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Sustainable Farming in Tropical Asian Landscapes (SFITAL)

Landscape Design Document

Labuhanbatu Utara
September 2022

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Appendix 2:
Methods in developing landscape characterisation

The aim of the landscape characterisation analysis was to classified North Labuhanbatu landscape into clusters that represent two main indicators: potential production and potential ecosystems services provisioning, each in 3 levels: high, medium and low. Number of clusters that can be generated from the landscape characterisation will depending on the variations occur in the landscape. The maximum number of clusters are 9 clusters, from a combination of 3 levels of potential production and 3 levels of potential ecosystems services provisioning.

		Potential Production		
		High	Medium	Low
Potential Ecosystems Services Provisoning	High	1	2	3
	Medium	4	5	6
	Low	7	8	9

Figure 5: *The possible 9 distinct clusters based on combination of levels potential Ecosystems Services and potential production*

The landscape characterisation was based on village characteristics, as the smallest unit of analysis. The information from Village Potential Data of BPS 2019 were used as the village boundary. The analysis was based on the following steps:

Step 1. Selecting relevant spatially explicit variables from the available information. For the case of North Labuhanbatu , from the available datasets/maps 66 variables were identified that potentially characterise palm oil production and the provisioning of ecosystems services. The distribution of variation of the 66v ariables were used to select variables that can significantly grouped the landscape into different levels of the potential provisioning of ecosystems services and palm oil production. Based on the analysis, 15 significant variables were identified that can be further used in the cluster analysis.

Step 2. Cluster analysis using K-mean methods resulted in 6 distinct clusters (Figure 1). SFITAL will work in 3 clusters and therefore verification process through FGDs and a household survey will be carried out in these areas, Clusters 4, 7 and 8. The FGDS and household survey aim to gather detailed information on production and ecosystem services provisioning issues that exist in each cluster.

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Strategic approaches	Activity	Theory of Change
		incentives for small-scale producers and jurisdictions for the green commodities that they buy. The technical capacity development of local governments aim to build inclusive local stakeholder platforms at District levels that are facilitated to 1) carry out scenario development based on the implementation of sustainability standards of cacao and palm oil, particularly for smallholders, that are specific in addressing local contexts and variability); 2) conduct negotiations on interventions; 3) formulate policies and/or plans; and 4) monitor and evaluate.
Component 4. Coordinate global partnerships and knowledge management for awareness, upscaling and replication.		
Implement Monitoring and Evaluation (M&E) systems	4.1. Manage and monitor project progress in a timely and effective manner.	Effective M&E systems enable SFITAL program to progress effectively, ensuring SFITAL teams to work according to the agreed work plan and agreed commitment with partners. The data collected will also provide the information needed for impact study.
	4.2. Conduct and disseminate impact studies on the drivers of sustainable value-chain transformation.	
Implement the national communication strategy	4.3. Establish a knowledge management system to effectively capture, distil and disseminate the knowledge generated from the project to target audiences and for internal learning.	Good communication strategy allows an effective dissemination process of SFITAL findings to small-scale producers, local and national government institutions and the private sectors. Consequently, enhancing the commitment of all parties to play their role in establishing sustainable commodity value chain that address conservation of landscape, sustainable livelihoods, and sustainable commodity development at the targeted landscape.

Strategic approaches	Activity	Theory of Change
2.3 Development of sustainability monitoring and evaluation systems practiced by small scale producers	Test a traceability system that meets the requirements of sustainability standard verification and develop and establish participatory monitoring systems coordinated by farmers' groups.	An integrated M&E using the digital platform is designed to verify the sources of the commodity (geographical, group identity) and capture the existing relevant supply chains, from small-scale producers to processing units. Further, the digital platform can be enriched by additional information, such as farming practices, conservation agriculture practices as the proxy for the status of ecosystem services, and profitability profiles at each production stage. Monitoring and evaluation systems on the implementation of sustainable practices by small scale producers are crucial in developing P4 and PES scheme as proof of environmental stewardship activities and as the means of verification to encourage the involvement of public and private sectors.
	Pilot and measure impact compliant with agreed sustainability management systems and/or standards.	
Component 3. Develop road maps to scale-up and mainstream inclusive, sustainable, and transparent smallholder commodity chains.		
3.1 Inclusive, integrated and informed stakeholder engagement	Collect participatory data to feed into the development of appropriate land-use scenarios that match local contexts in the targeted landscapes.	To attain sustainability interventions at scale, investors, both agribusiness and impact ones, need a set of information that guide them where to invest and what type of green business portfolios are available. Sub-national governments are the most appropriate stakeholders to facilitate the presence of such information. Road Maps in cocoa and palm oil sustainable development and sourcing that are resulted from the evidence-based, inclusive and integrated trade-offs analysis of land suitability, ES provision, and development strategy, become the foundations for sub-national government to provide information for upscaling green investment. Component 3 supports and facilitates the sub-national governments (i.e. District and municipality levels) to develop such road maps. The Road Map in Cocoa and palm oil also encompasses information on designing, developing, and implementing co-investment for ecosystem services. The main focus is to identify and pilot the payment for ecosystem services at landscape levels. However, the opportunity to design and implement it for inter-jurisdiction by applying for ecological fiscal transfer and designing landscape certification schemes are explored. Local stakeholders (government, private sector, farmers, civil society) willingness to support smallholder commodity chain is crucial for the success of sustainable smallholder commodity chains. Awareness raising combined with inclusive technical capacity strengthening can inspire local stakeholders to achieve sustainable development through green smallholding cacao and oil-palm production. Local governments can develop policies and enabling factors through public funding to 1) facilitate smallholders to comply with sustainability standards; 2) improve land governance; and 3) maintain ecosystem services. The private sector/off-takers can commit to enhance
	Develop land-use suitability maps and scenarios for targeted commodities and landscapes.	
3.2 Piloting sustainable commodity sourcing management systems managed by the local government	Develop, test, and evaluate sustainable landscape-level sourcing management systems.	
3.3 Awareness raising, capacity strengthening and development of sustainable and inclusive jurisdictional strategies for sustainable commodity development.	Conduct intervention planning and partnership building in developing and implementing sustainable and inclusive jurisdictional strategies for commodity development in the targeted landscapes.	
3.4 Establishing PES scheme managed at jurisdictional level developed from P4	Pilot co-investment for ecosystem services and reward mechanisms to incentivise compliance at scale.	

1 Site Profile

1.1 District demography

North Labuhanbatu is a new district expanded from North Labuhan Batu District through Law no. 23 of 2008, dated July 21, 2008 (Figure 1). North Labuhanbatu has an area of 3545.8 km2 divided into eight sub-Districts: Na. IX-X, Marbau, Aek Kuo, Aek Natas, Kualuh Selatan, Kualuh Hilir, Kualuh Hulu, and Kualuh Leidongi. In total, there are 82 villages in the district.

Geographically, North Labuhanbatu is in the East Coast Region of North Sumatra Province, located at 990 25' 00"- 1000 05' 00" east longitude and 010 58' 00" – 020 50' 00" north latitude with an altitude of 0-2,151 mdpl. The administrative boundaries of North Labuhanbatu are Asahan District and the Malacca Strait in the north, Labuhanbatu District and North Padang Lawas District in the south, North Tapanuli District and Toba Samosir District in the west, and Labuhanbatu District in the east.

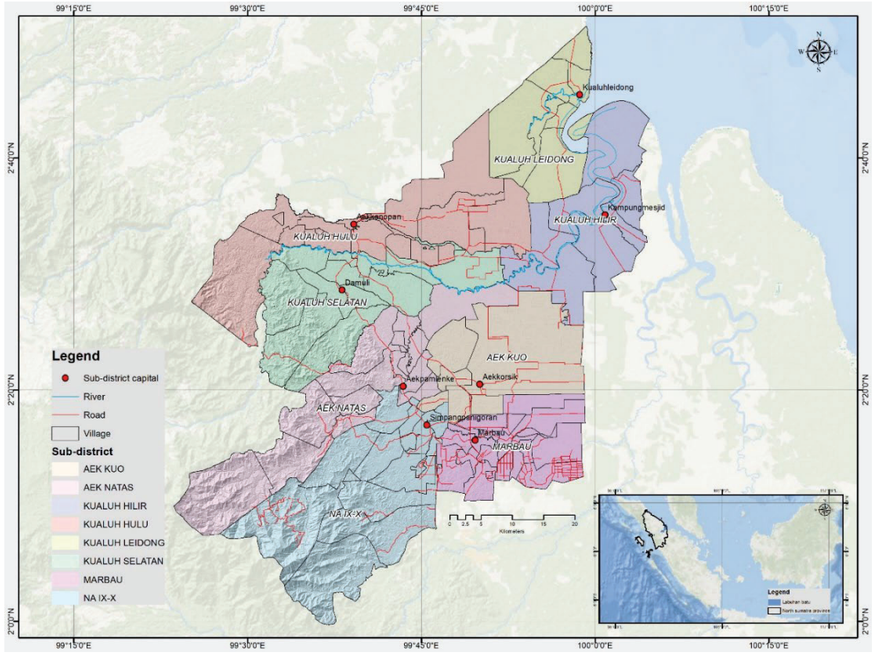

Figure 1: *Map of North Labuhanbatu, North Sumatra, Indonesia (Note: district boundary is based on national map. It is currently being discussed among neighbouring districts and may change)*

When summed up, forest areas with different functions and managed by the national and provincial government are the largest area in North Labuhanbatu covering approximately 35% of the total area, with protected area about 12% and production area about 23% (Table 1). Estate crops are the second dominant land use covering about 31% of the total area of the district.

Table 1: *Changing of land use and forest function in North Labuhanbatu according to different government documents*

Land use	Decree of the Minister of Forestry Number 44 of 2005[i] (hectares)		Proposed revision of forest area in North Labuhanbatu Regency[ii] (hectares)		Landuse of North Labuhanbatu of 2021 (in hectares)[iii]	
	Area	% total	Area	% total	Area	% total
Protected areas	*45,666.45*	13%	41,691	12%	42,082.84	12%
Protected forest (HL)	44,666.45	13%	34,725	10%	41,129.15	12%
Nature Reserve Forest (HSA)	997.34	0%	6,966	2%	953.69	0%
Production areas	*113,969.35*	32%	83,071	23%	83,279.47	23%
Production Forest (HP)	72,406.90	20%	17,451	5%	20,195.59	6%
Limited Production Forest (HPT)	39, 569.45	0%	38,386	0%	38,078.88	11%
Convertible Production Forest (HPK)	1,993.00	11%	27,234	11%	25,005	7%
Horticulture (vegetable plants)	n.a	-	n.a	-	420	0%
Estate crops	n.a	-	n.a	-	108,221.3	31%
Food crops	n.a	-	n.a	-	21,501.8	6%

Source: i. DISKOMINFO Labuhanbatu Utara; ii. BPS Kabupaten Labuhanbatu Utara (2021); iii. Labuhanbatu Utara Regency in Figures (2022)

Strategic approaches	Activity	Theory of Change
1.2. Raising awareness, advocating and getting active supports for its adoption and implementation at targeted jurisdictions, and recognition at broader levels.	1.3. Support in developing and further facilitating multi-stakeholder sustainability platforms to develop road maps and strategies.	Awareness raising and advocacy of SFITAL program, its goals and findings, to key stakeholders (private sectors, government) at the regional, national and provincial levels can persuade stakeholders to gear their activities to build enabling condition for small scale producers to adopt and implement sustainability standards and supporting sustainable smallholder cacao and palm oil value chains.
1.3 Capacity strengthening on SFITAL at national and regional level	1.4. Provide technical assistance to regional cooperation bodies, national and sub-national governments.	Asian-wide and national partners, both public and private sectors, support the goal of SFITAL by creating enabling conditions and later mainstreaming the results of SFITAL to their programme and policy. Thus, the first step is to raise their awareness on SFITAL programme, and regularly update them with the progress and policy recommendations of SFITAL. The next step, when these potential partners are willing to mainstream and adopt the SFITAL approach, the SFITAL team provide technical assistance through joint workshops and other capacity building meetings.
Component 2. Pilot and evaluate sustainable technologies, environmental and social management systems and standards, and traceability systems in targeted landscapes.		
2.1 Capacity needs assessment	Stock-take and evaluate production management and technologies, farmers groups' capacity and local governance to adopt and monitor sustainable practices along value-chains in selected sites within the targeted landscapes.	Small-scale producers must have the knowledge and technology on good agriculture practices and entitle for further support and incentives to adopt sustainability standards. Supports and incentives are essential as the adoption of sustainability standards is beyond their business-as-usual farming practices. Thus, Component 2 targets two layers of interventions. Firstly, related to good agricultural practices (knowledge and technology) focusing on agroforestry practices for cacao and palm oil, the SFITAL collaborated with Mars partners to conduct capacity strengthening on sustainable cacao and palm oil farming practices and management. Secondly, to develop the incentive systems leading to continuous sustainable practices, people-public-private-partnership (4P) can support farmers for better access to finance and stable market for the main raw materials (cocoa and palm oil) and agroforestry products. Moreover, ecosystem service provisions, as the co-benefit from applying GAP, can become another form of additional incentive for smallholders when payment for ES mechanism is put in place.
2.2 Awareness raising, capacity strengthening and piloting cocoa/palm oil systems that implement sustainability standard and establish people-public-private partnerships/P4	Facilitate and build the capacity of smallholders to pilot and prepare business plans compliant with agreed sustainability systems and/or standards, and support in access to financing.	

Appendix 1:
SFITAL Theory of Change

Goal:

The emergence of small-scale producers who are both entrepreneurs and environmental stewards benefiting from well-functioning agri-service providers and enabling environments for sustainable commodity value chains in Asia.

Objective:

1. Environmental and social management systems and/or standards leveraged and properly framed to meet sustainability and strategic positioning in the global market
2. Increased participation of small-scale producers in value chains based on sustainably sourced-raw materials in the targeted landscape
3. Scaling-up of sustainable raw materials value chains at landscape level through strengthening enabling environments by inclusive involvement of local governments and stakeholders
4. Integrated and effective knowledge and project management

Strategic approaches	Activity	Theory of Change
Component 1. Leveraging environmental and social management systems/standards for sustainable, inclusive, and broad-scale transformations of smallholder-based commodity value-chains.		
1.1. Harmonising existing standards and identifying, critical sustainable principle and criteria for commodity and its jurisdictional sourcing landscape.	1.1. Identify and analyse the role of existing environmental and social management systems and/or standards to upgrade and position commodity value chains on global markets.	Environmental and social management systems/standards that sufficiently capture the jurisdiction's sustainability context (i.e. most critical principle and criteria of sustainable commodity and landscape) are key to adoption by small-scale producers of cacao and palm oil. The challenge of the existing ESMS and standards is that they are mostly designed to encompass broader ranges of contexts. Thus, Component 1 ensures and recommends the optimal adoptions of such ESMS and standards that are feasible and operational at the plot, landscape and jurisdiction levels. Identifying the proper design for such standards is crucial for SFITAL in developing a strategy for establishing pilots of sustainable farms (Component 2) and developing road maps of sustainable development for cocoa and palm oils in the targeted landscape (Component 3). The analysis of existing ESMS and standards guide the road maps on targeted raw materials (i.e. cocoa and palm oil).
	1.2. Conduct gap analysis of current value-chain governance arrangements, policy, and regulatory environments at regional, national and local levels.	

Agriculture-forestry, fishery, manufacturing and retail trade are the main sectors contributing to 82% of Labuhanbatu Utara GRDP (Table 2). Agriculture-forestry and fishery contribute the highest (35.5%) to the district GRDP.

Table 2: *Percentage of Gross Regional Domestic Product (GRDP), 2021 Based on Industry*

Industry	Percentage
Agriculture, forestry, and fishery	35.5
Manufacturing	29.47
Wholesale and retail trade; repair of motor vehicles and motorcycles	16.99
Construction	7.10
Real estate activities	3.37
Administrative and defence; compulsory social security	2.24
Transportation and storage	1.12
Accommodation and food services activities	0.95
Financial and insurance activities	0.76
Mining and quarrying	0.66
Education	0.62
Human health and social work activities	0.42
Information and communication	0.40
Business activities	0.17
Other services activities	0.13
Electricity and gas	0.07
Water supply, sewerage, waste management, and remediation activities	0.02

Source: Labuhanbatu Utara Regency in Figures (2022)

1.2 Demography

The total population in North Labuhanbatu was 385,869 people from 85,183 households (2021). The population growth rate per year between 2019-2020 is 1.41%. The largest population is in Kualuh Hulu Sub-District (9.45%), and the smallest is in Kualuh Hilir (9.05%). Aggregated by gender, the proportion of the population between males and females is 194,987 and 189,159. The percentage of poverty in North Labuhanbatu in 2017 was 11.28%, and by 2021 declined to 10.62%[1].

1.3 Agriculture and agroforestry profile

Regarding GRDP (Gross Regional Domestic Product), agriculture is North Labuhanbatu District's primary revenue source, with palm oil and rubber as the leading agricultural commodity. The most significant smallholder palm oil and rubber production are in Kualah Hulu. Other commodities that are also widely produced are coconut and cocoa. In 2021, the agriculture, forestry, and fisheries sectors was estimated to contribute 35.5% to the total GRDP at current price. Table 3 shows the composition of area and production of North Labuhanbatu commodities in 2020:

[1] BPS Kabupaten Labuhanbatu Utara. (2021). *Kabupaten Labuhanbatu Utara dalam Angka 2021.* Labuhanbatu Utara: BPS Kabupaten Labuhanbatu Utara

Table 3: *Composition of Area and Production of Plantation Commodities in North Labuhanbatu 2021*

	Immature (ha)	Mature (ha)	Damaged (ha)	Total (ha)	Production (ton)
Palm oil	5,258	66,992	20,970	93,221	1,583,323.60
Rubber	249	13,309	3,876	17,434	59,510
Coconut	29	391	1,162	1,582	4,659
Cocoa	5	201	40	246	482
Areca nut	17	142	20	182	6,460

In 2020, the area of palm oil plantations was 87,727 ha, and the largest is located in Kualuh Hilir Sub-District. In addition, North Labuhanbatu also produced vegetables[2]. The horticulture productions were 153.9 tons of chili, 80.0 tons of long beans, 222 tons of spinach, 224.9 tons of kale, 75 tons of eggplant, and 74.5 tons of cucumber. Other food crops the North Labuhanbatu produced included lowland rice with a production capacity of 100,780,23 tons from a harvested area of 18,211.2 ha; field rice with a production capacity of 50,867.11 tons from the harvested area of 14,039 ha; 290.16 tons maise and 578.13 tons cassava.

1.4 Environmental issues and ecosystem services' potential

North Labuhanbatu District is upstream of Bilah River and part of the Kualuh Watershed. The river has excellent water quality and serves as a source of drinking water for the surrounding community, although people also use the river as a toilet and washing facility. Oil palm plantations locate along the river and are cultivated in the catchment. Given the intensive management of oil palm plantations, the quality of the river is under threat.

The management of Kualuh watershed is under BPDASHL (*Badan Pengelolaan Daerah Aliran Sungai dan Hutan Lindung*) Asahan Barumun for its forest and conservation areas and Wilayah Sungai (WS) Kualuh-Barumun for its infrastructures such as irrigation and reservoir. Around 24% of the watershed areas that lies in North Labuhanbatu is degraded land.

[2] BPS Kabupaten Labuhanbatu Utara. (2021). *Kabupaten Labuhanbatu Utara dalam Angka 2021.* Labuhanbatu Utara: BPS Kabupaten Labuhanbatu Utara

5 Next Step Towards Implementation

The landscape characterisation developed in North Labuhanbatu (Step 1, Appendix 2) is the basis for developing specific interventions at the village level. Several steps and analyses are still required to determine intervention options contextual to the villages' issues and conditions.

The landscape characterisation provides the sampling frame for the household survey and FGDs [Step 2]. The FGDs and household survey will be carried out in each cluster identified for interventions to obtain socio-economic features of farmers as the targeted beneficiaries, including information on prior exposure to knowledge and current oil palm farming practices. Hence, SFITAL can identify the intervention options that cater to the need and preferences of farmers. The sampling framework will need to be developed before performing the household survey and FGDs.

Once the potential options of interventions are identified for each targeted village, the next step is to inform and discuss with the stakeholders at the district and village levels. At the district level, the discussion will be on potential synergy with the existing district programme and the relevance to each cluster's overall direction of oil palm development. At the village level, the primary intention is to raise the awareness of the SFITAL programme among the village offices and farmers; and to gain their feedback if the intervention options match the farmers' interest, need, and capacity.

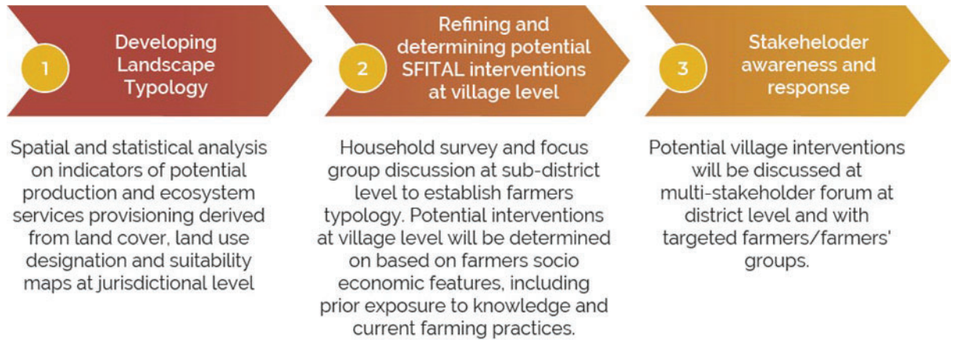

Figure 4: *Steps in developing interventions at village level*

C.3. Coordinating in establishing a digital M&E system adopting the Terpercaya platform for critical socio-ecological indicators (linked to Strategy A).

Purpose	To equip the district with a versatile tool to plan, monitor, evaluate and report critical socio-ecological indicators for ensuring jurisdictional sustainability sourcing areas, aligning to the Terpercaya system.
Activity	C.3.1. Develop the critical indicators to be translated into the digital tool in close consultation with the district stakeholders. C.3.2. Test and refine the digital tool to ensure long-term practicalities in the district. C.3.3. Conduct a series of training sessions on the final version of the product.
Partners	Bappenas, Bappeda and other District Agencies in North Labuhanbatu, district special taskforce,
Means of verification	C.3.1. The district stakeholders jointly design and agree on indicators as part of the M&E sustainable palm oil digital tool. C.3.2. The digital tool is acknowledged and applied for enhancing the M&E sustainability performance of the district. C.3.3. The relevant stakeholders responsible for database and M&E systems can operate, manage, maintain, and update the tool after the SFITAL completes.
Timeline	Y4 – Y5

2 Palm Oil Commodity Profile

2.1 Palm oil cultivation, plantation, and relevant statistics

Oil palm plantation in NL covers approximately 160 thousand hectares and produces more than 1.6 million metric tonnes (or about 5.3% of North Sumatra's and 0.5% per cent of Indonesia's total production in 2021). Oil palm productivity in North Labuhanbatu is somehow between the average of national and provincial ones and better than other areas in North Sumatra (Table 4). Overall, this number is relatively low as the peak of oil palm is 12 tons/hectare yearly, with average productivity worldwide stagnating around 3 tons/ha yearly[3].

With this production, seventeen companies are operating to process the oil palm harvest (Table 5). NL's oil palm processing factories include subsidiaries of internationally well-known companies, such as Sinar Mas Agro Resources and Technologies, and PT Tbk (PT SMART-Tbk), among other prominent players in Indonesia. Two rubber plantations with natural rubber processing factories exist in NL, PT Socfin Indonesia (Socfindo) and PT Kapuas Mas.

Table 4: *Oil palm data in Indonesia, North Sumatra, and North Labuanbatu 2021*

	Harvested area (ha)	% area	Total harvest (ton)	% Harvest	Productivity (ton/hectare)
Indonesia	15,081,021[i]		49,710,345[i]		3.30
North Sumatra	1,345,783[i]	8.9% of Indonesia	5,928,612[i]	12% of Indonesia	4.41
North Labuhanbatu	71,180[ii]	0.5% of Indonesia 5.3% of North Sumatra	255,870[ii]	1% of Indonesia 4% of North Sumatra	3.59

Source: [i] Directorate General of Plantation data; [ii] Provincial Statistic Office of North Sumatra

[3] Woittiez, L.S., van Wijk, M.T., Slingerland, M., van Noordwijk, M., Giller, K.E., 2017. Yield gaps in oil palm: A quantitative review of contributing factors. European Journal of Agronomy 83, 57-77. https://www.sciencedirect.com/science/article/pii/S1161030116302131

Table 5: *Information on estate companies and smallholder plantation areas*

Oil Palm plantation areas and estate companies		Areas of other commodities (hectares)	
Estate companies	17 companies	Rubber	18,455
HGU (cultivation rights)	-	Cacao	250.75
HGU area	-	Coconut	1,590
HGU area, of which oil-palm	-	Pinang	198.50
Planted area	93,221 ha		
Harvested area	66,992 ha		
Total production	1,583,341,560 ton[i]		
Smallholders' palm oil	31.350		

Source: Labuhanbatu Utara in Figures: 2022; i. Unpublished Data Department of Agriculture, 2021

2.2 Governance of sustainable commodities

The Government of Indonesia has committed to ensuring the sustainability of the palm oil industry in Indonesia by enacting and implementing various policies and regulations (Table 6). The first attempt to achieve deforestation-free commodities was to enact Presidential Instruction Number 8 of 2018, targeting the moratorium and evaluating palm oil plantation licenses and delays in granting new permits. Despite some challenges, the GoI has implemented the Indonesian Sustainable Palm Oil System (ISPO) since 2011. The ISPO was enacted by the Presidential Instruction in 2022 to ensure wider adoptions by smallholders, defined as those with farms smaller than 25 hectares. These smallholding farmers will have five years in which to comply. Indonesia's 2.67 million smallholder farmers in Indonesia manage 40% of the total oil palm plantation area in the country (5.8 million hectares). Only 0.21% of that area, or 12,200 hectares (30,150 acres), is certified as sustainable under the ISPO. In contrast, 557 of 1,500 plantation companies have been certified, covering 5.25 million hectares (12.97 million acres).

In 2017, the government launched a nationwide program – People's Palm Oil Rejuvenation Program (PSR) – to replant the entire span of those ageing farms with higher-yield seedlings by 2025. As of the end of 2019, however, it had planted just 4% of the targeted area, with bureaucracy the central obstacle: the farmers found it difficult to prove they were eligible for government financial assistance for replanting.

Table 6: *Indonesia's regulations on sustainable palm oil development*

National regulation	Content
Presidential Instruction Number 8 of 2018	Moratorium and evaluating palm oil plantation licenses and delays in granting new permits.
Presidential Instruction Number 6 of 2019	National Action Plan on Sustainable Oil Palm (RAN KSB) for 2019-2024. Presidential Instruction mandates the Governor and the Regent/Mayor to prepare the Regional Action Plan for Sustainable Palm oil (RAD KSB) at the regional level and integrate it with existing policies and development plans through the involvement of stakeholders.

Means of verification	C.2.1. The district stakeholders can identify problems and root causes of unsustainable practices, analyse and design credible solutions. C.2.2. The district stakeholders agree on development and ecological scenarios for sustainable oil palm based on evidence and information from the ground. C.2.3. A sustainable and inclusive jurisdictional road map and plan is formally legalised, becomes a benchmark, and guides the district development plans. C.2.4. The North Labuhanbatu district becomes one of the national pioneers in designing and implementing ecological fiscal transfer schemes using relevant landscape indicators for sustainable development.
Timeline	Y3 Q4 – Y5

C.2. Facilitating the establishment of a multi-stakeholder platform to support the implementation of RAD KSB, SFITAL interventions, and upscaling.

Purpose:	To accommodate the existing and legally appointed district multi-stakeholder platforms, including their working groups, aiming at updated, well-informed stakeholders, and can mainstream and upscale the innovations of SFITAL.
Activity	C.1.1. Organise awareness-raising events/training for the concepts and practices of inclusive jurisdictional approach to sustainable oil palm development, ecological fiscal transfers, payment for ecosystem services, sustainable sourcing, and other topics as required by the district stakeholders. C.1.2. Conduct regular meetings to update the progress of the SFITAL. C.1.3. Discuss and result in a road map and work plans for mainstreaming and upscaling SFITAL innovations.
Partners	*Bappeda and other District Agencies in North Labuhanbatu , Asosiasi Petani Kelapa Sawit Indonesia (Apkasindo)*, district special taskforce.
Means of verification	C.1.1. The district stakeholders have sufficient conceptual and technical knowledge of landscape and jurisdictions approaches, including assorted tools and instruments and relevant regulations for implementing such strategies. C.1.2. The relevant district stakeholders are aware of the progress of SFITAL, acknowledge, are interested in learning and applying the innovations brought by the project. C.1.3. The district stakeholders – both public and private ones – commit to mainstream and upscale SFITAL innovations.
Timeline	Y3 Q4 – Y5

developing and implementing RAN KSB is high as the Provincial Government of North Sumatra has enacted the North Sumatra Governor Regulation 14/2020 on RAD KSB to order the district government for its actions toward sustainable oil palm development and accelerate the implementation of ISPO.

The RAD KSP provides an enabling condition for the ISPO implementation, mentioning that the local government should provide support in accelerating the implementation of ISPO certification and access to the sustainable oil palm product market. The mandatory and voluntary certifications for palm oil, i.e., ISPO and RSPO, have not yet developed their full potential in ensuring a sustainable commodity value chain. Focusing at the sub-national (district) level, particularly on ISPO, local government is facing several problems, including (1) limited personnel budgets; local government officials now often conduct the assessments based on desk studies without performing field evaluations; (2) local government cannot easily access data and information about participating companies in ISPO in their region; (3) lack of authority and inadequate incentives for local government to assure compliance and penalize companies or smallholders in the case of non-compliance or encroachments.

A sustainability action plan requires a comprehensive M&E system, including key performance indicators. SFITAL, in collaboration with the National Development Planning Agency, will support the district government in developing the digital M&E platform by adopting the Terpercaya e-platform systems[15]. The Terpercaya defines district sustainability at scale, hosted by the National Development Planning Agency, with support from the European Union (EU). It builds on national regulations, reflects international commitments, and complements existing sustainability certifications. The Terpercaya is proposed as an effective way to measure the performance of districts in overcoming the challenges by producers, farmers, and concessionaries as they work towards sustainability[16]. The Terpercaya implementation is currently limited to pilot districts thus it is crucial to expand the engagement and adoption in other districts with large palm oil plantation areas.

C.1. Facilitating in development of an integrated, synergised, and participatory regional action plan on sustainable oil palm contextual to the district regional development plan and strategy supported by field data and information.

Purpose	To facilitate the district with an integrated, inclusive, evidence-based road map for commodity development and conservation financing towards sustainable oil palm using landscape and jurisdictional approaches in the form of a RAD KSB.
Activity	C.2.1. Consult the district government officers and agencies intensively on the driver, pressure, state, impact, and responses in oil palm landscapes. C.2.2. Jointly determine scenarios on oil palm development. C.2.3. Develop a sustainable and inclusive jurisdictional road map for oil palm development in the form of RAD KSB. C.2.4. Support the district stakeholders in ecological fiscal transfers using the agreed landscape indicators for sustainable development.
Partners	Bappeda and other District Agencies in North Labuhanbatu , NGO, University, district special taskforce, etc

[15] https://transparencypathway.org/initiatives/terpercaya/

[16] https://efi.int/sites/default/files/files/flegtredd/Terpercaya/Briefings/9.%20Lessons%20learnt%20from%20the%20Terpercaya%20Initiative%20-%20ENGLISH.pdf

National regulation	Content
Presidential Instruction Number 44 of 2020	Certification system of Indonesian Sustainable Palm Oil (ISPO) to ensure sustainable practices implemented by the oil palm plantation through conformity, good agricultural practices, sustainable management, responsibility to labour, corporate social responsibility, transparency, and sustainable businesses.
Ministerial Regulation of Agriculture No. 38 of 2020	Implementation of ISPO provides detailed specifications and mandates the responsibility of the plantation to have ISPO certification five years after the regulation is enacted.

The National Action Plan on Sustainable Oil Palm (or *Rencana Aksi Nasional Kelapa Sawit Berkelanjutan* – RAN KSB) aims to provide more operational enabling conditions for developing sustainable palm oil in Indonesia enacted by Presidential Instruction Number 6 of 2019. The document comprises recommendations of actions for multi-stakeholder actors relevant to palm oil supply chains. The stakeholders include relevant government institutions, private sectors, NGOs, and international government organisations. The funding of the RAN KSB is sourced from APBN (state budget), APBD (provincial budget), BPDKS (Palm Oil Management Fund Agency), CSR (Corporate Social Responsibility), and other legal funding sources. Furthermore, the regulation recommends mainstreaming gender issues into implementing RAD KAB at the national and sub-national levels.

To respond to the national mandate, the Provincial of North Sumatra passed the Provincial Regulation No. 14 of 2020 on the Provincial Action Plan for Sustainable Palm oil Plantation of North Sumatra Province for 2020 – 2024 (*Rencana Aksi Provinsi Kelapa Sawit Berkelanjutan Sumatera Utara* – RAP KSB Sumut). Article 7 of the provincial regulation states that the Strategies for the Development of Sustainable Palm oil Plantation in North Sumatra are:

a. To implement regulations related to the development of sustainable palm oil plantations
b. To resolve the legality of plantation land based on statutory regulations
c. To apply the principles of sustainability to optimise the results of community gardens in the long term while preserving nature
d. To increase the productivity and income of smallholders by utilising appropriate plantation cultivation technology
e. To provide legal certainty and regional policies that guarantee business in the palm oil sector
f. To increase the institutional partnership of independent, mutually beneficial palm oil plantations with plantation companies and other business entities
g. To build open access to information, funding, markets, and investment for smallholders
h. To create harmonious, dynamic, and equitable industrial relations in the palm oil sector
i. To synergise and coordinate the actions across institutions/sectors for optimal regional development.

The guideline for operationalising the RAD KSB depicts that the mid-term sub-national policy and programme development plans must formulate sustainable oil palm policy and actions as outlined in the Mid-term National Development Planning 2020 – 2024 (and beyond) (Figure 2). The guideline also mentions the working flow of RAD KSB development: (1) formulating the drafting team; (2) discussing (Chambers *et al.*, 2021) the activity working plan; (3) drafting the action plans; (4) organising public consultations; (5) finalising the regional action plan document.

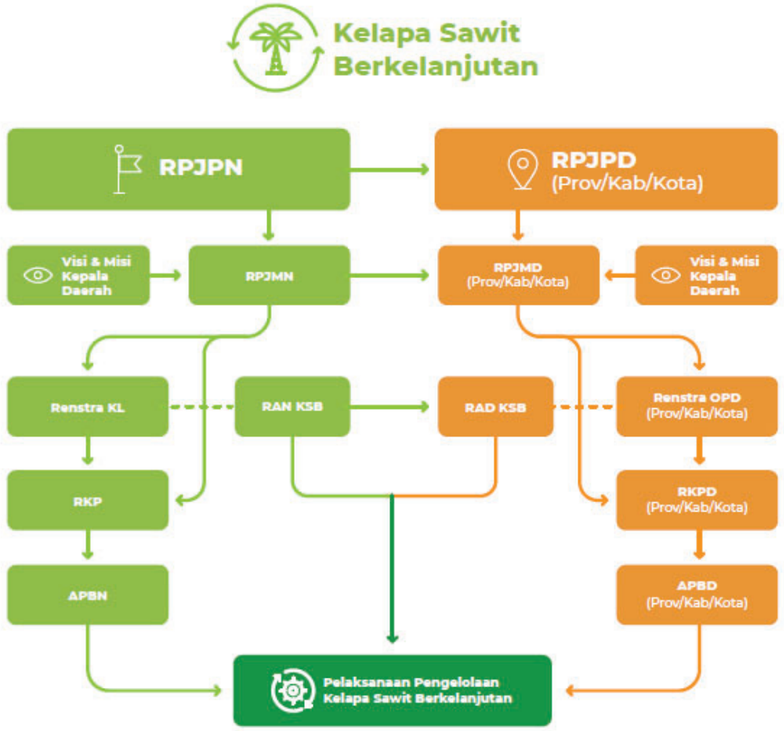

***Figure 2**: Positioning the national and regional action plans for sustainable palm oil development into national and regional planning documents (Source: Guideline of the Preparation and Implementation of Regional Action Plan for Sustainable Oil Palm)*

2.3 Issues and challenges

Albeit the contribution of the palm oil industries to its local economy, the oil palm plantations, particularly the ones managed by smallholders in North Labuhanbatu, are still facing various challenges.

- *Forest conversion to palm oil plantation*: a study from the Indonesian Forum for the Environment in North Sumatra (Walhi Sumut) found that tens of thousands of hectares of forest areas in North Sumatra Province have been converted into palm oil plantations managed by large corporations. The demarcation process of the forest area of North Sumatra, in the period 2005-2014 and 2014-2016, informed that the number of forest areas declined to approximately 731,960 hectares. According to SK No 579–SK No 1076 of 2016, between 2014-2016, 45,635 hectares of the total 3,010,160 hectares of forest area is converted into palm oil plantations. those area including Districts of South Tapanuli, Central Tapanuli, North Tapanuli, Simalungun, Mandailing Natal, North Labuhanbatu, and South Labuhanbatu. In Labuhanbatu Utara, the forest has been fragmented, destroying the habitat of the Sumatran tiger and endangered endemic fauna[4].

[4] http://foksbi.id/id/berita/baca/02-25-2021-dorong-sertifikasi-ispo-sumut-ingin-selesaikan-status-lahan-perkebunan-kelapa-sawit

B.3. Facilitating oil palm smallholder cooperatives with potential for establishing biofertiliser processing.

Context: Bio-fertilisers are natural fertilisers that contain living microorganisms that permeate the rhizosphere and promote growth by increasing the supply or availability of primary nutrients to the host plant. The use of bio-fertilisers is particularly evident in organic farming and the practice of composting for soil fertility as it is much more environmentally friendly than chemical fertilisers.

The substance of biofertiliser uses biofeedstocks, namely Empty Fruit Bunch (EFB), sludge and Palm Oil Mill Effluent (POME). Capitalising and harnessing biomass products also offer huge business opportunities for micro-small and medium enterprises (MSMEs), especially if they focus on bio-fertiliser production. The biofertiliser can be promoted as an alternative to the widespread use of chemical fertilsers in North Labuhanbatu District and surroundings. The cost and technological utilisation of oil palm biomass composting is relatively cheap and does not require sophisticated mechanisms[14]. Thus, the processing is feasible at the scale of smallholders. In the next stage of processing, the biofertiliser can be converted into eco- and bio-composite products across a range of sectors and industries.

Purpose:	To support MSMEs producing biofertilsers from oil palm biomass wastes.
Activity	B.2.1. Identify simple technologies feasible for MSME scale processors, including the cost and investment profiles, and market targets, in collaboration with the Indonesian Plantation Research Institute. B.2.2. Raise awareness and strengthen the capacity of local cooperative members to consider the biofertiliser business models. B.2.3. Facilitate the development of business models for biofuel processors.
Partners	Indonesian Plantation Research Institute, private sectors, local district government (Disperindagkop).
Means of verification	B.2.1. Business models of MSME biofertiliser processors are ready to be introduced to smallholders and endorsed by the district agriculture agency and potential off-takers. B.2.2. Members of interested farmer groups and cooperatives understand the cost and benefits of processing oil palm wastes. B.2.3. An investment plan for an MSME biofuel processor is ready to gain financial support.
Timeline	B.2.1. (Y3 Q4); B.2.2. (Y4); B.2.3. (Y4-Y5)

4.3 Strategy C: Enhancing the local government's governance capacity by implementing jurisdictional sustainability for oil palm.

Context: The Presidential Instruction Number 6 of 2019 on National Action Plan on Sustainable Oil Palm (RAN KSB) of 2019-2024 instructed the Governor and Chief of District to arrange a regional version of the RAN KSB, i.e., *Rencana Aksi Daerah*/Regional Action Plan (RAD KSB), mainstream the action plan to regional policy, and establish a regional taskforce to implement the action plans by involving multi-stakeholders. The principles of such RAN/RAD KSB are integrated into the regional medium-term planning document and its strategic plan of the district services, synchronised among various development sectors, including gender mainstreaming, and participatory by involving all relevant stakeholders for sustainable oil palm development. In North Labuhanbatu, the potential for

[14] https://www.eco-business.com/opinion/revolutionising-agriculture-bio-fertilisers-from-palm-oil-empty-fruit-bunches/

Means of verification	B.1.1. Smallholders trained have sufficient technical knowledge and capacity to apply and implement PSR and support in connecting them with the relevant institution at the national level. B.1.2. Farmer groups are connected to the financing institutions and can complete the required administration. B.1.3. A peer-to-peer lending platform is ready to collaborate with local farmers. B.1.4. Smallholders trained have sufficient technical knowledge and capacity to practise sustainable oil palm farming with stable high productivity and meet the required PCI. B.1.5. A farmer group's business model is facilitated with a bankable business portfolio and plan and connects to the funding administrators and potential off-takers.
Timeline	Y3 Q4 – Y4

B.2. Facilitating oil palm smallholder's willingness to diversify their farming systems towards agroforestry practices and building agroforestry-based business models targeting regenerative agriculture models.

Context: Oil palm is a highly significant crop in many countries and is prone to rot caused by fungus. Basal stem rot (BSR) is a fatal fungal (*Ganoderma*) disease of oil palm plantations which significantly impacts the production of palm oil in many countries, including Indonesia and Malaysia. Diversifying the oil palm with other trees in the form of intercropping and agroforestry practices might help reduce the Ganoderma distribution. Further, the literature mentions that agroforestry contributes to a more stable income before the oil palm matures and the provision of ecosystem services – particularly carbon stock and agrobiodiversity. Economically, when the non-oil palm commodities have their niche markets, the net present value of the agroforestry system can be higher compared to the monoculture ones.

Purpose:	To introduce regenerative agriculture practices that provide income from agriculture and ecosystem services and pilot oil-palm agroforestry models through public and private funds.
Activity	B.3.1. Design the regenerative agriculture models with smallholders in a participatory manner. B.3.2. Pilot oil palm agroforestry models and its M&E systems at the local level. B.3.3. Facilitate and strengthen grass-root institutions for better landscape governance.
Partners	Farmer groups, Government Extension Officers (Forestry and Agriculture), Forest Management Unit, Private sectors.
Means of verification	B.3.1. A regenerative agriculture model that combined ecosystem service provisions and better profitability is established voluntarily by participating smallholders. B.3.2. A performance-based conservation agriculture model is operational with the ecosystem service beneficiary is ready to provide incentives for the participating farmers. B.3.3. Grass-root institutions involved in the piloting of the conservation agriculture models.
Timeline	Y2 (Q1-2) for B.3.1; Y2 (Q3-Q4)-Y4 for B.3.2. and B.3.3

- *Incidences of forest fires*: North Labuhanbatu District is one of the areas with a high history of forest fires in North Sumatra. The incidents are summarised below[5]
  - Fire in Kualuh Selatan SubDistrict (2019) on PTPN 2 Land, which burned shrubs and wood trees due to community negligence.
  - Fire in Aek Natas Sub-District (2019) on HP and APL land which burned forest wood trees due to land clearing
  - Fire in Aek Natas (2019) on community land due to negligence
  - Fire in Aek Natas (2019) in production forest due to land clearing
  - Fire in Aek Kuo di (2018) on community land due to negligence
  - Fire in Kualuh Leidong (2018) on community land that burned peatlands and palm oil plantations due to negligence.
- *Potentials of natural disasters*: Potential natural disasters in North Labuhanbatu are ground motion, earthquakes, and floods[ii]. North Labuhanbatu is one of the areas prone to disasters such as landslides and flash floods, especially in extreme weather[6].
- *Land legality and ownership status*: at least 300 thousand hectares of land in North Labuhanbatu are overlapped between forest and smallholder plantations that need further clarification from regional boundaries (*Tapal Batas Regional*). Unclear legality and ownership status hinder the implementation of ISPO principles and criteria.
- *Land conflict*: the smallholders in Air Hitam Village, Kualuh Leidong Sub-District, North Labuhanbatu, with approximate 500 ha of land ownership, are not eligible to participate in government program-palm oil rejuvenation since their plantation is also located in Permanent Production Forest (HP), the conflict remained without settlement since the 1970s.
- *Limited established farmer organisations*: farmer groups are common in Indonesia. In North Labuhanbatu, farmer cooperatives exist but are mostly inactive and only respond to ad-hoc programmes of the government. Despite numerous government policies regulating the establishment of smallholders' institution, the limited capacity of farmer groups and cooperatives might weaken the bargaining position for the smallholders to enter an impactful value chain [7].
- *Low productivity of smallholders' oil palm plantations*: problems with the pathogenic fungus Ganoderma and ageing plantations are rampant in the district leading to low productivity of oil palm and reduced income for the farmers.
- *Insufficient information on the national programme of smallholder palm oil rejuvenation*: despite implementing the Smallholder Palm Oil Rejuvenation (PSR) program for three years, few farmers in Kualuh Leidong and Kualuh Hilir sub-Districts received comprehensive information related to PSR[8].
- *Delayed applications of PSR*: while some farmers under the management of cooperatives have applied the PSR to Directorate General of Plantation – Ministry of Agriculture, these applications have not been approved for years by the responsible institution.

5 https://rri.co.id/medan/1729-umum/1186601/13-daerah-di-sumut-risiko-tinggi-bencana-ini-daftarnya

6 http://disbun.sumutprov.go.id/dashboard/web/index.php?r=kebakaran-lahan-dan-kebun%2Frekapitulasi-kabupaten-kota&kode_provinsi=12&kode_kabupaten_kota=23

7 Nggarang, Y. F., Andri, M., Andriani, R., & Pandelaki, T. (2021). *Harga Sawit Naik, Petani Sejahtera?: Praktik Ekslusi dan Strategi Petani di Masa Pandemi Covid-19.* Bogor: Serikat Petani Kelapa Sawit

8 https://tanahkita.id/data/konflik/detil/bVgxRmFLZHktSUk

- *Limited engagement with ISPO and RSPO*: the implementation of ISPO and RSPO is limited to farmers who join the nucleus-plasm contractual scheme with large corporations. Moreover, there was lack of information on the numbers of farmers who have joined the ISPO and RSPO in this district.
- *Covid-19 pandemic*: the pandemic has had a prolonged impact on the smallholders in North Labuhan batu, reduced their income and impacted the supply of palm oil in the area. Interrupted distribution of agricultural inputs, such as fertilisers, certified seedlings, and pesticides, caused high prices at the farmer levels. Moreover, the pandemic situation limits labour availability. In short, the situation causes high costs for smallholders[9].

[9] Nggarang, Y. F., Andri, M., Andriani, R., & Pandelaki, T. (2021). *Harga Sawit Naik, Petani Sejahtera?: Praktik Ekslusi dan Strategi Petani di Masa Pandemi Covid-19.* Bogor: Serikat Petani Kelapa Sawit

Partners	BAPPEDA, District Agricultural Services, multi-stakeholder task force, related provincial government.
Means of verification	A.1.1. Local government and members of the multi-stakeholder platform voluntarily and actively attend and participate in capacity-strengthening events. A.1.2. The stakeholders contribute to the analysis in a participatory way. A.1.3. Agreements on a set of critical P&C are achieved and documented.
Timeline	Y3 – Q3, Q4

4.2 Strategy B: Ensuring smallholders benefits from a sustainable oil palm farming system and options of agriculture income diversification.

The sub-strategy under Strategy B is designed based on the socio-ecological context and typology built for the district using 15 datasets from secondary information. Options for field interventions will be combined from several sub-strategies below after consulting with local communities and other stakeholders in the district.

B.1. Facilitating smallholders with medium to high productivity access to join the national rejuvenation programme (PSR) and advance their farmer groups/cooperatives towards better bargaining positions in the value chain.

Context: Oil palm is a major commodity in North Labuhanbatu compared to other plantation raw materials, such as rubber, cacao, and coconut. At the national level, the government distributed Rp. 313.53 billion in 2018 and Rp1.94 trillion in 2019, with total disbursement to an area of 77,913 ha. The *Badan Pengelola Dana Perkebunan Kelapa Sawit* (BPDPKS) launched the PSR (community oil-palm revitalisation programme) Online application in June 2019, increasing the fund distribution by 621%. The District Government informed that at least 400 farmers had joined the programme with various challenges, including weak local institutions, lack of information on the programme, and delayed approval at the national level. Further, SFITAL may connect the PSR participants to peer-to-peer lending partners that will help utilisation of fallow revitalised lands at the beginning of the PSR programme by planting horticulture and annual fruits, such as watermelon and pineapples. After one or more years of facilitation, when the farmer's local institutions are more mature and stronger, introducing ISPO and the concept of sustainability for private lands will also be initiated.

Purpose	To improve the medium-to-high productivity of smallholders' capacity to adopt environmentally and socially responsible practices and create opportunities to advance their business models.
Activity	B.1.1. Raise awareness and capacity strengthening of local farmer groups to be well informed and ready to apply for the PSR programme; B.1.2. Facilitate farmers to develop a business model for utilising their fallow lands by cultivating annual commercial fruits, such as watermelon and pineapples; B.1.3. Support farmers to access public and private funding for revitalisation and enhanced value chains by connecting them to peer-to-peer platforms. B.1.4. Strengthen the 'good agriculture practices (GAP)' in collaboration with existing NGOs and government programmes, particularly the GAP that matches ecosystem service potentials and follows critical sustainability PCI (link to Strategy A and C). B.1.5. Support farmer group/cooperative models with better access to prices and markets, particularly markets for sustainable products.
Partners	District Agriculture Agency, private sectors, related national government: MoA, MoF.

4 SFITAL Interventions

4.1 Strategy A: Leveraging enabling conditions for sustainable palm oil sourcing at the jurisdictional level

Context: Environmental and social management systems/standards that sufficiently capture the jurisdiction's sustainability context (i.e. most critical principle and criteria of sustainable commodity and landscape) are key to adopting small-scale palm oil producers. The challenge of the existing ESMS and standards is that they are primarily designed to encompass broader ranges of contexts. Different planning documents and commitments towards sustainability usually define and require specific ESMS and standards that may either overlap or enrich each other. To be more efficient and cost-effective, the local government needs information on critical principles and criteria for meeting national-level commitments that might align with global demand. Certification systems and commodity sustainability standards for oil palm encompass Indonesia Sustainable Palm Oil (ISPO), Roundtable on Sustainable Palm Oil (RSPO)[11], the Accountability Framework Initiatives (AFI)[12], and International Sustainability and Carbon Certification (ISCC)[13]. This process aims to provide inputs for developing District Action Plans on Sustainable Palm Oil (RAD-KSB) (link to Strategy C, Component 3 SFITAL).

A.1. Harmonising existing public and private ESMS initiated by identifying critical principles, criteria, and indicators (PCI) for sustainable palm oil sourcing at the jurisdictional level and focusing on smallholders' benefits.

Purpose:	To support the district government in harmonising sustainability PCI from various relevant documents for their conservation and development planning (i.e., RPJMD, green growth plan) and required information for ensuring jurisdictional sustainability sourcing areas (such as district biodiversity HCV and HCS).
Activity – linked to the GDD output	A.1.1. Raise awareness on conservation and development problems and how to translate these issues into planning, action, and monitoring & evaluation systems. A.1.2. Analyse different sustainability principles, criteria and indicators of sustainability from the commodity (palm oil) perspective and landscape/jurisdiction. A.1.3. Develop and agree on a set of critical P&C contextual to the district.

[11] https://rspo.org/

[12] https://accountability-framework.org/

[13] https://www.iscc-system.org/

3 Landscape Characterisation and Existing Programme

3.1 District landscape characterisation and typology

This section describes the results from analysing the landscape characterisation of the North Labuhanbatu landscape using spatial and secondary tabular data of the district (Box 1 and Appendix 2). The final result of such landscape chracterisation is a landscape typology map that consists of the types of clusters existing within the district. The district landscape characterisation is based on spatial and statistical analysis with the village as the unit of analysis and further incorporated int sub-districts. The characterisation is analysed by considering spatially explicit variables

Box 1: *Definition and objective of landscape characterisation*

A landscape characterisation: a way of identifying the variability within a landscape to advise the sampling design in the landscape, based on similarity in spatial information representing production level and provisioning of ecosystem services. Each cluster reflects their different potentials to be designed and supported by interventions to increase (specific) commodity production and to maintain and enhance ecosystem service provisions. The landscape sampling framework will be complemented by:

- A farmer typology describing different types of farmers' practices and land management, knowledge on existing practices, including exposure to good agricultural practices and sustainability, assets, socioeconomic and grass-root institutions.
- A landscape typology describing variations of each landscape unit based on similarity of spatial, biophysical, and socioeconomic characteristics.

The purposes in developing the landscape characterisation are:

a) Understand the general characteristics of the landscape and its variations of clusters.
b) Present spatially the cluster conditions on (1) land suitability of the commodities expressed in the potential of each cluster in reaching a certain commodity production level; (2) ecosystem services expressed in the potential of each cluster in maintaining or providing the stocks and flows of ecosystem services; (3) Provides a basis to compare, synthesise and extrapolate results and lessons learned from the assessments.
c) Define broad strategy and intervention on each cluster.
d) Further elaborated into target participants and locations of interventions, with more refined units of farmer groups, sub-villages, and villages.
e) The landscape characterisation is developed with the following categorisation:

Cluster/typology	High potential production	Medium potential production	Low potential production
High ES potential	1	2	3
Medium ES potential	4	5	6
Low ES potential	7	8	9

Only 7 clusters exist in North Labuhanbatu (Table 7) as the area with high ES potential & high potential production, and medium ES potential & medium potential production cluster do not exist. SFITAL intends to work in clusters where potential production is medium or high, and ES is medium or low. Therefore, potential areas for SFITAL interventions are in Clusters 4, 7 and 8 (Table 7 and Figure 3).

Table 7: *Types of landscape clusters and sub-districts in North Labuhanbatu*

Cluster	Description	Sub-District	Cluster selected for SFITAL interventions
2	High ES potential and medium potential production	Aek Natas, Kualuh Selatan	*Not selected* – the sub-districts are mostly the buffer zones of state forest lands. Tenurial conflicts are high, and land status is unclear. Interventions in these areas are not feasible during the period of the project.
3	High ES potential and low potential production	Aek Natas, Kualuh Hulu, Kualuh Selatan, NA IX-X	
4	Medium ES potentials and high potential production	Aek Natas, NA IX-X	*Selected* – smallholder oil palm plantations are dominant and require interventions to enhance productivity and sustainability.
6	Medium ES potential and low potential production	Kualuh Hilir, Kualuh Leidong	*Not selected* – these sub-districts are in the swamp and coastal areas with low suitability for oil palm plantation. Fisheries are the dominant livelihood.
7	Low ES potential and high potential production and	Aek Kuo, Aek Natas, Kualuh Hulu, Kualuh Selatan, Marbau, NA IX-X	*Selected* – smallholder oil palm plantations are dominant and require interventions to enhance productivity and sustainability.
8	Low ES potential land medium potential production	Aek Natas, Kualuh Hulu, Kualuh Leidong, Kualuh Selatan, Marbau	

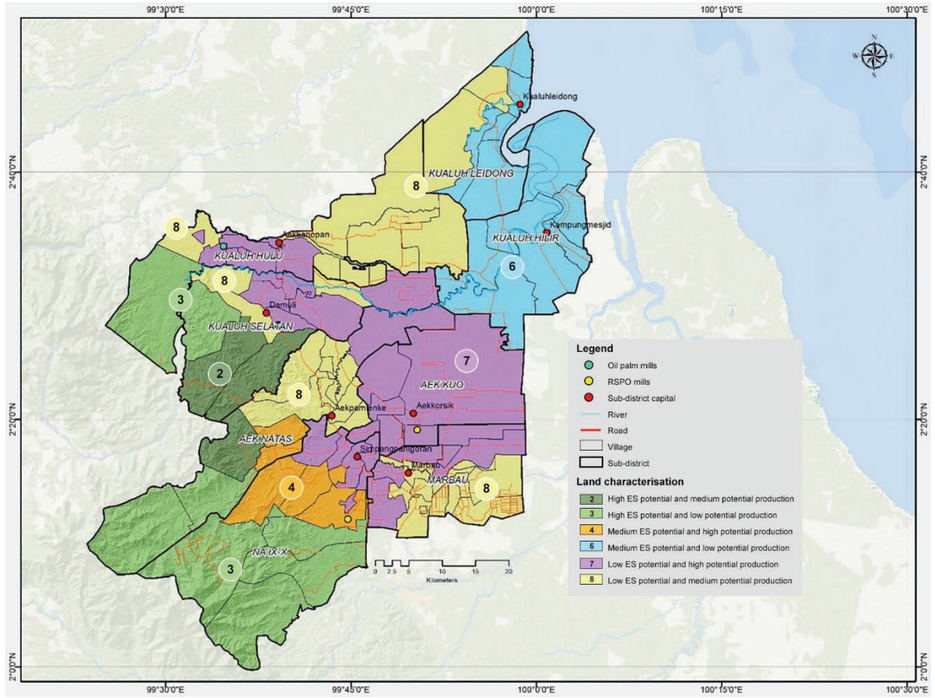

Figure 3: *Landscape typology of Labuhanbatu Utara District*

3.2 Programmes and partners

The national programme of oil palm rejuvenation or replanting old oil palm stands (Peremajaan Sawit Rakyat/ PSR) is an important programme targeting the smallholders in North Labuhanbatu. The Provincial Decree (SK) Number 188.44/84/KTPS/2022 regarding the establishment of a provincial team of PSR on February 15, 2022, gave high hopes to accelerate the ground implementation; so far, the programme has not smoothly run at the farmers' level.

Information on private sector partnerships is relatively scarce. Digital news mostly announced the business-as-usual corporate social responsibility (CSR) organised by private sectors with oi-palm as their main business. These CSR activities distributed construction materials, furniture, and food packages to the local communities[10]. While the regulation mentions that corporate is responsible for contributing as much as 20% of their net production annually through a partnership that can support the smallholders (MoA Regulation 18/2021 Article 7:3-4), this partnership might not have been effective in developing the productivity (and, even more, sustainability aspects) of smallholders' oil-palm industries of the district.

[10] https://waspada.id/sumut/pt-ssl-dan-pt-ppli-berbagi-csr/ ; https://www.asianagri.com/id/media-publikasi/berita/komoditas-luar-biasa-asian-agri-bagikan-4-870-paket-lebaran/