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Strategy To Strengthen The Impact Of Indonesian Sustainable Palm Oil (ISPO) Implementation On Independent Smallholder Palm Oil Farmers

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ABSTRACT

Environmentally friendly and sustainable palm oil management is one way that can be done in the face of competition for palm oil products produced. The standard used in Indonesia is Indonesian sustainable palm oil (ISPO), which requires effort and support from various parties. ISPO certification is important for all companies and independent smallholders to show that the palm oil products produced have met the standards or principles set in Indonesia. To inform that palm oil products are environmentally friendly and sustainable management. The purpose of this study was to formulate a strategy to strengthen the impact of ISPO implementation for independent smallholders who are partners of village unit cooperatives (KUD) Bumi Subur. The research was conducted in July 2024 at Kertabumi Village, Kuaro District, Paser Regency. Data collection methods included focus group discussions with representatives of smallholders and three experts, including academics, a representative of the Kertabumi village government who is also a board member of the Bumi Subur cooperative, and a representative of the NGO Solidaridad to formulate alternative strategies. The experts were selected using a purposive sampling method based on the consideration that the people selected had experience in managing oil palm plantations. The data analysis method used is the analytic hierarchy process (AHP) for weighting alternative strategies to strengthen the impact of ISPO implementation. Impact strengthening is seen from socio-economic impacts and environmental impacts. The results showed that of the 4 socio-economic impact strategy criteria formulated, the selected criterion with the highest weight was HR management (0.351). The alternative strategy with the highest weight on HR management criteria is that smallholders understand the standards of ISPO implementation (0.359). While strengthening environmental impacts, from 4 choices of criteria, the highest weight is waste management (0.312). For alternative strategies, namely distinguishing hazardous and toxic waste (B3) with a weight of 0.432. Each alternative in the criteria is mutually supportive and related, but planters can determine the prioritized things to do. Planters should know and be able to distinguish the most efficient steps in their cultivation according to the conditions of the plant.

Keywords*: AHP, alternative, ISPO, management, strategy.*

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BACKGROUND

Indonesian Sustainable Palm Oil (ISPO) is the guide for sustainable palm oil development and a commitment to implementing various relevant laws and regulations applicable in Indonesia (Anwar et al., 2016). The ISPO policy aims to ensure that all parties to oil palm plantations fulfill the standards of sustainable oil palm plantation development (Suratiningsih et al., 2024). The purpose of ISPO is as a guideline/standard for the plantation industry and as a pathway to the international market, with the main objective of achieving sustainable palm oil products to provide a competitive advantage (Hadi et al., 2023). In addition, the purpose of ISPO certification is to preserve the environment, such as land clearing that is not by standards, causing environmental damage (Ningsih et al., 2021). The acceleration of ISPO certification in independent oil palm plantations can be done by accelerating the implementation of the smallholder oil palm replanting program, strengthening ISPO implementation institutions, and providing assistance to support ISPO implementation institutions (Hadi et al., 2023).

Oil palm is a crop as a source of community income (Siswati & Putri, 2023). The oil palm plantation industry in Indonesia is faced with various sustainability issues that can hinder trade access in the global market. Therefore, oil palm smallholders play an important role in the development of sustainable oil palm plantations (Yutika et al., 2019). The ISPO system is a national palm oil standard, both at the national, regional, and international levels, which is reflected in the increasing acceptance of ISPO system products, especially in the international market (Fahamsyah & Pramudya, 2017). The management of smallholder oil palm plantations has not yet implemented good agriculture practices (GAP) and sustainability due to various limitations owned by independent smallholders, including capital capacity, technical cultivation, relatively low human resources, and others (Azizah et al., 2020).

The implementation of ISPO certification by smallholders, especially in terms of GAP, has the potential to increase the land productivity of oil palm smallholders (Rahutomo et al., 2022). Many factors can influence farmers to participate in the implementation of ISPO on their land. Internal factors that can influence the implementation of sustainability certification of oil palm plantations include the age of farmers, oil palm cultivation experience, number of family members, income from oil palm cultivation, and external factors that influence access to information (Sihombing et al., 2022). Oil palm smallholders, especially independent smallholders, are constrained in understanding the concept of ISPO, so ISPO training is in the form of delivering material on ISPO concepts and principles and discussions on implementation in the field (Andriani et al., 2024). Meanwhile, Sabinus et al., (2021) mentioned the challenges of independent smallholders' growth, namely limited knowledge of cultivation, optimization of production factors, and sustainability in production.

There are only around 62 palm oil companies in East Kalimantan that have ISPO out of the 357 companies registered so far and they are spread across several areas, one of which is Paser Regency (Pratama et al., 2024). Paser Regency is one of the palm oil producing regions in East Kalimantan Province and occupies the second largest position after East Kutai Regency for smallholder plantations with a total land area of 82.459 Ha (BPS, 2020). Meanwhile, Kuaro Sub-district has smallholder plantation locations, one of which is in Kertabumi Village where most of the people cultivate oil palm. In the village, there is also a village unit cooperative (KUD) Bumi Subur, whose members have received an ISPO certificate dated 02 January 2024. A total of 80 smallholders with an area of 201.17 ha have passed the ISPO certification test and fulfilled Indonesia's sustainable palm

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oil management requirements. This is one of the advantages that the area has because it has independent smallholders who have passed the ISPO certification test.

Palm oil management to continue to apply the standards (SOPs) in the ISPO principles needs to be carried out by planters by determining the priority strategies that need to be done. One way to formulate alternative strategies is with the analytic hierarchy process (AHP) method. This method requires FGD activities with experts on how to formulate alternative strategies in strengthening the impact of ISPO for smallholders. Based on the description above, the purpose of this study is to formulate a strategy to strengthen the impact of ISPO implementation on KUD Bumi Subur KertabumiVillage, Kuaro District, Paser Regency.

RESEARCH METHODS

The research was conducted in July 2024 in Kertabumi Village, Kuaro District, Paser Regency. The location was purposively selected with the consideration that there is a village unit cooperative (KUD) where the cooperative members are planters who have obtained ISPO certificates in 2024. The primary and secondary data are collected through literature studies. Determination of strategies to strengthen the impact of ISPO for smallholder partners of KUD Bumi Subur is mapped into socio-economic and environmental impacts. Each impact is formulated by alternative strategies that are then weighted by 3 experts using a pairwise comparison questionnaire and then analyzed using the AHP method. Strategy formulation is based on the results of focus group discussions (FGDs) on each impact with experts engaged in the field by exploring the problems faced by planters. After that, a strategy was formulated which was then made into a pairwise comparison questionnaire for weighting which was filled in by the expert. In this study, the experts consisted of representatives of oil palm smallholders who were also administrators of KUD Bumi Subur, a companion organization from Solidaridad, and academics from the Samarinda State Agricultural Polytechnic. The selection of experts using the purposive sampling method is with the consideration that the person has experience in oil palm development and has knowledge related to good and correct oil palm cultivation.

Analytic Hierarchy Process

The Analytic Hierarchy Process (AHP) method is one of the decision support models developed by Thomas L. Saaty in 1970. In general, there are three main steps to determine the weight or importance in decision making. The advantages of the AHP method include the tendency of human logical thinking to select and group similar elements in one level, the existence of logical assessment consistency in determining priorities, AHP considers the relative priority of factors in the system, so that decision makers are able to choose alternatives according to objectives (Saaty, 1993). The three main stages are, 1) hierarchical model, 2) pairwise comparison assessment matrix, both criteria and alternatives and 3) priority synthesis. Figure 1 is an example of a hierarchical model in AHP analysis.

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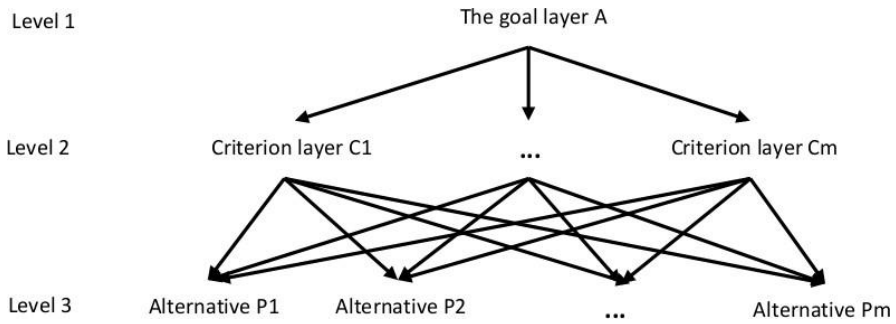

Figure 1. AHP Hierarchy Model

In the research of Bustomi & Suryanto, (2022) it is also mentioned that the AHP method is a method of selecting alternatives by conducting simple pairwise comparative assessments that are used to develop overall priorities based on ranking. The decision-making process is choosing an alternative. One method for formulating alternative strategies is the analytic hierarchy process (AHP) method. This method requires FGD activities with experts on how to develop alternative strategies to strengthen the impact of ISPO.

The steps in determining alternative strategies are (1) defining the problem and determining the desired objectives, and (2) organizing the problem into a hierarchical structure so that complex problems can be viewed from a detailed and measurable side. (3) create a pairwise comparison matrix of each element obtained from expert judgment or respondents, (4) calculate priority weights, and (5) test consistency, by looking at the CR value ≤ 0.1. The following is the formula for calculating the consistency ratio (CR).

$$CR = \frac{\text{CI}}{\text{RI}}$$

Description:
CR = consistency ratio
RI = random index (obtained from the table)
CI = index consistency

RESULT AND DISCUSSION

Overview of the Research Location

The partner in this research is the village unit cooperative (KUD) Bumi Subur which is located in Kertabumi Village, Kuaro Sub-district, Paser Regency. The distance between the institution and the partner is 225 km if traveled by land. KUD Bumi Subur was established in 1996 under the name Koperasi Unit Desa Bumi Subur (KUD Bumi Subur). Farmers who are members of KUD Bumi Subur are continuously trained in environmentally friendly sustainable oil palm cultivation. The training aims to obtain certification from the Indonesian Sustainable Palm Oil (ISPO). Research collaboration with KUD Bumi Subur as a partner has been carried out in 2023 with the theme of factors affecting the competitiveness of oil palm, which is known that the cultivation innovation factor and the availability of production facilities are factors that can increase the competitiveness of oil palm (Bustomi et al., 2023). The partner in this case, KUD Bumi Subur, played an active role in assisting

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the research process related to the provision of farmer data and participated in providing the information needed during the research.

To support the sustainability of oil palm farming requires environmentally friendly management and by established standards. Achieving the fulfillment of standards requires the participation of various parties, not only from individual farmers as landowners and business actors but also from external parties to achieve the success of oil palm cultivation to penetrate the global market. In the management of oil palm in Kertabumi Village, Kuaro District, especially farmers who partner with KUD Bumi Subur have succeeded in achieving recognition in the form of ISPO certificates and are KUDs that have successfully achieved it in Paser Regency. This achievement needs to be supported by a strategy on how to strengthen the impact or benefits of the certification so that it can be an example of KUD for other areas.

Strategy to Strengthen the Impact of ISPO Implementation.

In formulating strategies using the analytical hierarchy process, FGDs were first conducted to explore the problems and constraints faced by smallholders related to the ISPO program, starting from the preparation, and fulfillment of standards, to the assessment of ISPO principles. After that, the formulation of alternative strategies was carried out by compiling a hierarchy which was then weighted by experts related to the importance value of both criteria and alternative strategies on each criterion. In addition, it is also necessary to note the level of consistency of expert answers in this study. Experts who gave weights to the pairwise comparison questionnaire in this study consisted of 3 people, namely academics from the Samarinda State Agricultural Polytechnic, Kerta Bumi Village officials who were also administrators of KUD Bumi Subur, as well as representatives of assisting institutions from the NGO Solidaridad. The process of determining strategies to strengthen the impact of ISPO implementation is divided into 2 aspects, namely socio-economic impacts and environmental impacts. Hierarchical analysis is structured using criteria and then each criterion is formulated as an alternative strategy.

Socio-economic Impact

Table 1. Calculation of the Weighted Value of Socio-Economic Impact Criteria

Criteria	Priority Vektor	Matrik priority	Consistency	Eigen Value	CR of Alternatif
Institutional Strengthening	0.216	0.87	4.03	1.051	0,055
ISPO SOP Implementation	0.276	1.11	4.03	0.996	0,039
Input Use Efficiency	0.157	0.63	4.02	0.990	0,010
Human Resource Management	0.351	1.42	4.04	0.996	0,013
Total	1	4.03	16.12	4.032	

Lamda Maks	4.03
CI	0.0100
RI	0.9
CR	0.0111

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Based on the assessment of the expert, the consistency ratio (CR) value for the socio-economic impact criteria is 0.011, which is smaller than 0.1. The analytic hierarchy process (AHP) model requires a CR value of ≤ 0.1 so that it can be said that the expert's assessment is consistent. If it is consistent, then weighting is carried out for each criterion, the highest weight determines the selected criteria according to the expert's assessment. Meanwhile, hierarchical analysis based on expert judgment shows that the value of the consistency ratio (CR) of alternative HR management criteria is 0.012, which is smaller than 0.1. The analytic hierarchy process (AHP) model requires a CR value of ≤ 0.1 so that it can be said that the judgment assessment is consistent. The CR value for alternative institutional strengthening criteria is 0.055. The CR value for alternative criteria for implementing SOPs is 0.038. The CR value for alternative input use efficiency criteria is 0.010. After the CR value for all criteria is consistent, alternative strategies can continue to be determined for each of these criteria.

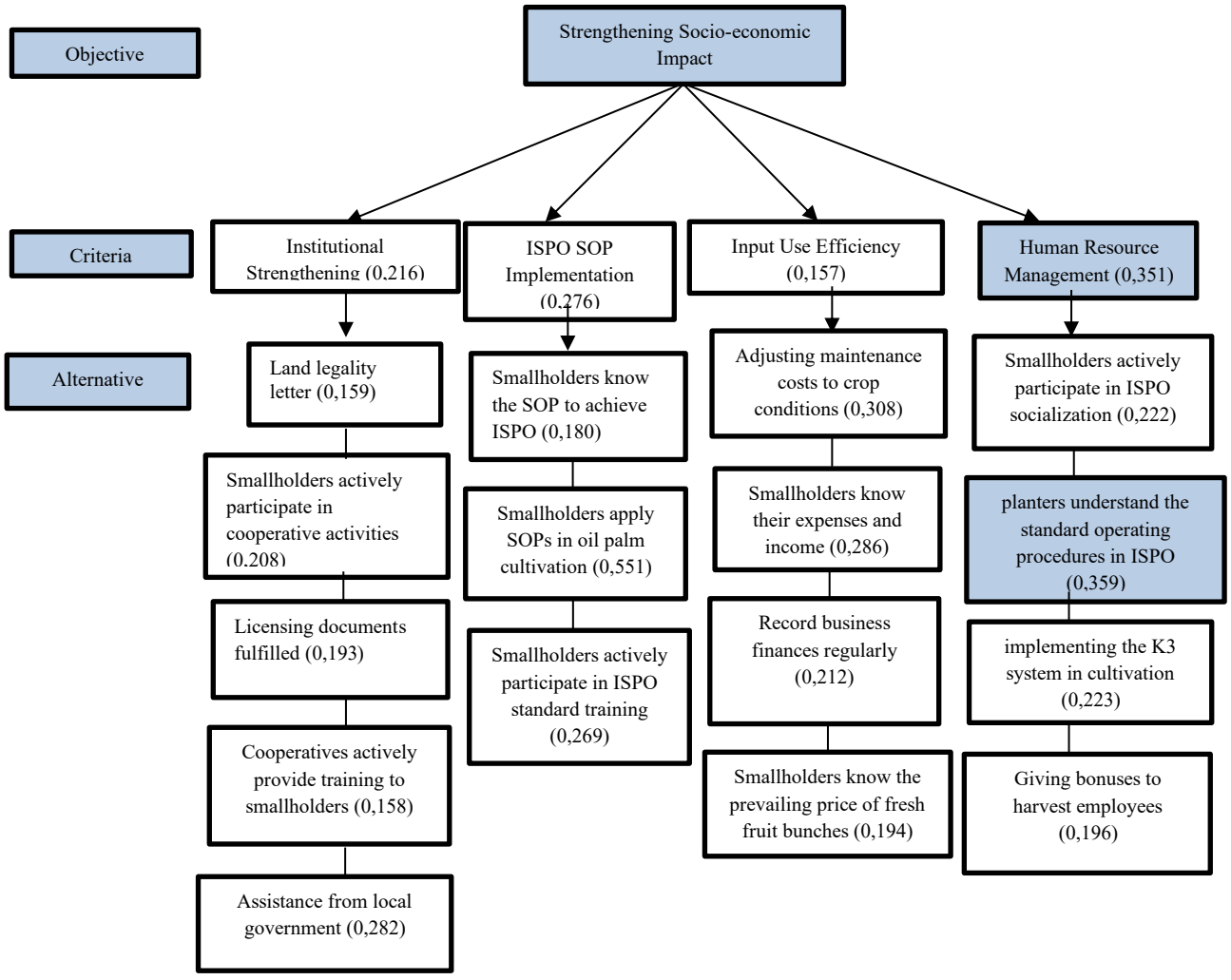

Figure 2. Hierarchy of Strategies for Strengthening the Socio-economic Impact of ISPO

The formulation of strategies in strengthening socio-economic impacts is seen from 4 criteria obtained from exploring the problems often faced by smallholders and also adjusted to the assessment of ISPO principles consisting of human resource management, strengthening smallholder institutions,

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implementing ISPO SOPs, and efficient use of inputs (production factors). Based on the weighting using the AHP method through the assessment results of experts, it is known that the HR management criterion has a weight of 0.351 which is the highest criterion among other criteria. This is supported by Apriyanto et al., (2019) that the determining factor in achieving the implementation of the ISPO standard is the commitment of business actors (planters) supported by adequate human resources to realize sustainable plantation development and the role of the government as a regulator in overseeing the policies that have been set. An overview of the hierarchical process in determining alternative strategies for strengthening socio-economic impacts can be seen in Figure 2.

The second highest criterion weight is the application of SOPs (0.276) then institutional strengthening (0.216), and input use efficiency with a weight value of 0.157. In practice, some oil palm growers have implemented these four criteria and have successfully obtained ISPO certificates for their plantations. The expert assessment in this study is to determine the most dominant criteria or factors as criteria that support the success of ISPO so that it can have a positive impact on smallholders. The impact felt by smallholders is not only in the form of increasing income directly but with the existence of ISPO, smallholders can understand the importance of good business management so that the use of production factors can be more efficient and palm oil management is more sustainable for the future This is supported by Siregar, (2023) that farmers who have ISPO have 0.5 toh/month higher production yield than those who have not. ISPO encourages farmers to adopt optimal farming techniques, including seed selection, fertiliser use, and pest control, so as to increase production yields. Every business needs good management in order to continue to grow, as well as in oil palm cultivation, by following the principles of sustainable management (ISPO), smallholders will benefit from the production of quality fresh fruit bunches and can get maximum yields.

Human Resource Management Criteria

Alternative strategies on human resource management criteria consist of 4, with the highest weight value, namely planters understand the standard operating procedures in ISPO with a weight of (0.359), the second alternative is by implement an occupational health and safety system in cultivation (0.223). This aims to protect and maintain the safety of oil palm growers. In addition, the third alternative of HR management is that planters actively participate in ISPO socialization (0.222), and then give bonuses to harvest employees (0.196). Based on this assessment, it is recommended that smallholders pay attention to HR management, both in terms of the smallholders themselves who must understand the SOPs of ISPO and if they have employees who help with oil palm cultivation. This is supported by Sari et al., (2022) that strategies are very necessary and needed to obtain ISPO certification, one of which is providing periodic counseling to strengthen the knowledge of smallholders about ISPO.

ISPO SOP Implementation Criteria.

The criterion with the second highest weight is the application of the ISPO SOP for smallholders with a weight value of 0.276. In this criterion, the highest alternative strategy is for smallholders to apply SOPs in oil palm cultivation, with a value of 0.551. Most of the smallholders who join as partners or members of KUD Bumi Subur have implemented ISPO standards in their plantations. This is due to the assistance of the companion organization (NGO) Solidaridad, which helps and assists cooperatives and smallholders in maintaining their oil palm plantations.

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Smallholders are active in participating in ISPO training with a weight of (0.269), followed by the third alternative of smallholders knowing the SOP to achieve ISPO (0.180). Smallholders are expected to be consistent in applying the principles of ISPO implementation on their plantations. MOA No.11/Permentan/OT.140/3/2015 states that smallholders can voluntarily implement a sustainable palm oil certification system through ISPO (PERMENTAN, 2015).

Institutional Strengthening Criteria

The highest alternative strategies for institutional strengthening criteria are assistance/support from the local government (0.282), smallholders actively participating in cooperative activities (0.208), fulfillment of licensing documents (0.193), land legality letter (0.159), and KUD actively providing training to smallholders (0.158). The success of cooperatives and smallholders in obtaining ISPO certificates cannot be separated from the assistance of facilitating institutions and support from the local government. Therefore, strengthening institutions is necessary so that smallholders have a forum to ask questions or get help in the process of oil palm cultivation.

Input Use Efficiency Criteria

The highest alternative strategy on this criterion is to adjust maintenance costs to the condition of the plant with a weight of (0.308). Smallholders who have participated in training and activities conducted by KUD Bumi Subur can have a positive impact on smallholders, namely the ability of management of the garden to be better.This is supported by Septiani et al., (2023) that the training implemented has a positive impact on equipping, improving and developing employee skills.

Identifying the condition of the plants can minimize costs/expenses used by smallholders. This is followed by knowing the costs of expenditure and income in oil palm cultivation (0.286), recording business finances regularly (0.212), and smallholders know the prevailing fresh fruit bunch price (0.194).

Environmental Impact

Table 2. Calculation of Weighted Value of Environmental Impact Criteria

Criteria	Priority Vektor	Matrik priority	Consistency	Eigen Value	CR of Alternatif
plantation management	0.227	0.91	4.02	1.013	0,017
utilization of cultivation technology	0.206	0.83	4.02	0.999	0,0001
waste management	**0.312**	1.25	4.03	1.001	0,018
technical knowledge of cultivation	0.256	1.03	4.02	1.010	0,026
Total	1.000	4.02	16.09	4.024	

Lamda Maks	4.02
CI	0.007
RI	0.9
CR	0.008

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The strategy to strengthen the environmental impact of ISPO implementation is formulated in 4 criteria, namely plantation management, utilization of cultivation technology, waste management, and technical knowledge of cultivation. Before determining the weight of the selected criteria, first look at the CR value for criteria on environmental impacts. Based on the expert assessment, the consistency ratio (CR) value of the criteria on environmental impacts is 0.008, which is smaller than 0.1. The analytic hierarchy process (AHP) model requires a CR value of ≤ 0.1 so that it can be said that the judgment assessment is consistent. The criterion with the highest weight is waste management (0.312), so the alternative chosen is in the waste management criteria, namely distinguishing hazardous waste. The hierarchy of alternative strategy selection on environmental impacts can be seen in Figure 3 below.

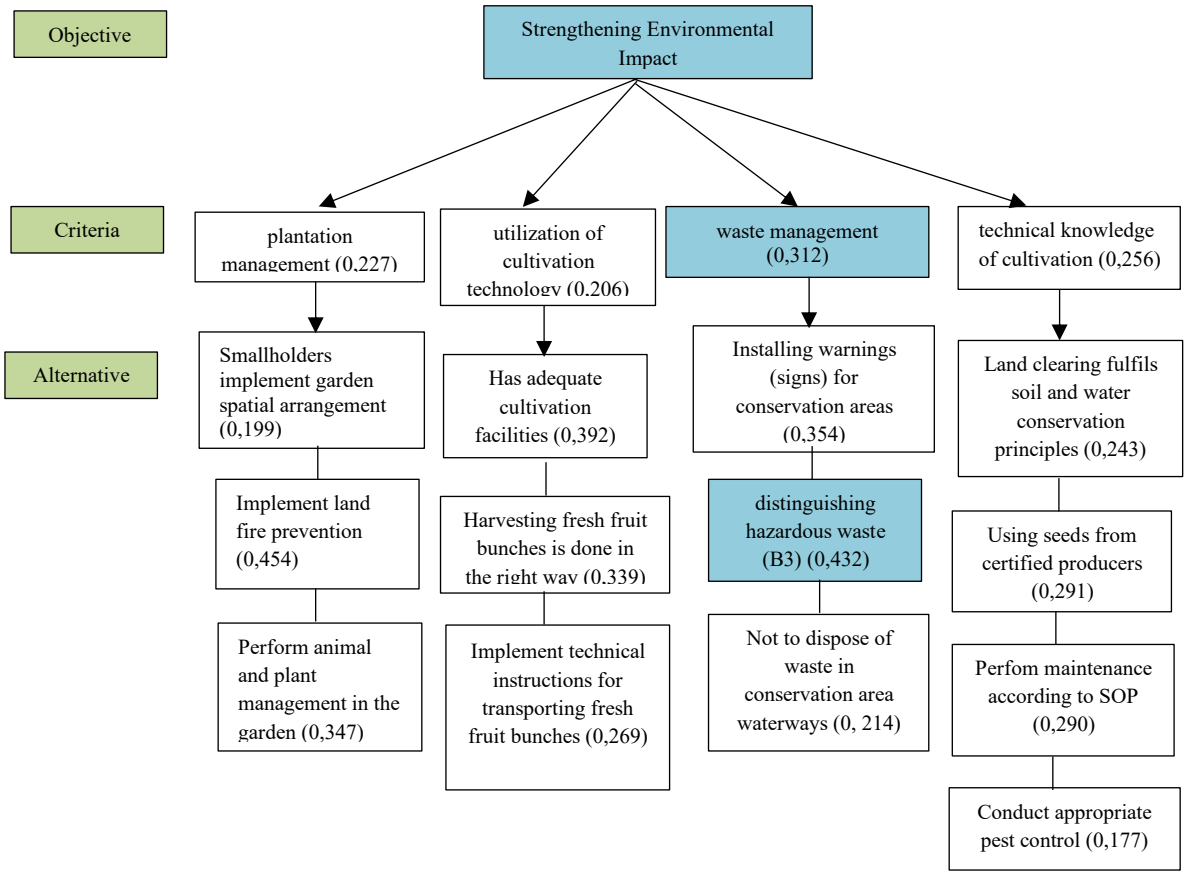

Figure 3. Hierarchy of Strategies for Strengthening the Environmental Impact of ISPO

The process of determining strategies through hierarchical analysis based on expert judgment shows that the consistency ratio (CR) value of alternative waste management criteria is 0.018, which is smaller than 0.1. The analytic hierarchy process (AHP) model requires a CR value of ≤ 0.1 so that it can be said that the judgment has been consistent. The (CR) value for farm management criteria is 0.017 which is also consistent. The (CR) value for the technology utilization criterion is 0.0001 which is consistent. The CR value for the cultivation technical knowledge criteria is 0.025 which is also

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consistent so that it can be continued for the selection of alternative strategies for the selected criteria according to the highest weight.

The waste management criterion was chosen because it has the highest weight compared to other criteria, which is 0.312, followed by the criteria for technical knowledge of cultivation (0.256), garden management criteria (0.227), and finally the criteria for the use of cultivation technology with a weight of 0.206. Determination of alternative strategies on criteria with the highest weight, namely waste management, is by selecting the highest weight value that is considered the most important to be carried out by planters, namely distinguishing hazardous waste (B3) with a value of (0.432), followed by installing warnings (signs) for conservation areas (0.354), and the last alternative is not to dispose of waste in conservation area waterways (0.214). The alternative with the highest weight based on expert assessment is that farmers are expected to differentiate the use of hazardous materials used in cultivation such as herbicides and pesticides made from chemicals. Always use masks in the chemical weed control process, and do not dispose of hazardous waste in waterways, because it can interfere with conservation areas in waterways, and other negative impacts caused if you do not manage hazardous waste in the garden. This is supported by Fazia, (2021) the determination of strategies to strengthen the impact of ISPO on environmental aspects, namely the improvement of facilities and infrastructure can also be related to the facilities used in waste management.

CONCLUSION AND SUGGESTION

The selection of alternative strategies through the AHP method is carried out through the process of strategy formulation and assessment by experts in their fields which aim to obtain alternative strategies to strengthen the impact of ISPO implementation. Impact strengthening consists of socio-economic and environmental. For the strengthening of socio-economic impacts, the selected criterion is for HR management (0.351) with choices with the highest weight of planters understanding the SOP in ISPO (0.359). Meanwhile, for strengthening environmental impacts, the selected criterion is waste management with a weight of 0.312 in the choice of distinguishing toxic hazardous waste (B3) with a weight of 0.432. Smallholders should know and be able to distinguish the most efficient steps in cultivation according to the existing plant conditions so that the funds spent are in accordance with the conditions and needs of the plant. Smallholders are expected to continue to be active in training on the application of ISPO principles held by KUD Bumi Subur and Solidaridad Assistance Institution. In addition, smallholders can apply the principles of proper waste management according to ISPO standards or principles.

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