PROMOTING SUSTAINABLE LAND USE PLANNING IN CENTRAL SUMATRA, INDONESIA

Building mapping capacity for sustainability

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

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EXECUTIVE SUMMARY

Spatial planning in Indonesia was established with Law No. 26 year 2007 for National Spatial Planning. The law integrates the concept of sustainability and its related principles into the island, provincial, and district level planning processes. The purpose is to realise national territorial space that is safe, comfortable, and productive, aiming to achieve justice for the people of Indonesia in the allocation of space, and sustainability in natural resource use.

In Indonesia, and in Sumatra and Kalimantan (Indonesian Borneo) in particular, the market for palm oil in foods and in biofuels is driving land use conversion. This is the second report in a two-part series that integrates sustainable land use principles with Indonesia's land use policy and the European Union's Renewable Energy Directive (EU RED) – an international policy concerning the cultivation of biofuels.

The first report was large in scale – with a study area including both Sumatra and Kalimantan – and provided an indicative map of EU RED sustainability criteria, as well as important conservation and sustainability targets. This report aims to provide much more detail; three districts (districts is sometimes translated as "regency") in three Sumatran provinces were chosen as study areas in order to create a landscape-level map of EU RED criteria. Riau, Jambi, and Sumatra Barat provinces are all adjacent to each other along the boundaries of the districts. Dharmasraya District in Sumatra Barat, Kuantan Singingi District in Riau, and Tebo, in Jambi were chosen as target districts – not only because they are adjacent and provide three separate experiences for promoting sustainable land use planning, but also because they are in the Rimba Integrated Ecosystem Area or Rimba Corridor (RIMBA). The corridor has been chosen by WWF, the Ministry of Public Works, and other government stakeholders as a training area where an Ecosystem-Based Spatial Planning concept will be implemented. RIMBA was delineated through a stakeholder integration process led by WWF and in consultation with provincial representatives from the Ministry of Home Affairs and the Ministry of Environment.

SuLu - Sustainable Land Use

“Balancing land use management, sustainable biomass production and conservation, climate change and conservation".

The results demonstrated that a significant portion of each district contains valuable conservation targets and that each district has some mismatched licensing, or spatial planning designations indicating future conversion of forest cover. In total, the three-district study area found that 32.8% of the total land area fell under the sustainability criteria of the EU RED.

We hope this study provides additional information and helps stakeholders and decision makers to be more ecologically aware during the spatial planning process. It must be understood that natural resources are limited and that sustainable land use planning, as envisioned in Law No. 23 year 2007, is of the utmost importance.

Scale in this analysis

As stated previously, this report supplements a chapter in the first report in this series, which demonstrated how indicative maps at the island level, for Sumatra and Kalimantan, can provide guidance to decision makers. It looks at land use decision-making at a more local scale, in three districts in central Sumatra at an important cross-section of the RIMBA corridor. In Presidential Decree No. 13 year 2012, President Yudhoyono declared the RIMBA corridor to be a site for best management practices and special consideration for sustainable decision-making[1]. The president furthermore declared that 40% of the island of Sumatra should be covered by natural forest. To achieve this national goal as stated in the presidential decree, the spatial planning process in Indonesia must be adapted at the district level to incorporate sustainability concepts. The previous island-level report found that the remaining natural forest in Sumatra is currently 11% less than the desired goal above, and developing a spatial plan that allows for an increase of 29% to 40% in Sumatra is a significant challenge moving forward.

The three districts were not only chosen because of their strategic placement within the RIMBA corridor, but due to their being in three separate provinces each with its own political culture. By recognising the interrelationship between different governing bodies and spotlighting the spatial planning process, we aim to create an example that the rest of the island of Sumatra could follow.

Geographic data at the district scale is very different from the island-wide analysis provided in the previous report. The draft Spatial Plan at the district level is drawn at 1:50,000 scale; whereas, at the island level, the Spatial Plan is drawn at the 1:1,000,000 scale. This finer scale creates a level of detail that is much more likely to be interpreted as a “hard boundary,” since users can see in more detail the particular location of a land use activity. This gain in information is good for decision makers at the local scale because they are making on-the-ground decisions about particular land uses. It should also be approached with a certain amount of caution, however, because nothing can replace site-level land use analysis. There are details that maps can still miss, as well as mistakes made during the analysis process that can lead a user to make an incorrect assessment. For final decision-making about future land use, a site-level analysis including social criteria, traditional land-uses and land use rights should be mandatory. EU RED for example, only considers biodiversity and carbon stock values, and does not include such social criteria.

1 | For more information see: Policy Review and Guideline on Sustainable Land Use in Indonesia that Complies with National and International Level Sustainability Standards. Zenwen Pador, S.H., IB Ketut Wedastra, WWF Indonesia

CHAPTER 1

SPATIAL PLANS IN THE THREE DISTRICTS

District-level spatial planning is administered by BAPPEDA, an institution of the Ministry of Public Works at the district level. Spatial plans themselves guide all regulations and land use decisions, and are therefore a critical legal document that public and private parties must adhere to. At present, spatial planning regulations in these three districts are still undergoing the draft process. The Directorate General of Spatial Planning has affirmed that all three spatial plans are on track to obtain approval from the Ministry of Public Works. The spatial plan drafts (Appendix 1) are not officially approved by either the Ministry of Public Works or the respective Provincial Governors of the districts concerned, so must only be interpreted as an indication of what the final spatial plan will be rather than as a strict legal assessment.

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2 | Website for Direktorat Jenderal Penataan Ruang Kementerian Pekerjaan Umum (Directorate General of Ministry of Public Works for Spatial Planning (www.penataanruang.net)

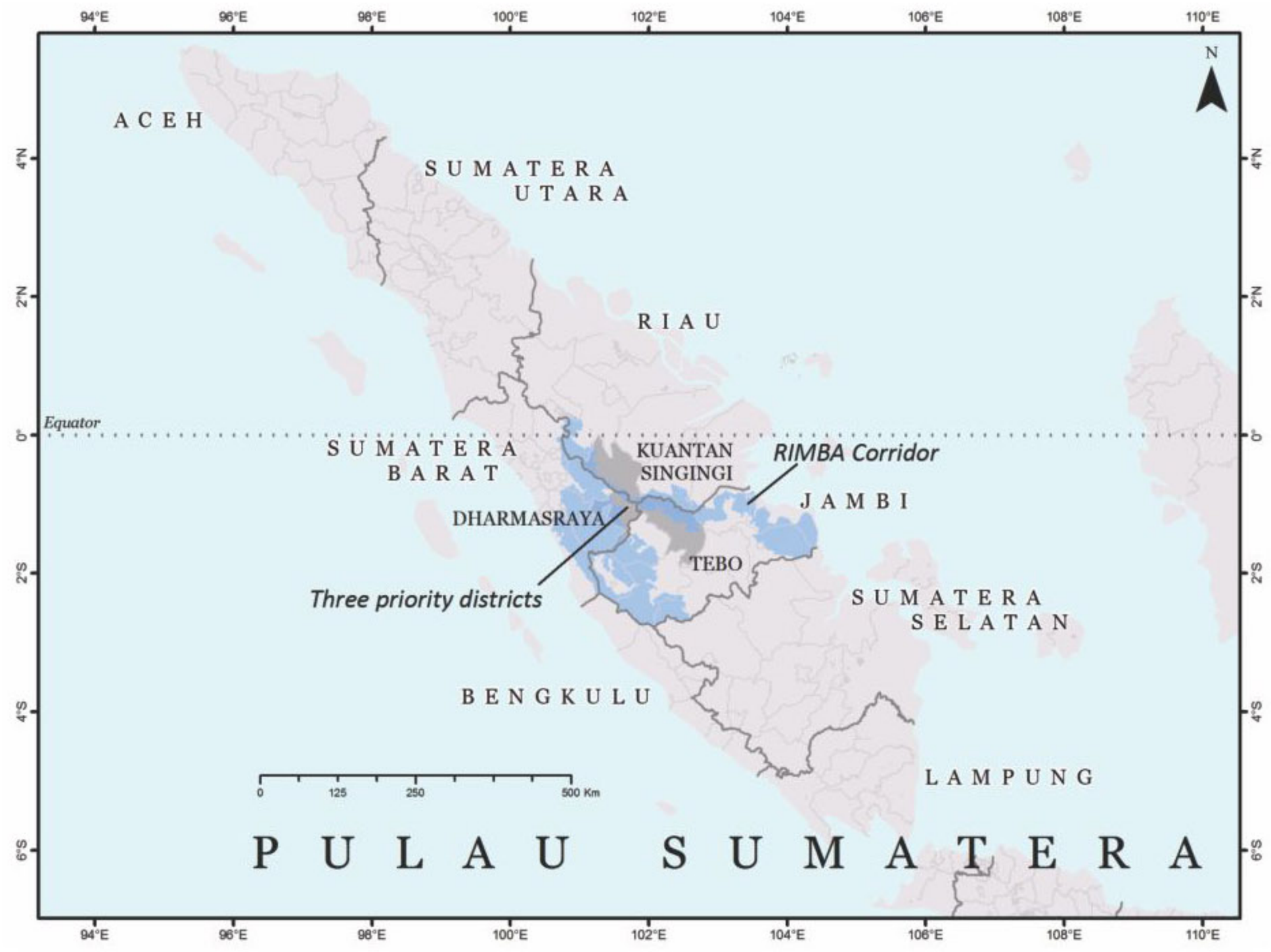


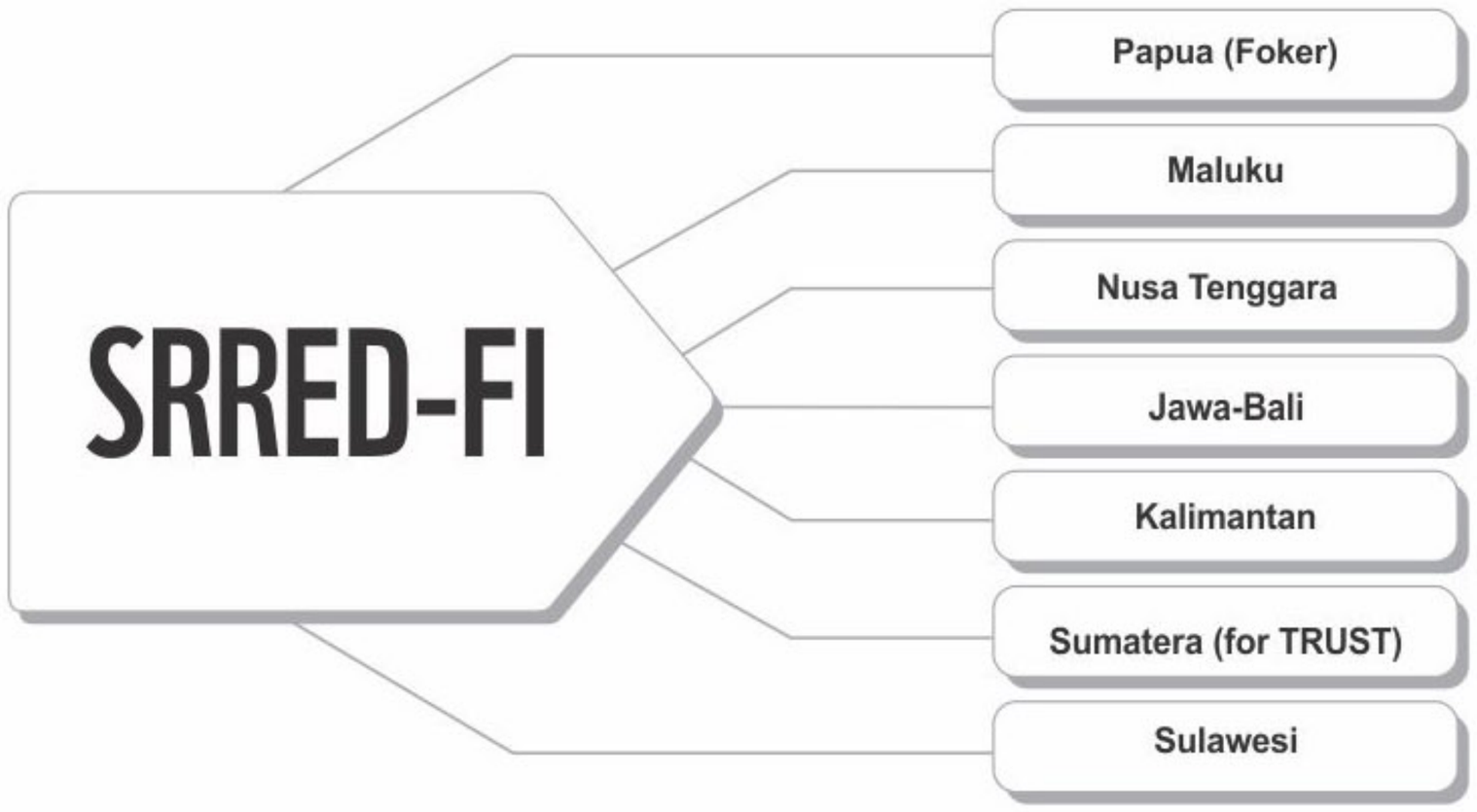
Figure 1 :

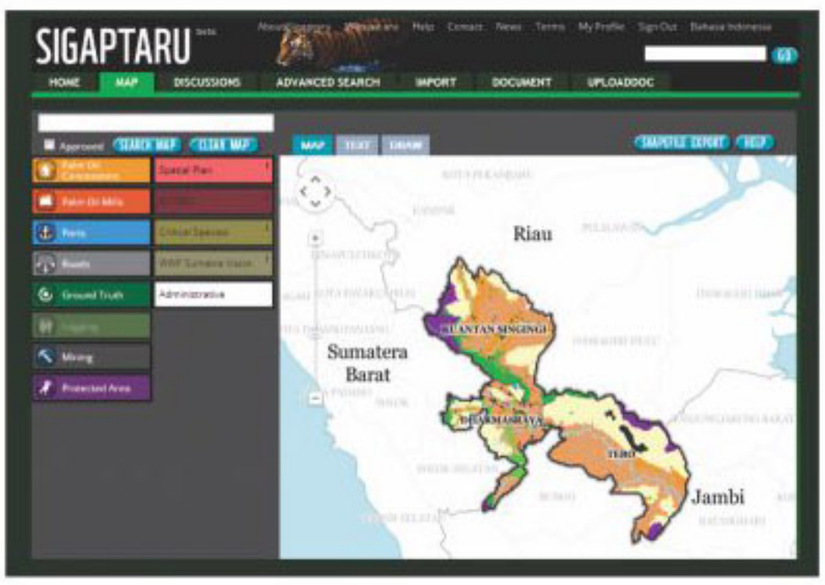
Location of three target districts and the RIMBA Corridor on the island of Sumatra

The next phase in the process is to obtain approval from MoF; this involves the special task force Tim Terpadu (integrated team), which reviews changes to forest cover status for both production and protected forest in the spatial plan. Members of the Tim Terpadu are not only composed of MoF personnel, but also NGOs and other members of civil society. In effect, the Tim Terpadu can slow down the approval for the spatial plan, since it increases the time needed for review, and also because it is reliant on district funding – an administrative function that is often not prioritised.

The spatial plan is a critical tool for observing the impacts of land use planning in the three districts. Land use activities do not always correspond with the official land use of the spatial plan; for example, sometimes deforestation activities are promoted by the spatial plan in the name of economic development. For these reasons, this chapter also focuses on the reality of the spatial plan at the district level and how it relates to an evaluation of the EU RED and ecosystem services.

The spatial plan is also promoted and monitored by the Sustainable Rural and Regional Development – Forum Indonesia (SRRED-FI) through a new online communication forum named Sigaptaru. The website hosts mapping and textual information for development in the three-district priority area (see Information Box 1 for more information).





SIGAPTARU (Sistem Jaringan Penataan Ruang) currently focuses on the three-district study area of this report, and hosts the Sustainable Rural and Regional Development – Forum Indonesia (SRRED-FI) – a communication medium for stakeholders to bring sustainable development to all rural and regional areas of Indonesia. SRRED-FI aims to establish a common vision and actions to realise balanced economic, social, and environmental development.

The principle purpose of SRRED-FI is to build partnerships among stakeholders in realising the sustainable development of rural and regional areas with respect to the values of openness, a solution-oriented approach, and respect for the principles and values of its members. Members can collaboratively map land use activities and discuss land use activities on the discussion board.

The forum's primary function is:

- To monitor the implementation of Island spatial planning (RTR) and National Strategic Areas (NSA)
- Perform technical facilitation of the adoption process of island spatial planning (RTR) and National Strategic Areas (NSA)
- Perform dialogue facilitation across administrations (country/province/district) within an island unit concerning transboundary land use patterns (e.g. a protected forest in the A province in line with the protected forest in B province)
- Perform dialogue facilitation across sectors to provide guidance in the realisation of spatial patterns (e.g. cross-functional corridor of protected area and cultivation)
- Develop models for a green economy that balance the utilisation of protected areas with conservation and the provision of environmental services
- Encourage low carbon development models and sustainable rural and regional spatial planning, especially in the land-based sector
- Perform technical facilitation of capacity building to the actors in rural spatial planning and traditional land use

Information Box 1 : Sigaptaru, a communication medium promoting spatial planning

CHAPTER 2

GEOGRAPHIC DATA IN THE THREE DISTRICTS

The primary data used in this analysis is land cover, which describes generalised spatial patterns of land cover and land use activities. MoF completed a land cover classification for 2008; however, this dataset was not completed at a high resolution, or validated for accuracy. In order to support this analysis, a new land cover classification was developed based on SPOT 2/4 imagery and supplemented with Landsat 5 TM imagery where gaps existed, with a recording time of 2007/2008[3], (Information Box 2). This new land cover classification produced a credible map, with 81% overall accuracy, at fine scale detail between the various land use classes (Fig 5, Appendix 1).

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3 | To produce a classification without cloud and shadow a combination of two years of data is being used. Cloud and shadow free images are then combined into one single image.

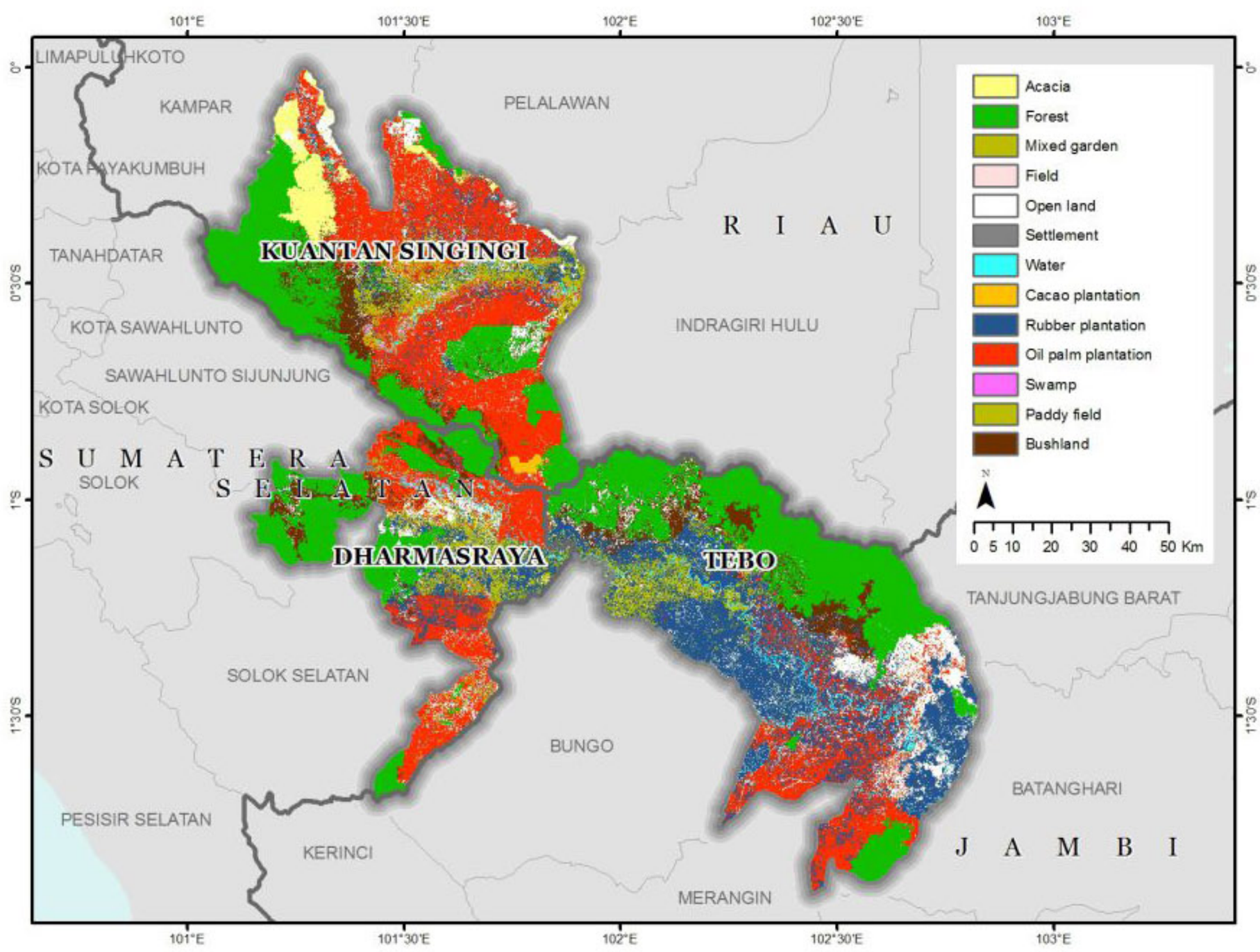

Figure 2 : SPOT 2/4 Land Cover produced for the three districts

The land cover dataset was used to provide a geographic interpretation of the EU RED high biodiversity and high carbon stock values as described in Article 17 of that policy, and are described in detail in the next section of this chapter. The third major criterion of the EU RED states that the greenhouse gas (GHG) emissions savings produced by land use change must be at least 35% in the year 2014, 50% in the year 2017, and 60% in the year 2018. Data to support this criterion came from the new land cover map and from soil and climate data. Soils were extracted from the Harmonized World Soil Database (HWSD), and climate data was developed by the Joint Research Centre of the European Union.

Table 1 : Data used in this analysis

DATA	DEVELOPE BY	USE IN THIS ANALYSIS
SPOT 2/4 2007 Land Cover	WWF-ID	EU RED
Harmonized Soil Wetlands Database	IIASA	EU RED
Elevation-Slope	WWF-ID	Ecosystem Services
WWF-ID 2008 Land Cover	Setiabudi	Ecosystem Services
Dharmasraya Spatial Plan	BAPPEDA	Spatial Plan
Kuantan Singingi Spatial Plan	BAPPEDA	Spatial Plan
Tebo Spatial Plan	BAPPEDA	Spatial Plan

Ecosystem services were mapped using the Integrated Valuation of Environmental Services and Trade-offs (InVEST) to demonstrate further scenarios of the benefits of conservation in the landscape study area (Information Box 2). InVEST[4] is a tool for assessing potential ecosystem services derived from potential land use decisions. InVEST was used in this study to identify potential ecosystem services, such as water yield, carbon storage and sequestration, and habitat quality for the Sumatran tiger. The analysis was completed to support the report A Green Vision for Sumatra[5], which evaluates the larger central Sumatran landscape. In that analysis, a land cover dataset created by WWF based on 2008/2009 Landsat imagery was used.

4 | http://www.naturalcapitalproject.org/InVEST.html

5 | A Green Vision for Sumatra, Nirmal Bhagabati, Thomas Barano, 2011

SUMMARY OF SATELLITE IMAGE INTERPRETATION OF SPOT AND LANDSAT TM/ETMTO IDENTIFY LAND USE AND LAND COVER IN THE RIMBA CORRIDOR LANDSCAPE (WEDASTRA 2012)

The interpretation of land cover was primarily completed using SPOT 2 and SPOT 4 satellite Imagery from the years 2007/2008 and 2011/2012. Landsat 5 and 7 ETM satellite imagery was also used to supplement the analysis.

By using remote sensing technology and satellite imagery covering the three districts, the process of identification of land cover was completed. The processes included: atmospheric correction, geometric correction, sharpening, classification, and finally a verification of the accuracy of the image classification results.

Classification was completed for 13 land cover classes: forest, scrub, palm oil plantation, rubber plantations, mixed gardens, paddy field, acacia plantation, dryland agriculture, open land, settlement, water, swamp, and cacao and areca nut plantation. In the 2007/2008 period, land cover analysis found forest to be the highest percentage of land area (30.1%), followed by oil palm and rubber plantations (24.8% and 18.31% respectively). An accuracy assessment was completed for the year 2011/2012 and found an overall accuracy of 75.12%.

It can be seen that since 2007/2008, oil palm plantations are replacing rubber plantations. Based on the information obtained, traditional plantation species are rubber and acacia plantations, but palm plantations have seen a 'boom' in recent years as many people have converted their land to oil palm.

Land use change from rubber to palm plantation varied by district. For Kuantan Singingi, oil palm rose from 35% in 2007, to 46% in 2012; rubber increased from 6.7% in 2007 to 11.8% in 2012. In Dharmasraya, the area of oil palm plantations increased 11.2%, from 29.5% of the land area to 38.7%, while rubber plantation increased 10.6%, from 12.9% in 2007 to 23.5% in 2012. In Tebo, oil palm plantations went from 13.9% in 2007 to 41.3% in 2012, a 27.4% increase in area .

Information Box 2 :

Summary of land cover classification completed for the years 2007/2008

CHAPTER 3

MAPPING FOR EU RED AND ECOSYSTEM SERVICES

There are two separate analyses conducted within this activity: the first develops an indicative EU RED Zone Map which identifies areas prohibited for biofuel plantation[6]; the second involves ecosystem services mapping to extend conservation values beyond those utilised by EU RED Zone analytical framework

▶ EU RED Zone mapping methodology

The main data used to generate the EU RED Zone Map was a land cover classification with a combination of SPOT and Landsat satellite imagery from the years 2007 and 2008. The EU RED[7] states that biofuels should not be cultivated on land prior to January 2008 that has high biodiversity values such as primary forest, areas designated for the conservation of nature, highly biodiverse grassland, areas with high carbon stock values such as wetland, peatland, woodlands, or where greenhouse gas emission savings from the land use change are not less than 35% (increasing to 50% as of 2017 and 60% as of 2018).

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6 | See report Promoting sustainable land use planning in Sumatra and Kalimantan, Indonesia for more information on EU RED.

7 | http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=Oj:L:2009:140:0016:0062:en:PDF

Table 2 : Parameters used for EU RED Zone Mapping

EU RED CATEGORY	CRITERION	DATA	CLASS
Biodiversity Value	Primary forest	Land Cover 2007	Forest
	Area designated for the protection of nature	District Spatial Plan	Protected areas
		National Strategic Area Plan	Protected areas
		Indicative Moratorium Map v4[8]	Primary, protected, and limited production forest
Carbon Stock Value	Wetland	Land Cover 2007	Swamp
	Peatland	No occurrence in study area	No occurrence in study area
	Continuously forested area spanning more than 1 ha with 15% canopy	Land Cover 2007	Forest, bush land
GHG Emissions savings criterion	Less than 35% savings	Carbon analysis	Areas where conversion results in less than 35% palm oil savings

8 | http://www.satgasreddplus.org/en/

FIGURE 3 : EU RED Zone mapping methodology

▶ High Biodiversity Value

Biodiversity value as described by the EU RED is represented here by forest (>30% canopy cover, see appendix 3) and protected areas (Fig 4), which were combined and represented as one class (Fig 5). Highly biodiverse grasslands were determined not to occur in the study area and thus have no representation in the results of the analysis. Most grasslands in Sumatra occur as imperata grasslands which are a secondary ecosystem resulting from deforestation. Imperata grasslands are also known as alang-alang, and are a non-natural grassland, unlikely to be species rich as described in the EU RED.

1. **Primary forest**, taken from the forest class in the SPOT 2/4 Land cover.
2. **Designated Area for Protection**, taken from district level spatial plan of the Development Coordination Board, the National Strategic Area Plan from the central government, as well as the Indicative Maps for Moratorium on New License version 4 from the MoF and the REDD+ task force.

▶ High Carbon Stock Value

Based on EU RED criteria, areas with high carbon stock value are either wetlands, continuously forested areas, or land spanning more than 1 hectare with between 10-30% canopy cover. Figure 8 shows the distribution of high carbon stock values in the three districts.

1. **Wetlands**, as defined by Ramsar 1972 and taken from SPOT 2/4 land cover by extracting swamp class;
2. **Continuously forested areas**, and land spanning more than 1 ha, with 15% or more canopy cover, taken from the forest class in the SPOT 2/4 Land cover. This is considered because forest class in this data is assumed to have more than 15% canopy cover;

Peatlands, there are none present in the three districts.

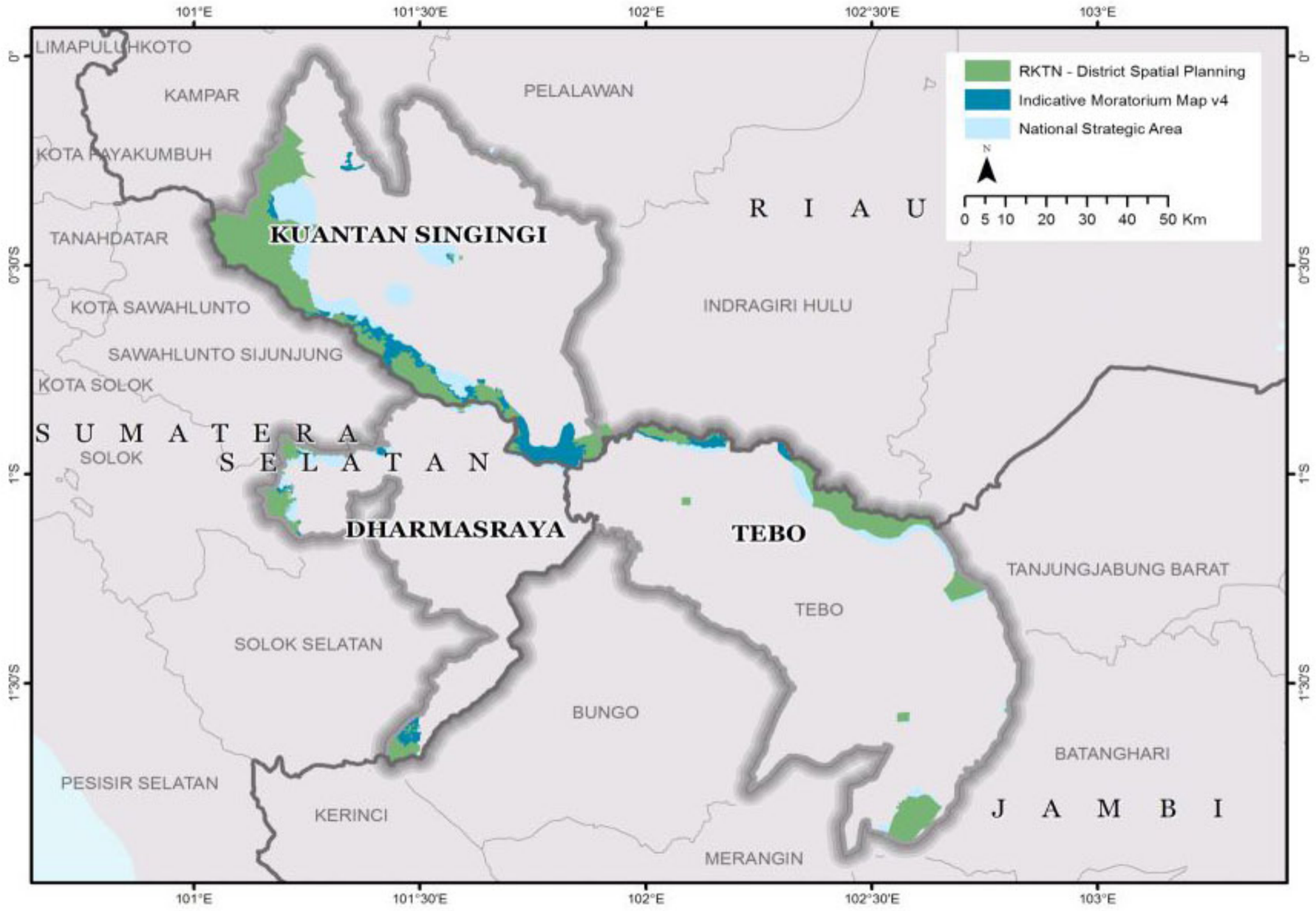


FIGURE 4 : Areas designated for the protection of nature in the study area

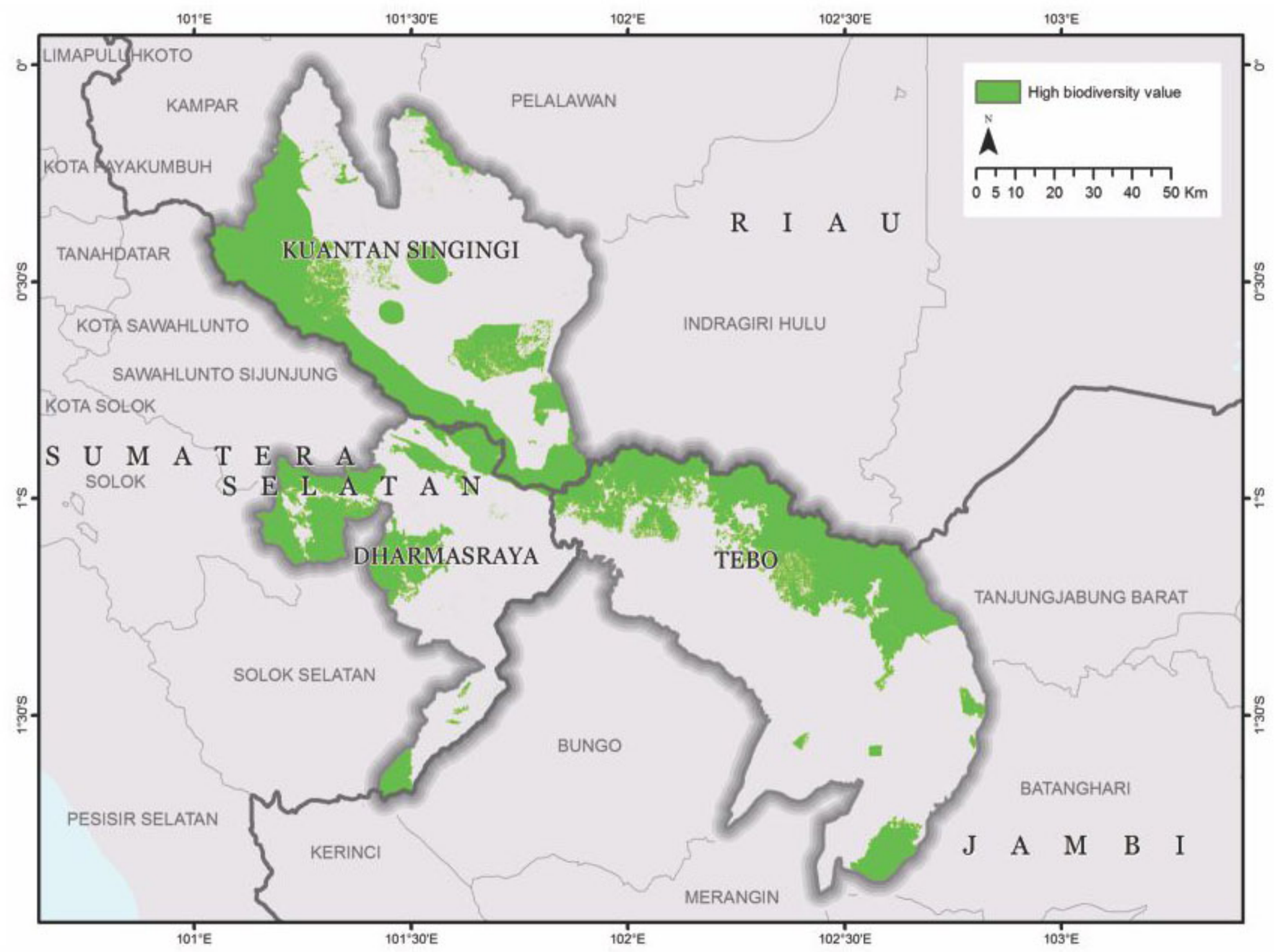


FIGURE 5 : Areas where high biodiversity values were found for forest and protected areas

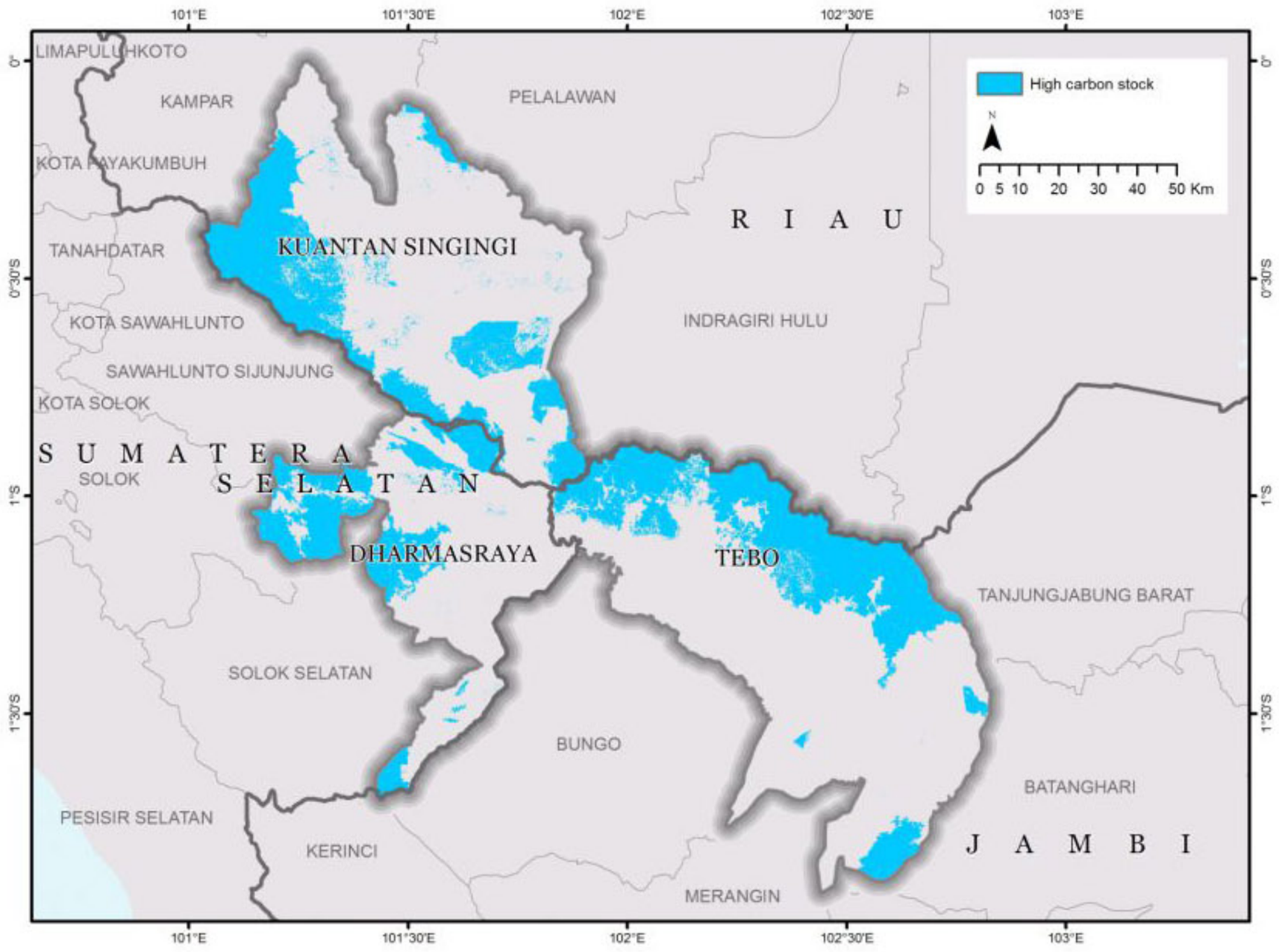


FIGURE 6 : Areas where high carbon stock values occur

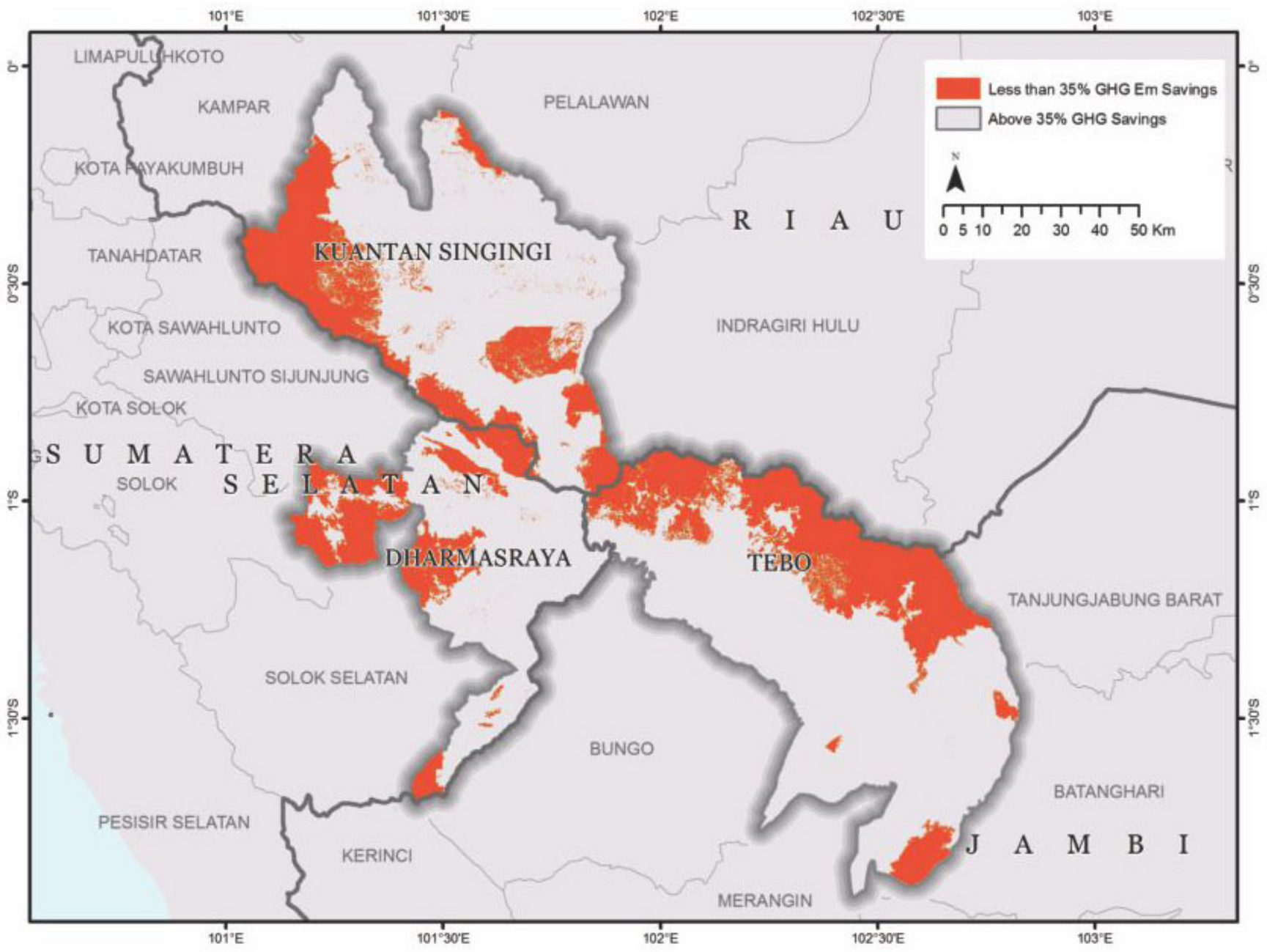


FIGURE 7 :

Areas where GHG emission savings compared to fossil fuel would not be higher than 35% if converted to palm oilplantation for biofuel production(assuming yields of 20 tons/hectare and methane capture operations.)

GHG Emissions savings criterion

The EU RED, in recognition of the potential for biofuels to cause greenhouse gas emissions through loss of carbon stock from land use change, states that biofuels must provide at least 35% GHG emissions savings compared to fossil fuels. This threshold will rise to 50% as of 2017, and to 60% as of 2018 for new facilities (EU-RED Article 17, paragraph 2). The GHG Emission savings criterion was evaluated with SPOT 2/4 data, the Harmonized World Soil Database, and climate data from the Joint Research Centre of the European Union using the Lange (2013) methodology initially developed for evaluating GHG emission savings in Sumatra and Kalimantan[9]. Land cover values from MoF 2008 Land Cover dataset were compared with SPOT 2/4 land cover classes.

Figure 7 shows the distribution of areas where GHG emissions savings are less than 35% if the area were converted to oil palm plantation for the production of biofuels given two assumptions that oil palm operations are operating at high efficiency, and that they are utilising best practices concerning methane capture relating to the decomposition of dead organic matter. Whilst Lange (2013) reports that harvest yields in Indonesia vary from about 17 to 20 tons per hectare, the analysis provides for lower harvest yields as well as the absence of methane capture practices.

The areas that do not report savings of GHG emissions are roughly the same areas as those composed of primary and secondary forest. Areas either already converted to agricultural production or degraded are shown as having more GHG emission savings if they were converted to oil palm plantation.

Data related to EU RED criteria (Figure 10) were overlaid for visualisation. All areas meeting at least one of the criteria are in the EU RED Zone, meaning that due to the sustainability criteria of EU RED these areas should not be used to produce biomass for bioenergy uses.

9 | Lange (2013) EU biofuels policies in practice – A carbon map for Kalimantan and Sumatra, Kiel Institute for the World Economy

CHAPTER 4

ECOSYSTEM SERVICES MAPPING

The EU RED contains extensive sustainability criteria that highlight important biodiversity conservation targets at a broad scale. However, there are other important targets that should be identified to provide stakeholders the opportunity to fully evaluate sustainability opportunities across landscapes. In the three districts, we completed an analysis of supplemental information highlighting other important biodiversity information not present within the EU RED. The goal is to identify important areas for the conservation of biodiversity and lands with high carbon stock that are potentially under pressure for uses other than bioenergy, thus providing a different perspective than the EU RED.

Tabel 1 : From Regulation No. 26.2008

REGULATION NO. 26 2008 - NATIONAL LEVEL SPATIAL PLANNING, ARTICLE 55

1. Protected forest area as referred to in Article 52 paragraph (1):
   a). Forest area slope, soil type, and rainfall intensity parameter are evaluated based on a weighting system, and then summed* and are found to have a score of 175 or more;
   b). Forest areas that have a slope of at least 40%; or
   c). Forest areas that have a height of at least 2,000 (two thousand) meters above sea level.

2. Peatland areas referred to in Article 52 paragraph (1) to be determined by the thickness of the peat criteria (3 metres) or be contained in the upstream river or swamp.

3. Water catchment area as referred to in Article 52 paragraph (1) is defined by having high ability to absorb rainwater and as a controller of surface water system.

**The weighting system is described in Agriculture Ministry Regulation No. 837/Kpts/Um/11/1980*

In RIMBA, ecosystem services were assessed using InVEST (Information Box 3). These included water yield, sedimentation, carbon storage and sequestration, nutrient retention, and habitat quality for the Sumatran tiger. Ecosystem structure and function are integral components of biodiversity and are measured to provide decision makers the ability to evaluate how land use conversion impacts important services provided to humans by a healthy, functioning ecosystem.

This analysis is also aligned with Regulation No. 26 year 2008 (Table 1) for the National Level Spatial Plan. Article 55 of the regulation describes a set of the criteria that define areas that should be established as national strategic areas, which states that areas with greater than 40% slope should be protected. There are three main criteria for identifying these areas: slope, river border, and peat depth.

▶ Ecosystem Services InVEST analysis methodology

Adapted from A Green Vision for Sumatra (Information box 3)

For an analysis of carbon storage potential, the InVEST modelling tool was used to quantify four carbon pools in the study area. We used InVEST to model carbon stocks for different land use/land cover (LULC) categories under the current landscape and the two future scenarios for three carbon pools: above ground biomass, below ground biomass, and organic matter (organic matter was modelled for the greater RIMBA area, but there are no reported peatlands in the three-district study area).

We define the annual average water yield on a landscape as all precipitation that does not evapotranspire. While not all of the water yield is available to downstream users, its relative distribution across the landscape and change across scenarios can

SUMMARY OF A GREEN VISION FOR SUMATRA - USING ECOSYSTEM SERVICES INFORMATION TO MAKE RECOMMENDATIONS FORSUSTAINABLE LAND USE PLANNING AT THE PROVINCE AND DISTRICTLEVEL (BHAGABATI ET AL. 2011)

The RIMBA Integrated Ecosystem was designed as an ecological corridor where ecosystem-based spatial planning is being promoted and where a case study for this approach may be formulated. RIMBA has an area of about 3.9 million hectares, is located in the central part of the island of Sumatra, and is composed of 6 major watersheds. The study area includes areas in three provinces, namely Riau, West Sumatra, and Jambi. Our recommendation focuses on five priority actions identified by the central government to implement and finance ecosystem-based spatial planning in Sumatra, namely: forest restoration, forest carbon benefits, rewards and programs for watershed services, forestry best practices, and practice best-practice farm.

Action plans within the Sumatra Road Map stipulate that ecosystem-based spatial planning should be done by using information and analysis of ecosystem services, with a device such as INVEST (Integrated Valuation of Ecosystem Services and Tradeoffs, Tallis et al. 2010), a software package for the Geographic Information System-based modelling, mapping, and valuation of ecosystem services. InVEST can estimate the quantity and location of ecosystem services that are relevant to the landscape, and how these patterns may change based on land use scenarios in the future. Patterns of ecosystem services can be compared to biodiversity by using the habitat quality tool.

This report shows how the economic and spatial analysis of ecosystem services and wildlife habitat encourage the process of spatial planning in central Sumatra. By assessing the natural benefits administered to the population of Sumatra for their livelihood, overall benefits and costs of alternative trajectories of future development are identified. The results contrast the comparative landscape of Sumatra in 2008 with the Government Plan and Vision Sumatra for 18 counties and six major watersheds in central Sumatra.

Kuantan Singingi, Dharmasraya, and Tebo district are part of the 19 districts included in the Rimba Integrated Ecosystem Area. Dharmasraya has the potential to develop a district-based carbon project, while Kuantan Singingi and Tebo would benefit from habitat conservation and restoration.

Information Box 3 :

Summary of ecosystem services analysis for RIMBA completed in 2012

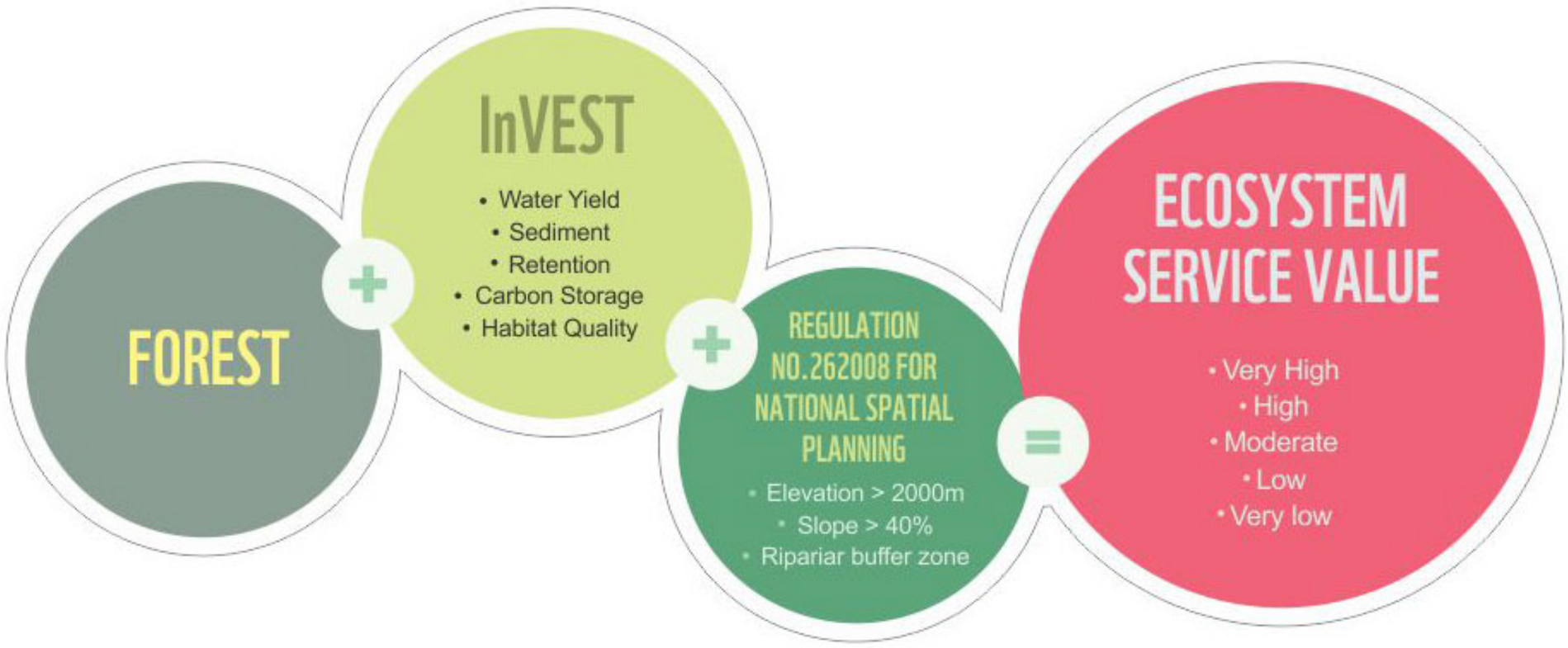


Figure 8 : Ecosystem Services Value mapping methodology

offer insights into the current availability of and potential changes to water supply for human uses. The InVEST Tier 1 water yield model is designed to evaluate how land use and land cover affect annual water yield across a landscape. This water balance model can accommodate areas with minimal access to data, and can be used with globally available data sources on annual precipitation and dryness indices (Zhang et al. 2001, Budyko and Zubenok 1961, Milly 1994). We summarise water yield for each watershed, sub-watershed, and district as annual average runoff depth.

The InVEST Tier 1 sediment retention model focuses only on sheet wash erosion processes, and is based on the Universal Soil Loss Equation (USLE) (Wischmeier and Smith 1978). The USLE predicts erosion based on the energetic ability of rainfall to move soil and cause erosion, the erodibility of a given soil type, slope, erosion protection provided by the presence of vegetation, and management practices (Roose 1996). The model also routes the sediment originating on each pixel along its flow path, with vegetated pixels along the path retaining some of this sediment based on their sediment retention efficiency, and exporting the remaining sediment to the next pixel in the flow path. We report the total sediment load exported to streams from each watershed, sub-watershed and district per year (tons/year), as an annual average.

Habitat quality analysis in central Sumatra was completed in relation to the Sumatran Tiger as an umbrella species of Sumatra. This model generates habitat quality maps that serve as proxies of the status of biodiversity. Good quality habitat indicates that the area is suitable for the species being analysed and suggests potential for biodiversity conservation, but does not necessarily confirm species presence. InVEST uses expert opinion to identify important parameters for considering habitat quality, including: a) the suitability of different land covers and land uses as habitat for the species in question, b) the spatial distribution of threats, c) the distance over which each threat source affects each habitat type analysed, and d) how quickly the impact of each threat decreases with distance from the source.

We used only the results of the analysis that were of pertinence to areas within the three districts concerned. The InVEST values were then classified into 5 types using Natural Breaks method (Jenks): a) Very High Ecosystem Value, b) High Ecosystem Value, c) Moderate Ecosystem Value, d) Low Ecosystem Value, and e) Very Low Ecosystem Value. The methodology usually used to create Ecosystem Value map at the landscape level is shown in figure 8.

CHAPTER 5

RESULTS AND DISCUSSION

The results demonstrate that a significant portion of each district contains valuable conservation targets and that each district has some mismatched licensing, or spatial planning designations indicating future conversion of forest cover. In total, the three-district study area found that 32.8% of the total land area fell under the sustainability criteria of the EU RED. In the following section, each district is analysed to examine how spatial planning, EU RED values, and ecosystem service values align. Comparison of these three maps provides three alternate perspectives of how land use should be arranged in the three-district area.

The spatial plan is of course the most important indicator of land use and the two supporting maps in this analysis EU RED (Fig 9) and ecosystem service value (Fig 10) – offer similar results on the most valuable areas for biodiversity and carbon stock conservation. The ecosystem service map in particular offers a bit more nuance to the discussion, as a variety of values ranging from very high to very low are used to describe conservation values. Decision makers may be able to use this map to prioritise adjustments to spatial planning. Very high ecosystem service value areas should be addressed first in spatial planning.

TABEL 3 : Total EU RED Zone area in each district

DATA	TOTAL AREA (ha)	EU RED ZONE (ha)	EU RED Zone %
Dharmasraya	301,665	95,669	31.7
Kuantan Singingi	523,123	189,014	36.1
Tebo	606,284	184,564	30.4
TOTAL	**1,431,072**	**469,247**	**32.8**

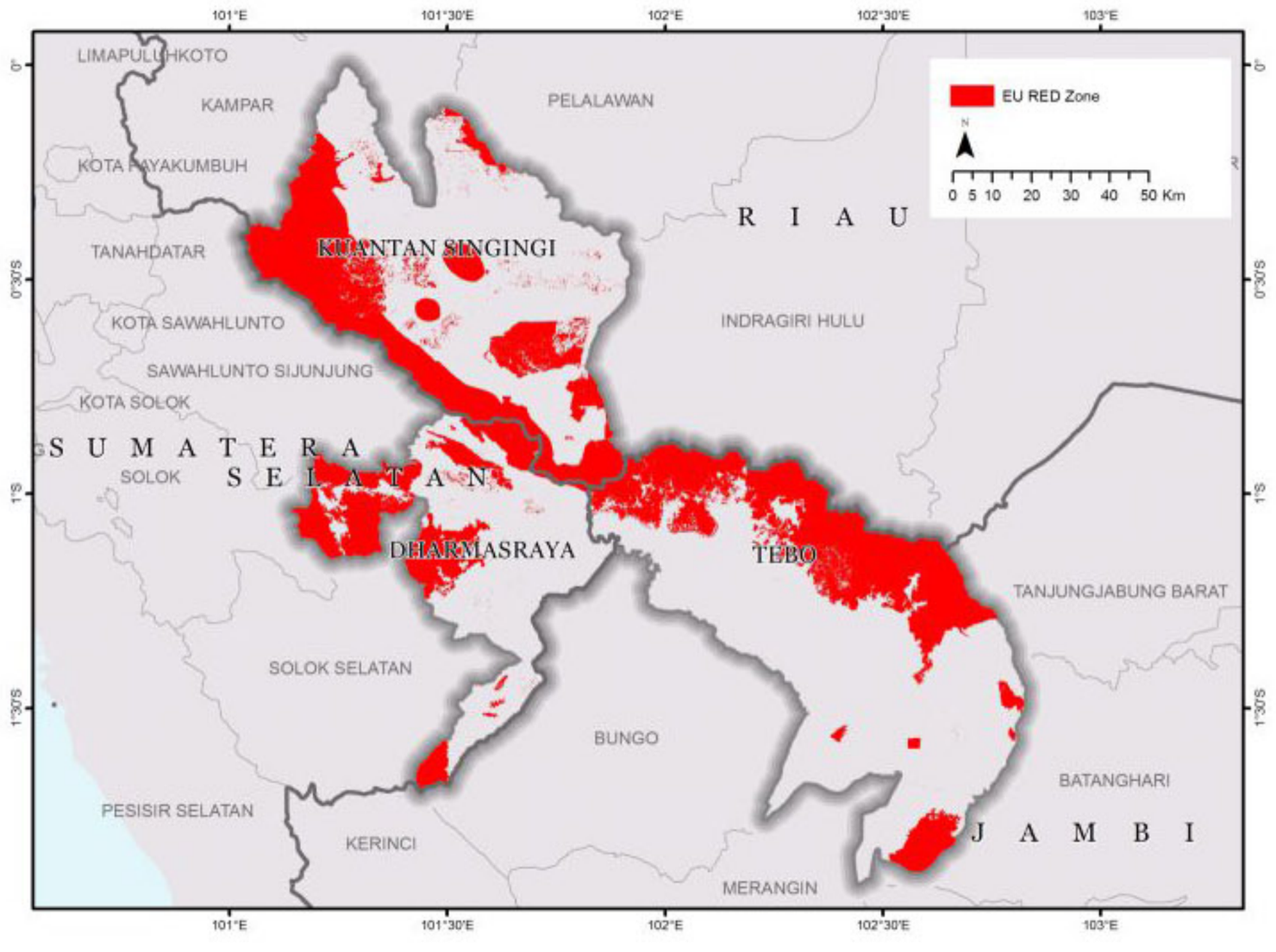


FIGURE 9 :

EU RED Zone in three districts - the red color indicates that a conversion to biofuel production in the area would not meet the EU RED criteria

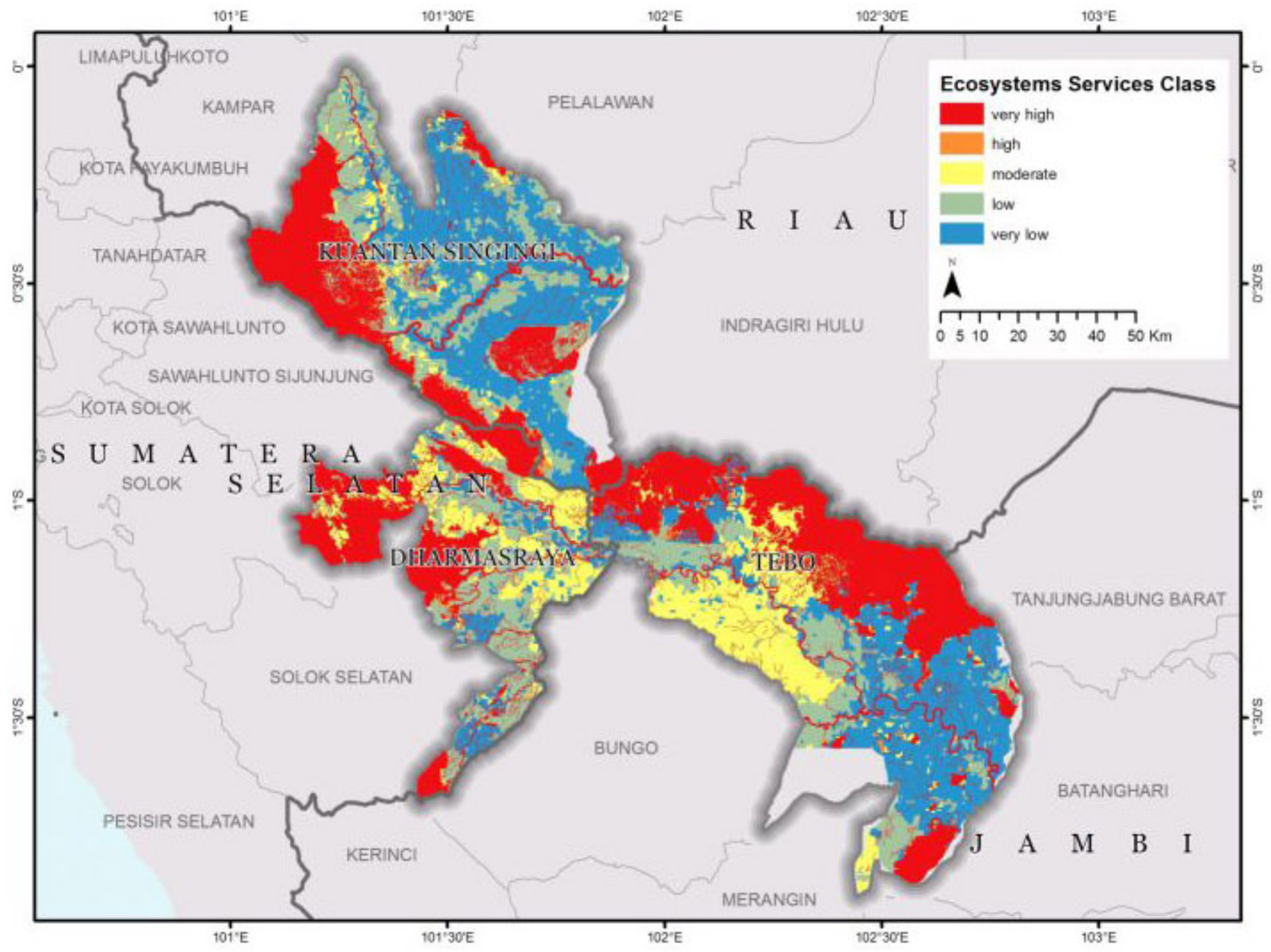


FIGURE 10 :

Ecosystem Services Map of three districts, based on an analysis first reported in A Green Vision for Sumatra, (Bhagabati et al. 2011). (Original analysis completed with different administrative boundaries, excluding some regions of the current study area. These areas are grey in colour.)

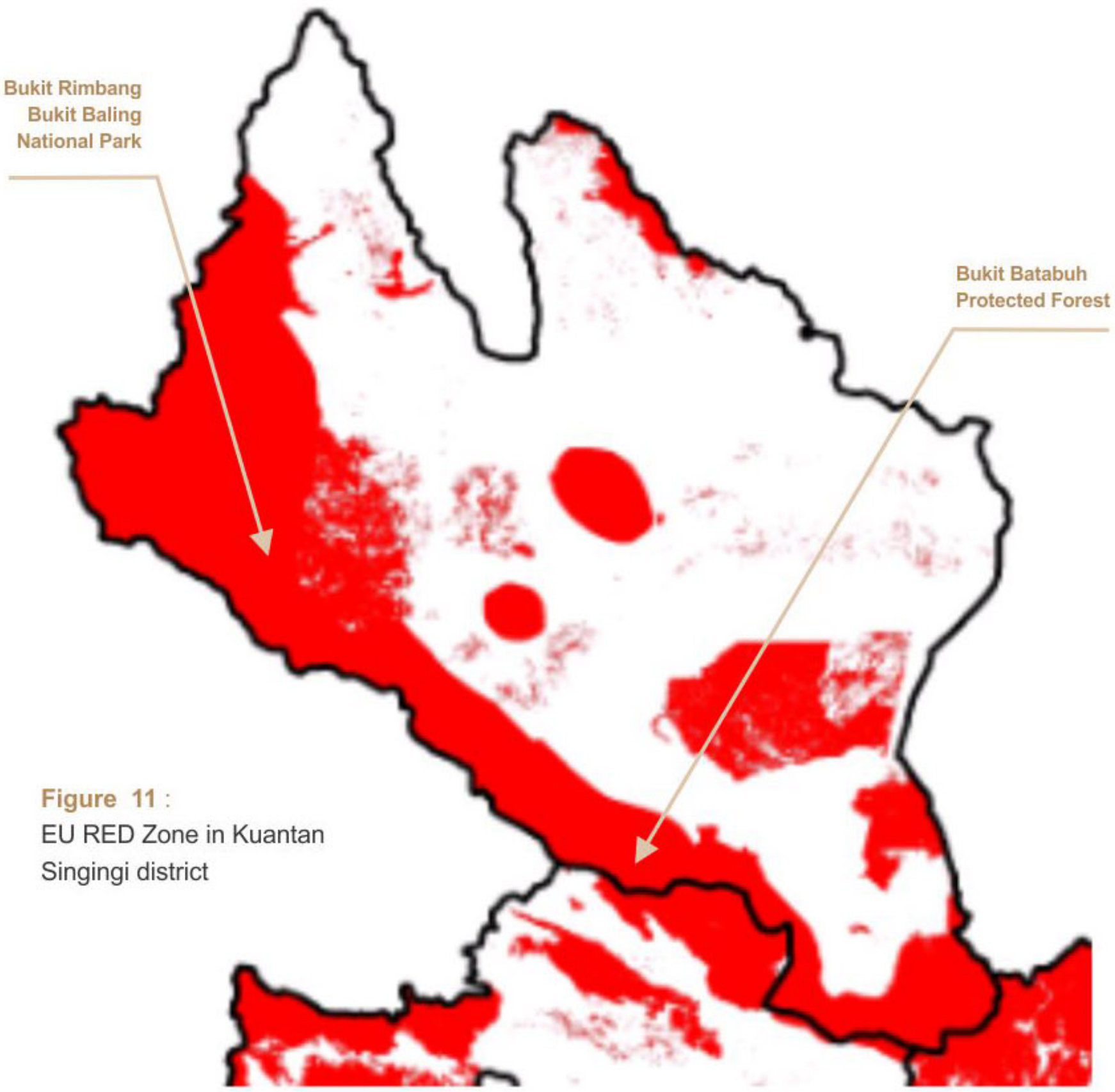


Figure 11 :
EU RED Zone in Kuantan Singingi district

▶ Kuantan Singingi District

Kuantan Singingi district is a relatively new district, established by the division of Indragiri Hulu district based on Law No. 53 year 1999, which created several new districts in the region. While rubber and coconut have historically been key commodities, oil palm has recently become the main commodity in the district.

Analysis of Kuantan Singingi shows that 189,014 ha (36%) of the total area are covered by EU RED Zone. In the region, there area two protected areas – Bukit Rimbang Bukit Baling National Park and Bukit Batabuh – both of which are located in the south of the region.

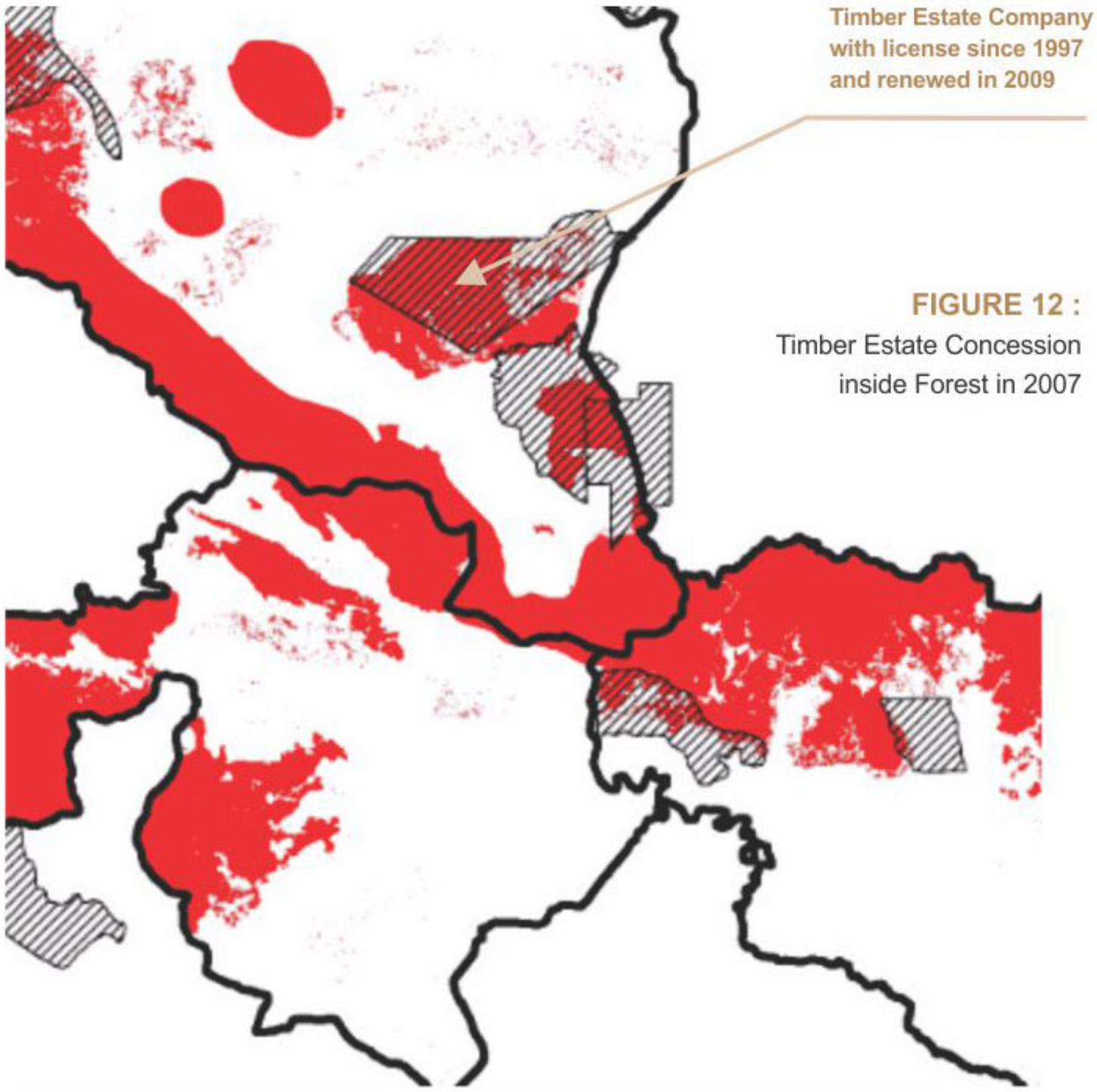
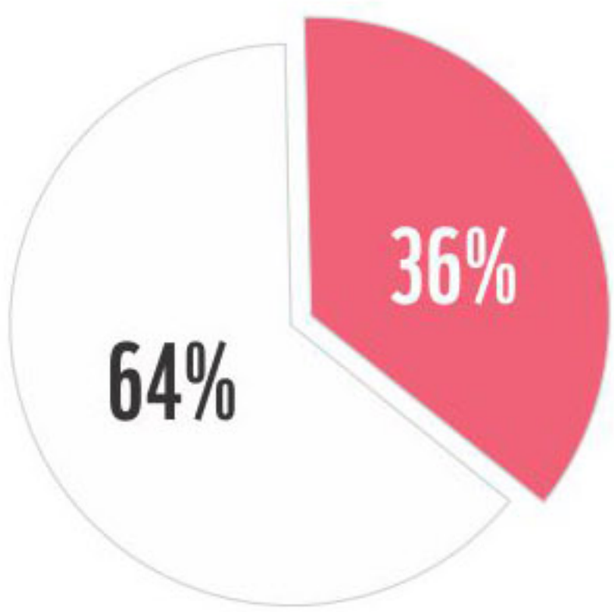


FIGURE 12 :
Timber Estate Concession
inside Forest in 2007



EU RED Zone Composition in Kuantan Singingi District

EU RED Zone in Kuantan Singingi District

The northern part of Bukit Batabuh contains a block area composed mostly of forest cover that is included in the EU RED Zone. Currently, this area is being deforested due to its status in the spatial plan as timber plantation; the Timber Estate Company has a concession license, granted in 1997 and extended again in 2009. From the perspective of the Kuantan Singingi Spatial Plan, this land use is aligned; however, it does contain important biodiversity and carbon stock values that are being lost.

The Kuantan Singingi Spatial Plan is in its final drafting stage, involving Strategic Environmental Assessment (SEA) by a group from Riau University. A SEA is a rapid ecological assessment utilising methodology that uses sometimes limited and secondary data to make assumptions about ecological value, which is then integrated into a district spatial plan. Figure 15 demonstrates various land uses within the spatial plan that are inside the EU RED Zone.

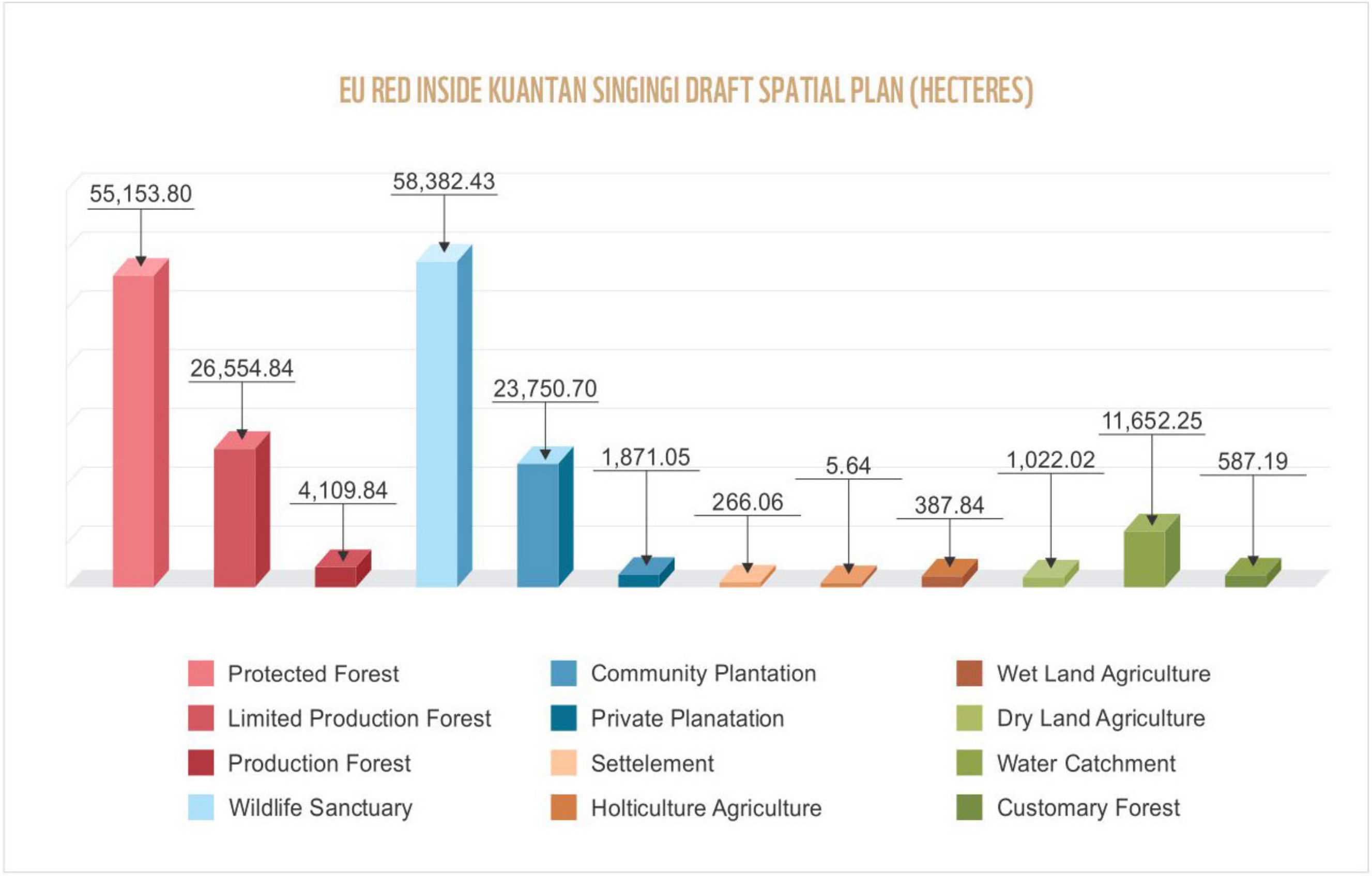


FIGURE 13 : EU RED Zone inside Draft of Spatial Plan of Kuantan Singingi district

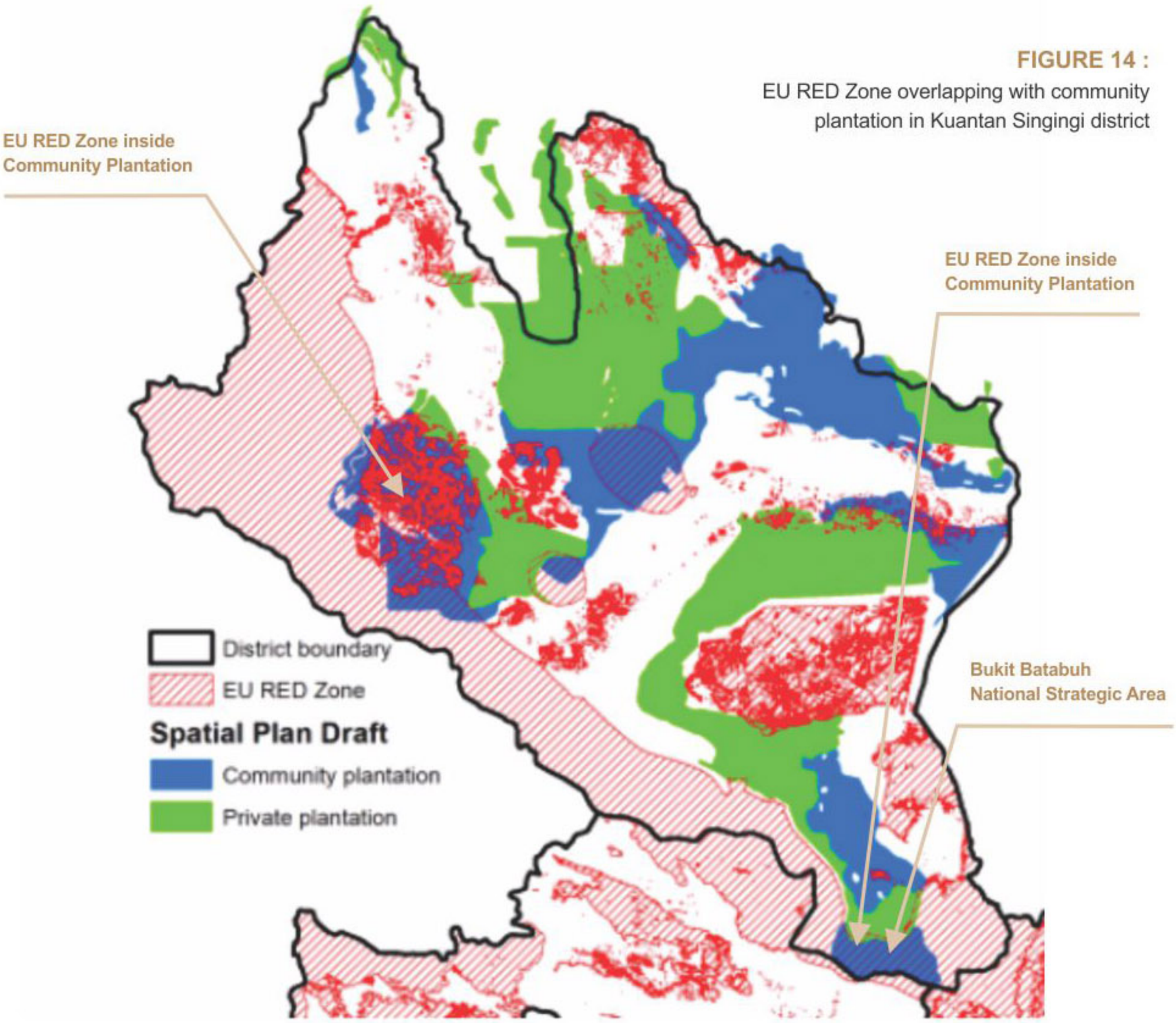


FIGURE 14 : EU RED Zone overlapping with community plantation in Kuantan Singingi district

FIGURE 14 : EU RED Zone overlapping with community plantation in Kuantan Singingi district

The above figure shows that the EU RED zone aligns well with the spatial plan designating protected forest, wildlife sanctuary, conservation area, and production forest. On the other hand there are some parts in the EU RED Zone that are designated in the spatial plan as community plantation, namely about 23,750 ha of the 97,490 ha total community plantation area in the region (Fig 7). Community plantations are a formal name for smallholder plantations and are typically oil palm plantations. The term “Plasma” is also used to describe a plantation that belongs to the community, whereas “Inti” refers to a plantation that is owned by a corporation. A community plantation is an area were tree crops are being cultivated as a shared resource for the local population. If this portion of 23,750 ha found in our analysis is confirmed by site-level verification as oil palm plantation, it may be restricted from accessing the European market since it does not comply with the sustainability criteria of the EU RED.

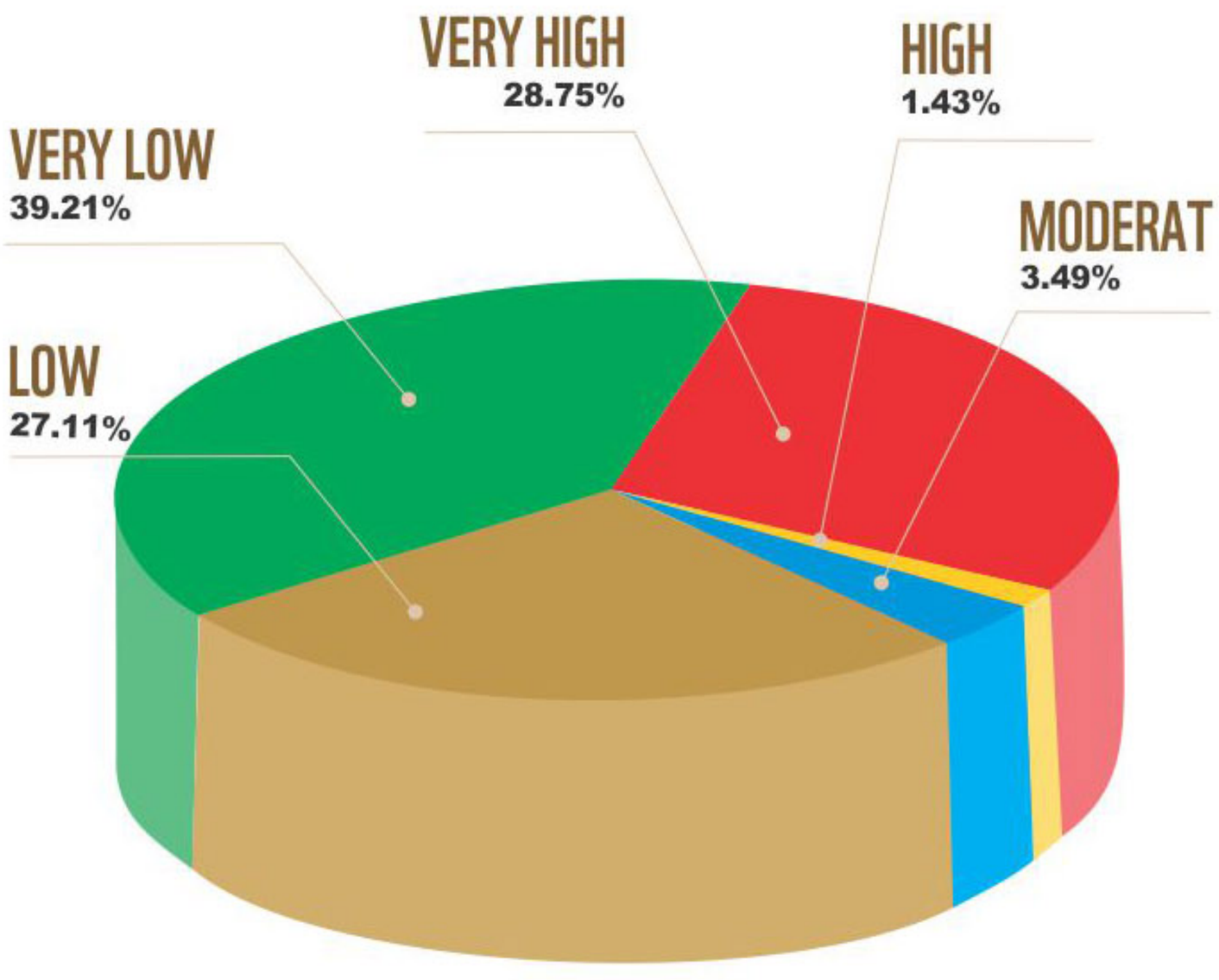


FIGURE 15 : Ecosystem Services Value in Kuantan Singingi district

There are several community plantations overlapping with EU RED Zone in the south of Kuantan Singingi, as well as oil palm plantations managed by the district government. Additionally, this area contains Bukit Batabuh, which is classified by MoF as a National Strategic Area (Kawasan Strategis Nasional, or KSN). The KSN was established in Law No.26 year 2008 for Spatial Planning at the National Level and mentions Bukit Batabuh is to receive special consideration as an ecologically sensitive area. However, the area where KSN Bukit Batabuh initiative has been implemented has also been converted to oil palm plantation. Furthermore, according to the Kuantan Singingi District Spatial Plan draft, there has been a proposal to reclassify this area as APL (Aplea Pengguanaan Lain), or "other land use." This lack of cohesion between the national spatial plans and the district level shows that national regulations are sometimes not implemented at the district level.

Ecosystem Value in Kuantan Singingi District

More than 1/3 of the Kuantan Singingi District is composed of low ecosystem value area due to a large amount already consisting as plantations for oil palm, rubber, or cacao. Areas with high ecosystem service value are mostly located in the south where the protected areas are located, most prominently of which are Bukit Rimbang Bukit Baling and Bukit Batabuh.

About 9% of the oil palm plantations in this district occur in very high and high ecosystem service value areas, covering 21,230 ha. Rubber plantation occurs in about 18% of the very high and high ecosystem service value areas, which is about 10,893 ha. Distribution of most oil palm and rubber plantations are indeed in moderate to low ecosystem service areas. When we overlay this information with existing concession boundaries, none of the concessions overlap with high ecosystem service area. This indicates that plantations inside very high and high biodiversity value area likely belong to the community plantations that sometimes operate outside of the government concession process.

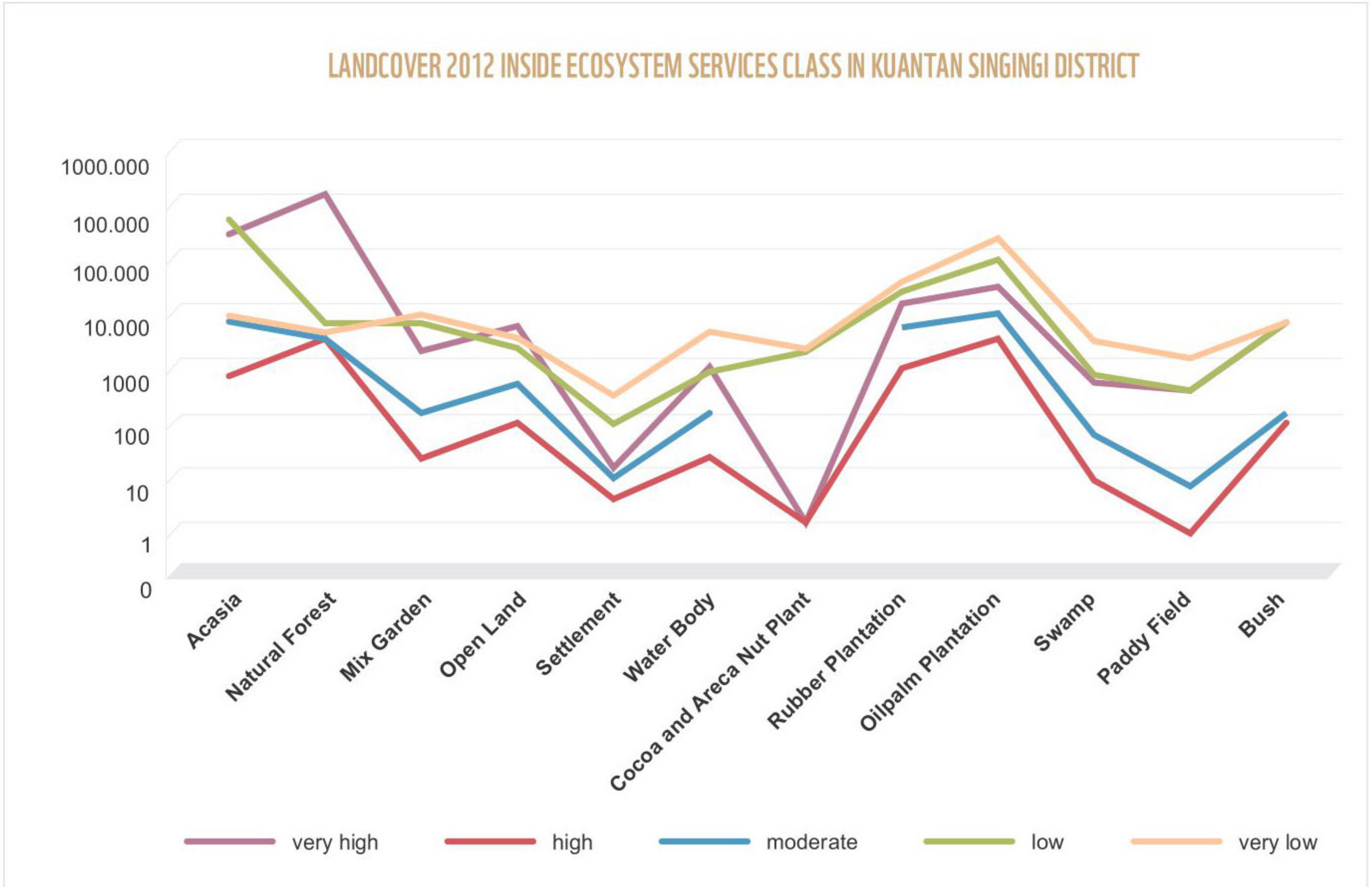


FIGURE 16 : Landcover type inside different ecosystem service value classes in Kuantan Singingi district

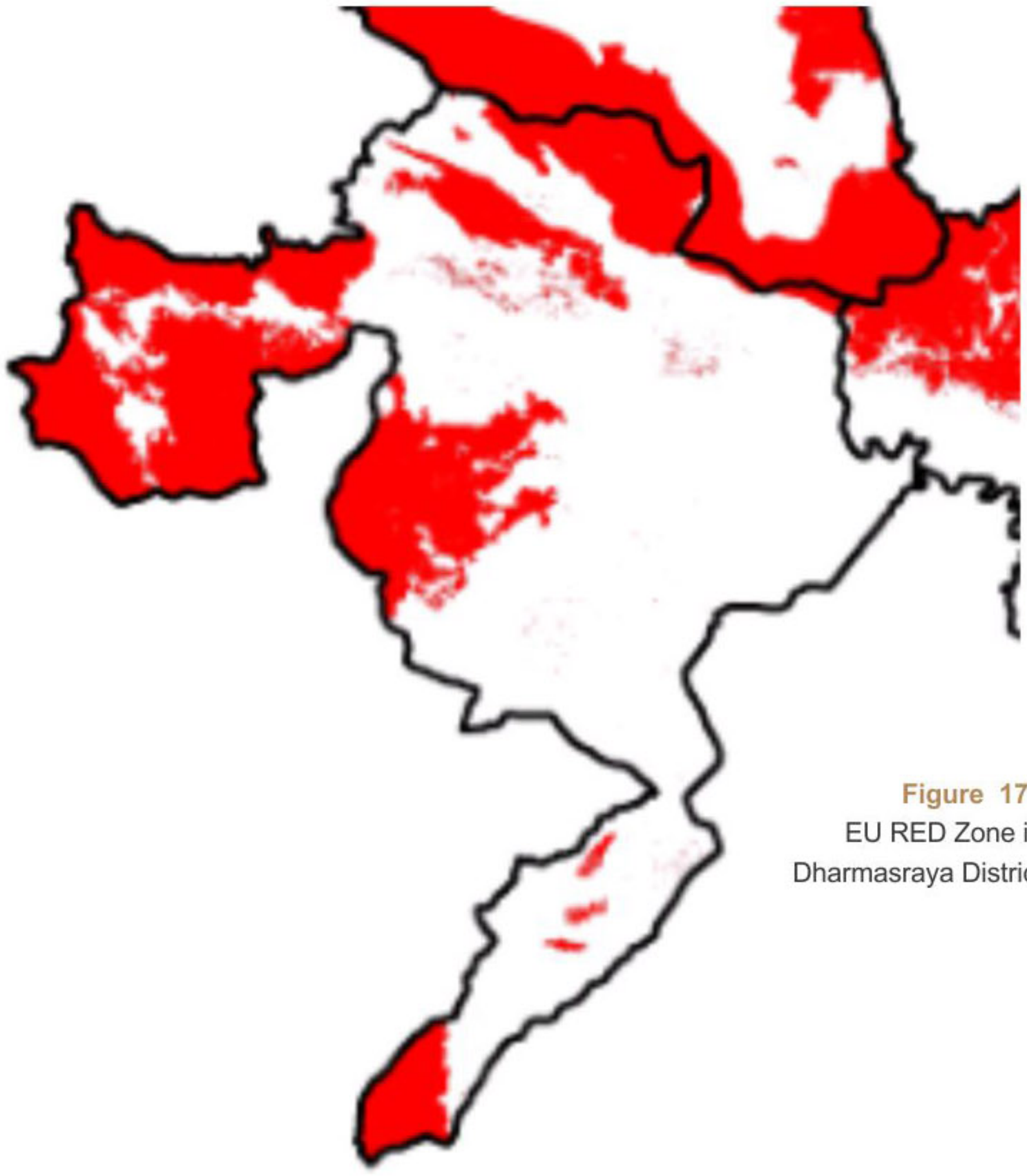
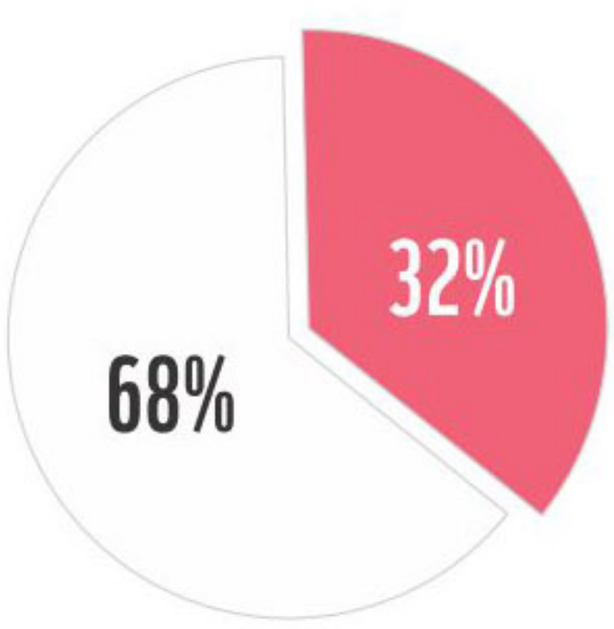


Figure 17 :
EU RED Zone in
Dharmasraya District

▶ Dharmasraya District

Dharmasraya was formed from a division of Sawahlunto and Sijunjung Districts in 2004 and is adjacent in the north to Kuantan Singingi and in the east to Tebo. Oil palm has provided a large contribution to recent economic development, whilst other commodities in the region are coconut, rubber, gambier, masis skin, coffee, clove, and areca nut.

There has been recent agricultural development besides oil palm. The Forestry and Plantation Agency in Dharmasraya began an initiative to develop jernang (Daemonorops draco Bl) fruit, also known as dragon's blood, as an alternative to oil palm. Jernang is believed to contribute



EU RED Zone % Non-EU RED Zone

EU RED Zone Composition in Dharmasraya District

EU RED Zone in Dharmasraya District

EU RED Zone in Dharmasraya covers 32% or 95,669 ha of the total district area. The remaining area of 68% covers around 301,665 ha. From a physical perspective, Dharmasraya is flat in its northern parts and mountainous in the south, with high-elevated areas making up part of the Kerinci Seblat National Park.

The Dharmasraya Spatial Plan draft indicates that all of its area designated for protected forest (11,000 ha) occurs in the EU RED Zone. Also within the EU RED Zone are production forests covering 14,480 ha, and limited production forest covering 25,500 ha. Area designated for converted production forest outside EU RED Zone is around 680 ha, while area designated for limited production forest outside EU RED Zone is around 6,008 ha. There is also community forest and forest for restoration in the Spatial Plan. Community forest includes 3,900 ha in the EU RED Zone, while the majority 20,700 ha occurs outside. Forest for restoration outside EU RED Zone is 12,100 ha and inside EU RED Zone is only 254 ha. About 6,260 ha within EU RED Zone from a total of 95,669 ha are area designated for plantation, which may be oil palm or rubber.

significantly in economic development as it is used for medicinal purposes and as a dye agent for batik, a traditional Indonesian cloth. It is a native tree variety and has been traditionally gathered in the wild; it is heavily dependent on pollination from other jernang trees and thus contributes to the local ecology of the natural ecosystem. Additionally, jernang cannot remain a commodity without healthy, functioning forest ecosystems to support it.

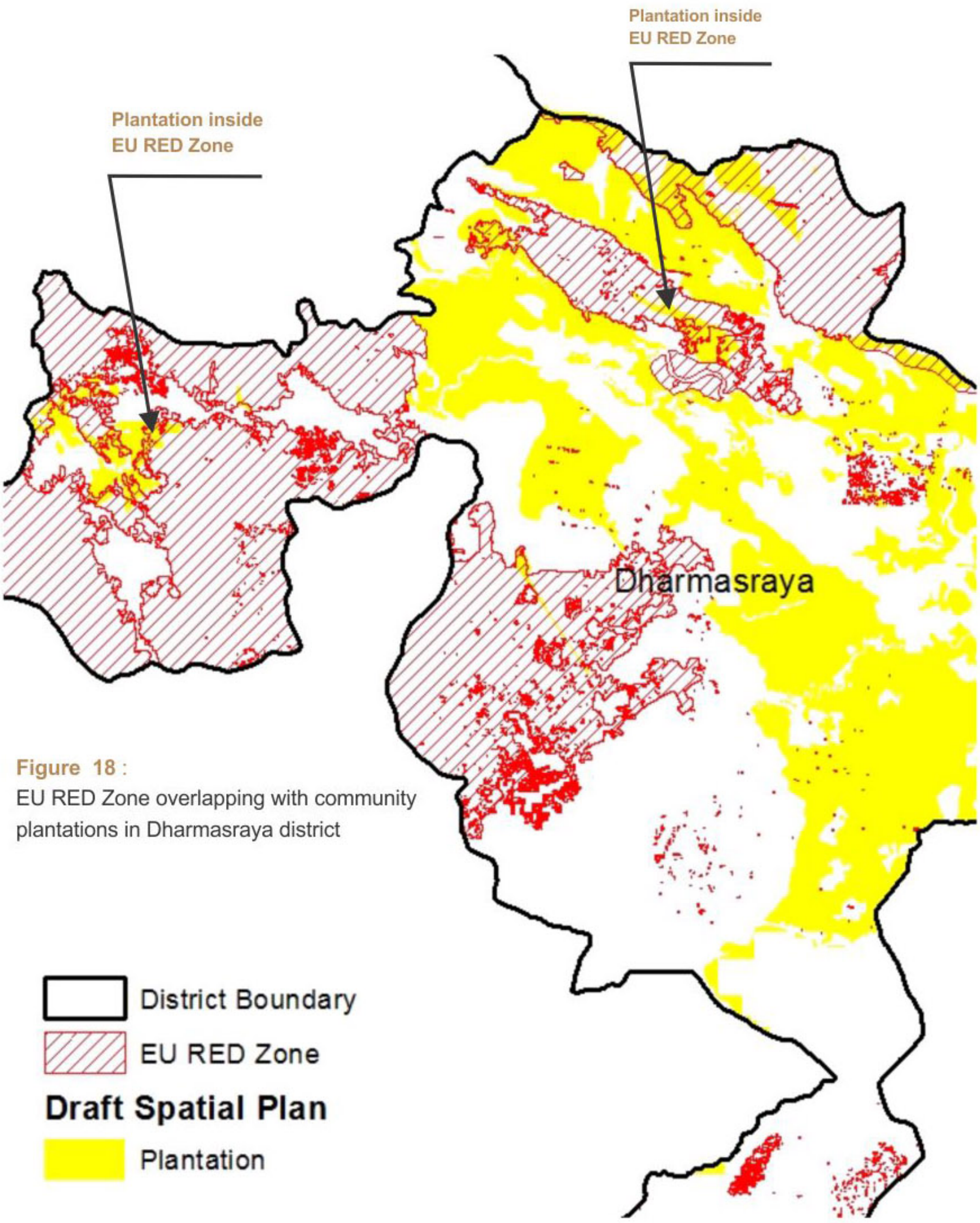


Figure 18 :
EU RED Zone overlapping with community plantations in Dharmasraya district

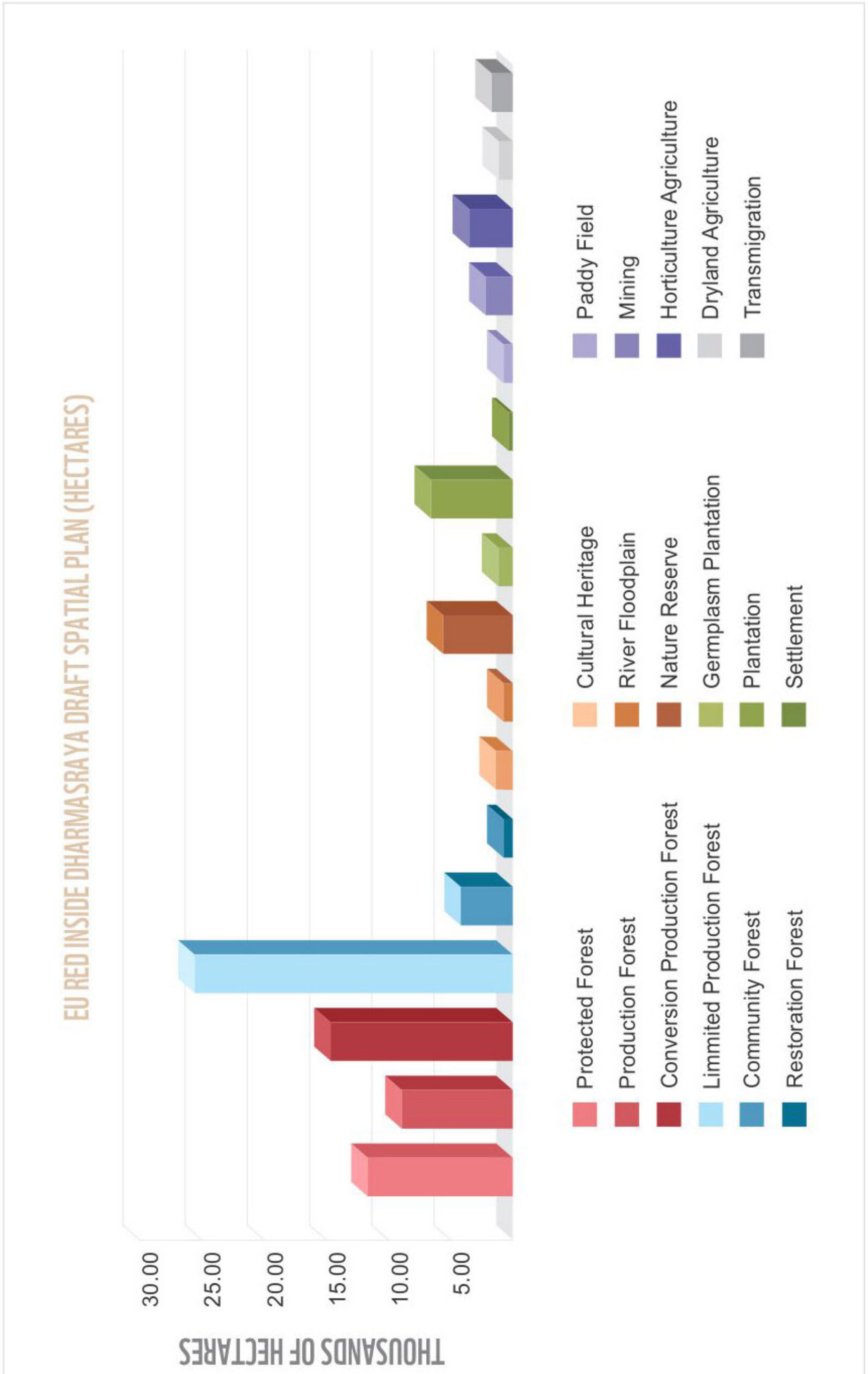


Figure 19 : EU RED Zone inside Draft Spatial Plan of Dharmasraya District

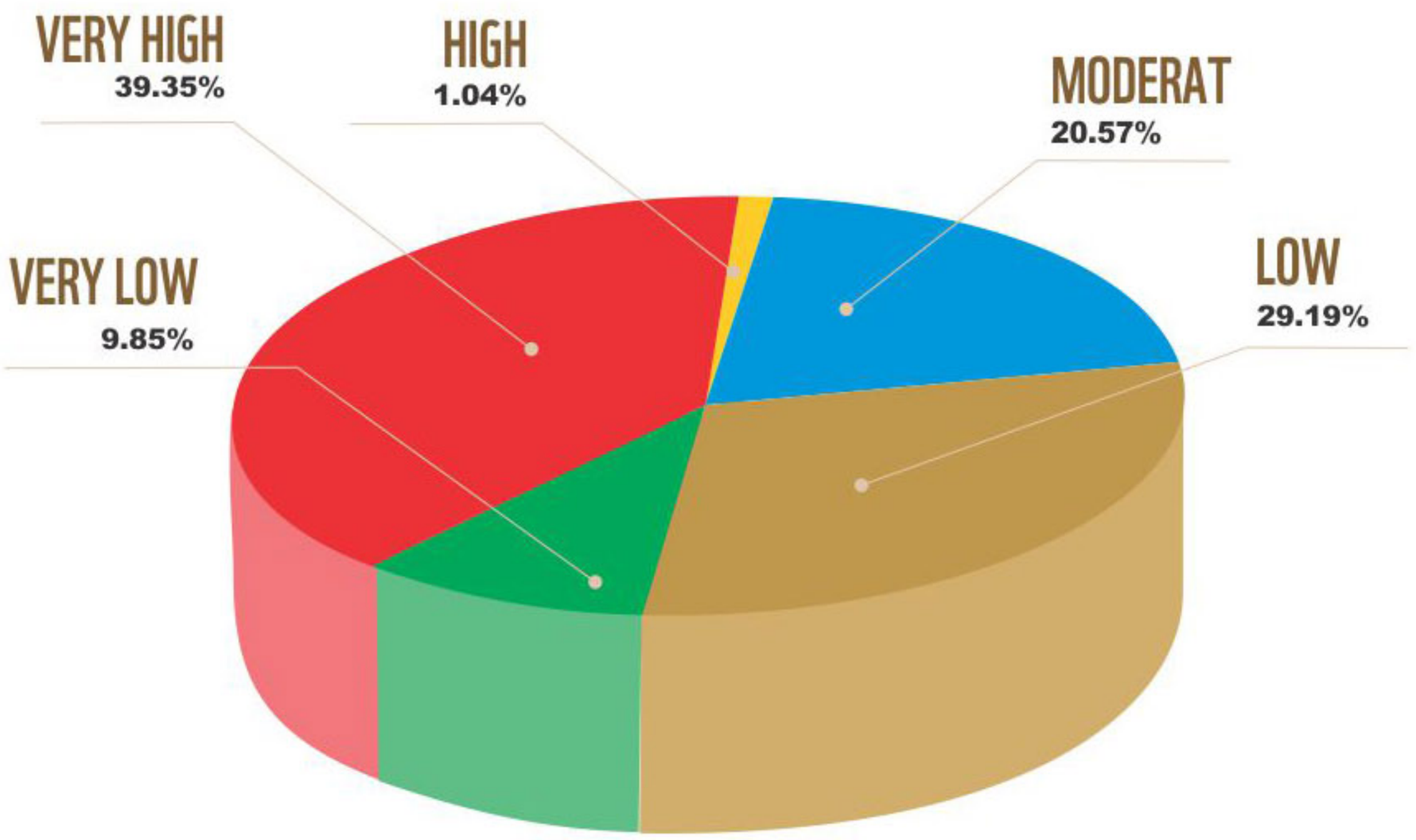


FIGURE 20 : Ecosystem Service Value in Dharmasraya district

Dharmasraya district is the first priority district to implement a carbon project among 19 other districts in the Rimba corridor. The project was initiated based on an InVEST analysis (see Information Box 3) demonstrating high carbon in the area with potential for restoration, as are identified in the West Sumatra provincial Spatial Plan.

Ecosystem Service Value in Dharmasraya District

Figure 20 shows that the ecosystem service value composition in Dharmasraya District is characterised as having more than half (about 60%) the total area being of very high to moderate ecosystem service value, underscoring the contribution ecosystem services provide to the population. The remaining portion of the area within the district has low ecosystem service value, and thus may be investigated further as area for development.

Very high and high ecosystem service areas occur where natural forest still exists. These two classes were highly influenced by river floodplains with 50 – 100 meters, as well as those areas with slopes greater than 40%. Dharmasraya District is dominated by flat topography, so it has no elevation above 2000 meters.

Integration between Landcover 2012 with ecosystem service value in Dharmasraya demonstrates that there are oil palm plantation areas within the very high ecosystem service values class (27,490 ha) as well as rubber plantations (9,840 ha). When intersected with existing concession data, most of the concession boundaries are located in low ecosystem service areas. However, in central, west, and northern areas there are some concession overlaps with very high ecosystem service value area, due to the occurrence of natural forest (Fig 10).

The western areas of Dharmasraya are mostly natural forest, though the spatial plan draft designates the area for plantation and transmigration[10]. Contrary to the government's target to restore forest area this situation creates the potential for natural forest conversion with areas under pressure for different land use conversion.

10 | Transmigration is an official program begun in the 1980s to move people from densely populated areas on islands such as Java, to less densely populated areas, such as Sumatra. For more information on transmigration, see Fearnside, P.M. (1997) Transmigration in Indonesia: Lessons from it Environmental and Social Impacts. Environmental Management, V 21, 4, 553-570.

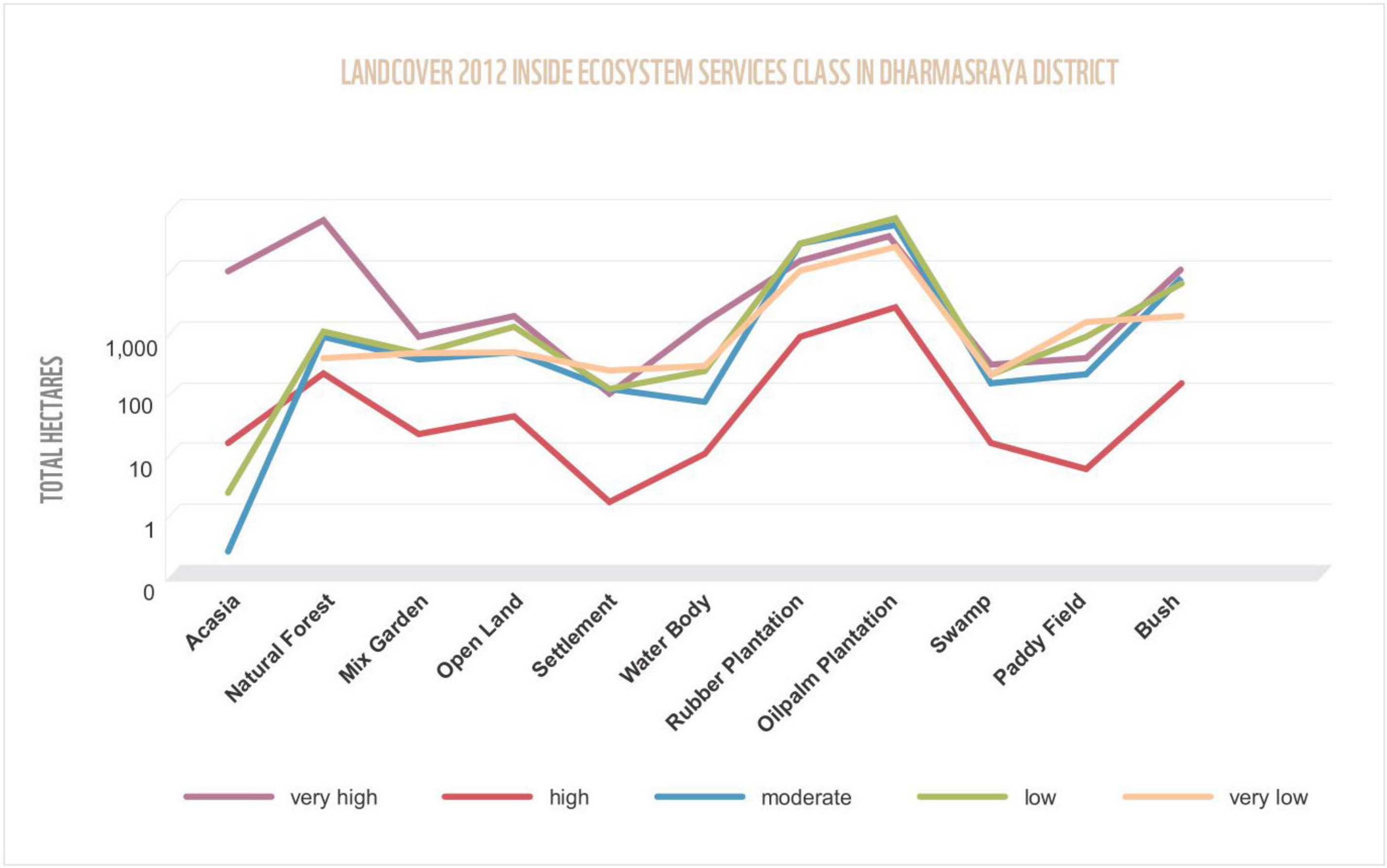


Figure 21 : Ecosystem Service Values in Dharmasraya district

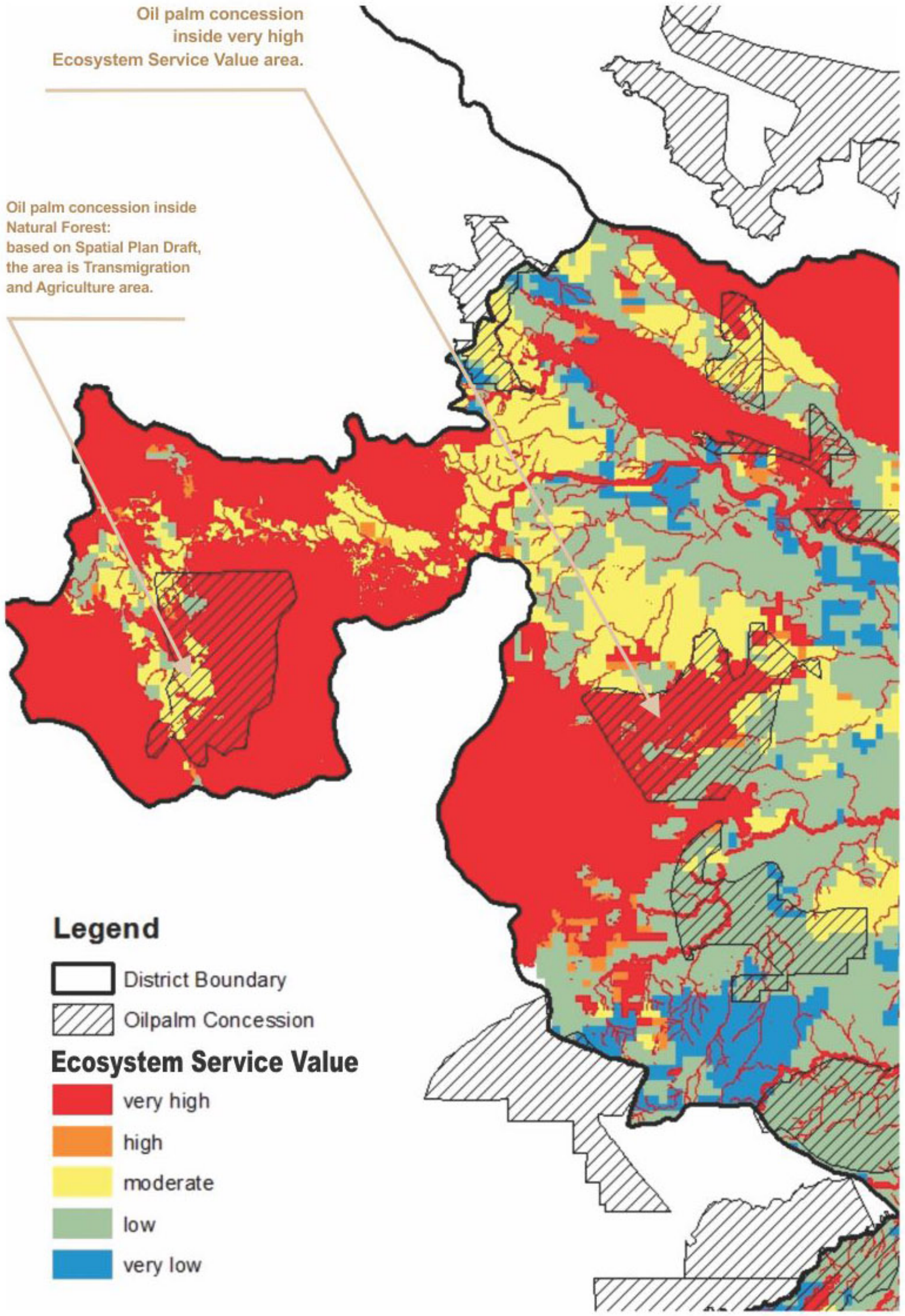


Figure 22 : Concession overlapping with High Ecosystem Service Value in Dharmasraya

FIGURE 23 :
EU RED Zone in Tebo district

▶ Tebo District

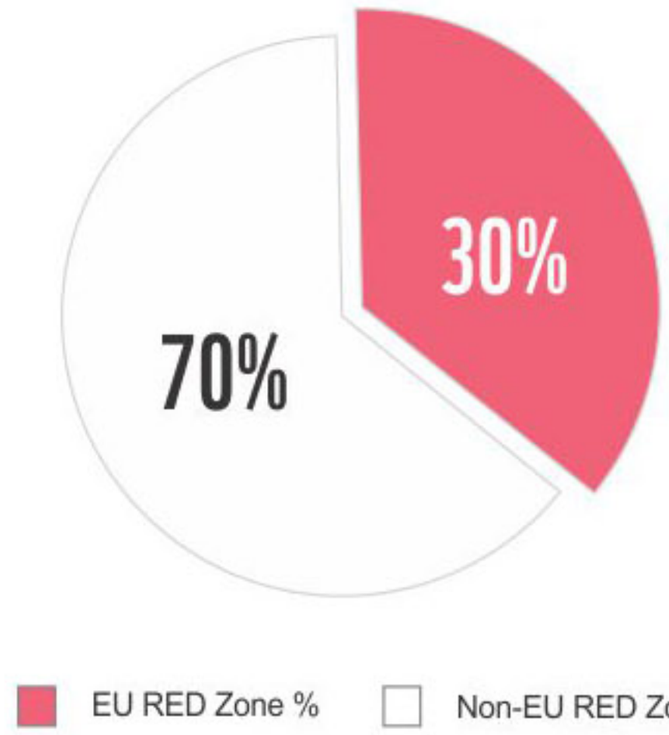
The EU RED Zone in Tebo District is mostly located in the northern part of the region due to Bukit Tigapuluh National Park, which also extends into Indragiri Hulu district in Riau Province. Due to this national park status, natural forest cover in the region is in relatively good condition. In the south part of Tebo district, there is also Bukit Duabelas National Park, meaning natural forest cover in the area is also in good condition and is identified as EU RED Zone.

EU RED Zone in Tebo district

Like in Kuantan Singingi and Dharmasraya Districts, EU RED Zone distribution in Tebo District is mostly a representation of remaining natural forest cover, covering about 30% of the total area. It is highly recommended that EU RED

Zone area should be considered as protected area to prevent pressure to convert for other purposes. This could be achieved by applying Presidential Decree No. 6 of 2013, creating an obligation to maintain at least 40% forest cover on the island of Sumatra.

The Tebo District Spatial Plan draft was completed with a Strategic Environmental Assessment, although according to district government, the assessment was completed according to the rapid assessment methodology. This is not recommended due to multiple environmental aspects that should be considered and might otherwise be missed with the lack of a comprehensive assessment, causing further degradation and deforestation. According to the Spatial Plan draft, about 59.5% of EU RED Zone distribution located in area is designated for production forest, whilst all conservation and protected areas are within EU RED Zone. Areas designated for research forest are not included in EU RED Zone, because it is likely that regardless of this designation there is no actual remaining forest – indeed, the land cover analysis found no forest existing there in 2008.



EU RED Zone Composition in Tebo District

Areas that need attention are those designated for plantation and agriculture and are found to be in the EU RED Zone. Without strict enforcement of the forest areas already part of the Spatial Plan, natural forest could well be impacted and lead to a decrease.

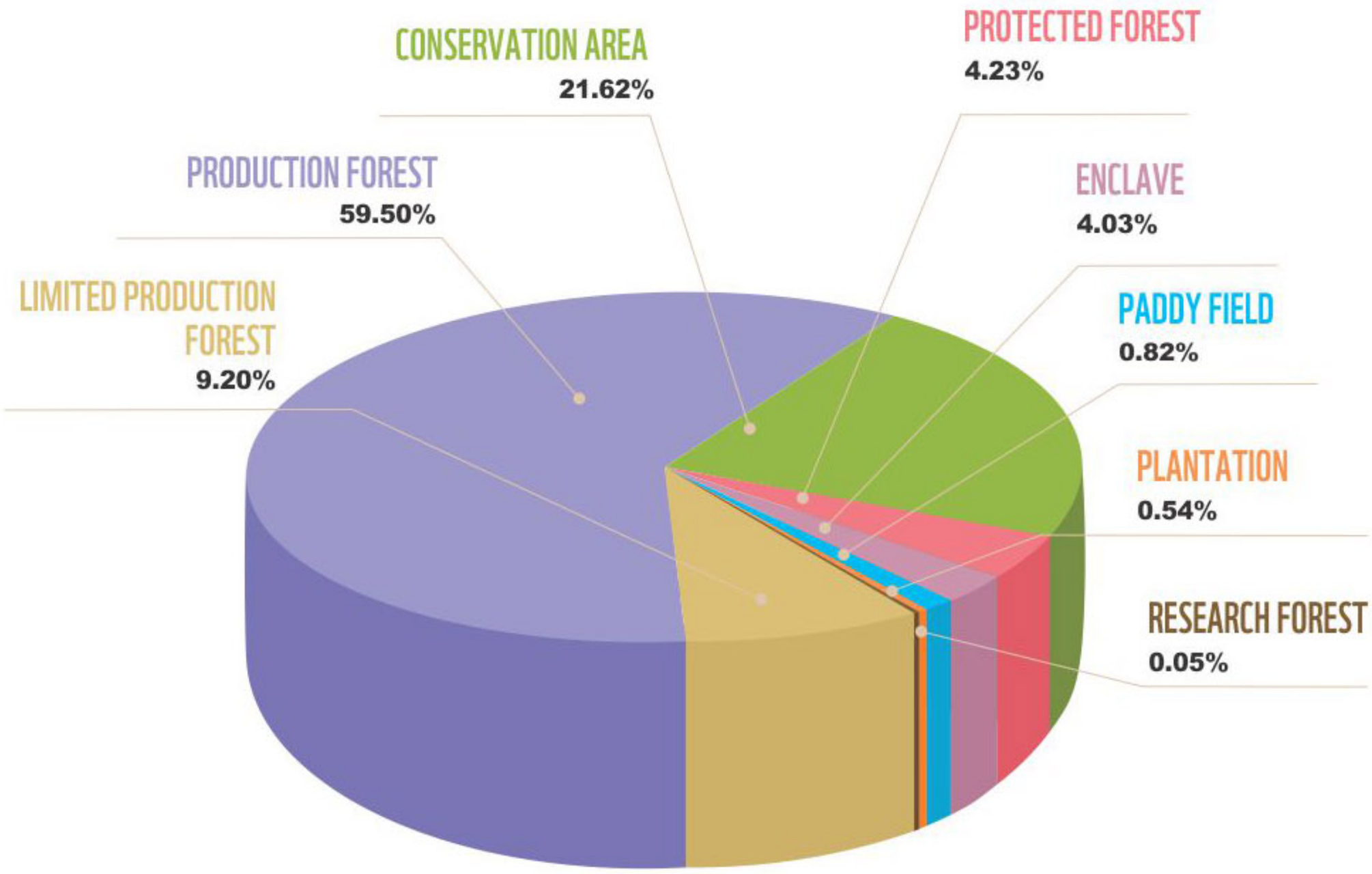


FIGURE 24 : EU RED Zone inside Draft of Spatial Planning of Tebo district

Ecosystem service value in Tebo district

Results of ecosystem service value analysis in Tebo indicate that most areas with high and very high biodiversity value are located in a small part in the south that is dominated by natural forest area. Conservation areas, such as Bukit Sari Sanctuary, Bukit Tigapuluh National Park, and Bukit Duabelas National Park, are also areas with high biodiversity value.

High ecosystem service areas in the northern part of the district mostly consist of areas designated for production forest. It is important therefore to ensure better management practices are implemented to achieve sustainability.

As in Dharmasraya and Kuantan Singingi, there are a number of oil palm and rubber plantation located in high biodiversity area. About 30,750 ha of rubber plantation overlap with high biodiversity areas, which is about 19% of total rubber plantations in Tebo. Meanwhile, 45,030 ha oil palm plantation overlap with very high and high biodiversity area, which is also 19% of total oil palm plantation in Tebo.

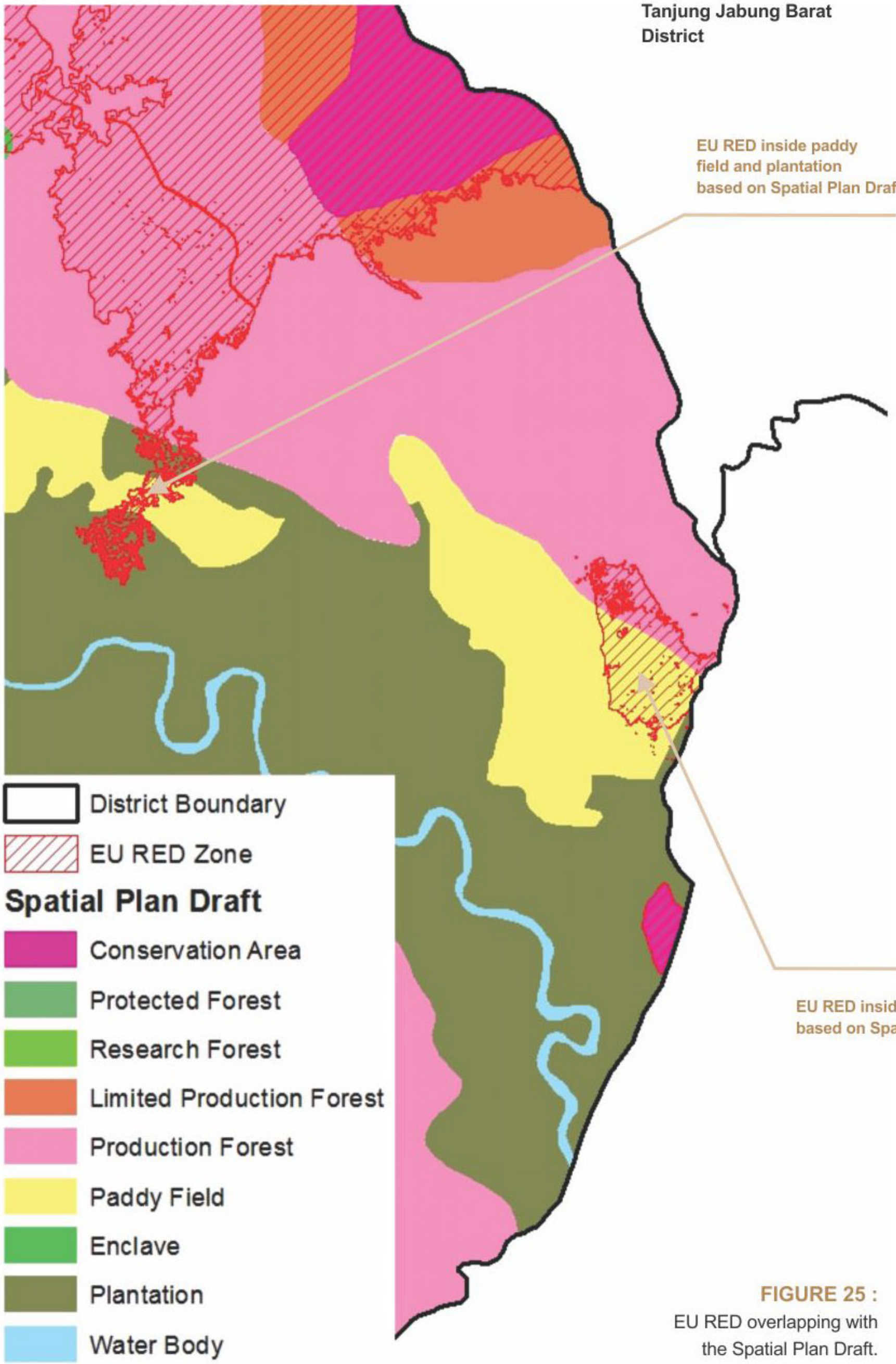


FIGURE 25 :
EU RED overlapping with
the Spatial Plan Draft.

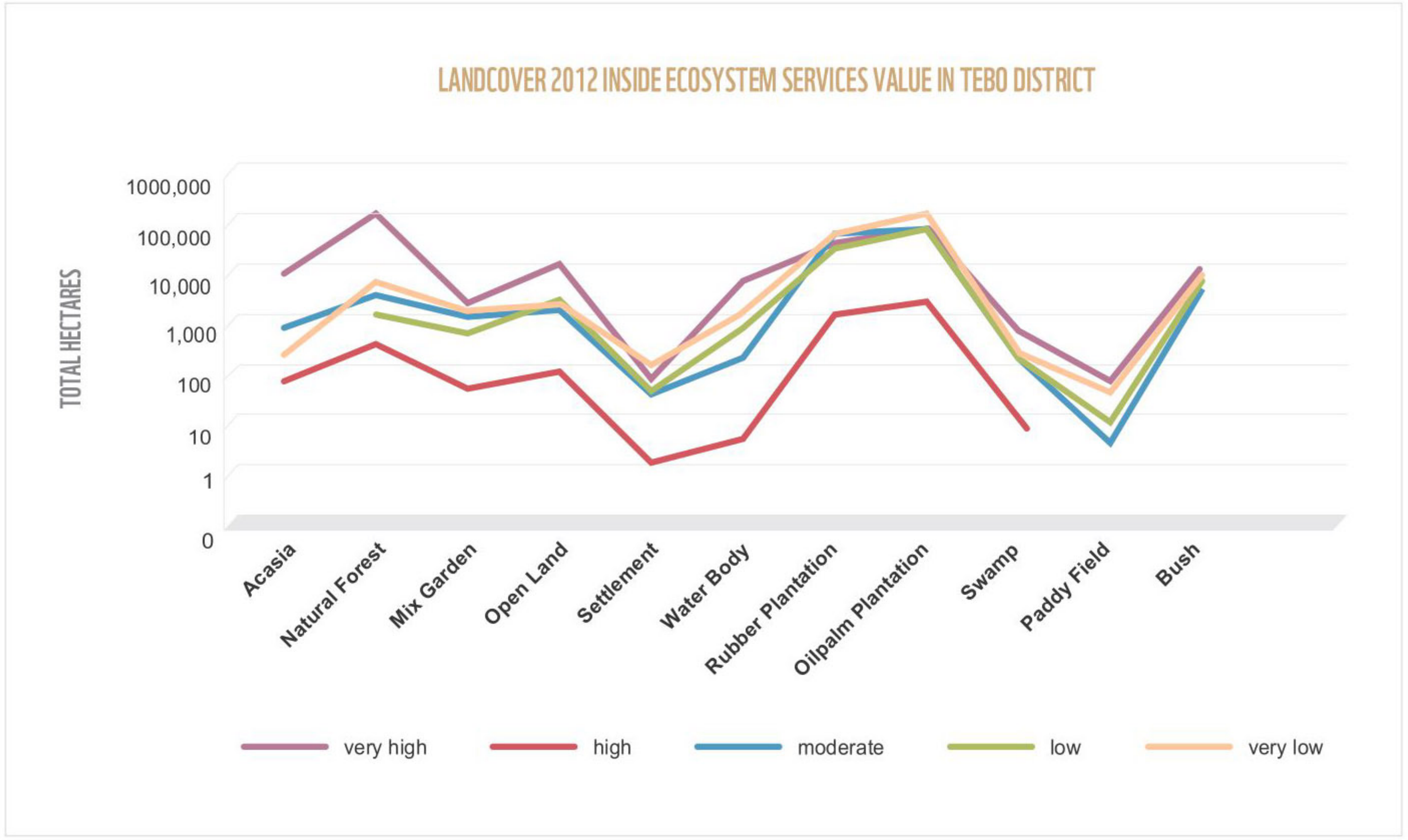


FIGURE 27 : Landcover type inside Ecosystem Service Value in Tebo district

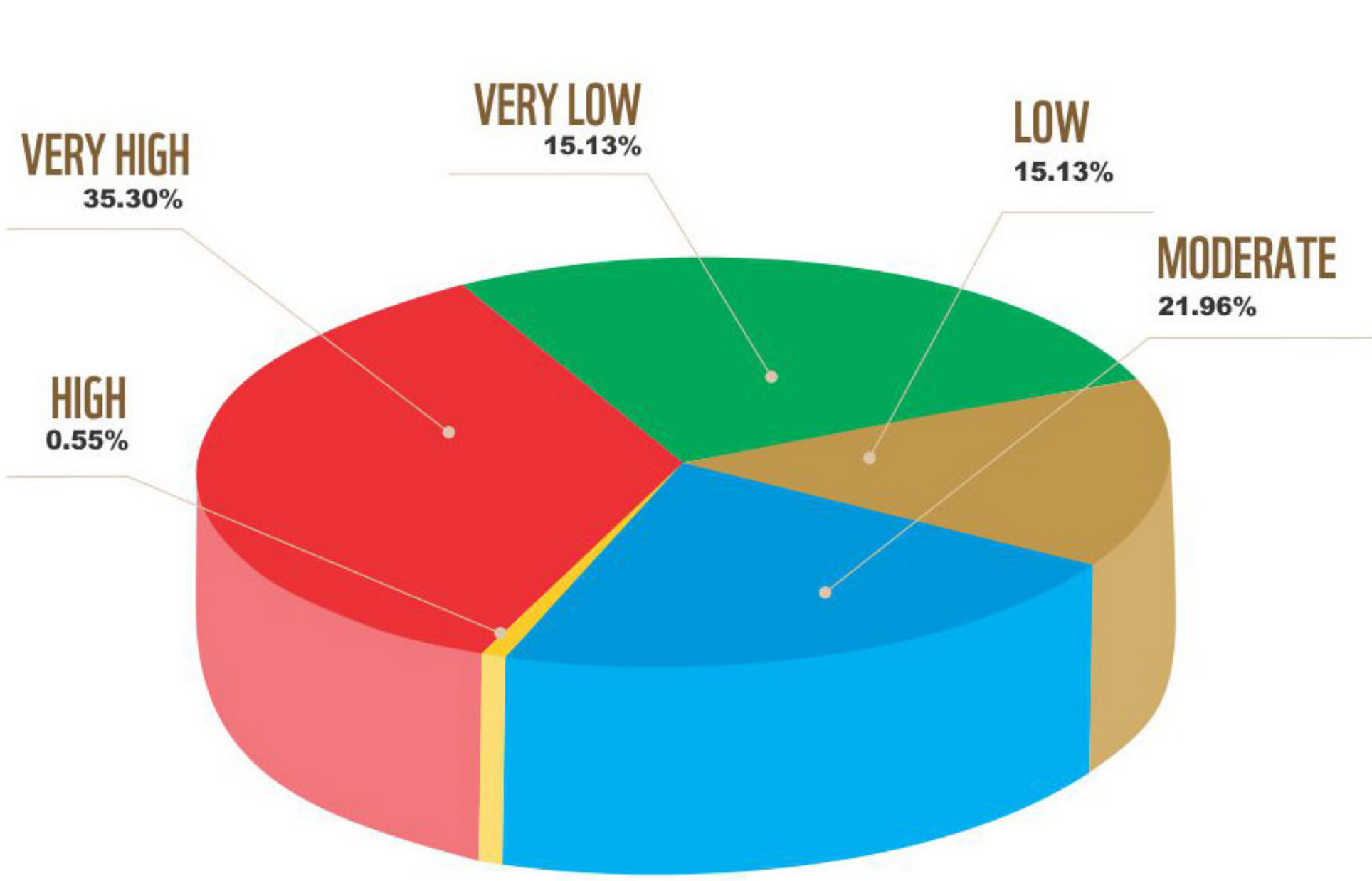


FIGURE 28 : Level of Ecosystem Service Value in Tebo District

CHAPTER 6

CONCLUSION

Due to the limitation of natural resources, especially in Sumatra, spatial planning must integrate the concept of sustainability. With such a large area of Sumatra already allocated for plantation, it has become a challenge for local government to develop a fair spatial plan that is able to contribute benefits to the community - both from an economic perspective, and the sometimes less measurable benefits that the natural environment provides.

There are other pertinent issues relating to balancing economic development with natural resource sustainability, for instance the national initiative: Masterplan Percepatan dan Perluasan Pembanguna Ekonomi Indonesia (MP3EI) (Masterplan for the Acceleration and Expansion of Indonesia's Economic Development). Based on this initiative, Sumatra will be considered a 'Production and Processing Centre for National Natural Resources and Energy'. This initiative is likely to increase conversion pressure for conservation initiatives including natural forest protection, and the natural forest mandate of the Presidential Decree No. 6 of 2013. Kuantan Singingi in Riau will be one of the priority areas for implementation of this initiative due to its already expansive oil palm industry. This will undoubtedly lead to high pressure for plantation development throughout the three priority districts and the rest of Sumatra.


CHAPTER 1
CHAPTER 2
CHAPTER 3
CHAPTER 4
CHAPTER 5
CHAPTER 6

Non-economic benefits are currently less realised as they are sometimes not directly perceived as benefits that are accountable by traditional economics. These benefits may be found in reduced human-wildlife conflict arising from limited forestlands that flagship species such as tigers and elephants use as a home range. Ecosystem services analyses are trying to build economic accountability into these types of benefits so that they may be evaluated by decision makers and better incorporated into spatial planning activities. For example, maintenance of air quality or ground water reserves provide an important value in supporting quality of life, yet are not evaluated directly for the economic benefit they provide since they are deemed to be external to the economic process.

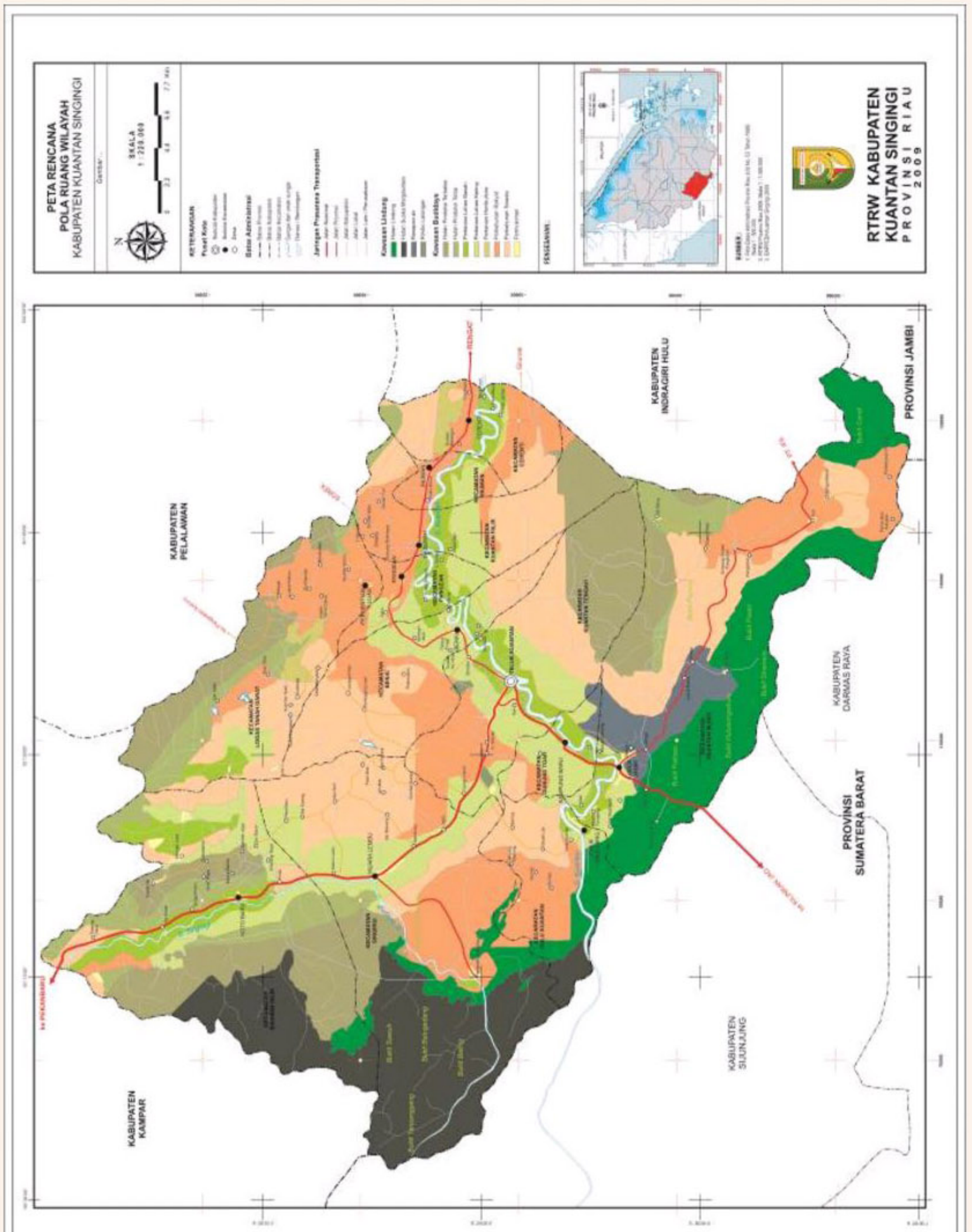
In practice, determining both EU RED or Indonesia government policies are constrained by data availability. It would be very useful if each district could create mapping analyses of their own to evaluate basic information such as land cover and land use. This would enable increased understanding of how each local situation contributes to the spatial pattern, distribution, and quality and quantity of natural resource information.

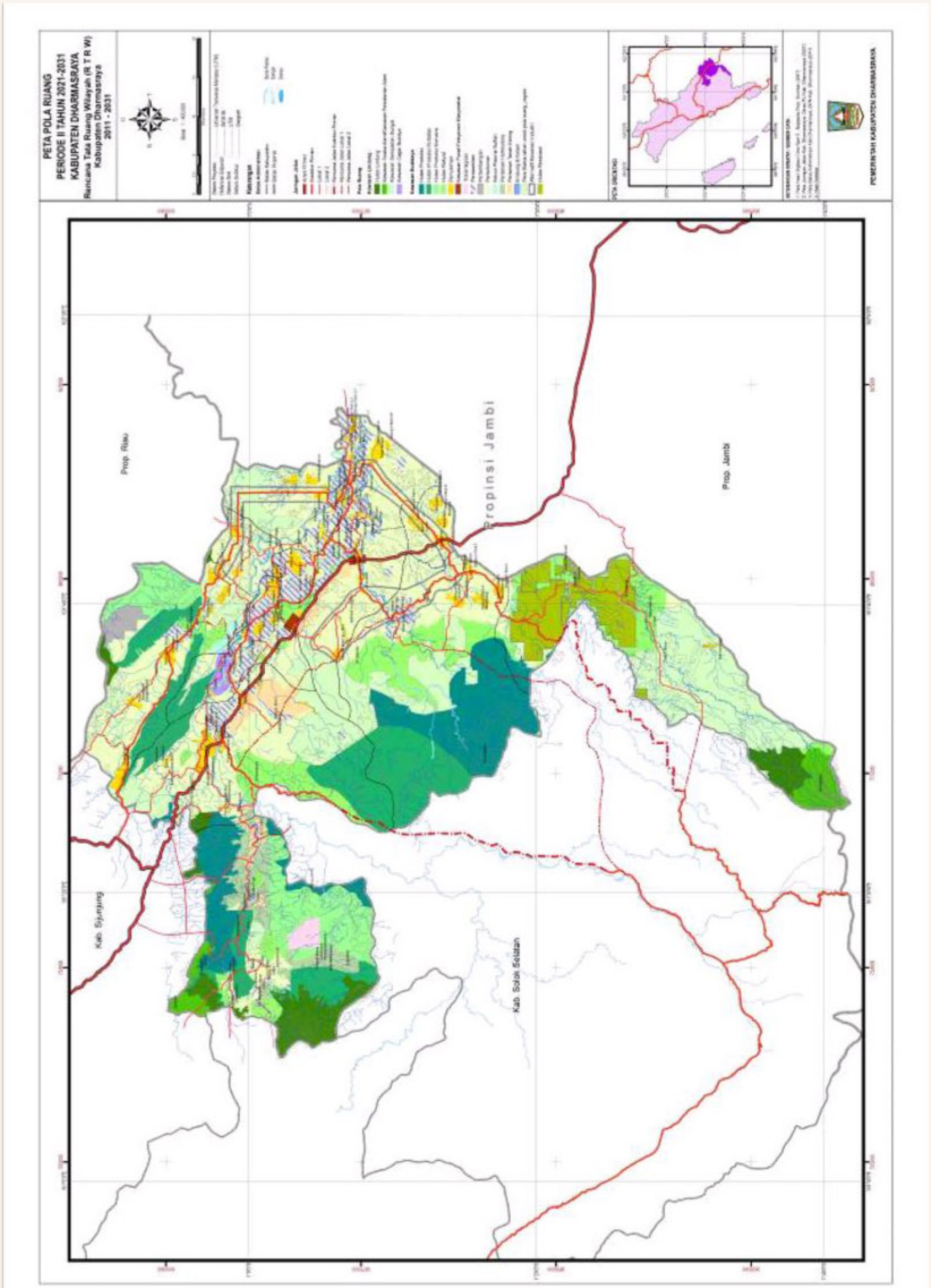
Currently, spatial data in these three districts is still limited to a general scale, which is better interpreted from the provincial or even island level. The level of detail is getting closer to that of a “hard boundary” of actual land use and land cover information. However, this analysis does not recommend strict interpretation of data provided in this report, as the information is still only indicative of likely ground conditions. Verification of results at the ground level should be used to complement decisions made based on the results of this analysis.

The results of this analysis demonstrate considerable need to align spatial planning with on-the-ground management activities. Often areas designated as forest, either community forest, or conservation forest in the spatial plan, are in fact deforested areas as demonstrated by comparing results from the SPOT LC analysis with spatial planning data. This analysis also found that community plantation on the spatial plan overlapped with official protected areas, as is the case in Bukit Batabuh in south Kuantan Singingi. Attention to detail, use of remotely sensed data, alignment of spatial planning with actual management decisions are integral to developing sustainable land use planning in Indonesia.

A key target of the spatial plan is to promote welfare of the people in harmony with the environment. Development of large-scale agriculture, such as oil palm plantations, is often seen as an easy way to provide jobs and generate economic activity in the region, but a more sustainable model for development would also consider the additional ecosystem services. These are widespread in application and can be found in Dharmasraya, where there is the potential to develop carbon projects and sustainable rubber plantations. Similarly, in Kuantan Singingi and Tebo there are opportunities for habitat quality improvement activities and habitat restoration. Finally, as an expression of the social and cultural benefits of conservation activities, Kuantan Singingi hosts the popular Pacu Jalur, a traditional rowboat race that is a great example of tourism ecosystem services.

APPENDIX 1 - DRAFT SPATIAL PLANS




PETA POLA RUANG
PERIODE II TAHUN 2021-2031
KABUPATEN DHARMASRAYA
Rencana Tata Ruang Wilayah (R T R W)
Kabupaten Dharmasraya
2011 - 2031
PEMERINTAH KABUPATEN DHARMASRAYA
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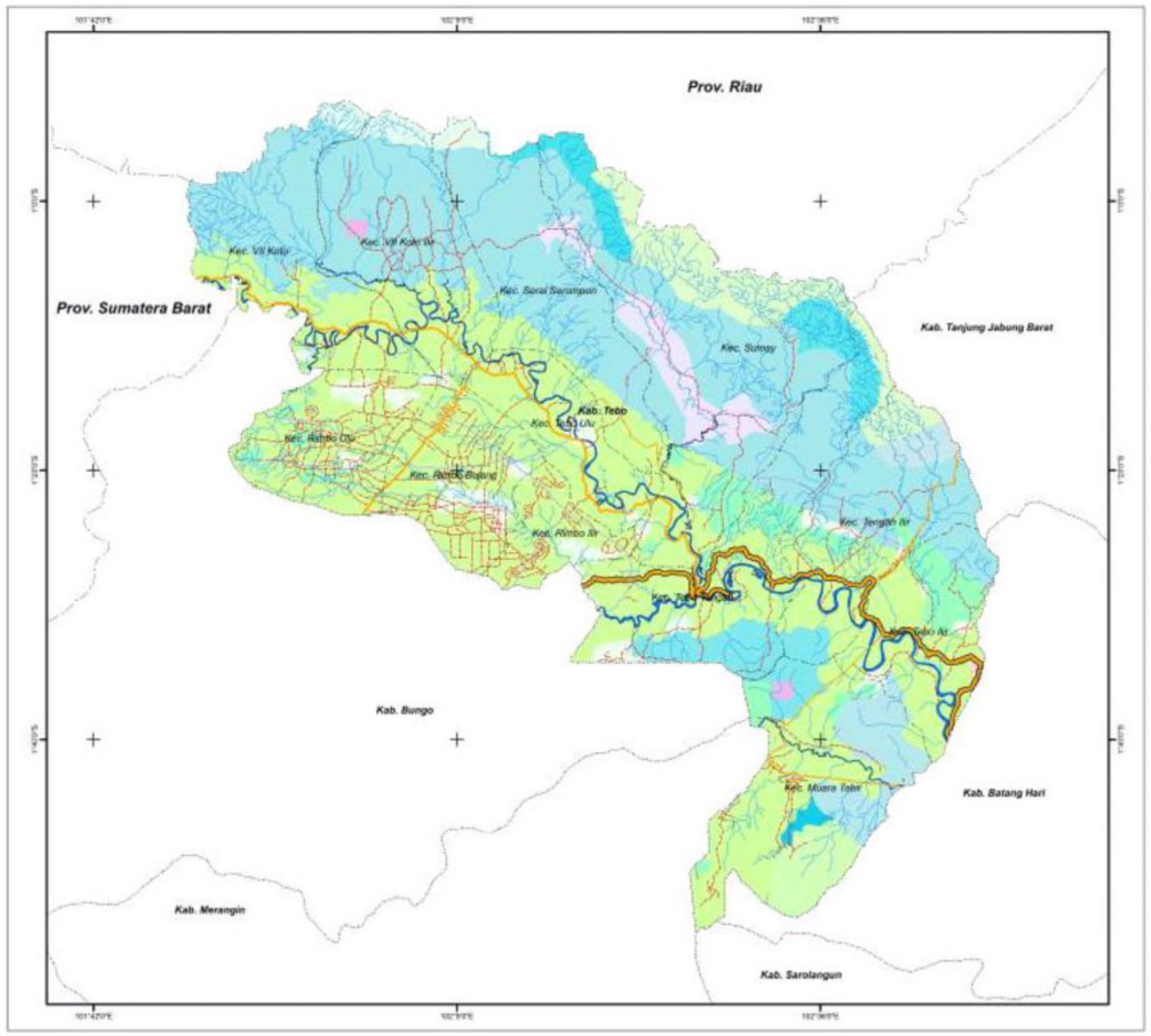
Propinsi Jambi
Prop. Jambi
Kab. Sijunjung
Kab. Solok Selatan



BADAN PERENCANAAN PEMBANGUNAN DAERAH
PEMERINTAH KABUPATEN KABUPATEN TEBO

PENYUSUNAN RTRW KABUPATEN TEBO TAHUN 2011 - 2031

PETA RENCANA POLA RUANG KABUPATEN TEBO

Keterangan

Batas Administrasi
- Batas Propinsi
- Batas Kabupaten
- Batas Kecamatan

Perhubungan
- Jalan Arteri Primer
- Jalan Arteri Sekunder
- Jalan Kolektor
- Jalan Lokal
- Jalan Lain

Perairan
- Sungai
- Danau

Rencana Pola Ruang

Diketahui :
Bupati Tebo

H. SUKANDAR, S.KOM, MSI

Inset

Sumber
1. Peta RBI Skala 1 : 50.000
2. Hasil Analisis Tim Penyusun

Skala 1 : 250.000

No. Peta : 4 _ 1

APPENDIX 2 - RIMBA APPROVAL DOCUMENTS FROM RIAU, JAMBI, AND WEST SUMATRA

→ UP/ATTENTION : BPK. YUDI ←

PEMERINTAH PROVINSI JAMBI
SEKRETARIAT DAERAH
Jl. Jenderal A. Yani No. 1
J A M B I

Jambi, 9 Maret 2010

Nomor : 660/ 325 /III/Bappeda
Lampiran : -
Perihal : **Deliniasi Koridor RIMBA dalam Upaya Penyelamatan Ekosistem Sumatera**

Kepada Yth :
Bapak Dirjen Bina Pembangunan Daerah
Departemen Dalam Negeri
Cq. Direktur Fasilitasi Penataan ruang dan Lingkungan Hidup
di -
JAKARTA

Menindaklanjuti surat Bapak Dirjen Bina Pembangunan Daerah Departemen Dalam Negeri Nomor: 660/543/IV/Banda tanggal 17 Februari 2010 perihal sebagaimana dimaksud diatas, setelah kami pelajari selanjutnya kami sampaikan beberapa hal sebagai berikut:

1. Mengingat bahwa penentuan batas koridor RIMBA (Riau Jambi Sumbar) yang ditetapkan tersebut telah melalui mekanisme pengkajian, diskusi dan kesepakatan bersama yang melibatkan pemerintah pusat, pemerintah daerah dan LSM terkait maka pada prinsipnya kami menyetujui penetapan koridor batas/peta deliniasi tersebut.
2. sehutungan dengan hal tersebut, kami mengusulkan beberapa hal sebagai berikut:
   a. mengingat di berbagai daerah provinsi/kabupaten saat ini sedang melakukan usulan revisi rencana tata ruang, maka dipandang perlu untuk melakukan sosialisasi dan penyampaian rencana kerja / rencana implemetasi di tingkat Provinsi/ Kabupaten terhadap pelaksanaan program penyelamatan ekosistem di Sumatera.
   b. Dipandang perlu untuk melakukan penyusunan tata kelola dan mekanisme peran multi pihak serta penjelasan informasi nilai manfaat finansial dan non-finansial khususnya bagi daerah dan masyarakat lokal dalam berbagai model insentif yang dikembangkan melalui program ini.

Demikian disampaikan, atas perhatian dan kerjasama yang baik diucapkan terima kasih.

GUBERNUR JAMBI
SEKRETARIS DAERAH,

SETDA

Drs. A.M. Firdaus, MSi
Pembina Utama Muda
NIP 19581116.198002.1.001

Tembusan (Disampaikan kepada Yth.:
1. Bapak Gubernur Jambi di-JAMBI (sebagai laporan)
2. Arsip

PEMERINTAH PROVINSI RIAU
SEKRETARIAT DAERAH
Jln. Jend. Sudirman No. 460 Telp. (0761) - 33749, 33140, 33712, 40307 Fax (0761) - 33477
PEKANBARU
Kode Pos 28136

Pekanbaru, 7 Mei 2010

Nomor : 050/Bappeda/81.10
Lampiran : -
Perihal : **Deliniasi Koridor RIMBA (Riau-Jambi, Sumbar) dalam Penyelamatan Ekosistem Sumatera**

Kepada Yth. :
Direktur Bina Pembangunan Daerah
Departemen Dalam Negeri
Di
Jakarta

Dengan Hormat,

Sehubungan dengan surat Saudara Nomor 650/543/IV/Bangda tanggal 17 Februari 2010 perihal sebagaimana pokok di atas, bersama ini disampaikan beberapa hal sebagai berikut:

1. Berdasarkan pertemuan-pertemuan sebelumnya terkait dengan "Peta Jalan Menuju Penyelamatan Ekosistem Sumatera 2020" termasuk pertemuan di Bukittinggi tanggal 17 Desember 2009 yang telah menyepakati perubahan nama dan deliniasi kawasan Koridor Rimba yang meliputi 3 (tiga) provinsi di Sumatera, yakni Riau, Jambi, dan Sumatera Barat.
2. Pada prinsipnya Pemerintah Provinsi Riau menyetujui deliniasi Koridor Rimba sebagaimana peta terlampir, yang implikasi penetapannya tidak bertentangan dengan ketentuan peraturan perundang-undangan yang berlaku.
3. Berkenaan dengan proses revisi RTRW Provinsi Riau saat ini, maka deliniasi Koridor Rimba untuk Provinsi Riau merupakan bagian yang tidak terpisahkan dengan RTRW Provinsi Riau yang telah direvisi, untuk itu perlu sinkronisasi/paduserasi lebih lanjut.
4. Dalam upaya pemahaman yang lebih jelas tentang Koridor Rimba, maka perlu dilakukan sosialisasi kepada berbagai pihak (stakeholders).

Demikian disampaikan, atas perhatian dan kerjasamanya diucapkan terima kasih.

SEKRETARIS DAERAH
PROVINSI RIAU,

H. WAN SYAMSIR YUS
Pembina Utama Madya
NIP. 19530305 197306 1 003

Tembusan disampaikan kepada:
1. Yth. Gubernur Riau (sebagai Laporan)
2. Arsip.

PEMERINTAH PROVINSI SUMATERA BARAT

SEKRETARIAT DAERAH

Jl. Jend. Sudirman No. 51 Telp. 31401 -- 31402 – 34425 Padang

Padang, 15 Maret 2010

Nomor : 130/III/PW-LH/Bappeda-2010
Lamp : –
Perihal : Deliniasi Koridor RIMBA (Riau-Jambi-Sumbar)

Kepada Yth,
Bapak DIRJEN
Bina Pembangunan Daerah
Depdagri
di-
Jakarta

Menanggapi surat Bapak nomor 660/543/IV/Bangda tanggal 17 Februari 2010 tentang Deliniasi Koridor RIMBA (Riau-Jambi-Sumbar) Dalam Upaya Penyelamatan Ekosistem Sumatera dapat disampaikan beberapa hal sebagai berikut :

1. Berdasarkan hasil pertemuan di Bukittinggi pada tanggal 17 Desember 2009 yang telah menyepakati perubahan nama dan deliniasi kawasan KORIDOR RIMBA yang meliputi 3 (tiga) propinsi di Sumatera yaitu Propinsi Riau, Jambi dan Sumatera Barat pada dasarnya kami menyetujui.

2. Berdasarkan pertemuan antara tim dari WWF, Depdagri, dan Meneg LH pada tanggal 13 Januari 2010 di Bappeda Propinsi Sumatera Barat yang dilanjutkan dengan pertemuan intern dengan dinas-dinas terkait di Propinsi Sumbar telah disepakati bahwa untuk Propinsi Sumatera Barat tidak mengusulkan tambahan wilayah untuk dijadikan kawasan Koridor RIMBA dan menerima kawasan yang ditetapkan pada peta deliniasi awal (terlampir) sebagai koridor RIMBA yang terletak di Propinsi Sumatera Barat.

Demikianlah disampaikan kepada Bapak, atas perhatian dan kerjasamanya diucapkan terima kasih.

SEKRETARIS DAERAH
PROVINSI SUMATERA BARAT,

FIRDAUS K, SE, M.Si
Pembina Utama Muda
NIP. 19530309 197603 1 005

APPENDIX 3 - SPOT 2/4 LAND COVER CLASS DEFINITIONS

LAND COVER 2007 - SPOT AND LANDSAT TM	
Forest	Area of dense (>30%) canopy cover, likely a primary dipterocarp forest.
Acacia	Area where Acacia trees are being grown for eventual harvest.
Mixed Garden	Area of various agricultural activities often shared by the local community, including fruit trees, perennial and annual crops may be grown here. Examples of crops include mangos, banana, durian, coconuts, clove, Jack fruit, etc.
Field	Agricultural activities with low vegetable plants dominate after recent disturbance of woody growth e.g. rice at dry land, tomatoes, potatoes, chilli, spinach, corn, beans, etc.
Open Land	Area of open barren land with <10% vegetative cover. Disturbance likely occurred here recently.
Settlements/Built Land	Area where houses and the human built environment dominate, roads are sometimes included.
Water Area	Areas of open water may be lakes, ponds, and rivers.
Cocoa and Areca Plantations	Area where Chocolate and/or Areca crops are being grown.
Rubber Plantation	Areas where rubber tree plantations are being cultivated (at least 5 years old in growth).
Oil Palm Plantation	Oil palm plantation where the trees (at least 1 year old in growth).
Swamp	Area of water saturated soils. Forest cover may occur here, as well as open swampland with low to the surface vegetative growth.
Paddy Field	Area where rice is being grown and has a block pattern.
Bushland	Various stages of canopy and tree height. Woody growth often exceeds 5 m in height and 10% canopy cover. Low-level plants are dominated by the growth of young woody plants form the successional assemblage that eventually becomes forest regrowth.

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