USAID
FROM THE AMERICAN PEOPLE

UNDERSTANDING THE DRIVERS OF DEFORESTATION AND THE POLICIES INCENTIVIZING FOREST CONVERSION IN FOREST AND PEATLAND IN THE LEUSER LANDSCAPE

FEBRUARY 14, 2019

This publication was produced for review by the United States Agency for International Development. It was prepared by Tetra Tech ARD.

This publication was prepared for review by the United States Agency for International Development under Contract # AID-497-TO-15-00005.

The period of this contract is from July 2015 to July 2020.

Implemented by:
Tetra Tech
P.O. Box 1397
Burlington, VT 05402

Tetra Tech Contacts:
Reed Merrill, Chief of Party
Reed.Merrill@lestari-indonesia.org

Rod Snider, Project Manager
Rod.Snider@tetratech.com

Cover: Palm oil plantation at the border of Rawa Singkil Wildlife Reserve in Le Meudama Village, Trumon, Aceh Selatan.

UNDERSTANDING THE DRIVERS OF DEFORESTATION AND THE POLICIES INCENTIVIZING FOREST CONVERSION IN FOREST AND PEATLAND IN THE LEUSER LANDSCAPE

FEBRUARY 14, 2019

DISCLAIMER
This publication is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this publication are the sole responsibility of Tetra Tech ARD and do not necessarily reflect the views of USAID or the United States Government.

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

Tables

Figures

LIST OF ABBREVIATIONS AND ACRONYMS

Bappeda	Badan Perencanaan Pembangunan Daerah
Bappenas	Badan Perencanaan Pembangunan Nasional
BKSDA	Balai Konservasi Sumber Daya Alam
BPKH	Balai Pemantapan Kawasan Hutan
BTN	Balai Taman Nasional
BBKSDA	Balai Besar Konservasi Sumber Daya Alam
BBTN	Balai Besar Taman Nasional
CA	Cagar Alam
CPO	Crude Palm Oil
FAO	Food and Agricultural Organization
FFB	Fresh Fruit Bunches
GAP	Good Agricultural Practices
GAR	Golden Agri-Resources
GDP	Gross Domestic Product
GHG	Greenhouse gas
GRK	Gas rumah kaca
KPHK	Kesatuan Pengelolaan Hutan Konservasi
LSM	Lembaga Swadaya Masyarakat
MoEF	Ministry of Environment and Forestry
NDC	Nationally Determined Contribution
PP	Peraturan Pemerintah
RPJMN	Rencana Pembangunan Jangka Menengah
RSPO	Roundtable on Sustainable Oil Palm
SM	Suaka Margasatwa/Wildlife Reserve
SMART	Spatial Monitoring and Reporting Tool
USAID	United States Agency for International Development
WCS-IP	Wildlife Conservation Society – Indonesia Program
WR	Wildlife Reserve

EXECUTIVE SUMMARY

This report provides an analysis of encroachment and the drivers of deforestation and peatland conversion in the Leuser Landscape, with a focus on Rawa Singkil Wildlife Reserve (WR). This builds on an initial situation analysis conducted by USAID LESTARI on the crucial role of peatland ecosystems in Aceh Province and the recommended steps to addressing the gaps in existing efforts to safeguard Rawa Singkil WR. This report recommends approaches for tackling deforestation and protecting the integrity of the peatland ecosystem, including through mitigating the conversion pressures associated with palm oil production. The findings lay out a vision for the long-term sustainability of the reserve. These approaches are consistent with USAID LESTARI's technical scope in supporting the Government of Indonesia to reduce greenhouse gas (GHG) emissions and conserve biodiversity in carbon rich and biologically significant forest and mangrove ecosystems and build on its existing support for the Leuser Landscape.

Rawa Singkil WR, spanning three districts in Aceh province[1], is designated as a Natural Conservation Area[2] and Conservation Forest Management Unit[3]. The reserve is Aceh's largest remaining intact peatland and comprises the following main ecosystem types: tropical forest, peat swamp, river and coastal area. These unique and fragile ecosystems provide important habitat for endangered wildlife, notably the Critically Endangered Sumatran orangutan (*Pongo abelii*)[4]. They also provide important environmental services both locally and globally; such as through hydrological regulation, which prevents surrounding communities from flooding during the rainy season, and by providing vital carbon storage and preventing methane (CH_4) emissions into the atmosphere. The area is threatened by encroachment and oil palm development along the border, which threatens the integrity of the ecosystem and negatively impacts wildlife and local livelihoods alike. To further understand these risks and the opportunities to mitigate them, the Wildlife Conservation Society (WCS), under USAID LESTARI, assessed the major threats facing the Rawa Singkil WR and surrounding landscape, including the main causes of deforestation and the connections to commodity supply chains.

This report provides an analysis of encroachment and deforestation patterns, including for oil palm, in Rawa Singkil WR, using satellite imagery and field research data conducted between January 2017 and August 2018. The analysis found that the rate of deforestation in the reserve's buffer zone was 1.26% (1,169 ha/year) and 0.29% (230 ha/year) inside the reserve. Deforested areas in the buffer zone are dominated by oil palm plantations (21,976 ha) and shrubs (17,803 ha). Deforested areas inside the reserve are dominated by shrubs (4,412 ha), however 77 ha of smallholder plantations were also found. However, this is likely to be an underestimate of the encroachment associated with plantations. Additional areas of encroachment exist, including those cleared by burning, however these have yet to be planted and are not therefore classified as plantations. Field research found that farmers have small plantations (1-2.5 ha) with low productivity. In some areas, local residents have cleared land to sell to migrants.

Supply chain assessments in Subulussalam City and the districts of Singkil and Aceh Selatan identified the links between plantations that overlap with, and are adjacent to, the reserve boundary and mills and refineries along the palm oil supply chain. Smallholders sell

[1] Aceh Singkil District, comprising the sub-districts of Singkil, Kota Baharu and Kuala Baru; Aceh Selatan District comprising the sub-districts of Trumon and East Trumon; and Subulussalam City comprising the sub-districts of Rundeng and Longkip.

[2] Based on Decree of the Minister of Forestry no. 166/Kpts-II/1998

[3] Based on regulation of the Minister of Environment and Forestry SK 980/Menhut-II/2013

[4] Around 11,000 orangutan in the Leuser ecosystem, over 1,200 individuals live in Singkil.

fresh fruit bunches (FFB) directly to collectors at the village level, with prices ranging from Rp1,000-1,400/kg. Three collectors were identified to be operating in the southeast and east of the reserve and another three collectors were identified in the northeast and northern area. Collectors sell to nearby processing plants, although in some cases collectors do not visit villages and communities therefore supply mills directly, including to PT Lembah Bhakti II, PT Samudera Sawit Nabati, PT Global Sawit Semesta, PT Nafasindo, and PT Rundeng.

Chain of custody (CoC) and desk-based research identified additional mills in the area surrounding Rawa Singkil WR and the buyers of crude palm oil (CPO) and palm kernel from these mills. These include refineries in Medan belonging to the Singapore-based palm oil companies of Wilmar, Golden Agri-Resources and Musim Mas. Engagement with these companies has been initiated to raise awareness of the sourcing risks, as well as to explore the potential solutions in the Singkil landscape. These companies and their buyers have commitments to achieving sustainable supply chains. This creates opportunities for building on their existing approaches, including efforts to achieve traceability, mill risk assessments, supplier engagement, smallholder mapping and support for independent smallholders to implement good agricultural practices and improve their yields, while ensuring no encroachment. These would form part of the recommended next steps for USAID LESTARI support.

The focus of subnational governments on increasing the production of agricultural, plantation and livestock commodities poses a threat by increasing land conversion pressure on Rawa Singkil WR. The Subulussalam City Government plans to increase the production of agricultural products, including rice, maize and soy; plantation crops, including oil palm, cacao and rubber; and livestock. The Aceh Singkil District Government also plans to increase the production of rice, maize, oil palm, rubber and livestock. The long-term development plan (2008-2028) for the district of Aceh Selatan similarly states its aim to develop and grow the plantation, industrial processing, mining and tourism sectors. The agricultural sector in particular acts as the main pillar of the district economy with a contribution to local GDP of up to 40%. These subnational government plans are in line with the national government target (RPJMN 2015-2019 Book II), which includes a target of increasing rice production from 2014-2019 by 3.0%, maize by 4.7%, soy by 22.7% and beef by 10.8%. The national government mid-term plan also focuses on other commodities for agribusiness development and sustainable agriculture, such as palm oil (4.3%), rubber (3.5%), cacao (3.0%) and coffee (1.8%). Following the Government of Indonesia's budgeting policy, these targets guide the prioritization of the government's budget allocation and therefore national investment in these activities. The national government has also set a target for increasing 9,000 large-scale industries and 20,000 small-scale industries outside of Java. The national government will therefore promote investment into the industrial processing of agricultural, mining and other natural resources proposed by subnational governments.

The three district governments have identified the area surrounding Rawa Singkil WR as suitable for plantation and agricultural development due to its flat topography and abundant water supply. Although the district and city governments have established targets to reduce land and forest degradation, it is clear that there will be trade-off between these sectoral targets.

At the provincial level, despite significant investments in the agricultural sector, in 2016 the Governor of Aceh issued an instruction for a year-long moratorium on the issuance of permits for oil palm plantations and in 2017, extended the moratorium for an additional six months. Similarly, in 2018 the President of Indonesia instructed relevant ministries and provincial and district governments throughout Indonesia to halt the issuance of new permits

for oil palm plantations, to review existing permits and improvements in oil palm productivity and to halt the conversion of forests to oil palm[5].

To address deforestation in Rawa Singkil WR and protect the integrity of the peatland ecosystem, approaches are needed both inside and outside of the reserve. Collectively, these approaches should reduce threats and increase the effectiveness of existing conservation efforts thereby supporting the long-term sustainability of the reserve.

The following recommendations are made for “in reserve” approaches. These should be led by BKSDA Aceh with support from conservation partners, including NGOs and aid agencies and the involvement of other government agencies, where relevant:

- Complete the demarcation and socialization of the reserve boundary. The demarcation process requires coordination between multiple government agencies in line with the Minister of Environment and Forestry regulation on Forest Area Boundary Committee (P25/Menhut-II/2014). This process should be chaired by the head of the committee (BPKH) and involve the three district and city governments, including the Provincial Forestry Office, Bappeda, Land Agency, and representatives of the subdistricts and others. This is an important milestone towards addressing encroachment and deforestation in the reserve. During the demarcation process, the committee should ensure adequate socialization of the boundary to communities and plantation companies around Rawa Singkil WR. Raising awareness of the boundary location is a vital step to addressing encroachment, especially as many smallholders growing oil palm inside Rawa Singkil WR are likely to state that they do not know the location of the reserve boundary.
- Increase the intensity of monitoring and patrols in the Singkil WR. Currently, three SMART (Spatial Monitoring and Reporting Tool) patrol teams involving BKSDA Aceh and conservation partners operate in the reserve with USAID LESTARI support. The teams have made rapid progress in tackling illegal logging and in patrolling the reserve boundary. However, three teams are not sufficient to cover the entire reserve. So, increasing the intensity of patrol team activities to increase their coverage is predicted to disincentivize illegal entry into the reserve.
- BKSDA Aceh, with support from conservation partners, should assess the typology of tenurial conflict in the reserve to define appropriate conflict resolution interventions, building on the analysis conducted by USAID BIJAK in five conservation areas in Indonesia (Widodo et al. 2019, in preparation). The assessment that we propose would include social mapping to understand the scale, intensity and impact of tenurial conflict; stakeholder mapping to understand the stakeholders involved in, or potentially affected by, the conflict; and, a spatial analysis to identify the locations where conflict has occurred inside a conservation area. Information collected from these activities would be used to define the best approach for addressing encroachment inside the Rawa Singkil WR. The possible intervention might include: law enforcement, conservation partnerships, resettlement, exclusion from encroached areas inside the conservation area, or partially rezoning of encroached areas inside the reserve.
- Establish a system to frequently monitor deforestation in the Singkil landscape. Led by BKSDA Aceh and conservation partners, this system would alert SMART patrol teams enabling a more rapid response to illegal activities occurring inside the reserve.
- To address illegal logging in Rawa Singkil WR, BKSDA Aceh and its conservation partner/s should conduct a socio-economic survey to better understand the underlying drivers of this illicit activity, its possible link with oil palm encroachment, and the main economic challenges faced by communities. This information would be used to develop

[5] Instruksi Presiden Republik Indonesia No. 8 tahun 2018 Penundaan dan Evaluasi Perizinan Perkebunan Kelapa Sawit serta Peningkatan Produktivitas Perkebunan Kelapa Sawit

locally-appropriate solutions for improving community livelihoods and reducing their demand for timber from inside the reserve.

Approaches to address the threats from outside of the reserve will require collaboration amongst multiple stakeholders, including smallholder farming communities, and other actors and companies operating along the palm oil supply chain, as well as relevant district government agencies. As the management authority of the reserve, BKSDA Aceh should lead the process. However, these approaches require a long-term process and a variety of skillsets in engaging with multiple stakeholders, with varying perspectives and motivations. BKSDA Aceh will therefore need support from partners with relevant experience in this regard, with different partners subsequently leading in the implementation of strategies to meet the overall vision of BKSDA Aceh. “Out of reserve” approaches should include:

- Facilitated by partners, such as USAID LESTARI, BKSDA Aceh should establish and facilitate a forum involving all stakeholders along the palm oil supply chain to increase their awareness of deforestation issues and other supply chain risks in Singkil. Once stakeholders have a shared understanding of this issue, BKSDA Aceh should seek to secure a joint commitment amongst these stakeholders, securing their collective ambition for addressing threats to the landscape. This can then be translated into a joint action plan for the landscape, including clear definition of roles and responsibilities for each stakeholder.
- Comprehensively assess company commitments and the current status of progress towards their achievement as relates to suppliers and the smallholder supply base in the Singkil landscape. Building on research undertaken for this report supported by USAID LESTARI, conservation partners, such as WCS, can conduct this assessment and work with partners, including company sustainability teams and their implementing partners, to increase the efficiency and impact of their efforts.
- On-the-ground conservation NGOs should work with the implementing partners of oil palm companies, such as The Forest Trust or Daemeter, and the company’s sustainability team to ensure alignment of company traceability efforts, supplier engagement and corrective actions, with a particular focus on common, non-compliant suppliers.
- BKSDA Aceh and on-the-ground NGOs should support improved knowledge, attitudes and practices related to conservation by communities and companies with plantations in the area surrounding Rawa Singkil WR.
- Companies and their implementing partners can support improved productivity, sustainability and community livelihoods among their collective smallholder supply base in the areas around Rawa Singkil WR. Supporting good agricultural practices (GAP) and access to inputs that improve smallholder productivity, which at 1-1.5 ton/ha is low, and enhancing organizational development of farmers by strengthening farmer groups and/or cooperatives. This should aim to optimize and intensify sustainable land use to increase oil palm productivity while reducing the threat of encroachment.
- Oil palm companies, their implementing partners and local government, with the support of conservation NGOs, should explore the feasibility of additional performance-based incentives to ensure against future encroachment.
- BKSDA Aceh and USAID LESTARI should align deforestation monitoring and SMART patrols within Rawa Singkil WR to inform the above “out of reserve” activities and ensure positive conservation impacts in adjacent areas within Rawa Singkil WR
- BKSDA Aceh to engage end buyers through direct and indirect dialogue as a way to increase supply chain leverage to influence supplier practices and support the achievement of buyer commitments to source legal and ‘compliant’ palm oil. Explore

opportunities to gain end buyers and refinery company support (including technical, in-kind and financial support) for implementation of the above landscape-level interventions to support community livelihoods and ecosystem conservation. It may be appropriate for an NGO partner to provide technical assistance to BKSDA Aceh here.

- Governors and district heads should support the implementation of Presidential Instruction Number 8/2018 by evaluating area release permits for oil palm estates in the area surrounding Rawa Singkil WR and postpone the issuance of permits for oil palm plantations for three years.

RINGKASAN EKSEKUTIF

Laporan ini menyajikan analisis perambahan hutan serta pendorong deforestasi dan konversi lahan gambut di Lansekap Leuser, dengan fokus pada Suaka Margasatwa (SM) Rawa Singkil. Analisis ini melanjutkan analisis situasi awal yang didukung oleh USAID LESTARI sebelumnya mengenai peran penting ekosistem lahan gambut di Provinsi Aceh dan rekomendasi langkah – langkah untuk mengatasi kesenjangan dalam upaya perlindungan SM Rawa Singkil saat ini. Laporan ini merekomendasikan pendekatan – pendekatan untuk mengatasi deforestasi dan melindungi integritas ekosistem lahan gambut, termasuk dengan mengatasi tekanan konversi yang terkait dengan produksi minyak kelapa sawit. Temuan – temuan yang didapatkan juga mengemukakan visi keberlanjutan jangka panjang kawasan. Pendekatan – pendekatan tersebut konsisten dengan ruang lingkup teknis USAID LESTARI dalam mendukung Pemerintah Indonesia mengurangi emisi gas rumah kaca (GRK) dan melestarikan keanekaragaman hayati dalam ekosistem hutan dan mangrove yang kaya karbon dan signifikan keanekaragaman hayatinya serta melanjutkan dukungan yang selama ini diberikan terhadap lansekap tersebut.

SM Rawa Singkil yang mencakup tiga wilayah di provinsi Aceh[6], ditetapkan sebagai Kawasan Konservasi Alam[7] dan Kesatuan Pengelolaan Hutan Konservasi[8]. SM ini merupakan lahan gambut utuh terbesar yang tersisa di Aceh dan terdiri dari tipe – tipe ekosistem utama berikut: hutan tropis, rawa gambut, sungai dan daerah pesisir. Ekosistem – ekosistem unik ini menyediakan habitat penting bagi satwa liar yang terancam punah, terutama orangutan Sumatra (*Pongo abelii*) yang Sangat Terancam Punah[9]. Seluruh ekosistem ini juga menyediakan jasa lingkungan yang penting baik secara lokal maupun global; seperti melalui regulasi hidrologis yang mencegah masyarakat sekitar dari bencana banjir selama musim hujan, dan dengan menyediakan penyimpanan karbon yang penting dan mencegah emisi metana (CH_4) ke atmosfer. Kawasan ini terancam oleh perambahan dan produksi kelapa sawit di sepanjang perbatasannya, yang tidak hanya mengancam integritas ekosistem dan berdampak negatif terhadap kehidupan liar, namun juga mata pencaharian lokal. Untuk lebih memahami resiko – resiko yang ada dan peluang untuk memitigasi resiko – resiko tersebut, Wildlife Conservation Society (WCS) melakukan penelitian terhadap ancaman utama yang dihadapi SM Rawa Singkil dan lansekap di sekitarnya, termasuk penyebab utama deforestasi dan hubungannya dengan rantai pasokan komoditas.

Laporan ini menyajikan analisis perambahan dan deforestasi, termasuk yang diakibatkan kelapa sawit, di SM Rawa Singkil menggunakan kombinasi citra satelit dan penelitian lapangan intensif yang dilakukan antara bulan Januari 2017 dan Agustus 2018. Analisis yang dilakukan menemukan bahwa laju deforestasi di zona penyangga SM ini adalah 1,26% (1,169 ha/tahun) dan 0,29% (230 ha/tahun) di dalam kawasan. Kawasan – kawasan yang terdampak deforestasi di zona penyangga SM didominasi oleh perkebunan kelapa sawit (21.976 ha) dan semak (17.803 ha), sedangkan di dalam SM didominasi oleh semak-semak (4.412 ha), walaupun 77 ha perkebunan rakyat juga ditemukan. Namun, temuan ini kemungkinan merupakan perkiraan perambahan terkait perkebunan yang terlalu rendah. Masih ada kawasan – kawasan perambahan lainnya, termasuk yang dibuka dengan cara pembakaran, meskipun belum ditanami sehingga tidak diklasifikasikan sebagai perkebunan.

---

[6] Kabupaten Aceh Singkil meliputi kecamatan Singkil, Kota Baharu dan Kuala Baru; Kabupaten Aceh Selatan mencakup kecamatan Trumon dan Trumon timur; dan Kota Subulussalam mencakup kecamatan Rundeng dan Longkip.

[7] Berdasarkan Keputusan Menteri Kehutanan no. 166/Kpts-II/1998

[8] Berdasarkan peraturan Menteri Lingkungan Hidup dan Kehutanan SK 980/Menhut-II/2013

[9] Sekitar 11.000 orangutan di ekosistem Leuser, lebih dari 1.200 individu hidup di Singkil.

Penelitian lapangan menemukan bahwa petani memiliki produktivitas rendah dan luas perkebunan kecil (1,0-2,5 ha). Di beberapa daerah, warga setempat telah membuka lahan untuk dijual kepada pendatang.

Penelitian rantai pasokan di Kota Subulussalam serta kabupaten Singkil dan Aceh Selatan mengidentifikasi hubungan antara perkebunan yang tumpang tindih, dan berbatasan dengan, batas kawasan SM dan pabrik dan kilang di sepanjang rantai pasokan minyak kelapa sawit. Petani menjual tandan buah segar (TBS) langsung ke pengepul lokal, dengan harga antara Rp1.000 - 1.400/ kg. Tiga pengepul teridentifikasi beroperasi di tenggara dan timur SM dan tiga pengepul lainnya teridentifikasi di wilayah timur laut dan utara. Para pengepul menjual ke pabrik pengolahan yang dekat lokasinya, meskipun dalam beberapa kasus para pengepul ini tidak mengunjungi desa sehingga masyarakat langsung memasok hasil panen mereka ke pabrik secara langsung, termasuk ke PT Lembah Bhakti II, PT Samudera Sawit Nabati, PT Global Sawit Semesta, PT Nafasindo, dan PT Rundeng.

Penelitian proses pelacakan dokumentasi kepemilikan/*Chain of custody* (CoC) dan studi literatur mengidentifikasi pabrik – pabrik pengolahan lain di sekitar SM Rawa Singkil dan pembeli minyak sawit mentah (CPO) dan kernel sawit dari pabrik – pabrik ini. Pabrik yang dimaksud termasuk kilang di Medan milik perusahaan minyak sawit Wilmar, Golden Agri-Resources, dan Musim Mas yang berbasis di Singapura. Keterlibatan dengan perusahaan-perusahaan ini telah dimulai untuk meningkatkan kesadaran akan resiko – resiko sumber pasokan, serta untuk mengeksplorasi solusi potensial di lansekap Singkil. Perusahaan – perusahaan ini dan para pembelinya memiliki komitmen untuk menciptakan rantai pasokan yang berkelanjutan. Hal ini menciptakan peluang untuk meneruskan pendekatan yang sudah mereka bangun, termasuk upaya – upaya untuk menjamin keterlacakan, uji resiko pabrik, pelibatan pemasok, pemetaan petani kecil dan dukungan bagi petani mandiri untuk menerapkan praktik pertanian yang baik dan meningkatkan hasil panen mereka, sambil memastikan tidak ada perambahan. Hal ini akan menjadi bagian dari rekomendasi langkah selanjutnya bagi dukungan USAID LESTARI.

Fokus program pemerintah daerah pada peningkatan produksi komoditas pertanian, perkebunan, dan peternakan merupakan suatu ancaman karena mengakibatkan meningkatnya tekanan konversi lahan pada SM Rawa Singkil. Pemerintah Kota Subulussalam berencana untuk meningkatkan hasil produksi pertanian, termasuk beras, jagung dan kedelai; tanaman perkebunan, termasuk kelapa sawit, kakao dan karet; dan ternak. Pemerintah Kabupaten Aceh Singkil juga berencana untuk meningkatkan produksi beras, jagung, kelapa sawit, karet dan ternak. Rencana pembangunan jangka panjang (2008-2028) untuk kabupaten Aceh Selatan juga memiliki tujuan untuk mengembangkan dan menumbuhkan sektor perkebunan, industri pengolahan, pertambangan dan pariwisata. Sektor pertanian khususnya bertindak sebagai pilar utama ekonomi kabupaten ini dengan kontribusi terhadap PDB lokal hingga 40%. Berbagai perencanaan oleh pemerintah daerah ini sejalan dengan target pemerintah nasional (RPJMN 2015 - 2019 Buku II), yang mencakup target peningkatan produksi beras antara 2014 – 2019 sebesar 3%, jagung sebesar 4,7%, kedelai sebesar 22,7% dan daging sapi sebesar 10,8%. Rencana jangka menengah pemerintah pusat juga berfokus pada komoditas lain sehubungan dengan pengembangan agribisnis dan pertanian berkelanjutan, seperti minyak kelapa sawit (4,3%), karet (3,5%), kakao (3,0%) dan kopi (1,8%). Menyusul kebijakan penganggaran Pemerintah Indonesia, target – target ini memandu prioritas alokasi anggaran pemerintah yang bermuara pada investasi nasional pada kegiatan – kegiatan tersebut di atas. Pemerintah pusat juga telah menetapkan target untuk meningkatkan 9.000 industri skala besar dan 20.000 industri skala kecil di luar Jawa. Karena itu, pemerintah pusat akan mempromosikan investasi pada pengolahan industri pertanian, pertambangan, dan sumber daya alam lainnya yang diusulkan oleh pemerintah daerah.

Ketiga pemerintah kabupaten di atas telah mengidentifikasi daerah di sekitar SM Rawa Singkil sebagai tempat yang cocok untuk pengembangan perkebunan dan pertanian karena

fitur topografi dan pasokan airnya yang melimpah. Meskipun pemerintah kabupaten dan kota tersebut telah menetapkan target untuk mengurangi degradasi lahan dan hutan, jelas akan ada *trade-off* antara target – target sektoral ini.

Di tingkat provinsi, terlepas dari investasi yang signifikan di sektor pertanian, pada tahun 2016 Gubernur Aceh mengeluarkan instruksi tentang moratorium penerbitan izin untuk perkebunan kelapa sawit selama setahun dan pada tahun 2017, memperpanjang moratorium selama enam bulan. Senada dengan hal ini, pada tahun 2018 Presiden Indonesia menginstruksikan kementerian terkait dan pemerintah provinsi dan kabupaten di seluruh Indonesia untuk menghentikan penerbitan izin baru untuk perkebunan kelapa sawit, meninjau izin yang ada dan peningkatan produktivitas kelapa sawit, dan menghentikan konversi hutan menjadi lahan kelapa sawit[10].

Untuk mengatasi deforestasi di SM Rawa Singkil dan melindungi integritas ekosistem lahan gambut, diperlukan pendekatan baik di dalam maupun di luar kawasan. Secara kolektif, pendekatan ini harus dapat mengurangi ancaman dan meningkatkan efektivitas upaya konservasi yang ada sehingga mendukung keberlanjutan kawasan.

Rekomendasi - rekomendasi berikut dibuat bagi pendekatan – pendekatan "dalam kawasan" yang harus diujungtombaki oleh BKSDA Aceh dengan dukungan dari mitra konservasi, termasuk LSM, dan lembaga bantuan dan keterlibatan lembaga pemerintah lainnya, jika relevan:

- Merampungkan demarkasi dan sosialisasi batas kawasan. Proses demarkasi memerlukan koordinasi antara berbagai lembaga pemerintah sejalan dengan peraturan Menteri Lingkungan Hidup dan Kehutanan tentang Komite Batas Kawasan Hutan (P25/ Menhut-II/ 2014). Proses ini harus diketuai oleh kepala komite (BPKH) yang melibatkan tiga pemerintah kabupaten dan kota, termasuk Dinas Kehutanan Provinsi, Bappeda, Badan Pertanahan, perwakilan bupati dan lain - lain. Ini adalah capaian (milestone) penting bagi penanganan perambahan dan deforestasi di kawasan. Selama proses demarkasi, komite harus memastikan sosialisasi batas kepada masyarakat dan perusahaan perkebunan di sekitar SM Rawa Singkil. Meningkatkan kesadaran akan batas kawasan merupakan langkah penting dalam mengatasi perambahan. Petani kecil yang menanam kelapa sawit di dalam kawasan SM Rawa Singkil seringkali beralasan mereka tidak tahu lokasi batas kawasan.
- Meningkatkan intensitas pemantauan dan patroli di SM Singkil. Saat ini, tiga tim patroli SMART (Spatial Monitoring and Reporting) yang melibatkan BKSDA Aceh dan mitra konservasi beroperasi di kawasan dengan dukungan USAID LESTARI. Tim – tim tersebut telah membuat kemajuan yang sangat baik dalam menanggulangi pembalakan liar dan patroli batas kawasan. Namun demikian, tiga tim yang ada tidak cukup untuk mencakup seluruh area kawasan. Meningkatkan intensitas kegiatan tim patroli akan meningkatkan cakupannya sehingga mencegah orang masuk kawasan secara ilegal.
- BKSDA Aceh dengan dukungan mitra konservasi, dapat mengkaji tipologi konflik tenurial dalam kawasan untuk menentukan intervensi resolusi konflik yang tepat, yang dapat dilaksanakan berdasarkan analisis yang dilakukan oleh USAID BIJAK di lima kawasan konservasi di Indonesia (Widodo et al. 2019, dalam persiapan). Kajian yang diusulkan ini meliputi pemetaan sosial untuk memahami skala, intensitas dan dampak konflik tenurial, pemetaan pengampu kepentingan untuk memahami pengampu kepentingan yang terlibat atau berpotensi terkena dampak konflik tersebut serta analisis spasial untuk memahami lokasi terjadinya konflik di dalam kawasan konservasi. Informasi yang diperoleh akan digunakan untuk merumuskan pendekatan terbaik untuk mengatasi deforestasi di dalam SM Rawa Singkil, yang dapat berupa: penegakan hukum,

[10] Instruksi Presiden Republik Indonesia No. 8 tahun 2018 Penundaan dan Evaluasi Perizinan Perkebunan Kelapa Sawit serta Peningkatan Produktivitas Perkebunan Kelapa Sawit

kemitraan konservasi, pemindahan perambah, mengeluarkan lokasi yang dirambah dari dalam kawasan konservasi, atau rezonasi lokasi perambahan di dalam kawasan konservasi.

- Membangun suatu sistem untuk dapat secara sering memantau deforestasi di lansekap Singkil. Dipimpin oleh BKSDA Aceh dan mitra konservasi, sistem ini akan menyiagakan tim patroli SMART yang memungkinkan respons yang lebih cepat terhadap kegiatan ilegal yang terjadi di dalam kawasan.
- Untuk mengatasi perambahan liar di SM Rawa Singkil, BKSDA Aceh dan mitra konservasinya dapat melaksanakan survei sosial ekonomi masyarakat untuk memahami penyebab utama dari kegiatan ini, kemungkinan kaitannya dengan perambahan untuk produksi kelapa sawit, serta tantangan ekonomi yang dihadapi masyarakat. Informasi yang diperoleh dapat digunakan untuk mengembangkan solusi yang tepat untuk meningkatkan mata pencaharian masyarakat dan mengurangi permintaan akan kayu dari dalam SM Rawa Singkil.

Pendekatan untuk mengatasi ancaman dari luar kawasan SM akan membutuhkan kolaborasi di antara banyak pemangku kepentingan, termasuk komunitas petani kecil, dan para aktor dan perusahaan lain yang beroperasi di sepanjang rantai pasokan minyak sawit, serta badan – badan pemerintah kabupaten terkait. Sebagai otoritas manajemen kawasan SM, BKSDA Aceh harus memimpin proses ini. Namun demikian, pendekatan ini membutuhkan proses jangka panjang dan berbagai keterampilan untuk melibatkan beragam pemangku kepentingan yang masing – masingnya memiliki perspektif dan motivasi yang berbeda. Oleh karena itu BKSDA Aceh akan membutuhkan dukungan dari para mitra dengan pengalaman yang relevan dalam hal ini, di mana para mitra yang beragam tersebut kemudian memimpin implementasi strategi untuk mencapai visi keseluruhan BKSDA Aceh. Pendekatan “Luar Kawasan” harus mencakup:

- Difasilitasi oleh mitra, BKSDA Aceh harus membangun dan memfasilitasi suatu forum yang melibatkan semua pemangku kepentingan di sepanjang rantai pasokan minyak kelapa sawit untuk meningkatkan kesadaran mereka tentang masalah deforestasi dan risiko rantai pasokan lainnya di Singkil. Setelah para pemangku kepentingan memiliki pemahaman bersama tentang hal ini, BKSDA Aceh harus memprakarsai suatu komitmen bersama di antara para pemangku kepentingan, memastikan ambisi kolektif mereka untuk mengatasi ancaman terhadap lansekap. Hal ini kemudian dapat diterjemahkan ke dalam rencana aksi bersama untuk lansekap, termasuk dengan peran dan tanggung jawab yang jelas untuk masing-masing pemangku kepentingan.
- Melakukan asesmen terhadap komitmen perusahaan secara komprehensif dan status kemajuan pencapaiannya saat ini terkait dengan para pemasok dan basis pasokan petani kecil di lansekap Singkil. Untuk meneruskan penelitian yang dilakukan untuk laporan yang didukung oleh USAID LESTARI ini, mitra konservasi, seperti WCS, dapat melakukan asesmen ini dan bekerja sama dengan para mitra, termasuk tim – tim keberlanjutan perusahaan dan para mitra pelaksananya, untuk meningkatkan efisiensi dan dampak upaya - upaya mereka.
- Didukung oleh para mitra konservasi, mitra – mitra pelaksana perusahaan dapat bekerja sama dengan tim – tim keberlanjutan perusahaan untuk memastikan keselarasan upaya – upaya penelusuran perusahaan, keterlibatan pemasok, dan tindakan korektif, dengan fokus khusus pada pemasok umum yang tidak patuh.
- BKSDA Aceh dan para mitra konservasi dapat mendukung peningkatan pengetahuan, sikap dan praktik yang terkait dengan konservasi oleh masyarakat dan perusahaan yang memiliki perkebunan di daerah sekitar SM Rawa Singkil.

- Perusahaan – perusahaan dan para mitra pelaksananya dapat mendukung peningkatan produktivitas, keberlanjutan, dan mata pencaharian masyarakat di antara basis pasokan petani kecil kolektifnya di kawasan sekitar SM Rawa Singkil. Mendukung praktik pertanian yang baik/ good agricultural practice (GAP) dan akses terhadap input yang meningkatkan produktivitas petani kecil yang masih rendah, sekitar 1-1,5 ton/ ha, dan meningkatkan pengembangan organisasi petani dengan memperkuat kelompok tani dan/ atau koperasi. Hal ini harus bertujuan untuk mengoptimalkan dan mengintensifkan penggunaan lahan secara berkelanjutan untuk meningkatkan produktivitas kelapa sawit sambil mengurangi ancaman perambahan.
- Perusahaan – perusahaan dan para mitra pelaksananya serta pemerintah daerah, dengan dukungan dari para mitra konservasi harus mengeksplorasi kemungkinan insentif berbasis kinerja tambahan untuk memastikan tidak adanya perambahan di masa depan.
- BKSDA Aceh dan mitra konservasi harus menyelaraskan pemantauan deforestasi dan patroli SMART di kawasan SM Rawa Singkil sebagai informasi bagi kegiatan “luar kawasan” di atas dan memastikan dampak konservasi yang positif di kawasan - kawasan yang berdekatan di dalam kawasan SM Rawa Singkil.
- BKSDA Aceh dapat memprakarsai keterlibatan pembeli akhir melalui dialog langsung dan tidak langsung sebagai cara untuk meningkatkan pemanfaatan rantai pasokan untuk memengaruhi kegiatan pemasok dan mendukung pencapaian komitmen pembeli untuk mendapatkan minyak kelapa sawit yang legal dan 'patuh' aturan. Menggali peluang untuk mendapatkan dukungan pembeli akhir dan perusahaan penyulingan minyak sawit (termasuk dukungan teknis, material, dan finansial) bagi implementasi intervensi tingkat lansekap yang telah diuraikan sebelumnya untuk mendukung mata pencaharian masyarakat dan konservasi ekosistem. Jika diperlukan mitra LSM dapat memberikan bantuan teknis kepada BKSDA.
- Para gubernur dan bupati harus mendukung pelaksanaan Instruksi Presiden Nomor 8/2018 dengan mengevaluasi izin pelepasan kawasan untuk perkebunan kelapa sawit di daerah sekitar SM Rawa Singkil dan menunda penerbitan izin untuk perkebunan kelapa sawit selama tiga tahun.

INTRODUCTION

Indonesia has voluntarily committed to achieve emissions reductions of 26% by 2020 unilaterally and of 42% with international assistance (Indonesia's NDC, 2016). Indonesia is the fifth largest emitter of greenhouses gases globally, mainly due to the conversion of forests and peatland. Addressing land use change is therefore central to achieving Indonesia's emissions reductions targets and its Nationally Determined Contribution (NDC) to international agreements under the United Nations Framework Convention on Climate Change. In 2011, the Government of Indonesia issued a Presidential Instruction establishing a moratorium on new clearing of primary forest and peatlands. Since then, the Presidential Instruction has been extended three times, most recently in July 2017 for a period of two years (Presidential Instruction No. 6/2017). In addition to the moratorium, in 2016, the Government also accelerated efforts to restore degraded peatland areas in seven provinces by establishing a Peatland Restoration Agency (*Badan Restorasi Gambut*) (Perpres No.1/2016). Finally, most recently in 2018, the President of Indonesia issued an instruction to halt the issuance of new permits for oil palm plantations, to review existing permits and improvements in oil palm productivity, and to halt the conversion of forest to oil palm[11].

Although not included as a focus of restoration efforts under the Peatland Restoration Agency (Presidential Regulation No. 1/2016), three important peatland areas can be found on the west coast of Aceh province: Tripa, Kluet and Singkil. Tripa has been heavily degraded by rapid expansion of oil palm plantations and the use of slash and burn clearing, while Kluet and Singkil are still relatively intact although also under threat.

According to a rapid assessment by Deltares in 2012, the peat depth in Singkil - in the Rawa Singkil Wildlife Reserve (WR) - averages at depths of 3.8m and in some areas reaches up to 10m; storing around 541 Mt CO_2. Meanwhile, carbon emissions generated from fires in the Kluet and Rawa Singkil WR alone may comprise up to 7% of Indonesia's total annual emissions (LESTARI 2016), jeopardizing the achievement of the country's emissions reductions targets and commitments under its NDC.

In addition to its significant role in carbon storage, Rawa Singkil WR is important for biodiversity, providing habitat for critically endangered species, including the Sumatran orangutan. The area also provides various environmental services such as by supporting the provision of clean water, fish, and other non-timber forest products, which are important for communities living in the surrounding area.

Efforts to preserve Rawa Singkil WR and other peatlands in Aceh face various challenges. Among these are a lack of information about the major threats and potential responses, including illegal oil palm production and supply chains, a lack of transparency in the status of existing plantation concessions, and weak understanding of policies and regulations for sustainable land use.

This report aims to address several of the existing barriers that hinder a robust conservation response for the Singkil landscape. Although illegal logging has been identified in several areas inside the reserve, a preliminary analysis indicated that the limited scale and scope of the timber operations and the associated supply chains pose a relatively low threat to Rawa Singkil WR and provide limited options for private sector leverage as a solution. The Tripa peatland area, located to the north of Rawa Singkil WR, demonstrates how the expansion of oil palm plantations can cause long-term and large-scale negative impacts on the ecological and social functions of peatland. Degradation of Tripa has directly impacted local food security and increased the vulnerability of local communities to natural disasters.

[11] Instruksi Presiden Republik Indonesia No. 8 tahun 2018 Penundaan dan Evaluasi Perizinan Perkebunan Kelapa Sawit serta Peningkatan Produktivitas Perkebunan Kelapa Sawit

Furthermore, it has led to significant carbon emissions and the local extinction of species that are wholly dependent on peatland habitat (Ruysschaert, 2015). By understanding the current status of oil palm plantations and the associated supply chains and relevant stakeholders linked to encroachment, this report establishes the foundations for the formulation of an approach to tackle deforestation and secure the future of Rawa Singkil WR.

METHODOLOGY

Satellite imagery analysis using Landsat images (30m resolution) was used to identify deforested areas in the Rawa Singkil WR (Husein *et al.* 2018, unpublished report). A unique ID was assigned to each deforested area (see **Error! Reference source not found.** for IDs o f encroached areas), providing a reference for field surveys to ground truth these results and to inform on the loxations for conducting our Chain of Custody (CoC) research. The location and details of palm oil mills in the area around Rawa Singkil WR were identified using Google Earth and other publicly available data, such as the Global Forest Watch Universal Mills List.

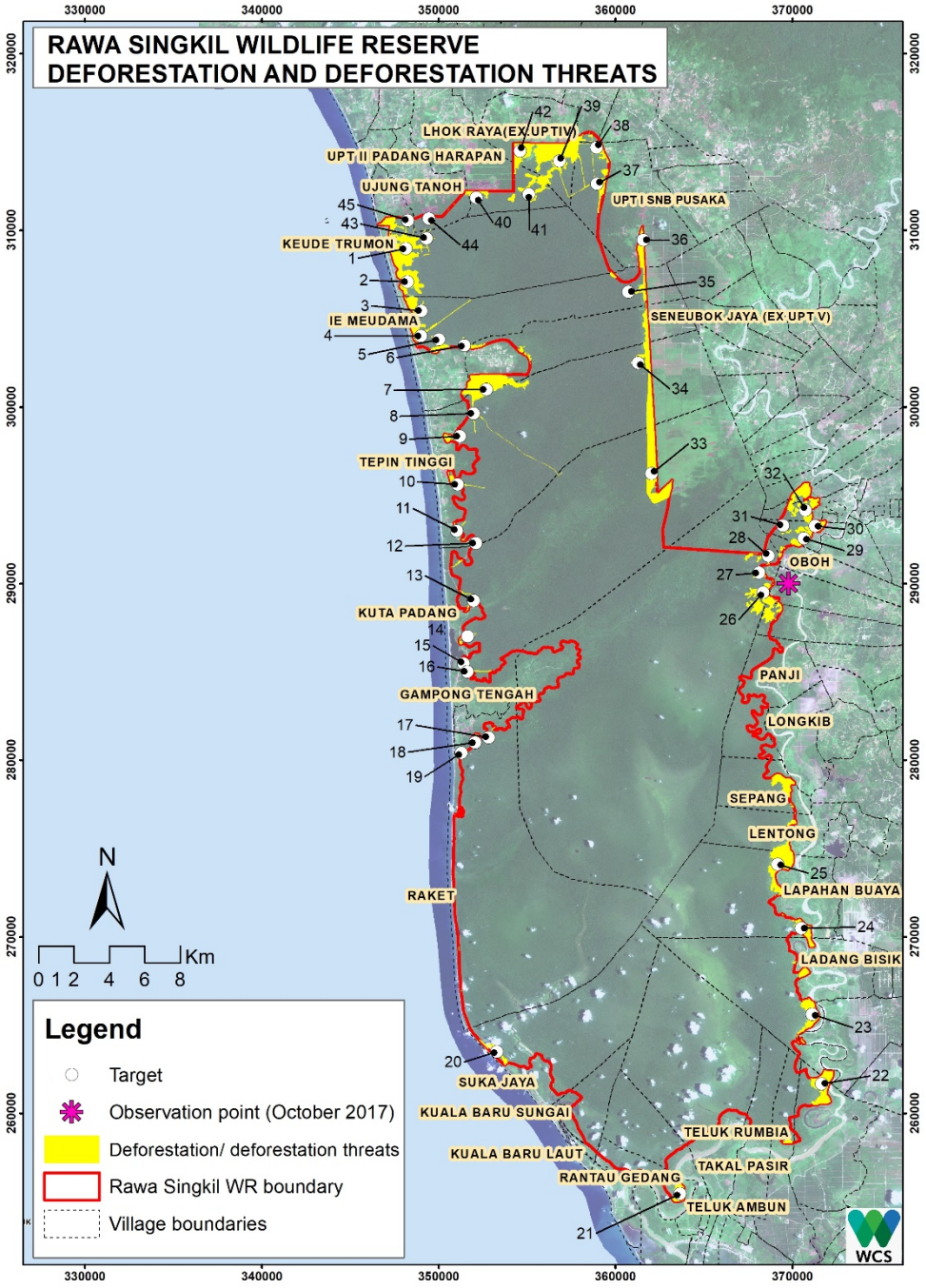


Figure 1. Distribution of forested area in the Rawa Singkil WR with ID,2017

Landsat imagery from 2000, 2004, 2008, 2011, 2015 and 2017 were used in the land cover classification and land use change analysis (Husein *et al.* 2018, unpublished report), Preprocessing of satellite imagery downloade from USGS (https://glovis.usgs.gov) and pixel classification was carried using R software and ArcGIS Desktop 10.3. This included radiometric, atmospheric and topographic corrections to improve image Furthermore, multi-temporal composite images were used to enable the analysis of cloud-free images and a more accurate assessment of land cover change. To increase the accuracy of land cover classification, information from ground-truthing was used, including from the results of SMART-based patrols. GPS points of encroachment identified through SMART-based patrols provided a reference for land cover on the ground and to increase the accuracy of the overall assessment. In addition, participatory mapping as part of Focus Group Discussions with representatives of the reserve resorts (management units) was carried out to further corroborate findings. The land cover classification method used in this study was a hybrid between the Maximum Likelihood Classification method and visual interpretation, whereby 'majority filtering' and 'class merging' were used to classify land cover.

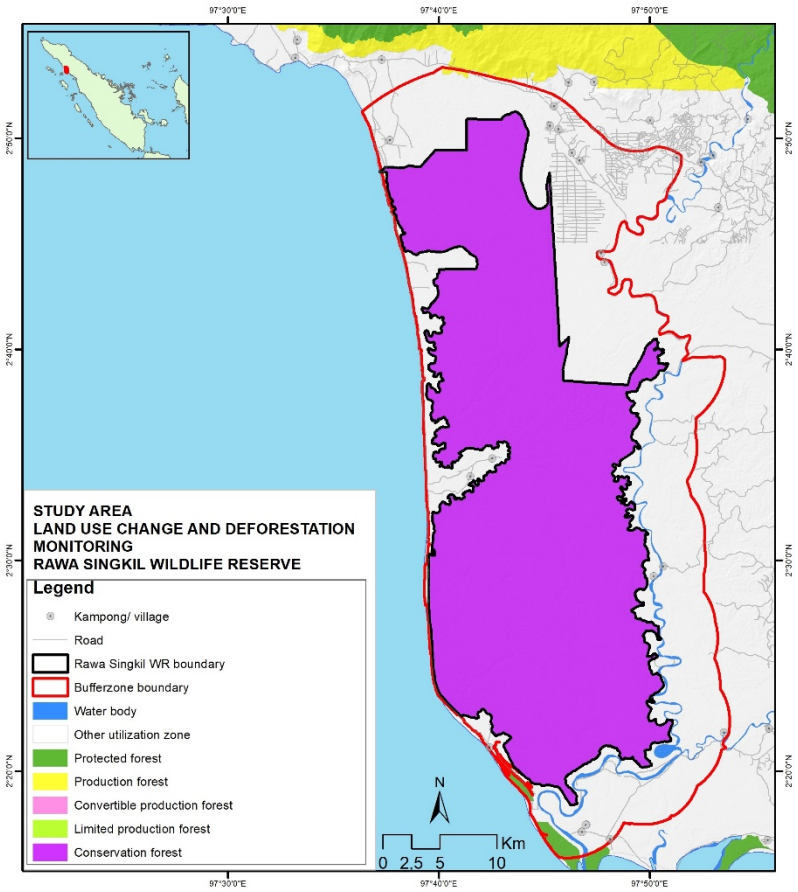
Changes in land cover were assessed over five time periods: 2000-2004, 2004-2008, 2008-2011, 2011-2015, and 2015-2017. The deforestation rate was calculated from the difference in forest cover across each time period according to the UN Food and Agricultural Organization (FAO) definition of deforestation. Net deforestation was calculated from the total value of deforestation minus any reforestation. Deforestation was calculated as a percentage of the total area due to the difference in time periods assessed (i.e. 2, 3, or 4 years).

Illegal oil palm activities and at-risk supply chains were assessed through direct field observations, smallholder interviews and chain of custody (CoC) research that identified collectors, mills and refineries in Medan. A desktop analysis as performed for company-disclosed data to provide additional information on relevant supply chain stakeholders and their associations to mills around the Rawa Singkil WR. This also provided a greater understanding of the sustainability commitments and approaches of the companies identified with links to the landscape. Finally, a literature review was conducted in order to evaluate policy coherence and trade-offs that indirectly incentivize conversion of the Rawa Singkil WR.

RAWA SINGKIL WILDLIFE RESERVE

The Ministry of Forestry[12] appointed 102,500 ha of Rawa Singkil as a Wildlife Reserve (WR) in 1998. In 2015, in line with the local government's land use planning process, the total area of Rawa Singkil WR was reduced to 82,374 ha. Rawa Singkil WR spans three districts: Aceh Singkil, Aceh Selatan and Subulussalam City. Following the Ministry of Environment and Forestry (MoEF) program, in 2013 Rawa Singkil WR was appointed as a Conservation Forest Management Unit (*Kesatuan Pengelolaan Hutan Konservasi; KPHK*). BKSDA Aceh, with USAID LESTARI support, has finalized the designation of Management Blocks within Rawa Singkil WR and revised the reserve long-term management plan.

In line with Law No. 5/1990 on the conservation of biodiversity and ecosystems, the area surrounding a conservation area that supports its integrity will be classified as a 'buffer zone'. This report defined the area surrounding Rawa Singkil WR withing a 5 km radius of the reserve border as the buffer zone (**Error! Reference source not found.**). The total b uffer zone area is 64,671 ha, with land cover dominated by oil palm plantations (33.6%), bushes and shrub (27.5%) and forest (17.5%). Most of the buffer zone is designated for other purposes (95.4%) and is eligible for plantations or settlements. A small proportion is designated as protected forest (1.2%) and production forest (0.2%), while the remaining area is identified as a water body.



[12] The Ministry of Forestry has since been re-named the Ministry of Environment and Forestry following a merge of the two ministries in late 2014.

Figure 2. Rawa Singkil Wildlife Reserve

Rawa Singkil WR comprises four main ecosystems: lowland rainforest, swamp, river and coast. The Reserve provides important habitat for Sumatran tiger (*Panthera tigris sumatrae*), Sumatran elephant (*Elephas maximus sumatranus*), estuarine crocodile (*Crocodylus porosus*), sun bear (*Helarctos malayanus*), and critically endangered Sumatran orangutan (*Pongo abelii*), as well as various other endemic species (Figure 3). The Reserve is often referred to as the 'orangutan capital' due to its high population of orangutans, comprising 1,500 individuals (PHKA 2002 in BKSDA Aceh 2010). Sumatran orangutans can be found across 67,614 ha or 83% of the total reserve area (Utami-Atmoko *et al.* 2017) with a relatively high population density of around 1,78 individuals/km^2 (Wich *et al.* 2016). Rawa Singkil WR is also home to a rich variety of flora species (Onrizal and Mansor 2016), with 54 tree species and 123 understory species found in an observation plot of just one hectare (Onrizal 2017).

Figure 3. Endemic species in Rawa Singkil WR. From left to right: Sumatran elephant (Elephas maximus sumatrensis), Sumatran orangutan (Pongo abelii), and helmeted hornbills (Rhinoplax vigil). Source: KPHK Rawa Singkil (elephant and hornbill) and Lubis Mohammad (orangutan)

DEFORESTATION IN THE RAWA SINGKIL WILDLIFE RESERVE

Between 2000 and 2017, forest cover loss in Rawa Singkil WR was 3,910 ha, with a further 19,865 ha lost in the buffer zone. The annual deforestation rate in Rawa Singkil WR was 0.29% (230 ha/year) and in the buffer zone was 1.26% (1.169 ha/year). According to satellite imagery analysis, the highest rates of deforestation occurred between 2011 and 2015, with a rate of 0.82% inside the reserve and 8.75% in the buffer zone. The buffer zone is important for supporting the integrity of Rawa Singkil WR. Deforestation in the buffer zone affects the hydrological system of the peatland area and its disruption therefore poses a threat to the peatland's viability. Road construction in the area facilitated this land and forest conversion. In addition, local migration to the buffer zone increased demand for land. The assessment revealed that migrants usually buy land from the local community who have already cleared the land.

Deforested areas in Rawa Singkil WR are dominated by scrub and mixed dryland agriculture, 77 ha of smallholder plantations were also identified. Plantations are the dominant land use in the buffer zone with a total land cover of 21,976 ha, followed by scrub with a total area of 17,803 ha.

Rawa Singkil WR consists of 3 working blocks: Trumon, Rundeng, and Singkil (Figure 4). From 2000-2017, the highest rates of deforestation occurred in the Trumon Block in the northern part of the reserve (122 ha/year), followed by Rundeng (55 ha/year) and finally, Singkil (53 ha/year). The main drivers of deforestation - illegal logging and oil palm encroachment - were identified from the USAID LESTARI Situation Analysis conducted for Singkil and from LESTARI field activities, in particular ranger patrols and site monitoring (LESTARI 2016).

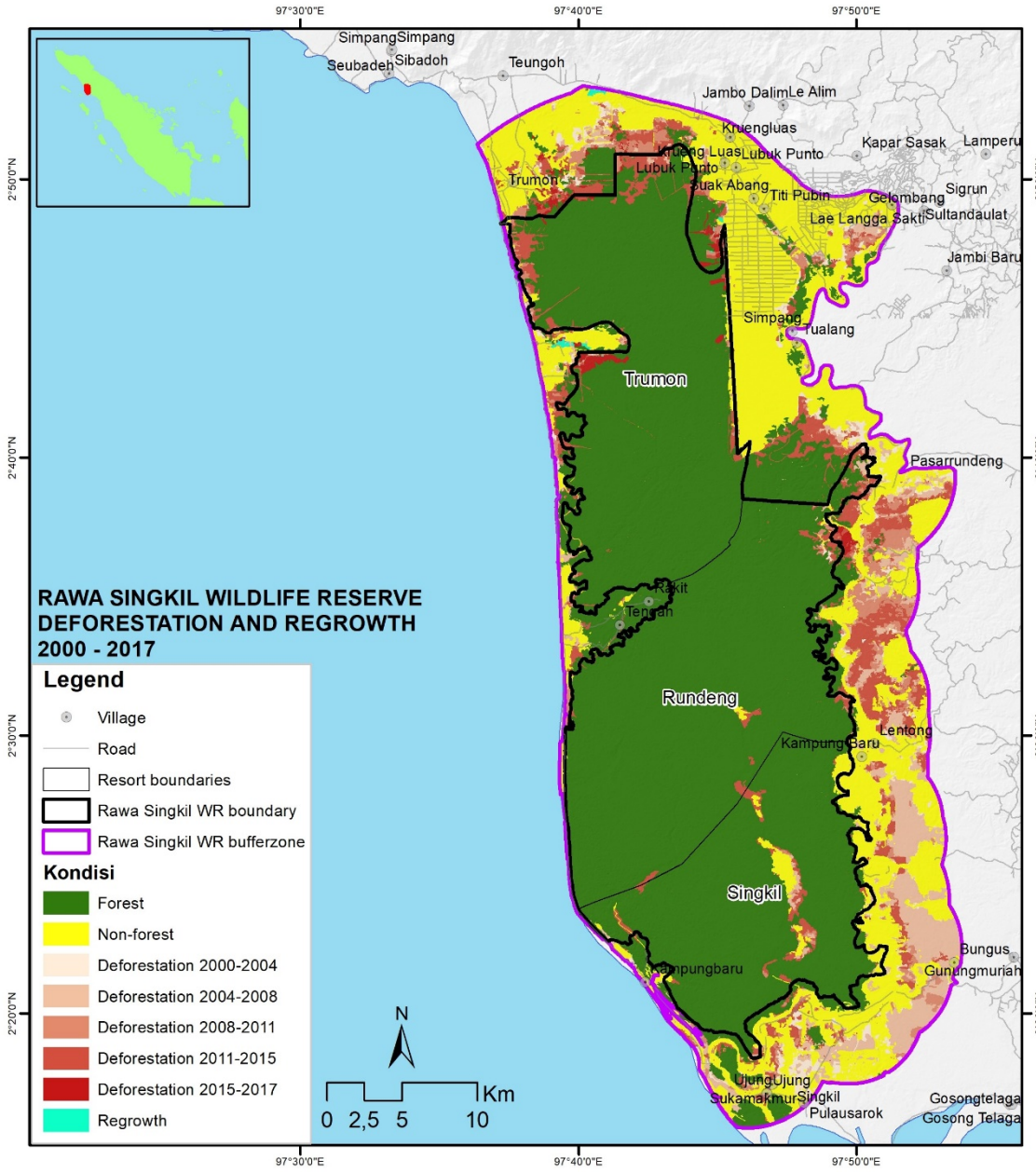


Figure 4. Deforestation in Rawa Singkil WR from 2000 – 2017

ILLEGAL LOGGING

Illegal logging activities were found approximately 3 to 5 km inside the border of Rawa Singkil WR and located near the bordering villages of Teluk Rumbia, Oboh, Rantau Gedang, Teluk Ambun, Takal Pasir, Le Meudama and Teupin Tinggi. Illegal loggers from these villages were found to be relatively well-organised and well-established, with more than 50 loggers operating within the reserve in just one day and logging taking place throughout the week, except on Friday.

The main tree species felled include *Shorea* sp, *Renghas* sp, and *Alstonia* sp. Timber is processed into planks and beams inside the reserve and then transported to villages by boat, with loggers found to be able to process around 0.5 m^3 planks and beams a day. During the rainy season, loggers may transport timber directly to Singkil port. Buyers come

to the villages to source planks and beams, which are mainly used for the production of furniture and for the construction of houses and boats. *Shorea* beams are sold for Rp 1.5 million/m^3. Beams for the construction of small boats cost Rp 2-6 million and for large boats cost Rp 30-60 million. Timber is mostly distributed in Singkil and Subulussalam for local use.

Despite law enforcement activities by BKSDA Aceh and local police, including the arrest of several illegal loggers[13], illegal logging still continues. In addition, road construction around the reserve has facilitated access to its interior and increased illegal logging activities.

Figure 5. Beams from Rawa Singkil WR

OIL PALM EXPANSION INTO RAWA SINGKIL WR

Rawa Singkil WR is threatened by encroachment for agriculture. This is most extensive in the northwest of the reserve along the northern border and to the eastern and southern part of the reserve (Figure 4). Along the northeastern boundary, there is a 6,111 ha estate belonging to PT. Agro Sinergi Nusantara (PT. ASN), which was planted in 1995-1996. Some 350 ha of the estate overlaps with the reserve with the company having planted oil palm on 70 ha of this area. BKSDA Aceh, in collaboration with local police, PT. ASN, and several NGOs, removed 70 ha of oil palm in this area in 2017. Furthermore, the company and BKSDA Aceh have agreed to restore 100 ha of the overlapping area while natural regeneration is expected to take place in the remaining 250 ha area.

Along the north to northwestern border, encroachment can be found along the road from Trumon to Ie Meudama Village. The encroached areas are dominated by smallholder oil palm plantations that are on average 6-7 years old. Several plantations are located inside Rawa Singkil WR (Figure 6). Judging by the age of the oil palm in this area, it is likely that road construction, which occurred at around the same time, facilitated encroachment.

[13] For example in 2015 at Teupin Tinggi Village, Trumon: http://www.mongabay.co.id/2015/08/09/tiga-pembalak-liar-yang-beraksi-di-suaka-margasatwa-rawa-singkil-ditangkap/

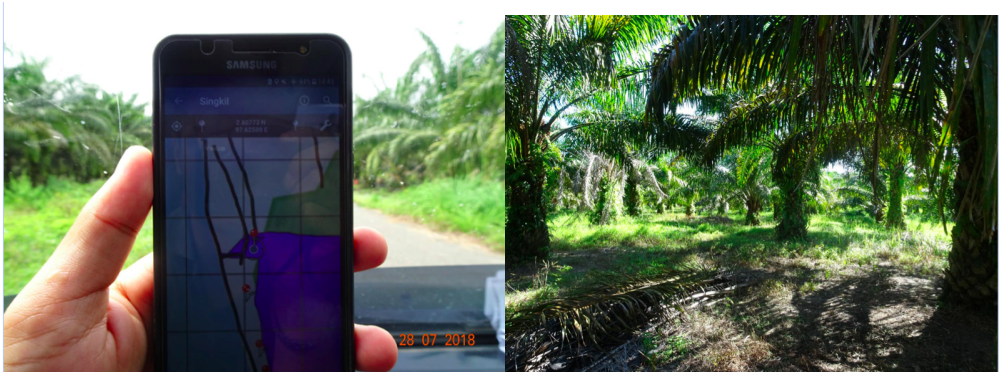


Figure 6. Smallholder oil palm plantation in the Rawa Singkil WR at Keude Village

Smallholder oil palm plantations also dominate the area surrounding the eastern and southeastern part of Rawa Singkil WR[14]. Ninety smallholder plantations were found bordering Rawa Singkil WR as well as several plantations inside the reserve (Figure 7). Newly cleared areas were also identified, indicating that communities are still actively opening land for agriculture. Although most land clearing occurs outside of the borders of Rawa Singkil WR, the hydrological dynamics of the peatland ecosystem means that this will still have a major impact on the reserve. Moreover, communities tend to apply slash and burn land clearing for the preparation of agricultural land, increasing the risk of forest and peatland fires and their impacts on the reserve. The majority of smallholder farmers originate from this area but there are also migrants from neighboring districts and even from other provinces, namely North Sumatra and West Sumatra.

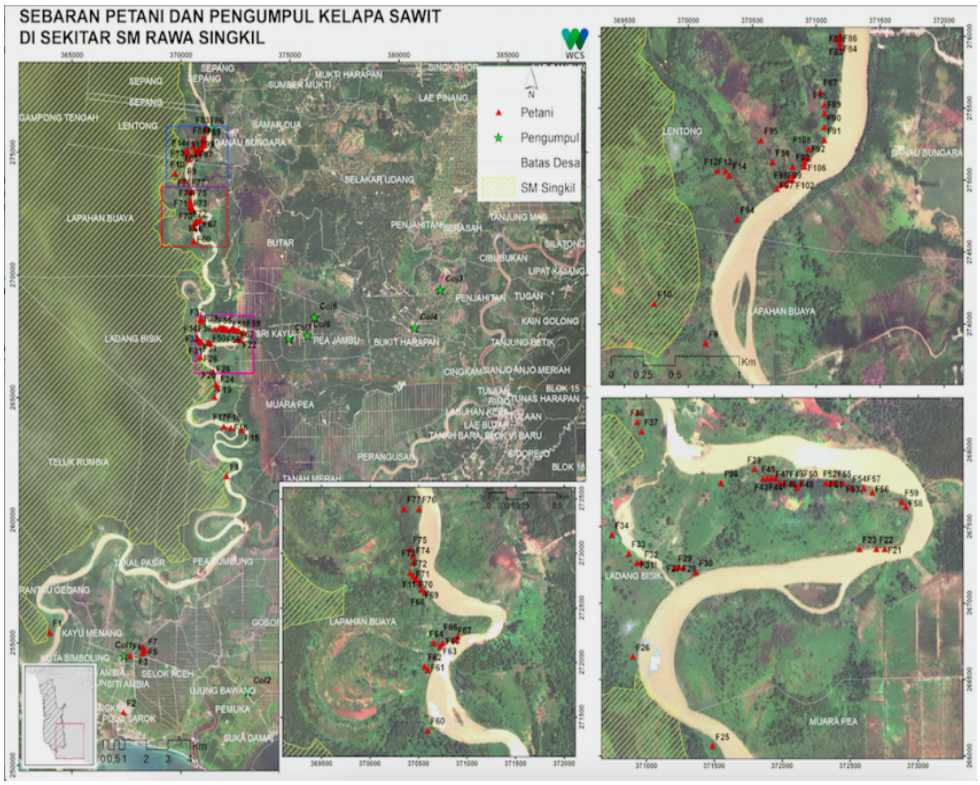


Figure 7. Distribution of smallholder oil palm plantations on the eastern to southern part of Rawa Singkil WR

[14] Areas of oil palm plantations include Singkil (Gunung Meriah, Kota Baharu, Singkohor), Aceh Selatan (Keude, Seunebuk Jaya and Ie Meudama-Trumon) and Subulussalam (Pasar Rundang and Oboh-Rundeng)

Smallholders in Singkil typically have 1-2 ha of oil palm plantations, obtained from clearing land either inside or outside of Rawa Singkil WR. However, in the last five years, there have also been cases where local communities clear land to sell to outsiders. For example, one businessman from Medan was identified as owning more than 70 ha of oil palm plantations outside the reserve and more than 20 ha are thought to belong to prominent people in the district.

According to the 2017 satellite imagery analysis, there are 77 ha of smallholder plantations inside Rawa Singkil WR and 21,976 ha in the buffer zone (Figure 8). Field research confirmed that the majority of communities surrounding Rawa Singkil WR are oil palm smallholders. The extent of plantations inside the reserve is considered to be a conservative estimate as satellite imagery analysis also revealed a larger deforested area inside the reserve, including 4,412 ha of scrub. This could be the result of forest fires or encroachment areas that are yet to be planted by farmers. Most planting occurred in 2010, however some plantations have also been established as far back as 1998. On average, oil palm productivity was found to be between 500-600 kg/ha/2 weeks (equivalent to an annual yield of 13.0-15.6 MT/ha). This is broadly consistent with the average smallholder yields across Indonesia (10-15 MT/ha) (Woittiez et al. 2015). However it is approximately 40% lower than the yields achieved under a best practice scenario for smallholders (IFC 2013).

In the RSWR	77 ha	39 farmers	561,600 kg/year	56,160/year
In buffer zone	21,976 ha	10,988 farmers	158,2 mio kg/year	15,8 mio/year

Figure 8. Oil palm production inside the Singkil WR and buffer zone

Intensive research on the ground in Subulussalam city, and Singkil and Aceh Selatan districts were conducted to understand the supply chains for oil palm grown in the landscape, and those at risk of association with existing or future encroachment in Rawa Singkil WR. An overview of the palm oil supply chain from plantation to refinery is shown in Figure 9.

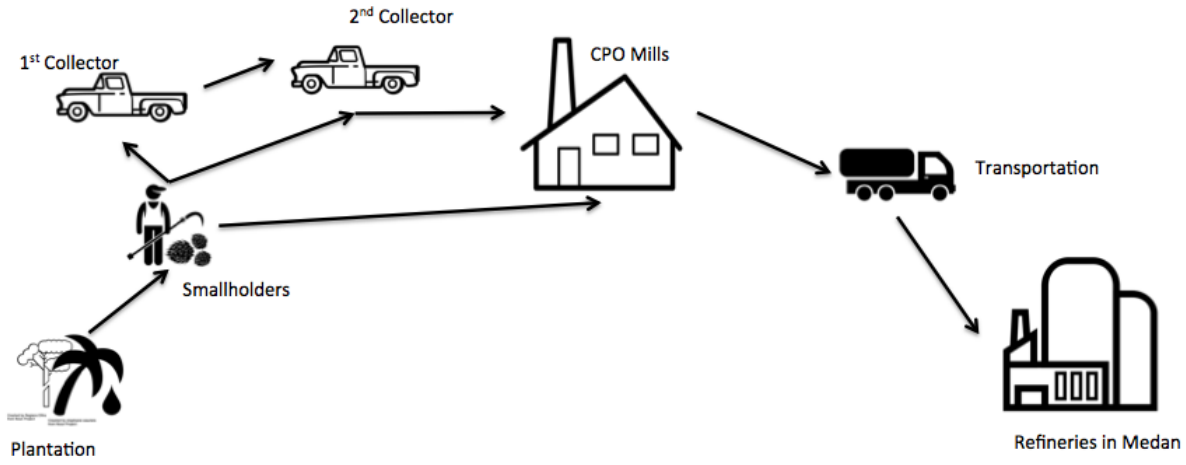


Figure 9. Palm oil supply chain in the Singkil landscape

The study found that collectors sell FFB to nearby mills at a price of Rp 1,200-1,700/kg. According to combined data from field survey, Google Earth and Global Forest Watch, there are ten mills operating in the area surrounding Rawa Singkil WR (Table 1) and each has an associated estate. Field survey confirmed that estates are often unable to fulfill mill processing capacities, therefore they also source FFB from third parties, including from collectors that are potentially buying FFB produced within Rawa Singkil WR. For example, data from one mill showed that around 25% of its FFB inputs were from third party sources (Figure 10). CoC research and additional desk-based research into the supply chain disclosure of buyers found links between the mills surrounding the reserve and several refineries in Medan. Crude palm oil (CPO) and palm kernel is transported from the mills to refineries via trucks (Figure 11). Buying refineries include those of major processing and trading companies such as Golden Agri-Resources, Musim Mas and Wilmar.

Table 1. Mills at risk of sourcing FFB from within Rawa Singkil WR.

Mill (parent company, if known)	Supplier to: Parent company (refineries, location, if known)
PT. Ensem Lestari[A]	Golden Agri-Resources[C]
PT. Runding Putra Persada[A]	Golden Agri-Resources (Belawan Refinery and Crushing Plant, PT SMART)[C D] Wilmar[C]
Samudera Sawit Nabati (Duta Marga)[A B]	Wilmar (PT Multimas Nabati Asahan, Paya Pasir and Kuala Tanjung)[D] Golden Agri-Resources (Belawan Refinery and Crushing Plant, PT SMART)[C D]
PT Bangun Sempurna Lestari JL. (PT Bangun Sempurna Lestari)[A B]	Musim Mas (KIM I, KIM II, and Belawan, Medan)[D]
PT Laot Bangko (unknown)[B]	Unknown
PT Global Sawit Semesta (PT Teguh Karsa Wanalestari, Raja Garuda Mas)[B]	Golden Agri-Resources (Belawan Refinery and Crushing Plant, PT SMART)[D] Musim Mas (KIM I, KIM II, and Belawan, Medan)[D]
Nafasindo (PT Nafasindo)[A B]	Musim Mas (KIM II, Medan)[C D] Wilmar (PT Multimas Nabati Asahan, Kuala Tanjung)[C D] Golden Agri-Resources (Belawan Refinery and Crushing Plant, PT SMART)[C]
Lae Butar Mill (Socfin Indonesia)[B]	Golden Agri-Resources (Belawan Refinery and Crushing Plant, PT SMART)[D] Musim Mas (KIM II and Belawan, Medan)[D]
PT Perkebunan Lembah Bakti (Astra Agro Lestari)[A B]	Golden Agri-Resources (Belawan Refinery and Crushing Plant, PT SMART) [C D] Musim Mas (KIM II and Belawan, Medan)[D] Wilmar (PT Multimas Nabati Asahan, Paya Pasir and Kuala Tanjung)[C D]
PT Delima Makmur (Risjadson / RSA Group)[B]	Musim Mas (KIM II and Belawan Medan Wilmar (PT Multimas Nabati Asahan, Paya Pasir)[D]

[A] *Named in field research*
[B] *Identified using Global Forest Watch*
[C] *Buyers identified through CoC research*
[D] *Buyers identified through company disclosure of supplier mills*

DATA PRODUKSI KEBUN & PMKS

JANUARI 2018

No	Hasil Produksi	Uraian	Hasil Produksi (Bulan Ini)			Hasil Produksi (s/d Bulan Ini)	
			Banyaknya (Kg)	Satuan (Rp)	Nominal (Rp)	Banyaknya (Kg)	Nominal (Rp.)
1	Tandan Buah Segar (TBS)	Bungara	3.314.351	1.559.31	5.168.090.120	3.314.351	5.168.090.120
		Darul Mas	2.136.496	1.478.64	3.159.113.495	2.136.496	3.159.113.495
		Kota Bahagia	1.801.922	1.403.65	2.529.265.765	1.801.922	2.529.265.765
		Kota Aman	1.683.020	1.540.05	2.591.940.947	1.683.020	2.591.940.947
		Sub Total	**8.935.789**		**13.448.410.327**	**8.935.789**	**13.448.410.327**
		Pihak Ketiga	3.075.433	1.487.25	4.573.933.660	3.075.433	4.573.933.660
		Jumlah	**12.011.222**		**18.022.343.987**	**12.011.222**	**18.022.343.987**
		Restan Awal					
		TBS Diolah	**11.873.137**			**11.873.137**	
		Restan Akhir	**138.085**			**12.011.222**	
2	Minyak Kelapa Sawit (MKS)	Stok Awal	138.085			334.457	
		Produksi	366.355				
		Penjualan	2.296.530	7.813	17.943.752.830		17.943.752.830
		Penyusutan					
		Stok Akhir	334.457			302.559	
3	Inti Kelapa Sawit (IKS)	Stok Awal	133.407			133.407	
		Produksi	421.751			421.751	
		Penjualan	480.320	7.150	3.434.484.800	480.320	3.434.484.800
		Stok Akhir	74.838			74.838	
	Rendemen	MKS	19.07				
		IKS	3.55				

Sumber Data : Laporan Produksi Pabrik

Figure 10. CPO mill data showing proportion of FFB sourcing from own vs third parties ('Pihak Ketiga')

Figure 11. CPO from PT. Perkebunan Lembah Bhakti 2 will be transported

OPPORTUNITIES FOR ENGAGEMENT WITH PALM OIL SUPPLY CHAIN STAKEHOLDERS

As detailed in the previous section, several major palm oil processing and trading companies list mills in the Singkil landscape among their third-party suppliers. These include Wilmar (two refineries identified linked to three mills adjacent to Singkil), Musim Mas (three refineries linked to six mills) and Golden Agri-Resources (one refinery linked to three mills) (GAR, 2018; Wilmar, 2018; Musim Mas, 2018) (Table 1). Other buyers include AAK, Bunge and ADM (Unilever, 2017) and identified end users include Nestlé (Nestlé 2018), Unilever (Unilever 2017), Reckit Benckiser (Reckit Benckiser 2017) and Mars (Mars 2017). These buyers are therefore linked via their supplier mills to the risk of sourcing illegally-cultivated or 'non-compliant' FFB. However, it is important to note that these palm oil processing companies and manufacturers are identifiable only because they have published full lists of their supplier mills. This disclosure has resulted from increased transparency within the palm oil sector (e.g. see RSPO Resolution 6g GA10, 2013 and Reporting Guidance for Responsible Palm, 2017). These companies are therefore likely to represent only a subset of buyers sourcing from these mills with other less transparent companies not identified. This supply chain transparency provides the opportunity for engagement and subsequent supply chain leverage to play a role in addressing the threats to the Rawa Singkil WR.

The identified major buying companies each have commitments and policies to achieve legal and sustainable supply chains, including those to address the risks identified in the Singkil landscape, such as peatland and forest conversion and low productivity of smallholder farmers. Table 2 summarizes the relevant policy components of the major buyers at the refinery-level based on an assessment of company websites and sustainability reporting.

Table 2. Overview of company sustainability policies and relevant policy components for the major buyers sourcing from mills in the Singkil landscape

Company	Overarching policy	Policy component				
		Forests and peatland	Peatland	Smallholder support	Traceability	Supplier engagement
Golden Agri-Resources	GAR Social and Environmental Policy (GSEP)	No development permitted; and the conservation of High Carbon Stock forests and High Conservation Value areas	No development permitted; and the conservation of peatlands of any depth	Enhance smallholder productivity and improve smallholder livelihoods, support smallholder inclusion.	100% traceability to mill achieved and traceability to plantation (TTP) for all GAR-owned mills. Working with suppliers to achieve TTP by end of 2020.	Engagement with suppliers and corrective actions with non-compliant suppliers.

Company	Overarching policy	Policy component				
		Forests and peatland	Peatland	Smallholder support	Traceability	Supplier engagement
Musim Mas	Sustainability Policy	No deforestation of High Conservation Value (HCV) area and High Carbon Stock (HCS) forest.	No development of peatland regardless of depth.	Respecting and ensuring the inclusion of smallholders in the supply chain. Support for independent smallholders to enable compliance with 'NDPE' policies, and support sustainable livelihoods.	100% traceability to mill achieved. Achieved TTP for own supply, and committed to TTP for all supply under the Palm Oil Innovation Group Charter.	Risk analysis to identify suppliers and prioritize engagement. Engagement with mills via mill parent companies with a focus on key volume suppliers, including action plans and controlled purchase plans for suppliers with identified grievances.
Wilmar	No Deforestation, No Peat and No Exploitation Policy (NDPE)	No development of High Carbon Stock forests or High Conservation Value areas.	No development on peat, including best management practices on existing areas, explore options for peatland restoration.	Facilitate the inclusion of smallholders in the supply chain. Smallholder support initiatives to improve yields and practices.	Commitment to traceability to mill. Achieved average traceability to mill at 90% across all operations. Not pursuing traceability to plantation for all supplier mills and instead focusing on investing 'resources to raise the floor for sustainability and good practice for all suppliers within a mill's supply base'.	Aggregator Refinery Transformation (ART) and Mill Prioritisation Process (MPP). Risk-based approach for engaging mills and growers supplying each refinery, including 'deep engagement and mill visits', action plans for non-compliance.

(Golden Agri-Resources 2016, 2017; Musim Mas 2017, 2018; SPOTT 2018; Wilmar International Limited 2013, 2017)

Company engagement has been initiated to raise awareness of the threats facing the Rawa Singkil WR and to explore opportunities for interventions that reduce pressures on the reserve and the wider Leuser Landscape whilst supporting the achievement of corporate sustainability commitments.

A number of opportunities exist, ranging from simpler one-to-one data sharing agreements to more complex, multi-company, multi-stakeholder collaborations. Data sharing can support company traceability efforts and provide more accurate and up-to-date information linked to

landscape risks. Integrating data into risk assessment approaches can support the prioritization of Singkil for supplier engagement and corrective actions. Follow up company actions will be determined by the prominence of these mills in terms of contribution to buyers' overall sourcing volumes and relative risk. Further discussions are required to understand where these mills currently sit in each company's mill/supplier prioritization process.

Given the fragmented nature of supply, with each downstream company sourcing from hundreds of mills (for example, Unilever sources from over 1400 mills, Mars from over 1500 mills) and the small volumes associated with each of these mills per manufacturer, opportunities for full supply chain engagement may initially be weak. Even for refinery companies, the major risks lie predominantly within the third-party supply (from independent FFB suppliers) of their third-party suppliers (non-company owned mills). These companies therefore are the priority for engagement, with follow up engagement with manufacturing companies likely to be more promising once there is a more established program with a clearer set of interventions that they can support.

The establishment of a multi-company forum offers an opportunity to align efforts and explore options for jointly addressing the risks facing Rawa Singkil WR. The challenges associated with smallholder encroachment in the Rawa Singkil WR are not unique to this landscape. Developing approaches to supporting independent smallholders that are linked to multiple companies in order to address the environmental impacts of supply chains while supporting the inclusion of independent smallholders is critical to the achievement of sustainable commodity sectors. It is recommended that field-level interventions to reduce pressures from outside of the reserve align with and build off ongoing company efforts with existing implementation partners (e.g. The Forest Trust) and via existing partnerships for conservation (e.g. the PONGO Alliance), while leveraging the conservation efforts of USAID LESTARI and partners in Rawa Singkil WR.

POLICIES INCENTIVIZING FOREST CONVERSION IN THE RAWA SINGKIL WILDLIFE RESERVE

Rawa Singkil WR spans Aceh Selatan and Singkil Districts, and Subulussalam City. In its performance agreement, the Subulussalam City Government has laid out a plan to increase the production and productivity of several agricultural products such as paddy, maize and soy, as well as to increase the production of livestock by 4.94% The Subulussalam Government also plans to increase the production and productivity of several plantation commodities, including smallholder oil palm, cacao, and rubber. Oil palm in particular is a priority commodity supporting improved livelihoods in Subulussalam (Pemerintah Kota Subulussalam 2017). Oil palm contributes significantly to the city's GDP. In 2017, Subulussalam City's GDP was IDR 1,540 billion, based on the applicable price in 2010, with economic growth of 5.16%. From 2013-2017, the agricultural, forestry and fisheries sector contributed significantly (22.48%) to the city's GDP. Oil palm contributed 80% of this total, with exports of CPO playing a particularly important role in accelerating the city's economic growth (Bidang Neraca Wilayah dan Analisis Statistik Subulussalam 2018).

In the last five years, the agricultural, forestry and fisheries sector has experienced economic growth of 4.31%, lower than the financial and insurance sector with growth of 15.28%. In this time, financial institutions have decreased the lending rate, affecting investor and consumer borrowing capacity. Thereby, although the agricultural, forestry and fisheries sector has grown positively, it's overall contribution to the city's GDP has decreased as other sectors have experienced significant growth (Bidang Neraca Wilayah dan Analisis Statistik Subulussalam 2018).

As with Subulussalam City, the Aceh Singkil District Government also plans to increase the production of paddy, maize and livestock, while in the plantation sector, the Aceh Singkil Government will focus on increasing oil palm and rubber production (Pemerintah Aceh Singkil, 2016). As of 2017, the agricultural sector contributes 28.4% to the district's GDP. The main agricultural commodities include rice, maize, soy, peanut and cassava. Oil palm is the main plantation commodity, produced both in smallholder plantations and large estates. As of 2017, the total oil palm production in the district is 78,593 tonnes.

The District Government of Aceh Selatan's long-term development plan (2008-2028) states its aims to develop and grow the plantation, industrial processing, mining and tourism sectors. In the initial medium-term development plan (2013-2018), the district government outlined its plan to establish a plantation development centre for oil palm and cocoa, a centre for industrial jabon (*Neolamarckia cadamba*) and mahogany forest plantation, and a development centre for the plantation and forestry processing industries in Bakongan and Trumon, nearby to Rawa Singkil WR (Rancangan awal RPJM Aceh Selatan, 2013). As of 2017, the highest contributor to the local GDP is the agriculture, forestry, and fisheries sector, at about 25% of the district's GDP. The main agricultural commodities include rice, maize, peanut, and soy. Whilst the main plantation commodities are nutmeg and oil palm. As of 2017, total nutmeg production is 6,614 tonnes and oil palm production is 53,698 tonnes.

The local government's plans for increased agricultural, plantation and livestock production require significant investment and the identification of suitable land for each commodity. The availability of suitable land for agriculture and plantations is a major challenge. For example, Aceh Selatan District is dominated by hilly areas, meaning only 7.5% of the district is suitable topography for agriculture. In addition, the population across Aceh Selatan, Singkil District and Subulusalam City is growing at more than 2%, which will further increase the need for land for both settlements and agricultural activities.

The district governments of Aceh Selatan and Singkil and the local government of Subulussalam City have identified the potential of the area bordering Rawa Singkil WR for plantation and agricultural development. The area is relatively flat and has an abundant water supply and is therefore suitable for plantation crops. The local government targets for increased production are therefore likely to increase pressure on the area surrounding Rawa Singkil WR. Rapid development in the surrounding area will influence the ecological and hydrological system of peatlands in Rawa Singkil WR, and potentially increase the threat of encroachment facing the reserve. Although the district and city governments have also established targets to reduce land and forest degradation, and rehabilitate critical land, it is clear that there will be trade-offs between these sectoral targets. The Tripa peat swamp forest provides an example of how short-term development targets may lead to environmental destruction which eventually negatively affects community livelihood, thereby undermining the economic achievement of the districts (Box 1).

Box 1. Lessons learned from unsustainable land use in Tripa peatland.

Ruysschaert et al. (2009) examine the value of Tripa's unique ecosystem and the impact of oil palm conversion on local people, climate change and biodiversity. Tripa is a peatland area located to the north of Rawa Singkil WR. It is an important freshwater reservoir and provides habitat for a rich variety of flora and fauna species, which are both ecologically and economically important. When the tsunami hit Aceh Province in 2004, the Tripa peatland effectively protected the coastline and communities in the surrounding area. Furthermore, the peatland area's hydrological system also prevented these communities from flooding.

Between 2004 and 2007, several oil palm estates resumed their operations in Tripa and continued to convert the remaining forest into plantation, which led to the destruction of this unique peatland ecosystem and resulted in significant methane emissions. The Tripa peatland lost its water retention capacity and its function in regulating water flow, resulting in the increase

in both frequency and severity of flooding in the area. Destruction of the area also eliminated its ability to provide various environmental services and forest products, which are important for local communities. The clearing and draining of the peatland has also affected the local climate, which ultimately will have an effect on local health security and reduce agricultural productivity, including of the oil palm estates that have contributed to the degradation in the first place. As Tripa is located nearby to the sea, the subsidence of peatland will also lead to the intrusion of saltwater, which again will affect community livelihoods, the local economy and the productivity of oil palm estates in the area.

At the provincial level, up to US$6.1 billion in aid was provided to Aceh after the 2004 tsunami. This included investment into the agricultural sector, including for the production of palm oil. Palm oil production targets in Aceh are estimated to increase by almost half a million tonnes from 2015 to 2019. Under business-as-usual scenarios, this equates to the conversion of approximately 220,000 ha of additional land for plantations in five years. However, increasing oil palm productivity to the national average of industrial plantations (an increase of 15% annually) would actually result in a decrease in land needed at 41,000 hectares below the 2015 total plantation area, while still meeting Government production targets (Leggett et al., 2016).

In 2016, the Governor of Aceh issued an instruction for a year-long moratorium on the issuance of permits for domestic and foreign investments in oil palm plantations. This included an instruction to the Head of the Plantation Agency to perform a comprehensive inventory of existing oil palm plantations operating in Aceh Province (Instruksi Gubernur Aceh No. 10/2016). In 2017, the Governor of Aceh extended the moratorium for an additional six months (Instruksi Gubernur Aceh No. 04/INSTR/2017).

At the national level, in 2018 the President of Indonesia instructed relevant ministries, and provincial and district governments throughout Indonesia to halt the issuance of new permits for oil palm plantations. This Presidential Instruction also orders a review of existing oil palm permits and improvements to oil palm productivity, and issues a halt on the conversion of forest to oil palm plantations (Instruksi Presiden No. 8/2018). Implementation of this instruction will require close coordination and collaboration between ministries and different levels of government.

CONCLUSION AND RECOMMENDATIONS

This study analyses the extent to which Rawa Singkil WR is threatened by forest degradation driven by illegal logging and deforestation driven by encroachment for the expansion of plantations and agricultural land, building on USAID LESTARI situation analysis conducted in 2016 (LESTARI 2016). Illegal logging was found to be well-organized, whereby timber is processed into planks and beams inside the reserve and then transported to nearby villages by boat. These planks and beams are then sold locally for furniture, housing and boat construction. The main tree species collected by illegal loggers include *Shorea* sp, *Gluta renghas*, and *Alstonia sp.* BKSDA Aceh and the local police have recently succeeded in arresting several illegal loggers but this does not seem to have created a sufficient deterrent effect because illegal logging continues.

Rawa Singkil WR is under pressure from land clearing for agriculture and plantations. Our analysis found that encroachment occurs from the northwest to northern part of the reserve along the road connecting Trumon and Le Meudama Village, and from the north to southern part of the reserve. The satellite data revealed a deforestation rate in the buffer zone of 1.26% (1,169 ha/year), which is higher than inside the reserve with a deforestation rate of 0.29% (230 ha/year). Deforested areas in the buffer zone are dominated by oil palm plantations (21,976 ha) and shrubs (17,803 ha). Deforested areas inside Rawa Singkil WR are dominated by shrubs (4,412 ha), but 77 ha of smallholder oil palm plantations were also identified. These figures are likely to be highly conservative estimates as to the true extent of encroachment, as areas identified as shrubs are most likely a combination of illegally logged areas, intentionally burnt areas and land that has been cleared but that is yet to be planted by smallholders. Further ground-truthing of the WR is required to accurately identify their intended use. In addition to the direct threats of encroachment, adjacent oil palm estates can also negatively impact the reserve, with drainage canals in the buffer zone affecting the hydrological system of the peatland, and edge effects (disturbance) of cultivation on biodiversity (particularly orangutans). Tracks to plantation areas are also likely to facilitate access for illegal hunting and logging.

Our supply chain mapping found that once FFB grown by smallholders from inside Rawa Singkil WR and neighboring estates enters the palm oil supply chain, it poses a risk to buyers because its legality becomes difficult to prove. Mill processing capacities around Rawa Singkil WR cannot be met from legal plantations alone, meaning that mills must also source FFB from third party suppliers, including collectors operating around Rawa Singkil WR who in turn are highly likely to be sourcing from inside the reserve. This provides a clear demand signal to other farmers and is likely to further incentivize the planting of more oil palm. Our CoC and desk-based supply chain research revealed the links between mills operating around the reserve and several oil palm refineries in Medan belonging to major international companies, including Golden Agri Resources (GAR), Musim Mas and Wilmar. The current supply chain risk facing these companies, and their respective sustainability commitments, offers the opportunity for USAID LESTARI to develop ‘production/protection’ measures in high risk areas. One example would be to focus on the Trumon corridor, one of the most at-risk areas of the WR, to ensure legal sourcing and to reduce supply chain risk. This corridor is also significant because it is the only connection between Rawa Singlil WR and GLNP.

Engagement with the at-risk companies identified has already begun as a way to raise awareness of their supply chain risks and the threats facing Rawa Singkil WR and identify opportunities for their support for interventions to reduce pressure on the reserve and the

wider Leuser Landscape. A multi-company forum would offer an opportunity to align efforts and explore options for jointly addressing the risks facing Rawa Singkil WR.

Collaborative and pre-competitive agreements with GAR, Musim Mas and Wilmar is a recommended way to both address existing risk and also significantly reduce future risk of smallholder expansion inside Rawa Singkil WR. Due to the reserve's relatively flat topography and abundant water supply, the Singkil landscape has been identified by the local Governments of Subulussalam City, Aceh Singkil and Aceh Selatan Districts as a potential area for agricultural and plantation development. This aligns with local government plans to increase the production of agricultural (rice, maize and soy), plantation (oil palm, cocoa and rubber) and livestock products. The fulfilment of these plans requires high investment and the identification of suitable land. Although the district and city governments acknowledge the protection status and function of Rawa Singkil WR, the implementation of these plans is predicted to increase the risks it faces.

The results of this research highlight the importance of a combined strategy that integrates "in reserve" and "out of reserve" approaches in order to address deforestation in Rawa Singkil WR and protect the integrity of the peatland ecosystem. Although the majority of existing deforestation has occurred in the buffer zone, communities are still actively clearing land in the buffer zone and are encroaching into the reserve. Efforts are needed to prevent further encroachment while the ecosystem is still relatively intact.

The following recommendations are made for "in reserve" approaches. These should be led by BKSDA Aceh with support from conservation partners, including NGOs and aid agencies and the involvement of other government agencies, where relevant:

- Complete the demarcation and socialization of the reserve boundary. The demarcation process requires coordination between multiple government agencies in line with the Minister of Environment and Forestry regulation on Forest Area Boundary Committee (P25/Menhut-II/2014). This process should be chaired by the head of the committee (BPKH) and involve the three district and city governments, including the Provincial Forestry Office, Bappeda, Land Agency, and representatives of the subdistricts and others. This is an important milestone towards addressing encroachment and deforestation in the reserve. During the demarcation process, the committee should ensure adequate socialization of the boundary to communities and plantation companies around Rawa Singkil WR. Raising awareness of the boundary location is a vital step to addressing encroachment, especially as many smallholders growing oil palm inside Rawa Singkil WR are likely to state that they do not know the location of the reserve boundary.
- Increase the intensity of monitoring and patrols in the Singkil WR. Currently, three SMART (Spatial Monitoring and Reporting Tool) patrol teams involving BKSDA Aceh and conservation partners operate in the reserve with USAID LESTARI support. The teams have made rapid progress in tackling illegal logging and in patrolling the reserve boundary. However, three teams are not sufficient to cover the entire reserve. So, increasing the intensity of patrol team activities to increase their coverage is predicted to disincentivize illegal entry into the reserve.
- BKSDA Aceh, with support from conservation partners, should assess the typology of tenurial conflict in the reserve to define appropriate conflict resolution interventions, building on the analysis conducted by USAID BIJAK in five conservation areas in Indonesia (Widodo et al. 2019, in preparation). The assessment that we propose would include social mapping to understand the scale, intensity and impact of tenurial conflict; stakeholder mapping to understand the stakeholders involved in, or potentially affected by, the conflict; and, a spatial analysis to identify the locations where conflict has occurred inside a conservation area. Information collected from these activities would be used to define the best approach for addressing encroachment inside the Rawa Singkil

WR. The possible intervention might include: law enforcement, conservation partnerships, resettlement, exclusion from encroached areas inside the conservation area, or partially rezoning of encroached areas inside the reserve.

- Establish a system to frequently monitor deforestation in the Singkil landscape. Led by BKSDA Aceh and conservation partners, this system would alert SMART patrol teams enabling a more rapid response to illegal activities occurring inside the reserve.
- To address illegal logging in Rawa Singkil WR, BKSDA Aceh and its conservation partner/s should conduct a socio-economic survey to better understand the underlying drivers of this illicit activity, its possible link with oil palm encroachment, and the main economic challenges faced by communities. This information would be used to develop locally-appropriate solutions for improving community livelihoods and reducing their demand for timber from inside the reserve.

Approaches to address the threats from outside of the reserve will require collaboration amongst multiple stakeholders, including smallholder farming communities, and other actors and companies operating along the palm oil supply chain, as well as relevant district government agencies. As the management authority of the reserve, BKSDA Aceh should lead the process. However, these approaches require a long-term process and a variety of skillsets in engaging with multiple stakeholders, with varying perspectives and motivations. BKSDA Aceh will therefore need support from partners with relevant experience in this regard, with different partners subsequently leading in the implementation of strategies to meet the overall vision of BKSDA Aceh. “Out of reserve” approaches should include:

- Facilitated by partners, such as USAID LESTARI, BKSDA Aceh should establish and facilitate a forum involving all stakeholders along the palm oil supply chain to increase their awareness of deforestation issues and other supply chain risks in Singkil. Once stakeholders have a shared understanding of this issue, BKSDA Aceh should seek to secure a joint commitment amongst these stakeholders, securing their collective ambition for addressing threats to the landscape. This can then be translated into a joint action plan for the landscape, including clear definition of roles and responsibilities for each stakeholder.
- Comprehensively assess company commitments and the current status of progress towards their achievement as relates to suppliers and the smallholder supply base in the Singkil landscape. Building on research undertaken for this report supported by USAID LESTARI, conservation partners, such as WCS, can conduct this assessment and work with partners, including company sustainability teams and their implementing partners, to increase the efficiency and impact of their efforts.
- On-the-ground conservation NGOs should work with the implementing partners of oil palm companies, such as The Forest Trust or Daemeter, and the company’s sustainability team to ensure alignment of company traceability efforts, supplier engagement and corrective actions, with a particular focus on common, non-compliant suppliers.
- BKSDA Aceh and on-the-ground NGOs should support improved knowledge, attitudes and practices related to conservation by communities and companies with plantations in the area surrounding Rawa Singkil WR.
- Companies and their implementing partners can support improved productivity, sustainability and community livelihoods among their collective smallholder supply base in the areas around Rawa Singkil WR. Supporting good agricultural practices (GAP) and access to inputs that improve smallholder productivity, which at 1-1.5 ton/ha is low, and enhancing organizational development of farmers by strengthening farmer groups and/or

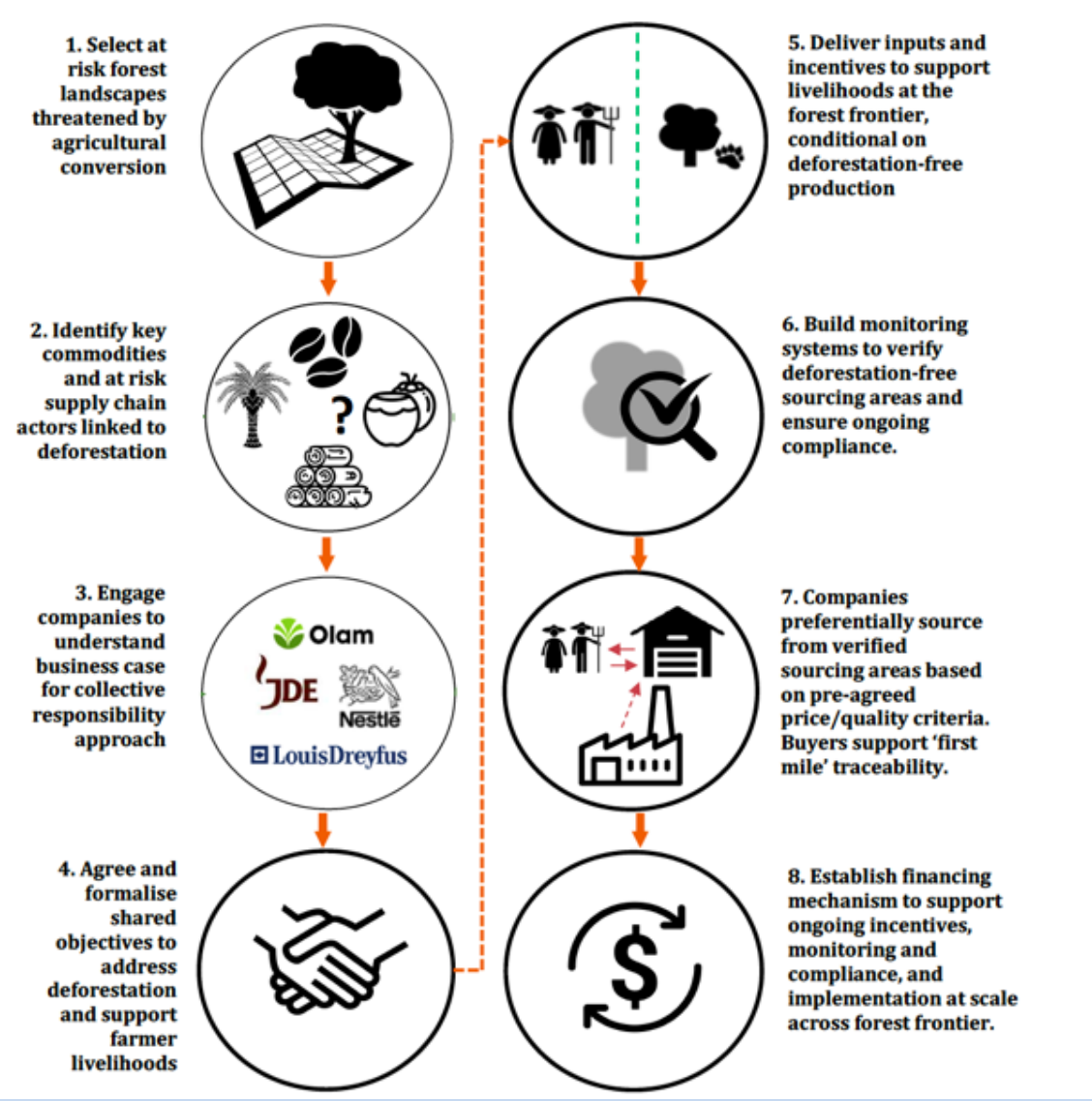
cooperatives. This should aim to optimize and intensify sustainable land use to increase oil palm productivity while reducing the threat of encroachment.

- Oil palm companies, their implementing partners and local government, with the support of conservation NGOs, should explore the feasibility of additional performance-based incentives to ensure against future encroachment.
- BKSDA Aceh and USAID LESTARI should align deforestation monitoring and SMART patrols within Rawa Singkil WR to inform the above “out of reserve” activities and ensure positive conservation impacts in adjacent areas within Rawa Singkil WR
- BKSDA Aceh to engage end buyers through direct and indirect dialogue as a way to increase supply chain leverage to influence supplier practices and support the achievement of buyer commitments to source legal and ‘compliant’ palm oil. Explore opportunities to gain end buyers and refinery company support (including technical, in-kind and financial support) for implementation of the above landscape-level interventions to support community livelihoods and ecosystem conservation. It may be appropriate for an NGO partner to provide technical assistance to BKSDA Aceh here.
- Governors and district heads should support the implementation of Presidential Instruction Number 8/2018 by evaluating area release permits for oil palm estates in the area surrounding Rawa Singkil WR and postpone the issuance of permits for oil palm plantations for three years.

An initiative similar to the “in reserve” and “out of reserve” approaches recommended above is being piloted in the Bukit Barisan Selatan (BBS) National Park landscape by WCS and partners to promote ‘collective responsibility’ to address coffee-driven deforestation inside the park (Box 2). This provides a model that could be replicated to address the oil palm-driven threats to Rawa Singkil WR.

Box 2. A collective responsibility approach for securing private sector support to address commodity-driven deforestation at the forest frontier

Collective responsibility approaches tackle deforestation with multiple companies at a landscape-level, irrespective of political boundaries. Companies collaborate to support smallholder farmers within their collective supply base, enabling them to mitigate sector risk through a joint focus on high risk, priority area. Companies source from verified areas adjacent to forest boundaries, which is underpinned by shared, low-cost monitoring and traceability systems, incentivizing deforestation-free production along the forest frontier. Private sector investments are pooled with public sector funding to generate additional incentives, including support to farmer organizations, the provision of capital and improved access to markets and inputs. This improves yields, quality and profitability for supply chain actors and creates a 'commodity fence' around forest landscapes.



REFERENCES

Balai Konservasi Sumber Daya Alam Aceh [BKSDA Aceh] 2010. Rencana pengelolaan jangka panjang kawasan Suaka Margasatwa Rawa Singkil, Kabupaten Aceh Singkil, Aceh Selatan, dan Kota Subulussalam, Provinsi Aceh, Periode 2010-2029. Banda Aceh.

Balai Konservasi Sumber Daya Alam Aceh [BKSDA Aceh] 2017. Laporan capaian rencana kerja Balai Keonservasi Sumber Daya Alam Aceh Tahun 2016. Banda Aceh.

Bidang Neraca Wilayah dan Analisis Statistik. 2018. Produk Domestic Regional Bruto Kota Subulussalam menurut lapangan usaha 2013-2017. Badan Pusat Statistik Kota Subulussalam. Subulussalam.

Deltares. 2012. Rapid assessment of peat deposits, carbon stock, CO_2 emission reduction/avoidance quantities and hydrological rehabilitation cost for three peatlands in Aceh. A technical report for Floresta and BPKEL; Deltares project number: 1205000.

Global Forest Watch. 2018. Palm Oil Mills. Available: http://data.globalforestwatch.org/datasets/ed8d5951b2a4482a9e62c4fe0bc23b5f_27?geometry=NaN%2C-88.367%2CNaN%2C88.505

Golden Agri-Resources. 2016, GAR Social and Environmental Policy; Golden Agri-Resources 2017.

Husein, S, Lubis MI, Tarmizi, Marthy W. 2018. Monitoring Perubahan Tutupan Hutan Di Bentang Alam Suaka Margasatwa Rawa Singkil Periode 2000-2017. Unpublished report.

IFACS.2014. Rencana Konservasi Bentang Alam Kabupaten Aceh Selatan Provinsi Aceh.

IFC [International Finance Corporation]. 2013. Diagnostic study on Indonesia oil palm smallholders. Available: http://www.aidenvironment.org/media/uploads/documents/201309_IFC2013_Diagnostic_Study_on_Indonesian_Palm_Oil_Smallholders.pdf

Instruksi Presiden Republik Indonesia No. 6 tahun 2017 tentang penundaan dan penyempurnaan tata kelola pemberian izin baru hutan alam primer dan lahan gambut.

Laporan Kinerja 2016 Subulussalam. 2017. Pemerintah Kota Subulussalam.

Leggett M, Lubis MI, Nuruliawati, Pusparini W. 2016. Wildlife Conservation Society Indonesia. Aceh and the Archipelago Economy: Protecting forests for water, energy and food security. Available: https://www.globalcanopy.org/sites/default/files/documents/resources/ACEH%20Briefing%20Note_ENG.pdf

LESTARI. 2016. Naskah konsep mengelola lahan gambut dalam di Rawa Singkil, Aceh: upaya mencapai tujuan penurunan emisi gas rumah kaca dan konservasi keanekaragaman hayati. USAID Lestari.

Mars. 2018. Mars Incorporated. Mill List. July 2017 – June 2018. Available: https://www.mars.com/docs/default-source/Policies-and-Practices/mars_39_suppliers_2018_full_mill_list.pdf?sfvrsn=6

Musim Mas. 2017. Creating a sustainable supply chain. Sustainability Report 2017.

Musim Mas. 2018. Policy Implementation Plan. Downloaded from: http://www.musimmas.com/qws/slot/u50045/style/Sustainability/2.%20Sustainability%20Policy/MM%20Policy%20Implementation%20Plan.pdf

Nestlé. 2018. Nestlé 2017 Palm Oil Mills. Available: https://www.nestle.com/asset-library/documents/creating-shared-value/responsible-sourcing/list-mills-february-2018.pdf

Pacheco P, Gnych S, Dermawan A, Komarudin H and Okarda B. 2017. The palm oil global value chain: Implications for economic growth and social and environmental sustainability. Working Paper 220. Bogor, Indonesia: CIFOR.

Pemerintah Kabupaten Aceh Singkil. 2016. Laporan Kinerja Kabupaten Aceh Singkil 2015. Dapat diunduh pada: https://anzdoc.com/laporan-kinerja-pemerintah-kabupaten-aceh-singkil-bab-2-per.html

Pemerintah Kota Subulussalam. 2017. Laporan Kinerja 2016. Subulussalam

Pemerintah Republik Indonesia. Nationally Determined Contribution (NDC) Pertama Republik Indonesia. Available http://ditjenppi.menlhk.go.id/reddplus/images/resources/ndc/terjemahan_NDC.pdf

Peraturan Pemerintah No. 57 tahun 2016 tentang perubahan atas Peraturan Pemerintah No. 71 tahun 2014 tentang perlindungan dan pengelolaan ekosistem gambut

Peraturan Presiden No. 1 tahun 2016 tentang badan restorasi gambut.

Rancangan awal Rencana Pembangunan Jangka Menengah (RPJM) Kabupaten Aceh Selatan Tahun 2013-2018.2013.

Reckitt B. 2017 Palm Oil Mills. Available: http://www.rb.com/media/3314/rb-palm-oil-mill-list_2017.pdf

Ruysschaert D, Singleton I, Darman S. 2009. Inappropriate land use in the coastal Tripa peat swamps on the west coast of Aceh. ResearchGate. Available: file:///Users/jenipareira/Downloads/Tripa-Inappropriate_land_use_ICONES-may09.pdf

SPOTT 2018. Assessment of palm oil producers and traders. Available from: http://spott.org

Unilever. 2017. Unilever 2017 Palm Oil Mills. Available: https://www.unilever.com/Images/unilever-palm-oil-mill-list_tcm244-515895_en.pdf

Widodo RB, Wibawa H, Riva WF, Susetyo B. 2019. Rumusan Tipologi Konflik Tenurial di Kawasan Konservasi. USAID BIJAK. In preparation.

Wilmar. 2013. No Deforestation, No Peat, No Exploitation Policy. Wilmar International Limited. Available:

Wilmar. 2017. Moving forward together. Sustainability Report 2017. Wilmar International Limited. Available: http://www.wilmar-international.com/sustainability/wp-content/uploads/2018/05/Wilmar-Sustainability-Report-2017.pdf

Woittiez L S, Slingerland M, Giller K E. 2015. Yield gaps in Indonesia smallholder plantations: causes and solutions. PIPOC, Kuala Lumpur

USAID LESTARI

Wisma GKBI, 12th Floor, #1210
Jl. Jend. Sudirman No. 28, Jakarta 10210, Indonesia

Phone: +62 21 574 0565 Fax: +62 21 574 0566
Email: Info@Lestari-Indonesia.org
Website: www.Lestari-Indonesia.org