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Oil Palm Economic Benefit Distribution to Regions for Environmental Sustainability: Indonesia's Revenue-Sharing Scheme

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Abstract: Palm oil is considered a key commodity in supporting the Indonesian economy, generating both domestic revenue and foreign exchange. Such revenue needs to be distributed equally for the benefit of the government and society. This paper discusses the opportunities and challenges of the proposed revenue-sharing scheme, DBH Sawit, sourcing from palm oil, particularly between central and local governments. It examines how the proposed scheme can be implemented and what strategies can reward regions for moving toward environmental sustainability practices. Research methods used in this paper include a literature study, stakeholder interviews, the SWOT method and analytical hierarchy processes. Results indicate that DBH Sawit is one of several fiscal instruments that could potentially incentivize sustainability. It has both strengths and anticipated opportunities, such as increased CPO production and global demand for palm oil. It faces, however, serious weaknesses, such as unauthorized oil palm plantations and the absence of traceability systems. It is also threatened by unfair market and global policies. This paper recommends diverse strategies to increase palm oil productivity, accelerate sustainability certification and develop a tracing system. To accelerate the adoption of environmental sustainability, the paper advocates an ecological-based fiscal transfer system.

Keywords: palm oil; sustainability; intergovernmental fiscal transfer; balanced fund

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1. Introduction

Palm oil is considered a key commodity in supporting the Indonesian economy. Furthermore, Indonesia is the world's largest producer of palm oil. In 2019, it generated a large amount of foreign exchange, estimated at USD 25.38 billion or equivalent to IDR 359.14 trillion [1]. The palm oil sector accounts for more than 14% of the country's total non-oil and gas export foreign exchange earnings, playing an important role in boosting domestic economic activities. The sector builds food security and energy sovereignty through a biodiesel program based on palm oil that would help the country reduce its dependence on oil imports and reach its 2025 renewable energy targets [2,3].[1] Oil palm plantation and industries absorb around 4.2 million direct workers and 12 million indirect workers, while smallholder plantations absorb 4.6 million workers [4]. The palm oil industry has withstood the COVID-19 pandemic, continuing to provide employment [5]. Oil palm plantations and industries have grown rapidly, spreading across more than 200 districts. They produce fresh fruit bunches (FFB), crude palm and kernel palm oils, and biomass, generating economic benefits for the central and regional governments [1].

However, the country needs to distribute the benefits arising from this important commodity evenly across the spheres of government and society. This challenge comes in parallel with its efforts to mitigate adverse impacts of palm oil plantation development, improve governance of the palm oil sector and promote transitions in many regions toward sustainability. In recent years, widespread dissatisfaction has emerged among key palm oil-producing regions with the fiscal transfer scheme. Around 20 local government leaders from palm oil-producing provinces, such as Riau, Central Kalimantan and East Kalimantan, formed a coalition[2] to appeal for changes in the revenue-sharing scheme or *Dana Bagi Hasil* (hereafter "DBH"). The coalition calls for the more proportional sharing of funds between producing regions.

The fiscal transfer scheme is deemed inadequate for not considering negative externalities in affected areas [6–8] and not contributing enough to regional development [9]. Palm oil plantation and industry development generate insignificant economic benefits through revenues from land building taxes. At the same time, they have caused road damage and adverse environmental impacts, such as forest and land degradation, increased emissions from land-use change, waste generation, and land and social conflicts [10–14]. Significant economic growth in five key palm oil-producing provinces has been found not to correspond to their palm oil contributions [15]. Local governments are often not incentivized to achieve environmental and sustainable development goals [16].

On 5 January 2022, the central government finally issued Law No. 1/2022 Fiscal Decentralization between Central and Local Governments, amending Law No. 33/2004. While this responds to local governments and others [17],[3] the new law does not fully accommodate the aspirations of most oil palm-producing regions. It does not regard palm oil as a key commodity or sector from which revenues can be shared with the regions through DBH SDA or *Natural Resources* (a revenue-sharing scheme originating from natural resource use), such as forestry, fisheries and mining. The law,[4] however, enables the central government to identify new funding to be shared through DBH provided that "producing regions" can be identified. Indeed, it specifies palm oil as the potential commodity from which revenues can be shared with regions. The new law also strengthens local governments' capacities to collect retribution from palm oil businesses operating within their jurisdictions.[5]

Earlier studies have looked at the impacts of fiscal decentralization or fiscal balance policies on local economic growth [18,19], human development [20] and poverty alleviation [21]. Few of them focused on how revenue sharing schemes originating specifically from palm oil have been implemented [9,22]. However, the new law comes with a new framework for sharing funds. Consequently, there is a need to examine how this framework provides an opportunity for palm oil-producing regions to receive more revenues through DBH SDA revenue-sharing schemes. To that end, this paper poses several research questions. What are the opportunities and challenges of the proposed revenue-sharing scheme (hereafter "DBH Sawit") between the central and regional governments? How can sourcing from palm oil earnings, potentially from crude palm oil (CPO) export levies, be implemented? What strategies can further reward regions for moving toward environmentally sustainable practices?

2. Materials and Methods

2.1. Framework Analysis

Indonesia has been decentralizing policies since 1999, including fiscal policies that transfer authorities related to budgeting and financial decisions from higher levels of government to lower levels [23]. Intergovernmental fiscal transfer (IFT) distributes part of the central government's revenues to close the gap between spending and revenues at the local level and correct spillover benefits of public services to other jurisdictions [24]. In Indonesia, IFT adheres to the "money follows functions" principle. This means the central government should transfer adequate funds so that local governments can carry out their delegated authority and duties [25]. Therefore, this paper uses the basic theory of IFT as

the foundation for analysis and discussion. The IFT becomes an important instrument to support the optimization of public services [26]. In federal countries or countries that adopt decentralized systems, the government strives to bring public services closer to the lowest level (municipal/village) to make them more responsive to people's needs [17,27,28]. The country's fiscal transfers aim to overcome the gap between a region's fiscal capacity and its duties to provide public goods. They take the form of *Transfer Ke Daerah dan Dana Desa* (TKDD) or fiscal transfers to regions or villages, which include: *Dana Perimbangan* or a balancing fund; *Dana Insentif Daerah* (DID) or regional incentive funds; and *Dana Otonomi Khusus* (DOK) or special autonomy transfers [29].

The DBH revenue-sharing scheme—the subject of this paper—is part of the balancing fund instrument. The central government allocates DBH-shared funds to a region based on its potential to source revenues from taxes, and from levies or provision funds generated from use of natural resources (by origin). It calculates the percentage of shared funds for producing and non-producing regions based on types of revenue sources and regions. The funds are also shared based on the "actual revenue" principle, which is based on how revenues for the current budget year are realized. DBH is intended to reduce the fiscal gap between the central and local governments, cope with vertical imbalance and fund the latter to implement delegated tasks. Shared funds from DBH are also meant to compensate regions for externalities resulting from exploited natural resources in their jurisdictions. DBH can source funds from taxed revenues (land and building, income and excise) and natural resource use (forestry, mineral, coal, oil and gas, geothermal and fisheries) [29,30].

Local governments receive economic benefits from palm oil through taxed land and buildings, as well as income, which is shared by the central government through DBH. With their own revenue power, they collect levies from land and building rights granted to oil palm investors seeking lands to start operations—a policy known as *Bea Perolehan Hak atas Tanah dan Bangunan* (BPHTB). In addition to taxes, the central government also collects non-tax revenues from export levies and duties charged on every ton of CPO exports, which amounted to IDR 67.53 trillion between 2015 and 2021 [31]. These CPO export levy revenues are substantial sources of funds that can be made available for palm oil DBH. In addition, Law 1/2022 [29] offers the possibility to regard palm oil as a source for DBH in addition to forestry, fisheries and others. Consequently, this paper also assesses the opportunities and challenges to the adoption of the DBH Sawit revenue-sharing scheme.

2.2. Data Collection

Data were collected through a literature review and interviews with key informants. These comprised relevant national and local government representatives, the private sector, nongovernmental organizations, business associations and academia. We engaged 10 experts to assess and weigh scores through online questionnaires using strength, weakness, opportunity, threat (SWOT) indicators. The experts were selected based on three competence criteria, as well as on their understanding of fiscal decentralization policies (especially related to revenue-sharing schemes or DBH), their general comprehension of palm oil governance and their familiarity with the management of oil palm plantation funds. We provided the experts with the detailed objectives of the study and a procedure for assessing and weighing scores for various indicators.

2.3. Data Analysis

We analyzed collected data through the SWOT method. In this case, SWOT was used to assess the extent to which DBH Sawit can be developed as a subset of fiscal transfer systems. Through this method, we assessed the internal strengths and weaknesses, as well as the external opportunities and threats, of this proposed revenue-sharing method. We also devised strategies to implement DBH Sawit more effectively so local governments could receive more proportional shares of palm oil revenues that incentivize sustainability. The results could become the basis for formulating relevant policies.

SWOT has been widely used in organizational environments, which aids in formulating strategies [32]. It is used both in strategic decision supports for business management, and for environmental management and assessment [33]. SWOT analyses are used to formulate sustainable forest strategies and policies [34] and to identify the most important factors and address concerns among public policy organizations to encourage local entrepreneurs to invest in sustainable development [35].

A qualitative analysis is used to identify SWOT factors, while a quantitative analysis—analytical hierarchy process (AHP)—is used to determine associated scores and weights. We use an internal and external factor evaluation matrix (IEFEM) [36] to develop strategies on how to develop, adopt and improve a proposed system or scheme. Previous scholars have used similar steps [37–40]. Data collected from the expert assessment are then processed using AHP. The IEFEM matrix determines the quadrant or position of DBH Sawit. This will guide the formulation of appropriate strategies for this revenue-sharing scheme.

Table 1 presents various internal and external factors identified through SWOT that affect the development and implementation of DBH Sawit. Further analysis using AHP and IEFEM came up with strategies for advancing the scheme.

Table 1. Relevant SWOT factors identified that affect the DBH Sawit revenue-sharing scheme.

Strengths	**Weaknesses**
S1: Sizable area of oil palm plantations	W1: Tax revenues from palm oil are not optimal as some plantations are located on state forest lands and not all corporate plantations are on land with business rights (HGU)
S2: High production of palm oil	W2: Absence of traceability systems that enable each region to trace all processes from FFB production to CPO exports
S3: Palm oil as the largest source of foreign exchange	W3: Absence of databases to calculate portions of shared funds
S4: Palm oil's contribution to regional economic development	W4: Lack of local government capacity to manage and use shared funds from palm oils
S5: Supporting regulations for sharing revenue funds	
S6: Local government institutions in support of sharing revenue funds	
S7: Huge amount of palm oil export levy	
Opportunities	Threats
O1: Enthusiasm of local governments for the new revenue-sharing scheme of natural resources from palm oil	T1: EU policies on sourcing deforestation-free palm oil products
O2: Increased global demand for palm oils	T2: Vegetable oil market competition that affects palm oil production and price fluctuation
O3: Potential increased production of CPO and its derivatives	T3: Lack of land intensification (i.e., good agricultural practices, replanting) causing low crop productivity
O4: Enhanced systems for IFT, particularly for a shared revenue mechanism	T4: Inappropriate use of DBH funds to support sustainable palm oil
O5: Potential use of performance-based accountability system (e.g., ecological fiscal transfer)	T5: Resistance among actors receiving biodiesel incentives from CPO levies
	T6: Increased domestic demand for palm oils (e.g., biodiesel policies)

The research method stages are further described in the diagram in Figure 1.

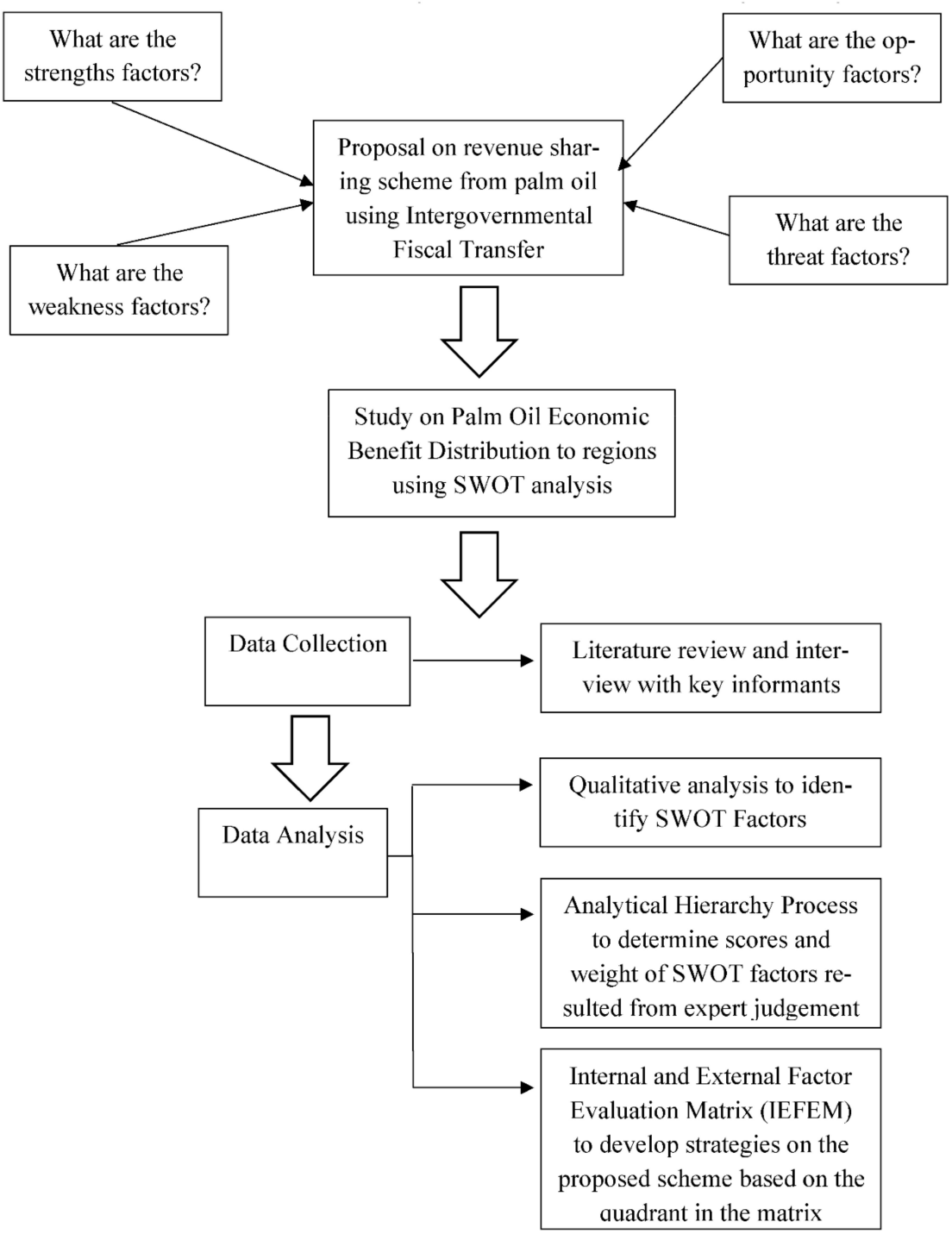

Figure 1. Research methodology outline.

3. Results

3.1. National Palm Oil Revenues

From 2010 to 2019, the export volume of Indonesian palm oil increased steadily, except in 2016 when it decreased but then rebounded. Highly dependent on the CPO price, export values fluctuated from 2012 to 2020. They dropped from USD 18,461 million to USD 15,574 million between 2012 and 2019, and then increased in 2020 to USD 18,444 million [1]. Purwanto [41] attributed a nearly 2% decrease in volume from 26.2 million tons to 25.7 million tons between 2015 and 2016 to the after-effects of the El Nino weather phenomenon [41].[6] The European Union (EU) is the third largest importer of

Indonesia's palm oil after The People's Republic of China (hereafter "China") and India. The EU's "palm oil free" import policies likely contributed to the reduction in 2016, with imports indicating a negative trend from March 2015 to June 2016 [42]. As shown in Figure 2, the export volume of palm oils and their derivative products increased from 2017 onwards, although export values showed a downward trend. In 2020, the volume of oil palm exports declined from 2019 due to the COVID-19 pandemic. The largest decrease in 2020 occurred in the volume of exports to China (−1.96 million tons). However, export values in 2020 were higher than those in 2019 [43].

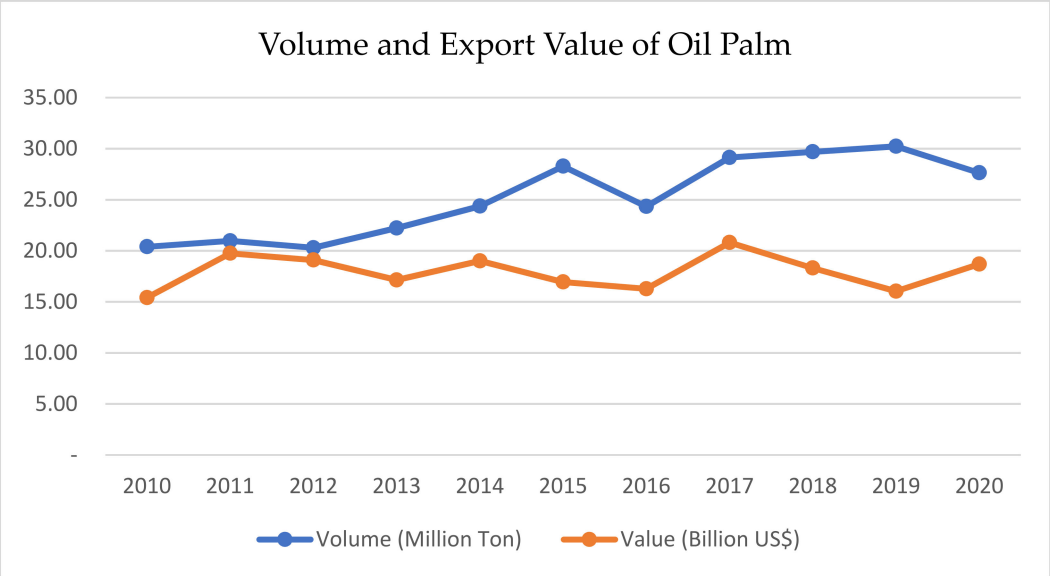

Figure 2. Volume and export value of palm oil in Indonesia from 2010 to 2019, (processed from statistic data) [1,44].

The steady increase in export volumes and values of palm oil are the mainstay of the country's foreign exchange earnings. The Palm Oil Plantation Fund Management Agency (BPDPKS) manages export levies on CPO, contributions from seeding activities and non-tax state revenues, or penerimaan negara bukan pajak (PNBP). Other earnings from the palm oil sector take the form of state revenue from export duties, taxes imposed on land and buildings (*pajak bumi dan bangunan*, PBB), income (*pajak penghasilan*, PPh 21 and PPh 25) and value added taxes [45], as shown in Table 2.

Table 2. State revenues from the oil palm sector.

Revenue Source	Revenue Type	Authority	
		Central	Regional
PNBP	Seeding	100%	
	Export levies	100%	
Pajak	Duty	100%	
	Land and building taxes (PBB)	10%	90%
	Corporate income tax (PPh Badan)	100%	
	Personal income tax (PPh OP)	80%	20%
	Value added taxes (PPN)	100%	

Source: Saputra [31]; Savitri [32].

Commodities or products under three main sectors, namely plantation, forestry and mining, are subject to taxes. Oil palm is a plantation commodity subject to taxes paid directly to the central government. Revenue is returned to the regions through DBH as part

of decentralized fiscal transfer in the form of PBB. The amount of land and building taxes generated depends on the sales value of taxable object (NJOP) determined by the central government, based on data submitted by taxpayers [22,46].

The central government controls the highest proportion of the revenues (Table 2) generated from the palm oil sector. This leaves local governments with income from PBB tax revenues (90%) and personal income tax (20%), as shared and returned to respective regions by the central government through DBH. This is, however, based on the former law (No. 33/2004). The new law increases the proportion from 90% to 100% PBB in which all revenues (Article 113 of Law 1/2022) are shared with regions. Based on the new law, the central government shares the revenues from PBB with the contributing province at a rate of 16.2% (similar to the rate applied in the former law). Producing districts/municipalities receive 73.8% (previously 64.8%) and other districts/municipalities within the same province receive 10%.

3.2. Fiscal Transfer through DBH Revenue-Sharing Scheme

Through DBH, the central government shares state revenues with regions based on percentages of revenues of the state budget (APBN) and performance assessments. DBH is part of fiscal decentralization through a balancing fund scheme, and a source of revenue for local governments. Fiscal transfer through DBH to producing regions aims to redress fiscal gaps between central and concerned regions. The shared funds with non-producing regions are intended to control negative externalities and to improve equality among regions in one area or province [29]. Revenues distributed through the DBH scheme are recognized to affect the expenditures of receiving regions. They result in significant positive effects on regional spending across regions in Indonesia [47] and also in Aceh province [48,49].

In addition to taxes, the DBH scheme—as depicted in Figure 3—also sources funds from dues, levies and fees charged on the use of natural resources, which will be discussed in a later section.

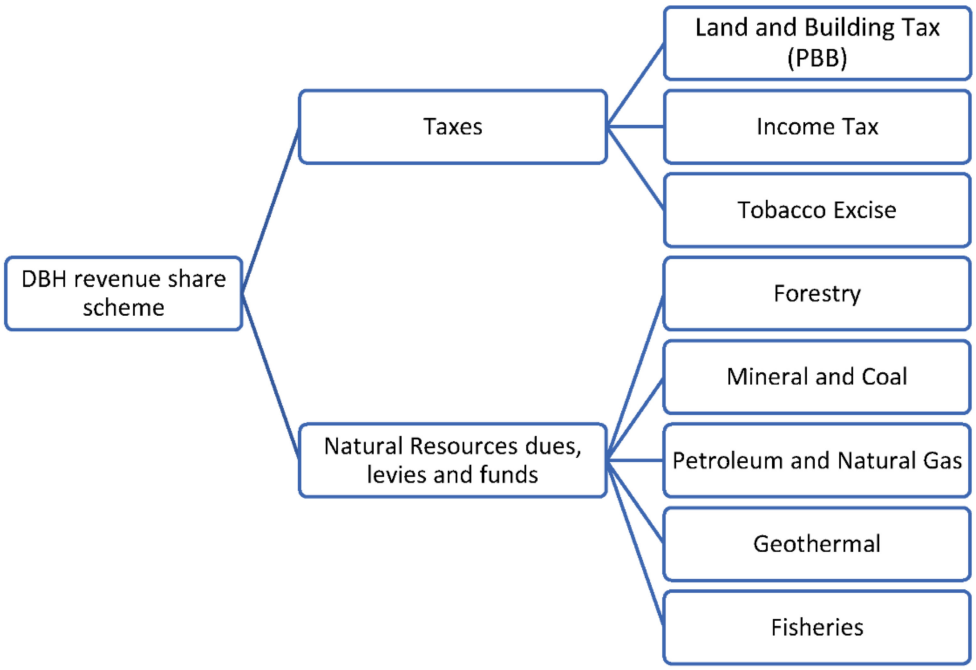

Figure 3. DBH revenue-share scheme and its source of funds.

Figure 4 presents DBH funds originating from the land and building tax. These funds are distributed by the central government to different key palm oil-producing provinces based on the percentage set in Law No. 33/2004. DBH funds received by respective provinces are proportionate to plantation areas.

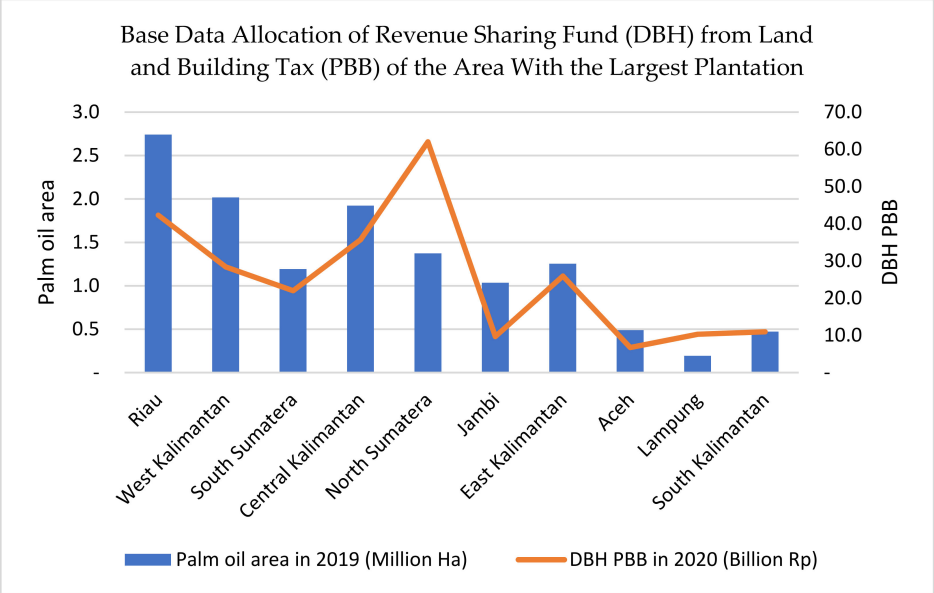

Figure 4. DBH funds from land and building taxes and their distribution across palm oil provinces[7].

Local governments are concerned about the relatively smaller amount of revenues received by palm oil-producing regions. They feel the oil palm sector has not contributed enough to regional development [9]. Current revenues received by the regions remain small due to the absence of a shared revenue mechanism in the IFT that considers palm oil a key element for determining the proportion of shared funds. Moreover, there is an increased demand for the regions to adopt sustainability practices. Mafira and Muluk [50] considered the need to develop an innovative fiscal transfer mechanism that would better reward and incentivize local governments to invest in and adopt sustainable land management.

As oil palm plantations are extensive across some regions, local governments theoretically should have received more of the shared revenues originating from PBB taxes. However, that is not the case. Tax revenues from PBB levied on plantations were not always directly proportional to the plantation area. Various factors influence the calculation of PBB tax, including the NJOP [15]. In addition, the collection of tax revenues is low for two other reasons. Taxpayers may be unaware of the need to comply with the regulation and pay their taxes. Supervision over oil palm plantation operation permits is lacking [22,51].

Potential tax revenues from palm oil were forgone due to the presence of unauthorized oil palm plantations on state forestlands. According to Ditjen Planologi Kehutanan dan Tata Lingkungan (2021) [52], oil palm plantations overlapping state forestlands have covered up to 3.4 million ha across various provinces. Some of these plantations cannot be taxed as they are not registered and do not have tax ID numbers. Some of the plantations have been registered and possess business permits. Only two types of plantations can be taxed: those with cultivation business permits (IUP-B) and those with plantation business permits (IUP), which integrate plantations and processing businesses [53]. IUP-B and IUP cannot be issued if plantations are improperly established on lands that are not intended for either cultivation or plantation. Efforts are underway to resolve these contested plantations through the current government policies, such as Job Creation Law No. 11/2020 and government regulations No 23/2021 and No. 24/2021. Specific clauses pertain to clarifying the legal statuses of those managing plantations with business permits but without forestry authorization (110A) and those having neither business permits nor forestry authorization (110B). Until they are resolved and clarified, these plantations cannot be taxed as they are not registered and thus do not have tax ID numbers.

3.3. DBH Sourcing from Natural Resources

Apart from the taxes discussed earlier, the DBH scheme sources revenues from natural resources (e.g., forestry, mineral and coal mining, petroleum mining, natural gas mining and geothermal mining). The revenues, for instance, derive from: dues collected from the holders of forest concessionaires; fees levied on the intrinsic losses of forest products harvested from state forests; and reforestation funds. DBH-shared funds are distributed based on the "by origin" principle whereby a producing region obtains a larger portion than other regions in a province. Other regions within that province receive an equal portion of funds. DBH-shared funds are also distributed based on "actual revenue" principles [29,30].

Why does it bother oil palm-producing regions that the DBH scheme sources from natural resources? The previous laws for fiscal transfer identified forestry, fishery and other sectors as a source of DBH and allocated a percentage for revenue sharing, but they did not do so for palm oil. This has raised expectations among the regions that the revised law will consider palm oil as a source of DBH from natural resources, giving it an allocated percentage. While all regions basically receive shared funds from this DBH scheme sourcing from natural resources, there are some limitations on how they can use them to support regional development. DBH-shared funds are partly block grants and their uses are earmarked for specific uses. DBH sourcing from reforestation funds, for instance, can only be used to finance such forestry and environmental programs and their relevant supporting activities, as specified by the regulation. This includes forest and land rehabilitation, social forestry and climate change mitigation programs.[8] Such rigid budgeting limits the ability of receiving local governments to use the funds for wider purposes, including maintaining infrastructure (roads), incentivizing local institutions toward adopting sustainable palm oil, etc. Following enactment of Law No. 23/2014, the authority for forestry affairs changed from the district to the provincial level. Consequently, the DBH-shared funds sourcing from reforestation funds have primarily been channeled through provincial rather than district governments. However, the balance of the funds shall also be shared with district or municipality governments.

As noted, palm oil is not explicitly considered a source of DBH natural resources, like forestry, fishery and other sectors. However, the recently issued Law No. 1/2022 enables the central government to identify new funding to be shared through the DBH scheme provided that "producing regions" can be identified. The law mentions palm oil explicitly in the elaboration section of the law as the potential commodity. In this context, the paper assesses the extent to which DBH Sawit can be realized. There is a great opportunity for local governments to make use of potential sources from export levies as managed by BPDPKS and retribution from palm oil businesses.

3.4. Potential Sources for DBH Sawit

3.4.1. Palm Oil Export Levies

As noted, the central government shares tax revenues from oil palm plantation businesses to local governments through DBH (e.g., levies on land and building, income and value addition) [45]. However, other funds originate from the oil palm sector, such as export duties, levies on exports and fees. These funds are not included as DBH, and can be shared with regions [15]. Proceeds from the levied palm oil export or CPO fund managed by BPDPKS are potential non-tax state revenues, which have two functions. First, they can discourage entrepreneurs to pursue exported products. Second, they can increase incentives for entrepreneurs to boost downstream industries, creating added value [54]. The tariff charged on the exported palm oil varies according to CPO price per ton [55]. The latest tariff on CPO stipulated by the Ministry of Finance lifted the threshold from USD 670 per ton to USD 750 per ton. The export tariff will increase progressively by USD 20 per ton with each increase of USD 50 per ton in CPO price. If the price of CPO rose to USD 100, for example, the tariff would be USD 40.[9]

From 2015 to 2021, BPDPKS collected and managed IDR 67.53 trillion from export duties and levies of palm oil and its derivative products. As shown in Figure 5, this revenue

is based on the volume of exported CPO. This revenue increased from 18.49 million tons to 40.77 million tons over 2015–2019, followed by a slightly declining trend to December 2021. The annual volume is 34.47 million tons on average [56]. Until end of 2021, CPO funds up to IDR 6.59 trillion have been used to finance a smallholder replanting program covering 242,500 ha across various provinces. In addition, IDR 110 trillion has been spent on an incentivizing biodiesel program intended to stabilize CPO price, secure energy self-sufficiency, reduce greenhouse gas emissions and save foreign exchange. A smaller portion of CPO funds has been used to develop human resources, conduct research and development, support palm oil development and infrastructure, and to advocate for the country's sustainable palm oils. CPO funds can potentially become a funding source for DBH Sawit.

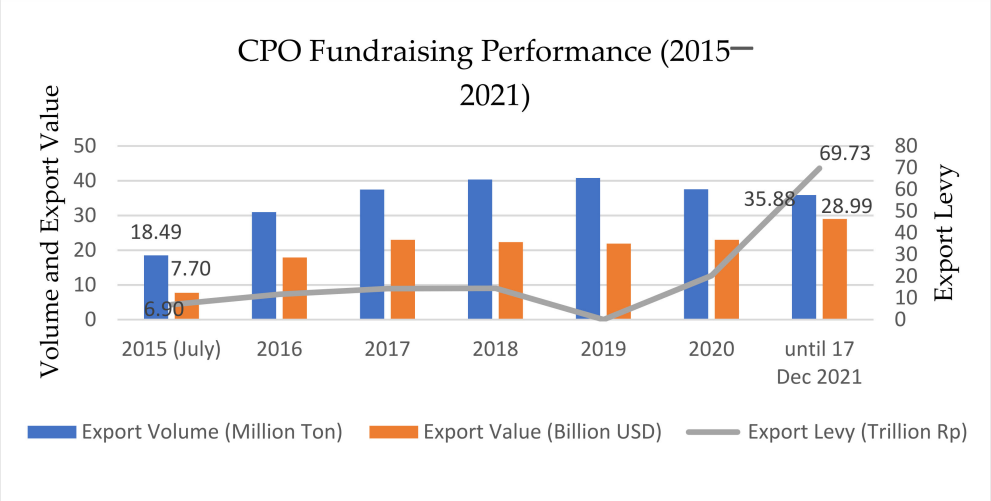

Figure 5. CPO fundraising performance 2015–2021 (BPDPKS) [56].

3.4.2. Revenues from Palm Oil Retribution

Law 1/2022 grants local governments the power to collect revenues from user charges or fees or *retribusi*—a regional levy as payment for services or the granting of permits provided and/or given by local governments to individuals or business entities. The potential for regional income from user fees is directly related to sectoral economic activities. Permitted fees consist of general service levies, business service levies and certain licensing fees. Article 88 of the law and its elaboration section authorize local governments to generate user fees charged for palm oil business.

User fee charging is not expected to disrupt investment in the palm oil sector. Besides rewarding local governments, user fees can also serve as a control instrument to encourage sustainable palm oil business. A lower rate of fees on transportation facilities or services, for instance, can be charged to those companies that have adopted certain aspects of sustainability (e.g., Indonesian Sustainable Palm Oil [ISPO] principles and criteria). Conversely, oil palm businesses that have not adopted sustainability standards would be charged higher fees. This would incentivize business actors to implement some aspects of sustainability and discourage environmentally harmful practices.

3.5. Assessing DBH Sawit Using SWOT Analysis

A further SWOT assessment (Table 1) identifies the relative importance of each internal and external factor vis-à-vis the adoption of DBH Sawit as a new subset of the DBH SDA fiscal transfer. As shown in Table 3, strengths of DBH Sawit exceed its weaknesses. If adopted, then, the scheme could increase revenues received by local government from palm oil, complementing revenue from other fiscal transfer schemes. Threat and opportunity have almost equal scores, indicating the importance of these indicators should DBH Sawit

be implemented. The scheme can also potentially act as an incentive for local governments to continue the transition toward sustainable palm oil development.

Table 3. Strength, weakness, opportunity and threat of the DBH Sawit revenue-sharing scheme.

SWOT Analysis	
Factors	**Weighting Score**
Strength	1.87
Weakness	1.15
Opportunity	1.61
Threat	1.67

3.5.1. Strength

In terms of strengths, regional economic contribution (S4), high foreign exchange (S3) and high production of palm oil (S2) rank first, second and third, respectively (Table 4). Other factors such as high export levy (S7), supporting regulation (S5), local government institutional support (S6) and sizable area (S1) scored lower. DBH Sawit could contribute to the regional economy, supplementing revenues received by producing regions from other sources, such as land and building taxes, income taxes, rights acquisition fees, local taxes and levies imposed on the palm oil sector. The rate of levies is determined by the district head. As shown by Hidayati et al. [57], the sector also provides employment opportunities that would improve the livelihood of local communities.

Table 4. Strength factors supporting the adoption of DBH Sawit.

Strength	
Internal Factors	**Weighting Score**
S1: Extensive area	0.02
S2: High production	0.30
S3: High foreign exchange	0.33
S4: Regional economic contribution	0.63
S5: Supporting regulations	0.18
S6: Institutional support	0.15
S7: Export levy	0.24

The palm oil sector is one of the largest sources of foreign exchange for Indonesia. In 2019, it generated palm oil export value of USD 16.04 billion or around 9.34% of the total national export value of USD 167.68 billion [1,58]. This comes from the sizable plantations covering an area of 16.38 million ha (Ministry of Agriculture's Decree No. 833/2019) and with a CPO production of around 47.12 million tons during that period.

The strength of DBH Sawit is also linked to the large sources of potential funds from export levies imposed on palm oil and its derivative products. The funds, managed by BPDPKS, reached IDR 67.53 trillion between 2015 and 2020 [31]. Revenues from this levy are expected to increase in the coming years, assuming stable CPO prices in the global market. A decree[10] from the Minister of Finance stipulating a progressive export levy that corresponds to fluctuating CPO prices would further increase this revenue. Based on the prevailing regulations, the central government fully controls export levy funds and does not share them with the regions through fiscal transfer schemes. Considering the substantial revenues from the levy, it is reasonable to provide an opportunity for palm oil-producing regions to receive more revenues from the key commodity sourcing from export levies. Saputra [17] suggests revising DBH SDA to include other key commodities (i.e., palm oil). This would allow the fiscal transfer to redress the fiscal gap, create equality among concerned actors and incentivize sustainability practices.

Other strengths reside on regulations for IFT that allow the addition of palm oil as a key commodity or sector in the DBH SDA scheme. Fiscal transfer schemes and

mechanisms, particularly DBH, support the proposed DBH Sawit. Another supportive factor includes established institutions at both national and regional levels along the chain of palm oil production, processing and trading. This includes: a local plantation unit; a regional financial management agency; trade and industry departments; a plantation directorate general of the Ministry of Agriculture; other relevant directorate generals within the Ministry of Industry in charge of agro-industry development; and other relevant directorate generals within the Ministry of Finance in charge of the fiscal balance and treasury, including BPDPKS.

3.5.2. Weakness

Of the four identified weaknesses (scoring 1.15 in total), the highest rankings are overlapping tenure claims in which palm oil plantations overlap forests (considered unauthorized) and lack of business use rights (HGU) for some plantations (Table 5). Without HGU, those plantations are not taxed, reducing tax revenues (W1). The absence of systems that allow regions to trace the entire process from FFB production to CPO export is ranked second (W2). Other weaknesses include the lack of local government capacity to manage and use shared funds effectively (W4) and the absence of databases for calculating portions of the shared funds (W3).

Table 5. Weaknesses hindering the adoption of DBH Sawit.

Weakness	
Internal Factors	**Weighting Score**
W1: Non-optimal tax revenues	0.58
W2: Non-existent traceability of production systems	0.39
W3: Absence of database of DBH	0.11
W4: Lack of local government management capacity	0.07

Of the total oil palm plantation of 16.8 million ha, 20.2% or around 3.4 million ha overlaps state forestlands across different forest functions [52]. The overlapping plantations are considered unauthorized because they did not register with HGU and are therefore not subject to tax. KPK [51] indicates that the increased size of oil palm plantation areas does not positively correlate with tax revenues. The collection of tax revenues from plantations across oil palm-producing regions is therefore not optimal.[11]

DBH Sawit requires that information is made available on non-tax state revenues (PNPB). It should identify how these revenues are generated and from which producing regions, and allocate shared funds according to the "by origin" principle. However, the absence of traceability systems means that regional authorities cannot trace the origins or plantations (i.e., districts, provinces) where FFB and CPO are produced, the mills where CPO is produced or the destinations of CPO exports. Not all provinces have export ports—the final point before CPO is exported. These all make a production and export database unavailable, or at best, incomplete and poorly documented.

3.5.3. Opportunities

Interestingly, the use of performance-based accountability systems (e.g., ecological fiscal transfer) (O5) and enhanced systems for IFT (O4) are regarded as the most significant opportunities. The potential increased production of CPO and its derivatives (O3) and increased global demand for palm oils offer other opportunities for Indonesia to increase its revenues. However, there is a pressing need for the DBH system to share a greater portions of funds with local governments and to incentivize sustainability (O1). Table 6 presents the result of the assessment.

Table 6. Opportunities for the adoption of DBH Sawit.

Opportunity	
External Factors	**Weighting Score**
O1: Great local government enthusiasm	0.06
O2: Increased global demand for palm oils	0.17
O3: Increased production	0.28
O4: Enhanced fiscal transfer system	0.38
O5 Ecological fiscal transfer	0.72

Over the last several years, civil society organizations and their coalitions have been the driving force behind the emergence of several eco-based transfer systems. These include the transfer from a provincial government to a district government (TAPE) and from a district government to the government, including villages (TAKE). A similar movement (TANE) encourages the national government to allocate funds to the subnational government for environment considerations, such as forest cover, forest governance, environmental quality, pollution and waste management. The National Development Agency (Bappenas) is developing a norm, procedure, standard and criteria for sustainable jurisdictions through *Terpercaya*, a tool that would reward regions that comply with sustainability standards (palm oil is one of the key commodities). These initiatives could also increase the likelihood that certain regions are incentivized toward sustainability through palm oil revenues.

Law No 1/2022 offers an opportunity for local governments to impose taxes and retributions. The Finance Minister expects this law would increase revenues received by local governments from taxes and levies (*pajak dan retribusi daerah*) by IDR 30.1 trillion (from IDR 61.2 trillion to IDR 91.3 trillion).[12] DBH aims to reduce vertical inequality and to provide regions with a greater chance to receive a larger portion of the shared revenues sourcing from agriculture commodities or products produced and processed by industries existing in the concerned regions.

Global demand for palm oils offers additional opportunities to DBH Sawit. Rapid growth in emerging economies has been the key driver for rising commodity prices and population growth, leading to increased demand for food and use of vegetable oils [59]. Among OECD countries, vegetable oil consumption is projected to increase steadily from 58.3 million tons in 2021 to 59.7 million tons in 2030 [60]. Biofuel use of vegetable oils is expected to increase by 5% over the coming decade [42,61]. In 2021, palm oil demand from India and China is expected to grow [62]. Despite this, BPDPKS is expected to receive CPO funds amounting to IDR 45 trillion in 2022, much lower than the IDR 69.72 trillion received in 2021. This expected decline in value is due to the lower CPO price in 2022.

Leaders in palm oil-producing regions will continue their appeal for the central government to share revenues from palm oil export levies with them. Law No. 1/2022, as specified in Article 123, will likely make this request a reality. Local governments' demands will push decision makers to explore an appropriate scheme for DBH Sawit that determines the percentage of fund portions to be shared.

3.5.4. Threat

Threat factors rank second overall according to SWOT (See Table 7). Concerns over inappropriate uses of shared funds (T4) by local governments for non-sustainable programs are the greatest threat. The second highest threat to DBH Sawit is the lack of land intensification (i.e., good agricultural practices, replanting) (T3), which will cause low crop productivity. The potential increase in domestic demand for palm oils (e.g., biodiesel policies) (T6) is considered another threat. This increased demand would force a slight shift from export orientation toward fulfilling domestic needs, decreasing revenues from levied CPO. DBH Sawit, if implemented, could be contested by actors engaged in businesses integrated with biodiesel companies (T5). These actors have thus far received biofuel incentives from the collected CPO funds to fill the gap between the market index price of

conventional diesel and biodiesel. Thus, the available portion of funds for incentivizing biodiesel may be reduced if more portions of funds are allocated for DBH Sawit. Further minor threats are vegetable oil market competition (T2) which affects CPO prices, and the EU's policy of banning CPO imports from Indonesia (T1).

Table 7. Threats challenging the adoption of DBH Sawit.

Threat	
External Factors	**Weighting Score**
T1: EU ban	0.04
T2: Market competition	0.18
T3: Lack of land intensification	0.37
T4: Inappropriate use of funds	0.55
T5: Actor resistance	0.21
T6: Increased domestic demand	0.32

Experts evaluating opportunity and threat factors that shape DBH Sawit have consistent views. While they were concerned over inappropriate uses of shared funds, they also expressed high expectations that the proposed revenue-sharing scheme would have an ecological-based accountability system. The intention to incentivize regions to support more sustainable practices may not be realized without clear guidance on the use of shared funds. According to Law No. 33/2004, regions can use shared funds to carry out tasks related to decentralization. However, the law does not specify these tasks must promote sustainability.

The continuity of the palm oil industry is also threatened by low productivity due to aging plantations, accounting for 24% of the total [62]. In 2018, the average productivity of oil palm was 3.6 tons of CPO per ha/year [1]. This is far below the potential rate of a superior variety of palm crop developed by the Center for Oil Palm Research (PPKS), which produced up to 7.8 tons CPO per ha/year from 1990 to 2010. Crop yields, especially those managed by smallholders, are lower than those owned by the company. Sari et al., 2021 [63] said that smallholders often use lands inefficiently. However, Grassini et al. 2018 [64] have said that the climate and soils offer favorable conditions for oil palm growth. Jeslma et al. [65] observed that farmers in Riau use poor seedling materials, adopt a square planting pattern and have limited fertilization, causing low yields. Often, smallholders use improper fertilizers, as observed by Woittiez [66].

Increased domestic demand for palm oil as exemplified by the recent imposition of a domestic market obligation by the Ministry of Trade may reduce CPO exports.[13] GAPKI [67] predicts declining exports of palm oil from 70% to 65%. The B30 mandatory policies on palm-based biodiesel requires a mix with 30% biodiesel. This will require a significant increase in palm oils [68,69]. This, in turn, will lessen the amount of revenues collected from export levies as the main sources for DBH Sawit. There has also been debate on the proper use of CPO funds; stakeholders have raised concerns about the huge amount of funds channeled to incentivizing biodiesel [22]. CPO funds allocated to regions through the DBH system would likely reduce the portion of funds allocated for biodiesel, which causes some actors to resist the proposed change in DBH Sawit.

In its Communication No. 352 "Stepping up EU Action to Protect and Restore the World's Forests" [70] and Delegated Act [71], the EU called for sustainable consumption of products from a deforestation-free supply chain. Its new approach to address emissions from indirect land-use change has posed a challenge for Indonesia's palm oil entering the EU market. EU's import of vegetable oils, primarily palm oil from Indonesia, accounts for 22.2% of the total imports from its trade partners [72]. Some argued that EU policies to stop CPO imports from Indonesia have not had a significant impact on macroeconomics. They point out that Indonesia's CPO exports to the EU were only 14% of total CPO exports in 2017 [73]. Others, however, argue the EU is Indonesia's second largest export destination with a 14.35% market share. They raise concerns that the palm oil ban would disrupt

the country's palm oil exports and, moreover, hurt the entire economy [74]. The ban has lowered the price of palm oil (Purba et al., 2018) and directly reduced FFB at the farmer level (Cristiningrum 2018).

4. Discussion

There is a rationale behind the proposed adoption of DBH Sawit, which would potentially augment the portion of shared revenues allocated to local government, incentivizing sustainability in the palm oil sector. As a fiscal transfer instrument, DBH Sawit is expected to boost regional development and provide an opportunity for palm oil-producing regions to solve various problems by developing their economic potential [75–77]. The funding sources from state revenues received from palm oil funds and transferred to the regions are part of the country's design for decentralization. Ideally, the transfer of authority over palm oil governance from the central government to the local government should be followed by adequate fiscal transfer [78]. The granted authorities take the form of programs and budgets to be managed and implemented by local governments [17,76].

Thus far, such an ideal form of decentralized governance in the palm oil sector has not been put in practice. The central government collects revenues from the sector, such as palm oil funds, which the BPDPKS manages based on a presidential regulation issued in 2015.[14] As a result, this centrally controlled budget and fund often pose a problem for local governments, which are unable to sort out immediately any issues arising from palm oil plantation and industry development [79]. The lack of governance in the sector can be improved by providing local governments with budgetary support from DBH Sawit that would enhance their capacity to manage and better control the sector, and gradually move toward sustainability.

The fiscal system (i.e., DBH from natural resource use) tends not to take full account of sustainability when shared budgets are allocated to regions. For example, in the forestry sector, regions giving forest management permits to investors or businesses obtain a larger portion of DBH-shared funds than those struggling to maintain forests, protection or conservation areas within their jurisdictions. This practice occurs because revenues are collected from forest resource extraction [77,80–90]. DBH Sawit should not imitate this policy, which raises sustainability issues in forestry development in Indonesia [91]. It should be designed as an instrument that would incentivize sustainability. One of the strategies is to build the most important sustainability indicators into the design of DBH Sawit. These include regions' performance in palm oil sustainability certification (ISPO, Roundtable on Sustainable Palm Oil [RSPO], International Sustainability and Carbon Certification [ISCC], adoption of good agricultural practices, empowerment of smallholders, etc). Through these strategies, DBH Sawit is expected to greatly contribute to regional development and sustainable palm oil governance.

DBH Sawit as Fiscal and Incentivizing Instruments for Sustainability

A further analysis of the above SWOT factors using IEFEM [36] places DBH Sawit in Quadrant 2. In this quadrant, the proposed scheme and its implementation face a tough challenge but still have sufficient internal strength. Diversification should be considered the best strategy to enable the scheme to operate well and reach its intended objective effectively. Table 8 presents strength and threat factors. It indicates how these are synthesized to generate strategies to optimize strength factors and anticipate threats, while mitigating challenges or barriers to the effective adoption of DBH Sawit.

To realize the optimal distribution of benefits from the palm oil sector to the regions, palm oil productivity must be maintained to generate high income. The productivity of Indonesian oil palm is still relatively low compared to that of Malaysia. National palm oil productivity in 2019 only reached an average of 3.9 tons/ha [1], while in Malaysia, palm oil productivity had already reached the rate of 4.28 tons/ha in 2015 [92]. Globally, palm oil productivity can be increased to an estimated 11-18 tons/ha. Meanwhile, global vegetable oil demand is estimated to reach 240 million tons by 2050 [93]. To meet this

high global demand, oil palm crops can further be increased through land intensification without expanding plantations [94,95]. Accelerating the smallholder oil palm replanting program is key to increasing the productivity of oil palm plantations.

Table 8. Diversification strategies for DBH.

Internal—External Factors	Strength S1: Sizable area of oil palm plantations S2: High production of palm oil S3: Palm oil as the largest source of foreign exchange S4: Palm oil's contribution to regional economic development S5: Supporting regulations for sharing revenue funds S6: Local government institutions in support of sharing revenue funds S7: Huge amount of palm oil export levy
Threat	Diversification strategies
T1: EU policies on sourcing deforestation-free palm oil products	1. Increase palm oil productivity through land intensification to meet high global market demand
T2: Vegetable oil market competition resulting in palm oil production and price fluctuation	2. Accelerate sustainable palm oil certification for all business actors (companies and smallholders)
T3: Lack of land intensification (i.e., good agricultural practices, replanting) causing low crop productivity	3. Revamp sustainable palm oil governance to encourage increased palm oil exports
T4: Inappropriate use of DBH funds to support sustainable palm oil	4. Conduct inventory, tracing, recording of palm oil production with regions' jurisdictions, the results of which could be the basis for DBH Sawit formula
T5: Resistance among actors receiving biodiesel incentive from CPO levies	5. Formulate sustainability criteria used for allocating funds through revenue-sharing scheme
T6: Increased domestic demand for palm oils (e.g., biodiesel policies)	6. Advocate the adoption of ecological-based fiscal transfer concept for DBH Sawit
	7. Expand opportunities to use export levy funds as an incentive for the region by referring to provisions on the use of plantation funds as specified in the Plantation Law (Law No. 39/2014)

The intense international demand for sustainability within the Indonesian palm oil production, processing and trade needs to be considered. One response would be to improve the governance of palm oil, while internalizing sustainability principles along the supply chain from production to trade [96,97]. In this scenario, the adherence of oil palm business actors to policies and regulations would be enforced. Those failing to comply with sustainability standards would be warned, developed (*pembinaan*) or granted adequate time for corrective actions. If non-compliance continued, they would be harshly sanctioned. The government has issued a series of policies to prevent deforestation. These include policies to postpone the granting of plantation business licenses on natural forests and peatlands, and to prevent forest and land fires. Efforts have also been made to evaluate oil palm licenses of palm oil companies, which has led to cancellation of some licenses across different provinces.[15] In addition, to address sustainability issues, voluntary (RSPO) and mandatory (ISPO) sustainable palm oil certification should be accelerated for all business actors, both companies and smallholders. The government needs a series of incentive policies to accelerate ISPO certification through regulatory support related to legality, and technical and funding aspects of plantation and cultivation. Meanwhile, market actors, such as buyers and traders, need to pay attention to how market incentives can reward sustainable palm oil [98,99].

Another strategy is to revise the ISF by adding a specific scheme for DBH Sawit (originating from palm oil) within the DBH SDH (natural resources revenue share) scheme. The palm oil sector is not part of the DBH SDH scheme. However, palm oil should be included as a natural resource commodity because how it is produced, extracted and used leads to externalities. Incorporating palm oil in a DBH SDH scheme would also help it achieve its stated objectives to create equalities among rich natural resource regions, fill

the fiscal gaps and overcome problems arising from externalities of the exploited natural resources [100–102]. The newly issued Law No. 1/2022 offers an opportunity for amending the fiscal transfer, which will be more favorable to local governments. It provides a legal basis for local governments to exercise greater authority over revenue collection from taxes and levies associated with palm oil. The law[16] also enables the central government to identify a new fund to be shared through a DBH scheme provided that "producing regions" can be identified. The law explicitly mentions palm oil in its elaboration section as the potential commodity.

Sharing more fiscal transfers from the palm oil sector with regions through DBH Sawit is considered the sector's contribution to the local economy, creating equity among palm oil-producing regions. However, the distribution of funds should go beyond the principles and criteria that one region is a producer of a key commodity. They should also be based on performance of environmental management. DBH Sawit needs to be based on sustainability indicators and adopt ecological fiscal transfer concepts. Law No. 1/2022 defines DBH as revenue-sharing funds allocated to regions based on performance criteria and promotes performance-based fiscal transfers. Regions that are constantly performing well in maintaining their environment and ecology could benefit from DBH Sawit. This scheme, if properly implemented, could also discourage producing regions from not adopting sustainable practices in use of their natural resources [77,103].

The inclusion of ecological indicators in the fiscal transfer scheme will likely increase local governments' preference for protecting the environment without disrupting the growth of the local economy [104]. It would also enhance environmental quality and a coordinated role in mitigating the race-to-the-bottom competition among regions [105]. Ecological-based fiscal transfers can be adopted as a counterweight to regions' actions to boost their revenues from the oil palm sector. Thus, adopting this innovative fiscal transfer requires intensive advocacy by academics and discussions targeted at national policy makers.

Implementing DBH Sawit requires a strong data infrastructure to help it operate effectively. The allocation of funds under the DBH scheme is based on two principles: actual revenues and origin. This means that funds distributed to regions are based on the actual amount received by each region and transferred to producing regions with a larger portion and to surrounding areas. However, the absence of traceability systems means regional authorities are unable to trace the origins or plantations (i.e., districts, provinces) where FFB and CPO are produced, the mills where CPO is produced and the destinations for CPO exports. CPO and FFB production are only recorded for statistical purposes. CPO exports from regions are difficult to trace; such records are not available. Thus, the availability of data on oil palm production both per province and district/city becomes critical if DBH Sawit were to be adopted, as confirmed by officials from the Directorate General of Fiscal Balance (DJPK) of the Ministry of Finance. This has made it difficult to develop a robust "production by origin" formula. Based on this formula, the central government could determine a plausible proportion of funds to be shared with producing regions.

Palm oil supply chain is complex [106] and continuous traceability is usually not achievable [107]. Three strategies are proposed for local governments: make an inventory of production data; develop a system that would trace FFB and CPO produced by their regions from the production site to export; and validate data related to oil palm production in each producing area. While this would take time and effort, some large companies or groups of companies and traders have adopted similar systems, especially those certified under voluntary sustainability (e.g., RSPO). For example, they have adopted traceability systems to enable them to trace CPO products they export to mills where they are produced and even to the plantations where FFB is originally produced [108,109]. The forestry sector has established a system for recording timber forest products and exports across regions. It has also reconciled differences in national and local production data as recorded in the Ministry of Environment and Forestry database [110]. In addition, the Minister of

Agriculture's regulation regarding ISPO[17] stipulates that palm oil traceability is mandatory to all, including companies and smallholders. However, this will only start to be in force on 16 November 2025. Thus, these various initiatives and the ISPO legal foundation could further encourage local governments and their development partners to develop a robust traceability system so that DBH Sawit can be adopted.

In the meantime, we can consider oil palm plantation coverage (*tutupan perkebunan kelapa sawit*) as a proxy indicator for real production. More indicators can later be added to make DBH Sawit more credible, such as the area of certified plantations and smallholder registered (STDB) plantations. To minimize likely resistance to the adoption of DBH Sawit, decision makers—especially at national level—should agree on a phased approach to develop this system by adapting the current DBH principles (e.g., by origin).

Regional uses of shared funds from DBH Sawit should be aligned with the intention to redress fiscal gaps and incentivize sustainability. Incentives and fiscal transfer can support regional land-use change strategies, especially the reduction in deforestation [111]. Further, the fiscal transfer implementation in the long and short term will encourage an increase in per capita consumption in developing countries [112]. In addition, the incentives can promote sustainable intensification in agriculture [113] and are the key to attracting and maintaining community participation [114].

There are two proposed mechanisms to achieve this goal. First, the shared funds can be considered a regional revenue and the receiving regions can use the fund flexibly to support local development. The current use of shared funds from the mining sector (DBH Pertambangan) can be a reference. However, our model goes further, incorporating proposed sustainability indicators into the formula. Second, general formulas to determine the shared funds may be set up, but the receiving regions should only use the fund to finance sustainable programs and activities. Clear criteria and metrics can guide program development. The use of shared funds from tobacco excise taxes (DBH *cukai hasil tembakau*) can be a reference [115].

CPO funds managed by BPDPKS can potentially be a funding source for DBH Sawit, from which palm oil-producing regions can further benefit from the oil palm sector. Through the scheme, the amount of shared funds can be determined based on certain criteria and indicators, as discussed earlier. These include the extent to which regions are committed to sustainable palm oil as expressed by relevant local regulations on sustainable plantations, green palm oil or palm oil-based sustainability jurisdiction. Further criteria shall include how regulations have been enforced and how effectively they have encouraged the adoption of good agricultural practice and sustainability standards. These criteria, for example, could identify the number of companies already ISPO- or RSPO-certified and the number of companies with identified HCV areas and management plans.

The proposal for DBH Sawit to source CPO export levies to incentivize local governments aligns with the mandate in the plantation law (UU No. 39/2014). The law specifies that funds collected from the plantation sector shall be used for developing human resources, research and development, promotion of the sector, smallholder replanting, and infrastructure development. Export levy funds collected and managed since 2015 by BPDPKS have financed various programs relevant to sustainable palm oil. Priority should be given to supporting those outlined in the law. Expanding the use of funds to incentivize local governments is also possible. Moreover, the proposed DBH Sawit scheme can also support the decentralization of plantation licensing toward sustainability. Plantation permits, as regulated in Law no. 39 of 2014, are decentralized to both district and provincial governments depending on the size and coverage of the territory. Oil palm is developed to stimulate the economy [116,117], which makes local governments ignore sustainable development in granting permits for their areas. The implications of implementing the DBH Sawit policy with ecological indicators can lead local governments to consider sustainability in policies and permits for allocating land for oil palm development. The DBH Sawit scheme along with sustainability indicators can potentially incentivize oil palm-producing

regions to adopt sustainable practices, while fulfilling equitable principles associated with distribution of oil palm benefits.

5. Conclusions and Recommendations

Mitigating negative impacts of palm oil development effectively and moving toward sustainability are linked in two ways. First, they influence how the economic benefit from palm oils can be proportionally divided among the spheres of governments. Second, they influence how the shared funds can incentivize actors to comply with environmental sustainability standards. This is especially true for palm oil-producing regions, responsible for governing palm oil plantations and industries.

Augmenting palm oil economic benefits to the producing region is possible through two actions. First, fiscal transfer systems, particularly DBH, must be improved. Second, local governments should be leveraged to generate levies (*retribusi*) from both potential sources of CPO export funds, and charges for goods and services, respectively. The proposed DBH Sawit scheme could make the decentralized fiscal system work for incentivizing palm oil-producing regions through an enhanced revenue-share mechanism.

DBH Sawit has both strengths and weaknesses. Its key strengths are that the proposed scheme could contribute to the regional economy, and generate huge revenues from foreign exchange linked to the high production of palm oil. It is also associated with several opportunities. If properly designed, a performance-based accountability system (e.g., ecological fiscal transfer) and enhanced IFT systems could incentivize local governments to speed up the transition to sustainability. However, DBH Sawit also faces several challenges. The country's small portion of oil palm plantations is unauthorized since they overlap state forestlands, making for a non-optimal collection of revenues. Key weaknesses are the absence of a system to trace CPO production (making data for DBH formula unavailable) and a lack of local management capacity. The proposed scheme is also threatened by several issues. These include the inappropriate use of shared funds by local governments (i.e., uses not directed at sustainability), the lack of land intensification (i.e., good agricultural practices, replanting) and low crop productivity. In addition, the potential increase in domestic demand for palm oils (e.g., biodiesel policies) requires a large portion of CPO funds.

The paper recommends the development of a DBH Sawit scheme as part of DBH SDH. The proposed diversification strategies include: increasing palm oil productivity; accelerating sustainability certification and enhancing palm oil governance; adopting a phased approach to developing a tracing system; and making production data available. As part of a phased approach, it also recommends developing indicators, criteria and metrics to guide the proper use of shared funds in the regions. Specifically, funds should only support oil palm plantation coverage, certified plantations and registered smallholder plantations. This will ensure that DBH Sawit incentivizes sustainability. Finally, the paper advocates an ecological-based fiscal transfer system to accelerate the adoption of environmental sustainability indicators and criteria. However, this study is confined to the analysis of arguments for the development of DBH Sawit and has not developed a formula used to calculate the proper revenues shared by the central with eligible producing palm oil regions. Further studies are needed to develop the DBH sawit formula and to make the system work.

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Notes

1 Indonesia prioritized the development of a green and renewable energy system that increases the renewable energy target to 23% by 2025. It has a mandatory biodiesel programme with 30% palm oil content known as B30. Indonesia to ramp up biodiesel efforts to meet green energy targets, official says | Reuters

2 https://kabar24.bisnis.com/read/20200112/15/1189181/18-provinsi-penghasil-sawit-rumuskan-dana-bagi-hasil In January 2020, for instance, 20 provincial governments of palm oil producing provinces, 18 of which were represented by governor themselves, gathered in Riau. They made appeals for revisiting the current shared revenue scheme as stipulated in Law 33/2004 to enable them to receive portion of revenues from palm oils.

3 https://www.dpr.go.id/berita/detail/id/33716/t/Aturan+DBH+Sawit+Perlu+Masuk+Dalam+Pembahasan+RUU+HKPD

4 See Article 123 of the revised Law No. 33/2004

5 The Minister of Finance expected that regions can boost their income up to IDR 30.1 trillion through taxes and retribution (Menkeu: RUU HKPD akan dongkrak pendapatan daerah hingga Rp30,1 triliun—ANTARA News)

6 Indonesia's palm oil exports down 2 percent in 2016—ANTARA News

7 This is based on analysis of statistical data issued by Dirjenbun (2020) and the Ministry of Finance's database portal (http://www.djpk.kemenkeu.go.id/datadasar/dashboard)

8 Articles 2 and 3 of Finance Minister's Regulation No. 230/PMK.07/2017 regarding uses, monitoring and evaluation of DBH natural resources (reforestation fund). 230~PMK.07~2017Per.pdf (kemenkeu.go.id)

9 Finance Minister's Regulation No. 76/PMK.05/2021 regarding amendment on Minister's Regulation No. 57/PMK.05/2020 regarding service tariff applicable at BPDPKS

10 Minister of Finance's Regulation No. 05/2020 that amends No. 57/PMK.05/2020 concerning service tariffs for the public service agency in charge of managing palm oil funds (BPDPKS)

11 The overlapping is due both to the failure of plantations to respect concession boundaries, and weak governance of permitting authorities. Despite the overlapping, some plantations continue to operate, while others have stopped pending the outcome of investigations.

12 Menkeu: RUU HKPD akan dongkrak pendapatan daerah hingga Rp30,1 triliun—ANTARA News

13 Indonesia imposes mandatory domestic sales for palm oil—Nikkei Asia

14 Presidential Regulation No. 61/2015 concerning the collection and uses of palm oil plantation funds

15 Ministry of Environment and Forestry No. SK.01/MENLHK/SETJEN/KUM.1/1/2022 regarding Revocation of Forest Land Concession Licenses, issued on 5 January 2022

16 See Article 123 of Law No. 1/2022 concerning Fiscal Decentralization between Central and Local Governments

17 Peraturan Menteri Pertanian No. 38/2020 regarding Indonesia Sustainable Palm Oil Certification

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