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Analysis of Sustainability Leverage Factors and Development Opportunities for the Corn Industry in Dompu Regency, West Nusa Tenggara

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Abstract
This study aims to analyze the levers of sustainability and opportunities for the development of the corn industry in Dompu Regency, West Nusa Tenggara. The method used is descriptive method, data collection using interviews and online questionnaires to 60 farmer respondents spread across the three main corn-producing districts and 6 experts. The results of the study show that the lever factors that play a role in increasing sustainability are the ecological dimension "Spatial suitability for planting corn" the economic dimension "market access" the social dimension "Number of farmer households growing corn compared to the previous year" and the policy and institutional dimension "Policies related to price government purchase". Meanwhile, potential factors that have not been maximized and have development opportunities are the Ecological dimension "utilization of corn waste" the Economic dimension "access to capital" the social dimension "how often farmers receive assistance related to corn" and the policy and institutional dimension "Policies related to pesticides, seeds/seeds and fertilizer.

Keywords: Corn, Levarenge Factor, Dompu, Sustainable

Introduction

Sustainability has now become a central issue for every world development activity since the launch of the global agenda of the Millennium Development Goals (MDGs) followed by the Sustainable Development Goals (SDGs). Thus the achievement of the development goals of each country, both on a micro and macro scale, must be seen from a sustainability perspective (Fauzi, 2019). Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Barrow, 1995).

Corn is one of the most widely cultivated commodities by farmers after rice. National corn production shows a significant increase in planted area and corn production. In 2019, national corn production reached 27,609.643 tons from the Central Bureau of Statistics and the Ministry of Agriculture (2020), and in 2020 national corn production increased to 29,048.125 tons from the Central Statistics Agency and the Ministry of Agriculture (2020).

The Provincial Government of West Nusa Tenggara has designated corn as a leading program for regional development, this is the right step because apart from having regional potential (land potential), corn is a plant that is quite easy to cultivate, besides not requiring too much water, safe from pest and disease attacks. What is no less important is that corn has a sizeable role in the national economy with the development of the food industry which is supported by cultivation technology and superior varieties (Department of Agriculture, Food Crops and Horticulture, West Nusa Tenggara Province, 2010).

Corn is one of the main commodities of Dompu Regency, increasing the wheels of the community's economy, especially farmers through corn production which continues to increase. The development of corn in Dompu Regency has enormous potential, namely with a potential of 133,963 ha of dry land (BPS, 2018) because it has climatic conditions, soil types and topography which are very supportive for corn development. The corn

harvested area in Dompu Regency in 2020-2021 is 450,941 ha with an average productivity of 7.4 tonnes/ha (Central Bureau of Statistics, 2021).
Increasing the income of farmers, especially food crop farmers, is one of the government's goals in developing agriculture. Since its launch in 2010, the Corn Crops Program in Dompu Regency has provided real benefits in building the people's economy as well as having a positive impact on other development sectors, both Education, Health, Socio-Culture and others. Agriculture, especially corn, has been the largest contributor to gross regional domestic product (GDP) in recent years, where its value has always increased every year (Central Bureau of Statistics, 2021). Therefore, in this research, studies are needed to find out what are the leverage factors and what factors can become development opportunities so that the corn industry in Dompu Regency can be sustainable.

Research Methods

The methods used in this research are quantitative and qualitative methods. The data used are primary data obtained through interviews and online questionnaires to 60 respondents who work as corn farmers spread across the three main corn-producing districts in Dompu Regency, namely Woja, Kilo and Pekat Districts and 6 stakeholders consisting of Regional Planning Agency, Dinas Agriculture and plantations, Regional Disaster Management Agency, Environmental Service, Agricultural Extension Center, and Forest Management Unit. The survey was conducted in August-September 2022.

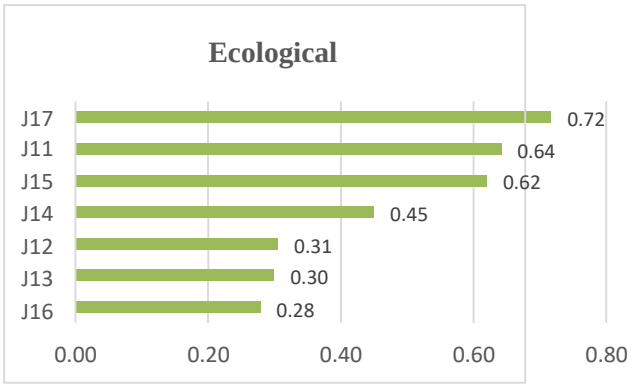
Results and Discussion

Analysis of Factors Leveraging the Sustainability of the Corn Industry in Dompu Regency

The leverage factor is a factor that is considered critical for the sustainable development of the corn industry. The discussion of the results of the corn industry sustainability index analysis in this study is described in four parts, namely: 1) ecological dimension, 2) economic dimension, 3) social dimension, and 4) institutional and policy dimensions.

Ecological Dimension

The ecological dimension includes 7 attributes for sustainability analysis. Field condition attributes that are expected to influence the sustainability of the ecological dimension are (1) agro-climate suitability for planting corn, (2) land slope conditions, (3) land elevation conditions, (4) land erosion rate, (5) land productivity compared to the previous year, (6) utilization rate of corn waste, and (7) spatial suitability for planting corn. Based on the field survey that has been carried out, the results of the analysis show that the sustainability index from the ecological dimension is 0.47 percent (moderate sustainability index). For more details, see the following image :



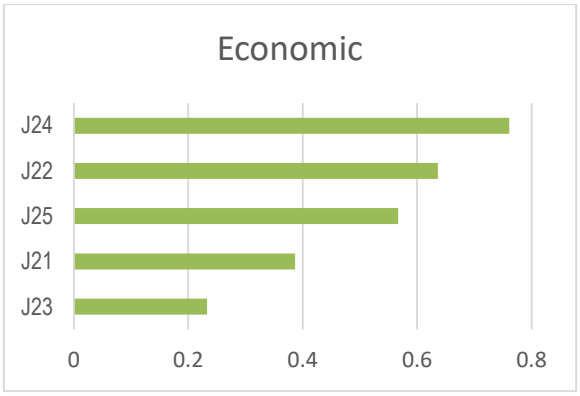
Picture. 1. Ecological Dimension Sustainability Index

The results of the analysis show that the sensitive attribute affects the sustainability of the ecological dimension, namely "Spatial Suitability". Spatial suitability is the most sensitive attribute with a sustainability index value of 0.72. The results of the field survey indicated that the spatial conditions in Dompu District were suitable for planting corn. In the future, by making improvements or interventions on these attributes, it is

expected to increase the sustainability status. This factor can be maximized by implementing intercropping cropping patterns so that land yields can be more optimal and sustainable for future corn farming activities. According to Suwena (2002) intercropping is planting two or more types of plants on a plot of land at the same time. The purpose of the intercropping cropping pattern is to optimally utilize the production factors owned by farmers (including limitations: land, labor, working capital), use fertilizers and pesticides more efficiently, reduce erosion, conserve land, soil biological stability and obtain greater total production. compared to planting in monoculture (Tharir and Hadmasi, 1984).

Economic Dimension

The economic dimension includes 5 attributes for sustainability analysis, namely (1) product selling price compared to the previous year, (2) availability of seeds/seedlings compared to the previous year, (3) access to capital, (4) market access, (5) availability of labor in compare to previous year. The attribute that is a lever factor in the Economic dimension is "market access" with a sustainability index value of 0.76. For more details, see the following image :

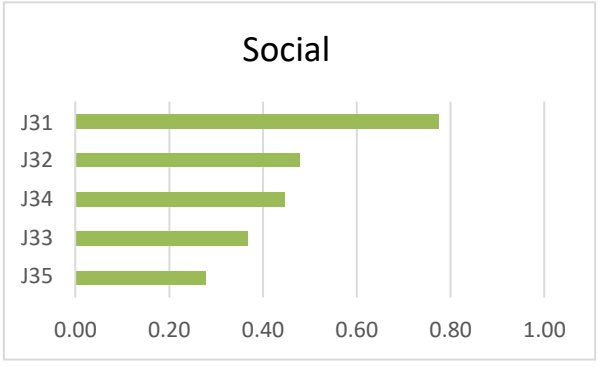


Picture. 2. Economic Dimension Sustainability Index

In Dompu Regency, it is very easy for farmers to market their crops, the demand for corn has increased, which is indicated by the large number of corn warehouses spread across almost every sub-district in Dompu Regency. With easy market access, of course, it will have a positive impact on farmers where farmers will get more benefits because they can directly sell their products directly to the warehouse, of course, at a higher price than selling to collectors. According to Rivai and Anugrah (2011) the economic dimension emphasizes aspects of meeting human economic needs for both present and future generations, so that if market access is easy it will benefit farmers.

Social Dimension

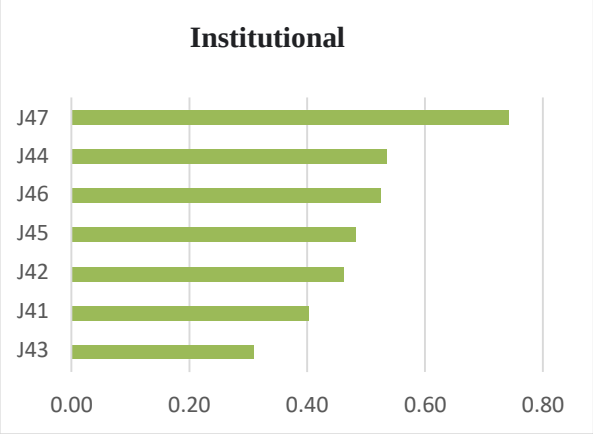
On the social dimension, the factors that are expected to influence the index and sustainability status consist of 5 attributes, namely (1) the number of farmer households compared to the previous year, (2) the age of farmers who plant corn, (3) the existence of corn farmer organizations, (4) access towards corn policy compared to the previous year, and (5) how often farmers receive government assistance related to corn development.



Picture. 3. Social Dimension Sustainability Index

The most sensitive factor that becomes a lever factor is the attribute "the number of farmer households growing corn compared to the previous year" which has a sustainability index value of 0.76. Every year the number of corn farmers in Dompu Regency is increasing, this is because currently the price of corn is good, followed by buying warehouses, seed assistance and fertilizer assistance so that farmers compete to plant corn. This is of course very good for economic growth in Dompu Regency and can help increase income and improve a better standard of living for farmers. But on the other hand, if this condition continues, it will lead to land conversion, as is currently happening in Dompu Regency, where forests have been converted into corn fields, thus threatening the balance of the ecosystem because the forests have changed their functions, animals and animals. animals lose their homes and can disturb residents' settlements, besides that the transfer of forest functions causes frequent landslides and floods in Dompu District. Land use change or commonly referred to as land conversion is a change in the function of part or all of a land area from its original function to another function which has a negative impact on the environment and the potential of the land itself.
According to Bambang Irawan and Supena Friyatno (2001) At the micro level, the process of conversion of agricultural land (land conversion) can be carried out by the farmers themselves or by other parties. In addition to the conversion of forest functions, another impact is that it will be difficult to get labor because all become farmers, usually the planting season and corn harvest season are carried out simultaneously so that at that time it will be difficult to get labor but now farmers have found ways to get labor, especially during the harvest, namely by bringing in workers from other areas, namely Sumba, is usually done in bulk for a fee of IDR 2,500,000 per hectare. In addition, an increase in the number of farmers will affect the price of corn because the abundant amount of production has the potential to cause the price of corn to fall while the supply remains the same causing the price of corn to fall.

Institutional and Policy Dimensions
Institutional and policy dimensions consist of 7 attributes, namely (1) government policies related to corn seeds, (2) government policies related to corn production facilities (fertilizers), (3) government policies related to corn production facilities (pesticides), (4) policies related to subsidies loan interest (credit), (5) policies related to irrigation (irrigation), (6) policies related to rice cultivation, and (7) policies related to the corn reference price.



Picture. 4. Institutional and Policy Dimensions Dimension Sustainability Index

The Policy Dimension has 7 attributes that are analyzed for sustainability, the most sensitive attribute and the leveraging factor is "policy related to government purchase prices". Currently, policies related to corn Government purchase price in West Nusa Tenggara, especially in Dompu Regency, have improved. The central government through the Republic of Indonesia's National Food Agency raised the reference purchase price for corn at the producer level to IDR 4,200 per kilogram. Head of National Food Agency R. Arief Prasetyo Aji said that the increase in purchase reference price was carried out after the government through the bapanas issued regulation No. 5 of 2022 concerning corn at the producer level of IDR 4,200 per kilogram with a moisture content of 15%. This revises the purchase reference price which is regulated in Rules of tray ministry No. 7 of 2020 at IDR 3,150 per kilogram. Meanwhile, the reference price at the consumer level is set

at IDR 5,000, which was previously IDR 4,500 (National Food Agency , 2022). This policy related to corn Government purchase price is useful for protecting farmers which can be used as a benchmark for corn prices.

Development Opportunities

Opportunity for development is to look for attributes that have the lowest sustainability value where this index has the opportunity to be developed so that the corn industry in Dompu Regency in the future can be sustainable.

Ecological Dimension

The ecological dimension of the attribute that has the lowest index value is the condition of the height of the land and the level of utilization of corn waste with index values of only 0.30 and 0.28 respectively. For the attribute utilization of corn waste, the index value is the smallest, namely only 0.28, this is because most corn farmers plant on state-owned land which is in the highlands, making it difficult for breeders to take the waste for animal feed purposes. In addition, in the lowlands the use of corn waste is still lacking, breeders usually release their cows in the corn fields that have been harvested but only part of it can be used because the corn fields are so wide that the waste is abundant so that part of it is used for feed. livestock and most of it was burned.

In addition to the waste utilization attribute, other attributes, namely the slope of the land and the level of land erosion, also have low category sustainability index values, namely 0.31 and 0.45. This illustrates that many farmers still grow corn on sloping land, which at times during the rainy season many of these lands are affected by landslides and floods, causing the corn planted by farmers to be damaged and yields to decrease. In line with research conducted by Fariz Primadi Hirsan et al. (2017) who said that there had been a change in land use to corn crops during the period 2012 to 2017 in Dompu District. There is a relationship between changes in land use and environmental degradation seen through an increase in areas prone to landslides and floods in Dompu District. It is recommended to maintain the area according to its function based on the physical characteristics of the land.

Economic Dimension

In the economic dimension, the attribute with the lowest sustainability index has development opportunities which really need to be improved, namely "Access to Capital". This is due to the lack of ability of farmers to manage finances. In the following planting season, farmers will usually be in debt by borrowing from a bank, but from the results of a survey, many farmers prefer to borrow from neighbors as initial capital to plant corn because the process is much faster, although the interest is much higher. According to the farmers, borrowing at the bank takes a long time and can even be disbursed when the farmers have harvested, so farmers are looking for other alternatives, such as borrowing from neighbors for their farming needs. In the future, so that farming activities can run better, lenders, especially people business kredit, can make efforts to disburse capital assistance quickly so that it can make it easier for farmers to carry out their farming activities.

Social Dimension

In the social dimension, the attribute with the lowest index value that has not maximized its contribution to the sustainability of the corn industry in Dompu Regency is "How Often Farmers Receive Corn-Related Assistance". It turns out that from the results of interviews between researchers and stakeholders in Dompu Regency, the reason why farmers rarely receive government assistance related to corn development is because many farmers have not been registered with farmer groups or in the Group Needs Devinitive Plan, farmers who are not registered will not automatically receive any assistance and if farmers If you want to get help, you have to be registered with the condition that the land must be privately owned. Because almost 70% of corn farmers in Dompu Regency plant corn on state-owned land, they will not receive any assistance. According to Wardhani and Prasetiyo (2016) owning land will have a calming effect and can be used as a means of increasing capital or guaranteeing venture capital to increase production. In the future, so that farmers can get assistance from the government and farming activities run better, they must join farmer groups and no longer plant corn on state-owned land.

Institutional and Policy Dimensions

On the Policy and Institutional dimension, the attribute with the lowest index value that has not maximized its contribution to the sustainability of the corn industry in Dompu Regency is "policy related to pesticides". Based on the current survey results, farmers are complaining about the price of pesticides which is much higher compared to the previous year, the increase in pesticide prices is almost 2x the price of pesticides last year so that farmers find it difficult to buy because the prices are quite expensive. From the results of interviews with several stakeholders, the reason for the increase in the price of production inputs such as seeds/seeds, fertilizers and pesticides was due to several factors, including the occurrence of a pandemic, the crisis that occurred in Europe and the policies of several countries which stopped the export of raw materials. In the future, so that farmers can save expenses related to the use of pesticides, they can use natural/vegetable pesticides. The advantages of vegetable pesticides are that they are cheap and easy for farmers to make themselves, relatively safe for the environment, do not cause poisoning in plants, are difficult to generate immunity to pests, are compatible with other control methods, produce healthy agricultural products because they are free of chemical pesticide residues. In addition, in this dimension, the attributes that have not been maximized are still related to policies related to production inputs, namely "policies related to seeds/seedlings" and "policies related to fertilizers". In Dompu Regency, policies related to seeds/seeds are still not optimal, many farmers are still using low-quality corn seeds so that the results obtained are not optimal. Corn seed assistance from the government is a type of corn seed that is of less quality which if planted the results are not optimal compared to the type of seed purchased directly which is of good quality. Increasing the productivity and quality of crop yields is strongly influenced by the quality and quantity of seeds. The use of certified superior variety seeds accompanied by the application of other technologies contributes to increasing productivity, production and quality of food crop commodities. In addition, the importance of using superior seeds is to save land use. Therefore, the availability of certified superior variety seeds needs to be continuously improved so that they can meet the needs in the field and are easily accessible to farmers.

Policies related to fertilizers also need to be maximized because currently the availability of fertilizers is very rare and prices have doubled compared to last year. The reason for the scarcity of fertilizers is due to the insufficient allocation of subsidized fertilizers and frequent misuse in the field. The results showed that fertilizer problems occurred because there were farmers outside the Group Needs Devinitive Plan who also received subsidized fertilizer allocations. Apart from that, another problem was that as many as 70% of corn farmers who had been surveyed planted corn on state-owned land where these farmers were not recorded in the Group Needs Devinitive Plan, farmers also get the allocation of fertilizer. In addition, the number of corn farmers who are increasing every year causes fertilizer to become scarce because the demand is increasing, while the fertilizer allocated by the government is limited. So that in the future so that corn farming activities can run well, they must be able to overcome this scarcity, namely by reallocating fertilizer needs. Reallocation is changing the allocation of fertilizer, an area with low fertilizer absorption will be transferred to an area with high absorption. By carrying out this reallocation, the problem of fertilizer scarcity can be properly addressed.

Conclusion

The lever factors that play a role in increasing sustainability are the ecological dimension "Spatial suitability for planting corn" the economic dimension "market access" the social dimension "Number of farmer households growing corn compared to the previous year" and the policy and institutional dimension "Policies related to government purchase prices. Meanwhile, potential factors that have not been maximized and have development opportunities are the Ecological dimension "utilization of corn waste" the Economic dimension "access to capital" the social dimension "how often farmers receive assistance related to corn" and the policy and institutional dimension "Policies related to pesticides, seeds/seeds and fertilizer.

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