatial planning, cooperation on research and development planning along with academia, government and private agency.	Ministerial Decree Sk.733/menhut-ii/2014 on forest area and water conservation of West Kalimantan Province	Statutory regulations	Governor of West Kalimantan
		Presidential Regulation: President of the Republic of Indonesia, Number 18 of 2020 regarding national middle-term development plan for 2020-2024. Regional Government Regulation: Perda West Kalimantan Province Number 10 of 2014 regarding West Kalimantan Spatial Planning 2014-2034 Perda West Kalimantan Province Number 2 of 2019 regarding middle term development plan 2019-2023 Presidential Regulation Number 31 of 2015 on spatial planning on the state border area in Kalimantan		

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Table 10.1 Continued

Authority and Initiative	Responsibility	Legal basis	Type	Coordinating agency
Provincial Watershed Management Agency (BPDAS- Balai Pengelolaan Daerah Aliran Sungai)	Watershed management	Regional Regulation: Perda of West Kalimantan Province Number 2 of 2018 on Integrated Watershed Management (working area of watersheds including Kapuas Watersheds, and watershed forum establishment)	Statutory regulation	Ministry of Environment and Forestry, Governor of West Kalimantan
Regency level authorities				
BAPPEDA at Regency level	Coordinating body on development planning at the regency level including policy formulation, regency's strategic plan, development and spatial planning, budgeting, facilitate cooperation on research and development planning along with academia, government and private agency.	Presidential Regulation: President of the Republic of Indonesia, Number 31 of 2015 on spatial planning on the state border area in Kalimantan President of the Republic of Indonesia, Number 18 of 2020 about national middle-term development plan for 2020-2024. Regional Regulation: Perda Kapuas Hulu regency Number 1 of 2014 on the spatial planning of Kapuas Hulu regency 2014-2034 as a reference on Allocation and planning for conservation area and cultivation area including APL – land for other purposes (settlement, industrial, agriculture) Perda Kapuas Hulu regency Number 20 of 2015 Designation of Kapuas Hulu as a Conservation regency	Statutory regulation	

Table 10.1 Continued

Authority and Initiative	Responsibility	Legal basis	Type	Coordinating agency
Betung Kerihun and Danau Sentarum National Park Management Office (Balai Besar Taman Nasional Betung Kerihun dan Danau Sentarum)	Betung Kerihun and Danau Sentarum National Park management	Danau Sentarum Management Plan (Integrated Management for Water Catchment Area, river bank and the Lake Sentarum Waters) 2019-2023	Government planning	Danau Sentarum Catchment Working Group consists of the Provincial government (forestry agency, BPDAS), Betung Kerihun and Danau Sentarum National Park management office, the government agencies at regency level, FMUs, NGOs, customary representatives and academics
Betung Kerihun and Danau Sentarum long-term planning	Supporting and supervising village governments.	Ministerial Decree SK 3075/Menhut-VII/KUH/2014 on Betung Kerihun National Park; Ministerial Decree 4815/Menhut-VII/KUH/2014 on Danau Sentarum National Park; National Park Betung Kerihun and Danau Sentarum long-term planning	Statutory regulation	The Ministry of Environment and Forestry
Village Community Empowerment Agency (DPMD)	Supporting and supervising village governments.	Law: Village Law Number 6 of 2014 Local Government Law Number 23 of 2014 Regional regulation: Perda Kapuas Hulu regency Number 1 of 2014 on the spatial planning of Kapuas Hulu regency 2014-2034 (as a reference on allocation and planning for conservation area and cultivation area including APL – land for other purposes, such as settlement, industrial, agriculture)	Statutory regulation	Head of regency

Table 10.1 Continued

Authority and Initiative	Responsibility	Legal basis	Type	Coordinating agency
FMU Kapuas Utara	Forest management	Regional regulation: Perda Kapuas Hulu number 20 of 2015 as Conservation regency FMU Kapuas Hulu Utara Long-term planning 2015 - 2024 Forest Management Unit planning for Kapuas Utara Forestry area, managing about 461,470 ha in Kapuas Hulu, including protected forest (HL) ± 224,522 ha, production forest (HP) ± 83,241 ha and limited production forest (HPT) ± 150,262 ha	Statutory regulation	Ministry of Environment and Forestry
Village level authorities				
Head of Village	Leader of the village, chosen by the public through an election and assisted by the village apparatuses	Law No. 6/2014 on village	Statutory regulation - Autonomy	Head of regency

Note:

“On the Legal Basis” column, the placement of law and regulation is based on the order of legal products in Indonesia.

Source: Compiled by the authors, based on organization working reports (WWF 2008; WWF 2010; WWF 2010; Setneg.go.in and FORCLIME.org accessed 20 June 2020). Government of Indonesia law and regulations.

conservation areas (FMUs and national parks). However, this is not the case for oil palm plantations. Much of the plantation areas were converted from forest areas, which were previously allocated to logging concessions. Consequently, the forest area that is available for communal activities and cultural traditions has gradually diminished due to expansion of oil palm plantations.

A key conservation initiative has been developed outside conservation and forest areas. In October 2017, the Directorate General of Conservation Natural Resources and Ecosystem (KSDAE) designated Labian-Leboyan as an Ecosystem Essential Area (KEE) for orang-utan habitat. The protocol of collaboration on managing the KEE was signed by KSDAE, TNBKDS, the Provincial Forestry Agency, BAPPEDA of Kapuas Hulu Regency and WWF (Hadrian 2017; Hakim 2017). This is the first KEE initiative for supporting the orang-utan conservation in Indonesia. The KEE designation is applied for conservation and environmental protection purposes outside conservation areas. The KEE designation requires committed stakeholders and budgetary consistency (Anandi pers. obs.). Without KEE, this respective area is allocated for other development purposes. On a legal basis, the existing *perda* in this conservation regency should strengthen the KEE operation that will engage a wider range of stakeholders to achieve balanced development and conservation goals. However, to align with the regency development planning and budget allocation, the KEE must be translated into the specific planning document, *perda* on Regency Strategic Area (*Kawasan Strategis Kabupaten* known as KSK). Therefore, to be operationally validated, the final legal form of KEE in this situation is ‘Perda on KSK Koridor’.

There are several essential requirements to develop KSK, such as reference to the RTRWK²¹ Kapuas Hulu, synchronization with national standards for detailed mapping, and later validation by the KSDAE and the ATR/BPN (Anandi pers. obs. and personal interview with ATR/BPN director of spatial planning development and regional space utilization, September 2018). KSK formulation is under BAPPEDA of Kapuas Hulu Regency responsibility, and is partially funded by the WWF. At the time of writing, status of the KSK was under development and was awaiting detailed mapping activities (personal interview with BAPPEDA officer of Kapuas Hulu Regency, August 2019). As a result, the KEE operational status was uncertain.

Due to myriad regulations and jurisdictions, implementing an integrated landscape approach is challenging. As demonstrated here, the agencies concerned have various responsibilities that represent different approaches and activities in their area of jurisdiction. This may present challenges to the continuation of ILA initiatives beyond the duration of COLANDS activities. The growing number of NGOs, public-private and private initiatives in the focus area are addressed in the next section. These add further to this complexity.

10.3 Growing numbers of interventions, but better coordination and synergy required

10.3.1 Bilateral cooperation

21 RTRWK = Rencana Tata Ruang Wilayah Kabupaten (Regency spatial land-use planning).

The Forest and Climate Change program (FORCLIME), a major initiative, was implemented between 2012 and 2020. A collaboration between the governments of Indonesia and Germany, the program aims to support the FMU in reducing greenhouse gas emissions, managing protected areas and building capacity to achieve those ends.²² Since 2015, this has been associated with sub-projects in several villages in the Batang Lupar sub-district, such as village forest management, village boundary demarcation, GPS training, agriculture and farming. The project was expected to conclude by mid-2020 and in a series of interviews with village administrators and youths from the project sites in March 2020, concerns were expressed over how to continue the initiatives. Interviewees said, “We were not sure how to sustain the activities after the project ends. There might have been some guidance but it was not clear for us. Without guidance that we understand, we are worried that the activities might stop once the project ends.” Concerns were expressed that the program could join numerous other small projects within the sub-watershed that were not sustained.

10.3.2 NGO activities

NGO assistance in Labian-Leboyan and Seriang began in mid-1990s with the Wetlands International Indonesia program’s conservation research in Danau Sentarum. Since then, more NGOs – including the World Wide Fund for Nature (WWF), Riak Bumi, Diantama, and Forina – have implemented conservation initiatives in both the sub-watershed, including WWF activities concerning orang-utan protection. Over time, NGO projects are significantly declining in Seriang, and increasing focus in Labian Leboyan. However, other NGO initiatives with limited time frames began to implement projects, WWF activities also slowed in Labian-Leboyan. In 2019, WWF closed its branch office in Batang Lupar, which had coordinated many initiatives along the Labian-Leboyan River. Prominent NGOs that remain active in the sub-watershed, as of time of writing, include WWF, Riak Bumi, and Kompakh. There are also two recent projects in the scoping phase Forest Investment Program (FIP-1) funded by the Asian Development Bank (ADB); and the Non-Timber Forest Products Exchange Program (NTFP-EP).

For interventions in national parks and state forests, each NGO needs permission and coordination with the Betung Kerihun Danau Sentarum National Park Management Office and the FMU. Interventions mostly focus on support for alternative livelihoods in the communities (horticulture, rubber gardens, NTFP commodity processing, eco-tourism); capacity building in village planning; and village forest management. One of the dominant activities of the NGOs is stimulating agricultural production of such commodities as rubber, coffee and kratom (*Mitragyna speciosa*) – tree leaves used as a stimulant, either chewed or brewed in tea. However, several challenges impede the sustainability of such interventions. Although coffee and kratom are promoted, most farmers have prioritized rubber, which communities have traditionally cultivated. Yet, government agencies provide limited marketing support for rubber, and some farmers have not seen any direct income benefits because of low latex prices (IDR 6,500-7,000/kg or USD 0.50 cents/kg) (Interviews with farmers in three villages, February-March 2020). Furthermore, although such initiatives are ideally coordinated with the regency

22 URL: <https://snrd-asia.org/forests-and-climate-change-programme-forclime/>.

government (specifically, the Agriculture and Food Crops Agency) and the communities, in practice, each NGO works independently with the communities in its working area. This means that communities become dependent on the NGO to facilitate marketing, technologies and compensation for their work in the above mentioned nurseries. Hence, when project funding ends, the activity is not well embedded in the local economy and the institutional environment.

Some NGOs have embarked on kratom production as an alternative livelihood and established nurseries and distributed seedlings. Kratom is a native evergreen tree used by the Dayak as a form of traditional medicine. It is a pioneer species confined to waterlogged areas and riverbanks, is easily grown in those conditions, and offers good market and economic value (dried flakes are valued at IDR 25,000/kg or USD 1.50/kg, and dried leaves, IDR 5,000-7,000/kg or USD 0.50 cents/kg). However, inconsistent and changing laws concerning this commodity have caused confusion among farmers and governance agencies (Oxtora 2019; Rezkisari 2019). National regulation classifies kratom as both a forestry species and an illegal commodity due to its opioid receptor characteristics. This creates uncertainty about whether it can be planted within conservation and state forests, creating challenges for farmers.

Several NGO programs stimulate activities such as ecotourism, production of traditional crafts, and processing of non-timber forest products. Some of these programs use a common approach to reach beneficiaries by forming working groups and farmer groups (*kelompok tani*) with the intention to empower the targeted groups and a long-term aim that the groups' knowledge and efforts will benefit wider communities. The target groups include women, groups of farmers, and youths. This may not always be the most desirable approach – despite the close kin relationships within a village or hamlet – as not everyone has the same level of commitment and conflicts may therefore arise.

NGOs have played a key role in establishing forums in Kapuas Hulu for coordination and collaboration at the landscape scale. For example, the National Park management office collaborated with BAPPEDA of Kapuas Hulu Regency and other government agencies to establish the Cagar Biosfer forum in early 2020, with 80 members from government, NGOs, the private sector and customary representatives. Other examples include the trilateral 'Heart of Borneo' task force, between Indonesia, Malaysia, and Brunei Darussalam governments, which was facilitated by WWF Indonesia; and the Labian-Leboyan forum organized at the watershed level by WWF and BAPPEDA of Kapuas Hulu Regency. These fora were mainly created and funded by donors and NGOs, with the commitment of government agencies from regency to regional levels. However, most participants are the same, educated people that already have networks organized among themselves. Engagement of local communities in such collaborations and platforms is rare.

Moreover, such forums are highly dependent on donor funding. The Labian-Leboyan forum, for instance, was established in 2007 but has been idle since 2009 and was re-activated only from 2016-2018 with financing from the Tropical Forest Conservation Act (TFCA) program. The latter involves the governments of Indonesia and the United States, in collaboration with The Nature Conservancy (TNC), WWF Indonesia and Indonesian Biodiversity Foundation (KEHATI) Foundation to stimulate the conservation, protection,

restoration, and sustainable use of tropical forests in Berau (East Kalimantan), Kapuas Hulu and the Heart of Borneo.²³ According to interviews with community members in four villages, these NGO initiatives have empowered villagers to voice their opinions, deal with outsiders, defend customary rights, become active in an organization, and work on administrative processes such as writing and submitting proposals; and designing rules and regulations (interview with Erwanto, February 2020; Asmoro, February 2020; women in Melemba village, February 2020; women in Mensiau village, March 2020). Yet, as seen above, their initiatives need to be better embedded in the local contexts for improved coordination and sustained effects.

10.3.3 Public-private partnerships

The Forest Honey Bee Collectors' Association in Lake Sentarum (APDS), which markets wild honey with organic certification, started in 2002 with the support of NGOs, notably Wetlands International and Riak Bumi (Aliansi Organisme Indonesia 2012). From a total of 37 Periau in Kapuas Hulu, there are 13 Periau that joined the APDS. It has continued to function independently through the work of villagers living around the national park, particularly from Leboyan and Semangit (Selimbau sub-district). APDS members are also active fishers and engage with APDS not only to provide them with additional income from honey, but also with the ability to negotiate, market, develop organizational skills and attain product standardization. Since 2015, the DSNP supports the APDS committee members in marketing and training in certified production. The APDS has also led to another community initiative, namely the establishment of the Tourism Management Association KPP²⁴ Semujan Dorsata. Established in 2016, this initiative works closely with National Park management office and private tourism agencies to develop their business.

Eco-tourism is increasingly popular at the community level. KPP Kaban Mayas in downstream Labian-Leboyan is a community-based eco-tourism initiative established by WWF in 2010. KPP Kaban Mayas, in an Iban village, has instilled its ecotourism plan into the village's 20-year spatial plan. The neighbouring village, a Malay community, followed suit by establishing KPP Semujan Dorsata in 2016. Located within the Danau Sentarum National Park area, group members proactively seek information and collaboration with DSNP officers related to potential tourism destinations. However, despite the proximity between villages, these groups work at a hamlet level, and independently seek support from external market actors (interview with KPP members in two villages, Erwanto, February 2020; Ferry, February 2002; Asmoro, February 2020).

10.3.4 Private sector initiatives

The private sector has affected landscapes, as well as social and political dynamics in Kapuas Hulu. During the Soeharto (Suharto) presidency (1967-1998), the national government allocated state forest areas to large-scale timber concessions. Many of these

23 Penabulu: <https://penabulufoundation.org/en/tfca-kalimantan-strengthening-institutional-capacity-program-program-management-and-financial-management-of-tfca-kalimantan-partners/>, accessed 14 June 2020.

24 KPP = Kelompok Pengelola Pariwisata (Tourism Management Association).

were given to people with close ties to the president, and to military personnel, with the intention of securing the border area. Large-scale timber logging by private companies such as PT Yamaker and PT Landjak Deras began in the 1980s and were booming between 2000 and 2004 (Eilenberg 2012) during a brief period when decentralization allowed the regency to issue small-scale logging permits. Conflicts with some local communities started when companies preferred to hire migrant labor. However, for some other communities, employment in the concessions provided cash income, while road building to the concessions improved transportation access. With almost no government attention to the border communities, some of the timber businessmen built trust relationships with the communities through the customary leaders by providing support with cash, entrepreneurship, work opportunities and road building (Eilenberg 2012).

In 2005, the national government declared a moratorium on new logging concessions (Eilenberg 2012, 2016), and at the same time, promoted oil palm plantations to improve the development of the border area (Hasudungan 2018). As a result, the logging areas – particularly the forest production areas that were cleared, as well as the community fallow areas – were downgraded to non-forest cultivation area (APL), much of which was designated for oil palm plantations. PT Sinar Mas, the most prominent plantation in Kapuas Hulu, began its operations in 2007 (Direktorat Jenderal Industri Agro 2011). Since then, plantations have expanded rapidly.

Land-use conflicts occur in many areas that are designated for oil palm. In the Seriang sub-watershed, particularly the Badau sub-district, private firms approach the community in various ways. During the early logging concession period, the common practice for appropriating community land was through repeated village visits, building relationships with local regency officers and customary elites, promoting the company agenda and making promises (Hasudungan, 2018; Yuliani et al. 2020). Some companies would hire village leaders as community representatives (Hasudungan, 2018). However, their decision-making and negotiation power vis-à-vis the oil palm companies has been generally weak and highly reliant on facilitation by the regency government. More recently, companies have tried to gain legitimacy through social investments in health and education. Through such investments, they aim to strengthen their relationships with local communities and alleviate land tenure conflicts, thus paving the way for their business operations (ibid).

There is no concrete collaboration between the private sector, government, local society, and NGOs in the context of landscape-scale initiatives. Individual relations with those in power, such as the regency head, still play a significant role in the private sector's support and presence. Personal relationships also influence the private sector's willingness to contribute to a government or community program. TNBKDS personnel, for example, approached fishing enthusiasts for support in fundraising to obtain wild Arowana (Asian bonytongue, *Schlerophages formosus*)²⁵ fish stock released in the

25 Arowana is an endemic species which almost extinct in the wild due to its expensive price. As expensive as IDR 875 million (USD 59,000). <https://wartakota.tribunnews.com/2019/06/23/heboh-ikan-arwana-super-red-kapuas-hulu-kalbar-terjual-senilai-rp-875-juta-di-china>.

“protected community lake” in Melemba village (Interview with G. Hartono, Danau Sentarum and Betung Kerihun national park officer, February 2020).

In summary, this section shows the challenges in bridging conservation and development objectives among communities, NGOs, governments, and private sectors. Despite the many attempts to build multi-sectoral platforms to promote coordination, many of the initiatives by outsiders remain isolated projects. There have been no significant changes made in private-sector engagement with conservation initiatives since the “New Order” era of President Suharto. Yet engaging the private sector is a necessary step that can lead to an improved landscape governance (Sayer et al. 2015).

The APDS, KPPs, and the national park staff rigorously build networks with the private sector. Although collaboration exists in the study area, it happens on a small scale. Existing collaboration with the private sector was built over time after a consistent relationship, both formal and informally. Engaging private actors requires a continuous, clear, and transparent approach to communicating interest and purpose between actors. Informal communication also plays a significant role in establishing cooperation and collaboration as suggested by the ten principles for ILAs (Sayer et al. 2013). Implementing ILAs in a broader context will help in strengthening the network (Riggs et al. 2018) that has been established. ILAs provide a platform for actors to communicate openly, horizontally, and vertically. Information sharing can thus reach a wider network, and stakeholders will be able to identify similar interests. As a result, ILAs can bridge conservation and development goals and scale up collaboration (Langston et al. 2019; Reed et al. 2020) beyond the private sector. It is also important to note, as shown in this chapter, that despite the importance of the formal setting and legal context in setting geographical boundaries, informal connections and communication are essential, allowing individual actors to fluidly share information and opinions.

10.4 The way forward

The environmental, social and economic challenges facing the Kapuas Hulu landscape require concerted efforts to implement an ILA. However, the complexity of tenure and governance arrangements poses a challenge. The regency spatial planning agency has allocated areas for development, cultivation, and conservation where each priority is mandated to particular agencies. National, provincial, regency and village authorities operate in the landscape with different conservation and development approaches and overlapping jurisdictions, responsibilities and budgets. The addition of ill-coordinated bilateral, NGO, public-private and private initiatives further complicates the institutional landscape.

We identified several established forums that are already well known among the local government, users groups, and the local communities in our landscape. We recognize some forums’ weaknesses and strengths, which helped us understand how ILA principles can further engage and empower these forums to be more effective, linked, and collaborative. Supporting the existing forums will allow us to reach out to the

communities and groups they represent, and hopefully open the door to building the trust to work together on landscape management.

The work of NGOs and their past and present initiatives have had a positive impact on community empowerment; not only financially, but also in terms of enhancing capacity. Such community-based conservation-development initiatives can be promising entry points for the operationalization and implementation of a landscape approach (Foli et al. 2018), but these must be strengthened and scaled up to sub-district or sub-watershed level. In parallel, existing discussion platforms could play a role in facilitating the necessary links between community, governmental and civic actors in the landscape for collaboration and mutual support.

References

- Aliansi Organisme Indonesia (AOI) 2012. *Madu hutan organisme Sentarum: Sebuah upaya komunitas periau untuk pelestarian hutan dan membangun kemandirian ekonomi (Sentarum organic wild honey: an effort by the Periau community to conserve forest and develop economic independence)* Bogor: <http://aoi.ngo/web/>. AOI.
- Anshari G, Kershaw AP and van der Kaars S. 2001. A late Pleistocene and Holocene pollen and charcoal record from peat swamp forest, Lake Sentarum wildlife reserve, West Kalimantan, Indonesia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 173(3–4): 213–228. [https://doi.org/10.1016/S0031-0182\(01\)00246-2](https://doi.org/10.1016/S0031-0182(01)00246-2).
- Anshari G, Kershaw AP, van der Kaars S and Jacobsen G. 2004. Environmental change and peatland forest dynamics in the Lake Sentarum area, West Kalimantan, Indonesia. *Journal of Quaternary Science* 19(7): 637–655. <https://doi.org/10.1002/jqs.879>.
- Ashton PS. 1988. Dipterocarp biology as a window to the understanding of tropical forest structure. *Annual Review of Ecology and Systematics* 19(1): 347–370.
- Basuki TM, van Laake PE, Skidmore AK and Hussin YA. 2009. Allometric equations for estimating the above-ground biomass in tropical lowland Dipterocarp forests. *Forest Ecology and Management* 257(8): 1684–1694. <https://doi.org/10.1016/j.foreco.2009.01.027>.
- BPS-Kapuas Hulu Regency. 2018. *Employment Statistics of Kapuas Hulu Regency*, Kapuas Hulu.
- BPS-Kapuas Hulu Regency. 2019a. *Badau sub-district in figures 2019*, Kapuas Hulu.
- BPS-Kapuas Hulu Regency. 2019b. *Kecamatan Batang Lupar Dalam Angka 2019*. <https://doi.org/1102001.6108.210>.
- BPS - Kapuas Hulu Regency. 2020. *Kapuas Hulu Regency in Figures 2020*, Kapuas Hulu.
- Caldecott J and Miles L. 2005. World atlas of great apes and their conservation. In Caldecott, J and Miles L. (eds.) *Prepared at the UNEP World Conservation Monitoring Centre*. Berkeley: University of California Press.
- Colfer CJP, Salim A, Wadley RL and Dudley RG. 2000. Understanding patterns of resource use and consumption: A prelude to co-management. *Borneo Research Bulletin* 31: 29–38.

- de Jong W. 2000. Micro-differences in local resource management: The case of honey in West Kalimantan, Indonesia. *Human Ecology* 28: 631–639.
- Direktorat Jenderal Industri Agro. 2011. Sinar Mas Grup Bangun Dua Pabrik CPO, retrieved 5 May 2020. <http://www.kemenperin.go.id/artikel/1217/Sinar-Mas-Grup-Bangun-Dua-Pabrik-CPO>.
- Direktorat Wilayah Pengelolaan dan Penyiapan Areal Pemanfaatan Kawasan Hutan. 2012. *Petunjuk Teknis Tata Hutan dan Penyusunan Rencana Pengelolaan Hutan KPHL dan KPHP*.
- Dudley, RG. 2000. The fishery of Danau Sentarum. *Borneo Research Bulletin* 31: 261–306.
- Eilenberg, M. 2012. The confession of a timber baron: patterns of patronage on the Indonesian–Malaysian border. *Identities* 19(2): 149–167. <https://doi.org/10.1080/1070289x.2012.672841>.
- Eilenberg M. 2016. A State of fragmentation: Enacting sovereignty and citizenship at the edge of the Indonesian state. *Development and Change* 47(6): 1338–1360. <https://doi.org/10.1111/dech.12272>.
- Eilenberg M and Wadley, RL. 2009. Borderland livelihood strategies: The socio-economic significance of ethnicity in cross-border labour migration, West Kalimantan, Indonesia. *Asia Pacific Viewpoint* 50(1): 58–73. <https://doi.org/10.1111/j.1467-8373.2009.01381.x>.
- Foli S, Ros-Tonen MAF, Reed J and Sunderland T. 2018. Natural resource management schemes as entry points for integrated landscape approaches: Evidence from Ghana and Burkina Faso. *Environmental Management* 62(1): 82–97. <https://doi.org/10.1007/s00267-017-0866-8>.
- Freeman OE, Duguma LA, and Minang, PA. 2015. Operationalizing the integrated landscape approach in practice. *Ecology and Society* 20(1). <https://doi.org/10.5751/ES-07175-200124>.
- Giesen W. 1987. *Danau Sentarum Wildlife Reserve: Inventory, ecology, and management guidelines*. Bogor, Indonesia: WWF.
- Giesen W and Aglionby J. 2000. Introduction to Danau Sentarum National Park, West Kalimantan. *Borneo Research Bulletin* 31: 5–28.
- Ginting T. 2017. *Valuasi ekonomi dan alternatif kebijakan pengelolaan kawasan taman nasional danau sentarum thasia ginting*. Bogor Agricultural University (IPB).
- Hadrian P. 2017. Kehidupan Orangutan di alam harusnya bebas ancaman. *Mongabay*. Retrieved 19 July 2020. <https://www.mongabay.co.id/2017/12/04/kehidupan-orangutan-di-alam-harusnya-bebas-ancaman/>.
- Hakim S. 2017. Pemerintah pusat tetapkan Kapuas Hulu sebagai kawasan ekosistem esensial. *Tribun Pontianak*. Retrieved 23 July 2020. <https://pontianak.tribunnews.com/2017/10/20/pemerintah-pusat-tetapkan-kapuas-hulu-sebagai-kawasan-ekosistem-esensia>.
- Harwell EE. 2010. Fluid landscapes and contested boundaries in Danau Sentarum. *Borneo Research Bulletin* 41: 36–62.
- Hasudungan A. 2018. *Political Ecology of Palm Oil Development in the Kapuas Hulu District of West Kalimantan*. PhD dissertation, University of Sydney.

- Heri V, Yuliani EL and Indriatmoko Y. 2010. Interacting threats and challenges in protecting Danau Sentarum, *Borneo Research Bulletin* 41:7 4–100.
- KPHP Model Kapuas Hulu 2015. *Rencana Pengelolaan Jangka Panjang 2015 - 2024 Kesatuan Pengelolaan Hutan Produksi Model Kabupaten Kapuas Hulu Provinsi Kalimantan Barat* (Long-term management plan 2015-2024 Forest Management Unit Model Kapuas Hulu Regency of West Kalimantan Province). Kapuas Hulu Regency: The Government Agency of Agriculture and Forestry.
- Langston JD, McIntyre R, Falconer K, Sunderland T, van Noordwijk M and Boedhihartono AK. 2019. Discourses mapped by Q-method show governance constraints motivate landscape approaches in Indonesia. *PLoS ONE* 14(1): 1–22. <https://doi.org/10.1371/journal.pone.0211221>.
- Labrière N, Laumonier Y, Locatelli B, Vieilledent G and Comptour M. 2015. Ecosystem services and biodiversity in a rapidly transforming landscape in northern Borneo. *PLoS ONE* 10(10), e0140423.
- Laumonier Y, Simamora T, Manurung A, Narulita S., Pribadi U, Simorangkir A and Shantiko B. 2020a. *Sentinel landscapes initiative: Stocktake and baseline data analysis for future landscape management and monitoring in West Kalimantan*. FTA Working Paper 5. Bogor, Indonesia: CIFOR.
- Laumonier Y, Hadi DP, Pribadi UA, Narulita S. 2020b. Kapuas Hulu ecological vegetation map 1:50000, CIFOR. Available at: <https://doi.org/10.17528/CIFOR/DATA.00202>, Bogor, Indonesia.
- Leonald L, and Rowland D. 2016. Drivers and effects of agrarian change in Kapuas Hulu Regency, West Kalimantan, Indonesia. In Deakin L, Kshatriya M and Sunderland T (eds.) *Agrarian Change in Tropical Landscapes*. 91–138. <https://doi.org/10.17528/cifor/005867>. Bogor, Indonesia: CIFOR.
- Li TM. 2007. Practices of assemblage and community forest management. *Economy and Society* 36(2): 263–293. <https://doi.org/10.1080/03085140701254308>.
- Lusiana B, Widodo R, Mulyoutami E, Nugroho DA, and van Noordwijk M. 2008. *Kajian kondisi hidrologis DAS Kapuas Hulu, Kabupaten Kapuas Hulu, Kalimantan Barat* (World Agroforestry Center Working Paper No 60). Bogor.
- Manuri S, Brack C, Nugroho NP, Hergoualc'h K, Novita N, Dotzauer H, ... Widyasari E. 2014. Tree biomass equations for tropical peat swamp forest ecosystems in Indonesia. *Forest Ecology and Management* 334: 241–253. <https://doi.org/10.1016/j.foreco.2014.08.031>.
- Moeliono M, Thuy PT, Bong IW, Wong GY and Brockhaus M. 2017. Social forestry-why and for whom? A comparison of policies in Vietnam and Indonesia. *Forest and Society* 1(2): 78–97. <https://doi.org/10.24259/fs.v1i2.2484>.
- Muhyidin A. 2017. *When the Forest is Depleted: Resource Governance in the Border Regions of Kapuas Hulu in West Kalimantan, Indonesia*. ASEAN-Canada Research Partnership Working Paper Series No. 5. Singapore: RSIS.
- Myers R, Sanders AJP, Larson AM, Prasti RD and Ravikumar A. 2016. Analyzing multilevel governance in Indonesia: Lessons for REDD+ from the study of landuse change in Central and West Kalimantan. *CIFOR working paper 202*. <https://doi.org/10.17528/cifor/006058>.

- Oxtora R. 2019. Bupati Kapuas Hulu minta regulasi jelas terkait Kratom (Kapuas Hulu regency head demanding a clear regulation on kratom). *ANTARA News.com*, 5 November 2019, retrieved July 18, 2020. <https://www.antaranews.com/berita/1147664/bupati-kapuas-hulu-minta-regulasi-jelas-terkait-kratom>.
- Prayogo H, Thohari, Machmud A, Solihin, Duryadi D, Prasetyo, ... Jito. 2016. Pemodelan kesesuaian habitat orangutan kalimantan (*Pongo pygmaeus pygmaeus* Linn, 1760) di koridor satwa Kapuas Hulu Kalimantan Barat. *Journal Penelitian Hutan dan Konservasi Alam* 13(2): 137–150.
- Reed J, Deakin L, Sunderland T. 2014. What are ‘integrated landscape approaches’ and how effectively have they been implemented in the tropics: a systematic map protocol. *Environmental Evidence* 4(2): 1–7.
- Reed J, Van Vianen J, Deakin EL, Barlow J, Sunderland T. 2016. Integrated landscape approaches to managing social and environmental issues in the tropics: Learning from the past to guide the future. *Global Change Biology* 22(7): 2540–2554. <https://doi.org/10.1111/gcb.13284>.
- Reed J, Ickowitz A, Chervier C, Djoudi H, Moombe K, Ros-Tonen M ... Sunderland T. 2020. Integrated landscape approaches in the tropics: A brief stock-take. *Land Use Policy* 99: 104822. <https://doi.org/10.1016/j.landusepol.2020.104822>.
- Rezkisari I. 2019. Tokoh adat minta presiden temui petani kratom (Customary leader inquiry to the President to meet with the kratom farmers. *Republika*, retrieved 18 July 1 2020. <https://nasional.republika.co.id/berita/qojcmm328/tokoh-adat-minta-presiden-temui-petani-kratom>.
- Roslinda E, Darusman D, Suharjito D, Nurrochmat DR. 2012. Stakeholders analysis on the management of Danau Sentarum National Park Kapuas Hulu Regency West Kalimantan Province. *Jurnal Manajemen Hutan Tropika (Journal of Tropical Forest Management)* 18(2): 78–85. <https://doi.org/10.7226/jtfm.18.2.78>.
- Russon AE, Erman A and Dennis R. 2001. The population and distribution of orangutans (*Pongo pygmaeus pygmaeus*) in and around the Danau Sentarum Wildlife Reserve, West Kalimantan, Indonesia. *Biological Conservation* 97(1): 21–28, [https://doi.org/10.1016/S0006-3207\(00\)00087-2](https://doi.org/10.1016/S0006-3207(00)00087-2).
- Sada C, Alas Y, Anshari M. 2019. Indigenous people of Borneo (Dayak): Development, social cultural perspective and its challenges. *Cogent Arts and Humanities* 6(1). <https://doi.org/10.1080/23311983.2019.1665936>.
- Sahide MAK, Supratman S, Maryudi A, Kim YS. and Giessen L. 2016. Decentralisation policy as recentralisation strategy: Forest management units and community forestry in Indonesia. *International Forestry Review* 18(1): 78–95, <https://doi.org/10.1505/146554816818206168>.
- Sayer J, Margules C, Boedhihartono AK, Dale A, Sunderland T, Supriatna J, Saryanthi R. 2015. Landscape approaches: What are the pre-conditions for success? *Sustainability Science* 10(2): 345–355. <https://doi.org/10.1007/s11625-014-0281-5>.
- Sayer J, Sunderland T, Ghazoul J, Pfund JL, Sheil D, Meijaard E... Buck LE. 2013. Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses. *Proceedings of the National Academy of Sciences of the United States of America* 110(21): 8349–8356. <https://doi.org/10.1073/pnas.1210595110>.

- Shantiko B, Fripp E, Taufiqoh T, Heri T, Laumonier Y. 2013. Socio-economic considerations for land-use planning: The case of Kapuas Hulu, West Kalimantan. *CIFOR Working Paper 120*, 63 p. <https://doi.org/10.17528/cifor/004349>.
- Sunderland TCH, Ehringhaus C, Campbell BM. 2008. Conservation and development in tropical forest landscapes: A time to face the trade-offs? *Environmental Conservation* 34(4): 276–279. <https://doi.org/10.1017/S0376892908004438>.
- Sunkar A, and Santosa Y. 2018. Biodiversity conservation at Betung Kerihun National Park: The positive role of customary law in mitigating a local community trust deficit. *IOP Conference Series: Earth and Environmental Science* 196: 012024. <https://doi.org/10.1088/1755-1315/196/1/012024>.
- Wadley RL, and Eilenberg M. 2005. Autonomy, identity, and ‘illegal’ logging in the borderland of West Kalimantan, Indonesia. *Asia Pacific Journal of Anthropology* 6(1): 19–34. <https://doi.org/10.1080/14442210500074853>.
- Whitmore TC. 1984. *Tropical Rain Forests of the Far East*. 2nd edn. Oxford: Clarendon.
- Wollenberg E, Moeliono M, Limberg G. 2009. Riding the rapids: Synthesis and conclusion, In: Moeliono M, Wollenberg E and Limberg G, eds. *The Decentralization of Forest Governance: Politics, Economics and the Fight for Control of Forests in Indonesian Borneo*. London: Earthscan. 281-298.
- WWF 2010. Financing the Heart of Borneo - A Partnership Approach to Economic Sustainability. http://awsassets.panda.org/downloads/financing_the_heart_of_borneo_pdf.
- WWF 2008. Heart of Borneo Indonesia. Secretariat of National Working Group Heart of Borneo. *Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry Republic Indonesia*. <http://heartofborneo.or.id/en/>.
- Wulffraat S, Faisal KF, Wedastra IBK, Shapiro A. 2014. *The Environmental Status of the Heart of Borneo*. WWF HoB Initiative.
- Yuliani EL, Adnan H, Achdiawan R, Bakara D, Heri V, Sammy J... Sunderland T. 2018. The roles of traditional knowledge systems in orang-utan *Pongo* spp. and forest conservation: A case study of Danau Sentarum, West Kalimantan, Indonesia. *Oryx* 54(1): 156–165. <https://doi.org/10.1017/S0030605316000636>.
- Yuliani EL, Jong EBP de, Knippenberg L, Bakara DO, Salim MA, Sunderland T. 2018. Keeping the land: Indigenous communities’ struggle over land use and sustainable forest management in Kalimantan, Indonesia. *Ecology and Society* 23:49.
- Yuliani EL, Groot WT de, Knippenberg L, Bakara DO. 2020. Forest or oil palm plantation? Interpretation of local responses to the oil palm promises in Kalimantan, Indonesia. *Land Use Policy* 96:104616.