Global Research Review in Business and Economics [GRRBE]
ISSN (Online) 2454-3217, ISSN (Print) 2395-4671
| Open-Access | Volume 12, Issue 03,
Pages 14-26 ||2026||

PLANNING THE CONSTRUCTION OF AN ANIMAL FEED FACTORY FROM A TECHNICAL, FINANCIAL, AND ENVIRONMENTAL PERSPECTIVE

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ABSTRACT

This study aims to analyze the feasibility of building an animal feed factory in Tabanan Regency from three main aspects, namely technical and technological aspects, financial aspects, and environmental aspects. The construction of this factory is driven by the need for independent feed production in Bali, which has been dependent on supplies from outside the region. The research methodology includes primary and secondary data analysis, field observations, and investment feasibility studies. The results of the study show that, technically, the construction of an animal feed factory in Tabanan is feasible due to the availability of local raw materials, supporting infrastructure, and adequate labor. However, from a financial perspective, this project has two scenarios: construction by the private sector alone is considered financially unfeasible (negative NPV), while management by Perumda Dharma Santhika shows feasible results (IRR 32.93% and Payback Period 3 years). From an environmental perspective, the construction of an animal feed factory has limited and localized impacts, which can be controlled through waste management and the application of green industry principles. This study concludes that the project to build an animal feed factory in Tabanan is feasible to proceed with BUMD-based management and sustainable environmental monitoring.

KEYWORDS: planning, animal feed, feasibility, investment, environment

1. INTRODUCTION

Fisheries and Livestock Statistics published by the Central Statistics Agency (Badan Pusat Statistik, 2023) show that Indonesia's pork production has increased by an average of 5.25% over the past five years. In 2019, Indonesia's pork production reached approximately 236,277.3 tons, then continued to rise and peaked at 262,783.1 tons in 2022. In 2023, it increased again to 276,610.7 tons. From these calculations, it can be seen that pork consumption in Indonesia in 2019 reached approximately 236,277.35 tons, rising steadily to 262,783.46 tons in 2022. Meanwhile, in 2023, it is estimated to reach 276,610.79 tons. This represents an average annual increase of 5.25%. Currently, there are 12-13 provinces in Indonesia with a pig population of over 500,000. The highest pig farming areas are East Nusa Tenggara (NTT), North Sumatra, West Kalimantan, Papua, South Sulawesi, Bali, and a few in Central Java such as Solo and Karanganyar, which normally have around 450,000 pigs but now only have a quarter of that number (Badan Pusat Statistik, 2025a).

According to (Badan Pusat Statistik, 2025c), poultry consumption in Bali in 2024 will be 3,827.025 tons, while pork consumption in Bali varies and tends to increase during traditional and religious ceremonies. In general, pork consumption in Bali is 2,675 tons, which will fluctuate according to traditional and religious activities. Data from (Sammani et al., 2025)shows that the national meat consumption share is dominated by chicken at 56%, beef at 23%, pork at 13%, goat and sheep at 5%, and others at around 3% .

Increased meat consumption and livestock populations directly drive the need for stable and sustainable feed supplies, particularly in regions with intensive livestock farming, such as Bali. The livestock feed industry plays a strategic role in ensuring livestock production efficiency, food security, and the stability of livestock product prices (Harinder P. S. Makkar, 2016; Shurson et al., 2023). Dependence on feed supplies from outside the region also increases production costs and supply chain risks, making the development of locally-based feed mills a widely recommended approach in sustainable livestock development (FAO, 2012; Viscardi et al., 2024; Yesuf, 2009).

From this consumption data, another aspect that needs attention is how this consumption is met by the available population, both poultry and pigs, especially for the needs in Bali. From the data (Badan Pusat Statistik, 2025c), the population of broiler chickens as a source of poultry meat, especially chicken, is 78,440,000. The pig population as a provider of pork consumption is 55,000 heads. From the population of both chickens and pigs, the predicted feed requirement for chickens is 87,748,867 kg and for pigs is 12,111,000 kg. From observations with chicken and pig farmers in Tabanan and Bali, it turns out that most of the feed requirements are concentrated feed purchased from feed factories, most of which are imported from outside Bali. This provides a great opportunity for the establishment of a Livestock Feed Factory, which is planned to be built in Tabanan (Arisena et al., 2025).

Several supporting factors are that Tabanan and several other areas in Bali have the potential to produce feed ingredients such as soybeans, corn, and bran as the main ingredients for animal feed. According to data (Badan Pusat Statistik, 2025b), the corn harvest area in Bali province is 7669.79 ha with a productivity of 50.92 ku/ha and a total production in 2024 of 39055.43 tons. From this data, it can be seen that with a planting area of 7,669.79 ha and a productivity of 50.92 ku/ha, corn production can still be increased. This means that there is still an opportunity to improve corn cultivation techniques so that production is in line with productivity (Asfaw et al., 2024).

The marketing of dried corn in Bali in 2024 is quite good because Bali has considerable agricultural potential and a continuously increasing demand for animal feed. The marketing of dried corn in Bali has good potential, but it needs to be balanced with the right marketing strategy and a focus on improving quality and distribution reach (Mahaputra et al., 2025). The government also plans to stop corn imports starting next year, which is an opportunity for corn farmers in Bali to increase their production and marketing (Ahmad & Nugraha, n.d.).

The use of local raw materials such as corn, soybeans, and bran has the potential to increase feed production cost efficiency while providing added value to the regional agricultural sector. Previous studies have shown that the integration of the feed industry with local raw material sources can improve the efficiency of livestock production systems and reduce dependence on imports (Castelein et al., 2022; Lu & Cheng, 2023). In addition, optimizing feed crop cultivation technology is an important factor in ensuring the continuity of feed industry raw material supplies (Maryam et al., 2025).

For soybean production opportunities, Tabanan Regency has a harvest area of 862 hectares with a predicted production of 16.17 quintals/hectare. Tabanan Regency experienced the highest production increase from 429 tons (2021) to 1,394 tons (2023), showing significant progress in terms of both land and cultivation technology. Based on this data, the opportunity to build livestock feed houses in Tabanan Regency to meet the livestock feed needs of the Bali region is very large and promising.

2. RESEARCH METHODOLOGY

This research was conducted in Tabanan Regency, using a descriptive-analytical approach with primary data collection through field observations and interviews with farmers and relevant agencies, as well as secondary data from the Central Statistics Agency (BPS) and regional planning documents. The analysis was conducted on three main aspects: (1) technical and technological aspects, including production facility planning and infrastructure requirements; (2) financial aspects, through the calculation of NPV, IRR, Net B/C, and Payback Period; This approach is a standard method widely used in the evaluation of agribusiness and processing industry projects in developing countries (Marinchenko, 2020; Timu et al., 2024). The simultaneous use of several indicators is necessary to obtain a comprehensive picture of the risks and profitability of long-term investments (Ari Pratama & Kamaludin, 2025) and (3) environmental aspects, with an analysis of the potential physical, social, and economic impacts. The feasibility assessment uses general investment study parameters in accordance with the guidelines of the Ministry of Agriculture and Bappenas.

3. RESULTS AND DISCUSSION

Technical and Technological Aspects

The technical aspects aim to assess the feasibility of the project in terms of resource availability, technology used, and production capacity. Tabanan Regency has advantages in the availability of key raw materials such as corn, soybeans, and bran, with total corn production reaching more than 39,000 tons in 2024 (Badan Pusat Statistik, 2025b). Supporting infrastructure such as road networks, water availability, and electricity are also adequate to support industrial activities. The proposed technology includes grinding, mixing, pelletizing, cooling, and laboratory-based quality control systems. The application of grinding, mixing, pelletizing, and quality control systems is common practice in the modern feed industry to ensure product quality consistency. Standardization of production processes and raw material quality testing has been shown to have a significant effect on livestock performance and feed efficiency (Baris, 2023; Burgess et al., 2023; Msangi et al., 2014).

Investment in feed processing technology also contributes to increasing the competitiveness of the regional feed industry (Rubio-Ramon, 2025). The main facilities include a weighbridge, raw material storage silos, a process control room, and a warehouse for ready-to-use feed products (Harinder P. S. Makkar, 2016; Rahman & Melville, 2023; Zhang, 2018). The feed mill plant layout is shown in Figure 1. Figure 1 consists of the main building and several production process buildings and supporting buildings for the Tabanan Regency feed mill plan. In terms of labor, this project is able to absorb dozens of local technical and administrative personnel, with training to improve machine operation and quality management skills.

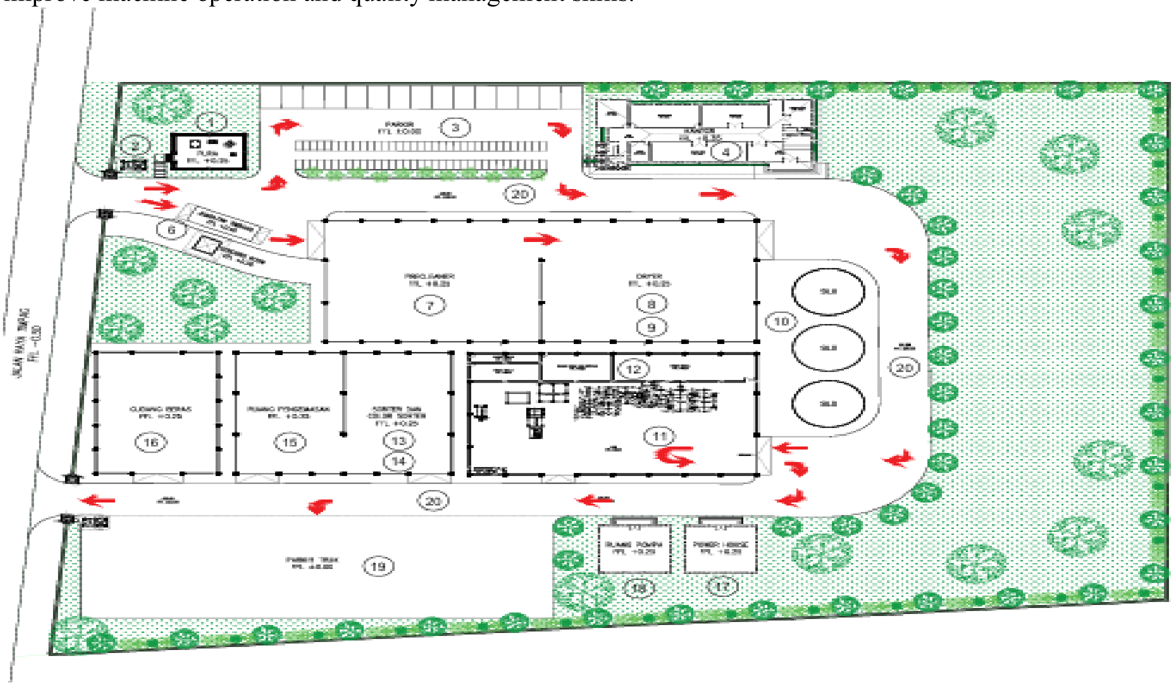

Figure 1
Plant Layout of the Animal Feed Factory in Tabanan Regency

4. FINANCIAL FEASIBILITY ASPECTS

Investment Costs for the Construction of an Animal Feed Factory

The total investment cost for the construction of an animal feed factory in Tabanan Regency is IDR 349,810,000,000, consisting of investment costs for buildings (land acquisition, certificates and permits, infrastructure buildings and factory machinery costs, namely weighing bridges, flat storage and SILO, raw material testing equipment, production process control equipment, feed product analysis equipment, quality control laboratories, production process machinery, packaging equipment, and storage warehouses. The total investment cost is presented in Table 1.

Table 1. Annual Investment Costs (Ct) for the Construction of an Animal Feed Factory in Tabanan Regency

No	Description	Volume	Unit Price (Rp)	Investment Value (Rp)
1	Buildings (land acquisition, certificates and permits, infrastructure buildings) for Feed Mill	1 unit		235.060.000.000
2	Feed mill machinery supporting production, licensing and technology, initial operational costs, logistics and distribution	1 unit		114.750.000.000
	Total			**349.810.000.000**

Source: Primary data analysis

Operational Cost Requirements Feed Mill Construction

After the feed mill is constructed in Year I, for operational activities in Year 2 until the economic life of the feed mill construction project in Year 10, fixed and variable costs are required. Fixed costs are calculated as building and machinery depreciation costs. Meanwhile, variable costs include the purchase of feed raw materials, feed processing costs, labor costs, and packaging costs. Detailed operational costs are presented in Table 2.

Table 2. Fixed Costs and Variable Costs of Animal Feed Factory Operations in Tabanan Regency

No	Desription	Volume	Unit Price (Rp)	Value (Rp)
I	**Fix Cost**			
1	Depreciation Costs for Buildings and Machinery in Animal Feed Mills			34.981.000.000,00
	Sub Total I			**34.981.000.000,00**
II	**Variable Cost**			
1	Purchase of chicken feed raw materials (kg)	26.324.661.00	7.010,73	184.555.305.159,66
2	Purchase of pig feed raw materials (kg)	3.633.300.00	5.926,43	21.532.500.000,00
3	Production process costs (kg)	29.957.961,00	100	2.995.796.100,00
4	Labor costs (kg)	29.957.961,00	75	2.246.847.075.00
5	Packaging bag cost (@ 50 Kg (pcs)	599.192,20	1.500	998.738.830,00
	Sub TotaI II			**212.229.187.164,66**
	Total Cost			**223.704.187.164,66**

Source: Primary data analysis

Based on Table 2, the largest operational cost is for the purchase of raw materials for pig and chicken feed. This is related to the target for pig and chicken feed production and the high average price of these raw materials. The target for pig feed production is 26,324,661.00 kg/year with an average price of pig feed at 7,010.73/kg. Meanwhile, the chicken feed production target is 3,633,300.00 kg/year with an average chicken feed raw material price of 5,926.43/kg. The total variable costs of the pig and chicken feed factory reach Rp. 212,229,187,164.66/year.

Benefits (Bt) of Animal Feed Factory Development

The main benefit of developing an animal feed factory in Tabanan Regency is pig and chicken feed. The benefit is calculated by multiplying the quantity of feed produced by the price of feed. The planned animal feed factory is the largest in Bali, so that the planned production or target benefit is able to meet 50% of the demand for pig and chicken feed in Bali. Table 3 presents the benefits of building an animal feed factory in Tabanan Regency, with a total benefit of IDR 256,459,318,500.00/year.

Table 3. Annual benefits (Bt) of building an animal feed factory in Tabanan Regency

No	Benefit	Production (Kg)	Unit Price (Rp)	Value (Rp)
1	Fig Feed	3.633.300	9.000	32.699.700.000
2	Chicken Feed	26.324.661	8.500	223.759.618.500
	Total			**256.459.318.500**

Source: Primary data analysis

Investment Feasibility of Animal Feed Factory Construction in Tabanan Regency

The feasibility analysis begins with calculating the time value of money to obtain the equal value of cash inflows (Bt) and cash outflows (Ct) by multiplying Bt and Ct by the discount factor (DF 12%). Table 4 presents the feasibility results for the construction of an animal feed factory in Tabanan Regency.

Table 4. Results of Feasibility Analysis for the Investment in the Construction of an Animal Feed Factory in Tabanan Regency

Criteria	Value	Feasibility Indicator	Result
NPV	Rp. -139.068.388,502	NPV < 0	Unfit
Net B/C	0,5087	Net B/C < 1	Unfit
IRR	6,66%	IRR < DF	Unfit
Payback Periode	10.841Tahun		Unfit

Source: Primary data analysis

Based on Table 4. NPV Rp –139,068,388.502 (NPV < 0). This NPV value indicates that the construction of a feed mill is not profitable, or that the average net profit from RMU management per year is Rp -13,906,838,850.2 Based on the NPV investment criteria, this business is not feasible because it is not profitable ("no go"). Net B/C is the ratio between the net benefits that benefit the business and the net benefits that harm the business. A Net B/C value of 0.5087 indicates the efficiency of investment costs in the construction of the animal feed factory; an investment of Rp 1,000 will yield a return of Rp 508.7. A Net B/C value less than one means that the investment in the construction of the animal feed factory generates benefits that are smaller than the costs incurred, or it can be said that the investment in the construction of the animal feed factory is not profitable. Based on the Net B/C analysis, the investment in the construction of the animal feed factory is not feasible to proceed with ("no go") (Mukarrom et al., 2022).

IRR analysis is used to determine the extent to which the livestock feed mill construction project can generate profits from the investment made. IRR shows the interest rate generated from the livestock feed mill construction investment as a percentage. Feasibility criteria are determined by comparing the IRR value with the interest rate used. Based on the IRR analysis results, the figure obtained is 6.66%, meaning that the internal rate of return on the investment in the animal feed factory construction is 6.66%. The IRR value obtained is lower than the interest rate used, which is 12%, so the construction of the animal feed factory is not profitable and not feasible to implement ("no go").

The results of the study obtained a payback period value of 10.841 years, which indicates a payback period value that is greater than the economic life. This also shows that the investment return period for the construction of a feed mill is 10 years, 8 months, 4 weeks, and 1 day, which is longer than the economic life of the feed mill construction business, making the feed mill construction business unfeasible. "No go."

Feasibility of the construction of a feed mill by Perumda Dharma Santhika as the manager

Perumda Dharma Santhika as the manager, so that the buildings and infrastructure are owned by the Tabanan Regency Government and are not counted as investment costs. Only the animal feed factory machinery is counted as investment costs. The annual costs will be lower because they are not burdened with building and infrastructure depreciation costs; the only depreciation costs taken into account are machinery depreciation costs (Yang & Zeng, 2025). Meanwhile, the amount of pig and chicken feed produced remains the same. The feasibility analysis results are presented in Table 5.

Table 5. Results of Feasibility Analysis for the Investment in the Construction of a Feed Mill by Perumda Dharma Santika Tabanan

Criteria	Value	Feasibility Indicator	Result
NPV	Rp. 70.806.611.498	NPV > 0	Suitable
Net B/C	1,9671	Net B/C > 1	Suitable
IRR	32,93 %	IRR > DF	Suitable
Payback Periode	3, 00 tahun		Suitable

Source: Primary data analysis

Based on Table 5, the NPV of Rp. 70,806,611,498 is greater than zero, meaning that the construction of the animal feed factory is profitable. Similarly, the Net B/C of 1.9671 is greater than one, meaning that the use of costs is efficient. The IRR of 32.93% is greater than the discount factor of 12%, meaning that the construction of the animal feed factory is capable of generating a 32.93% return on investment. The payback period is 3.00 years, meaning that the investment will be recovered within the economic life of 3 years, 0 months, and 0 weeks. Based on these criteria, the construction of the RMU is feasible and should proceed. The analysis results show that the financial feasibility of the project is greatly influenced by the ownership structure and the allocation of initial investment costs. Several studies indicate that the involvement of local governments or regionally owned enterprises (BUMD) in strategic agribusiness projects can improve financial feasibility through reduced fixed costs and increased operational efficiency (Akbar et al., 2025; Wibowo, 2020). Public ownership schemes also allow for the optimization of broader socio-economic benefits compared to purely private investment (Todaro, 2020).

Environmental Aspects

The animal feed mill development plan will be carried out in Timpag Village, Kerambitan District, Tabanan Regency, Bali Province, with geographical coordinates -8.504275° S and 115.084326° E. The location is accessible via a ±6-meter-wide road, which is adequate for operational vehicle traffic. There are two alternative locations being considered, with a distance of approximately 200 m between them. Figure 2 shows the location of the two alternative locations for the animal feed factory on Google Earth.

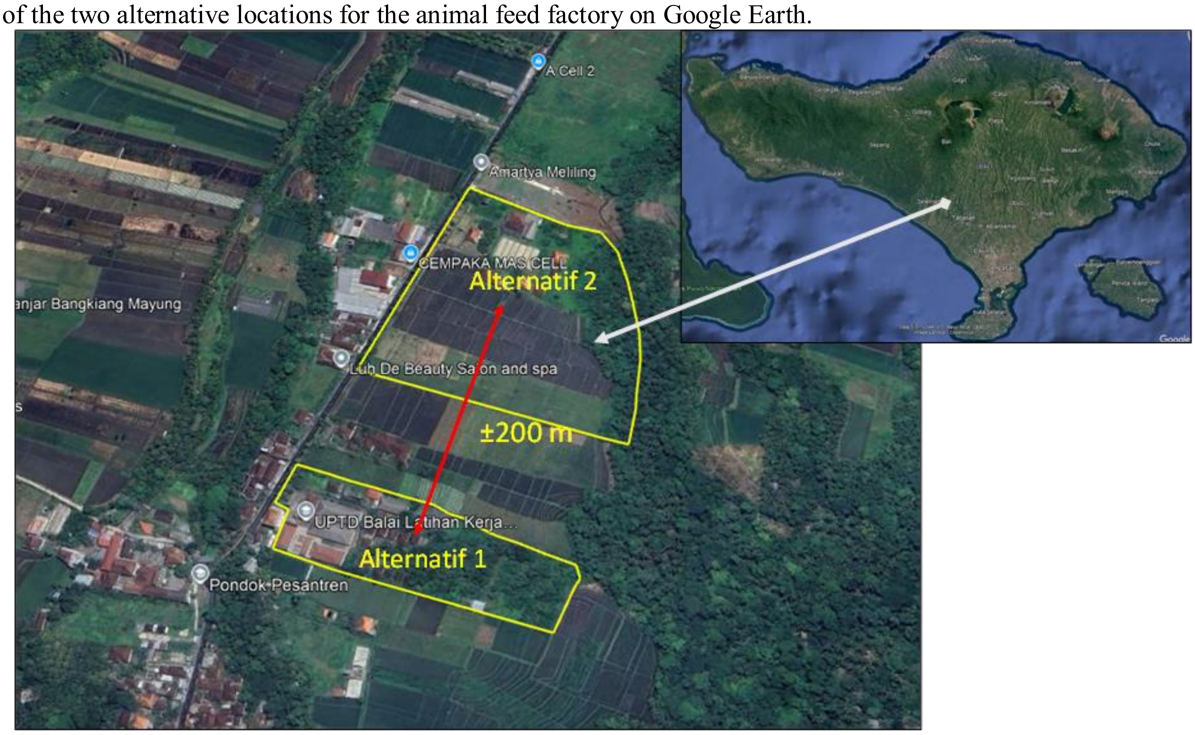

Figure 2
Alternative Locations on Google Earth Map

Animal feed industry activities have the potential to cause environmental impacts in the form of particulate dust emissions, liquid waste, noise, and increased traffic. However, various studies show that these impacts can be effectively managed through the implementation of an integrated environmental management system and appropriate pollution control technologies (Azapagic, 2004; Boggia & Cortina, 2010). A Life Cycle Assessment (LCA)-based approach is also recommended to assess the overall environmental impact throughout the animal feed production cycle (Cherubini, 2010; Jeroen Guinée, 2016).

Initial Environmental Conditions

The initial environmental conditions at location 1 and location 2 consist of developed land surrounded by rice fields and mixed garden vegetation. Figure 8.2 shows alternative locations with three buffer lines of 50 m, 100 m, and 200 m, respectively. Figure 2 shows that the residential area is located more than 200 meters from the alternative location, except for a few houses across the road in front of the location. At the current location, there are several government buildings, some of which are still in use and some of which are no longer in use. Figure 3 shows some documentation at alternative location 1. Because the location is in an agricultural area, no protected flora and fauna were found at the location. The application of green industry principles through energy efficiency, 3R-based waste management, and sustainable environmental monitoring are important prerequisites for the sustainability of the animal feed industry. The implementation of an ISO 14001-based environmental management system has been proven to improve environmental performance and regulatory compliance in the agro-industry (Azapagic, 2004; ISO, 2015).

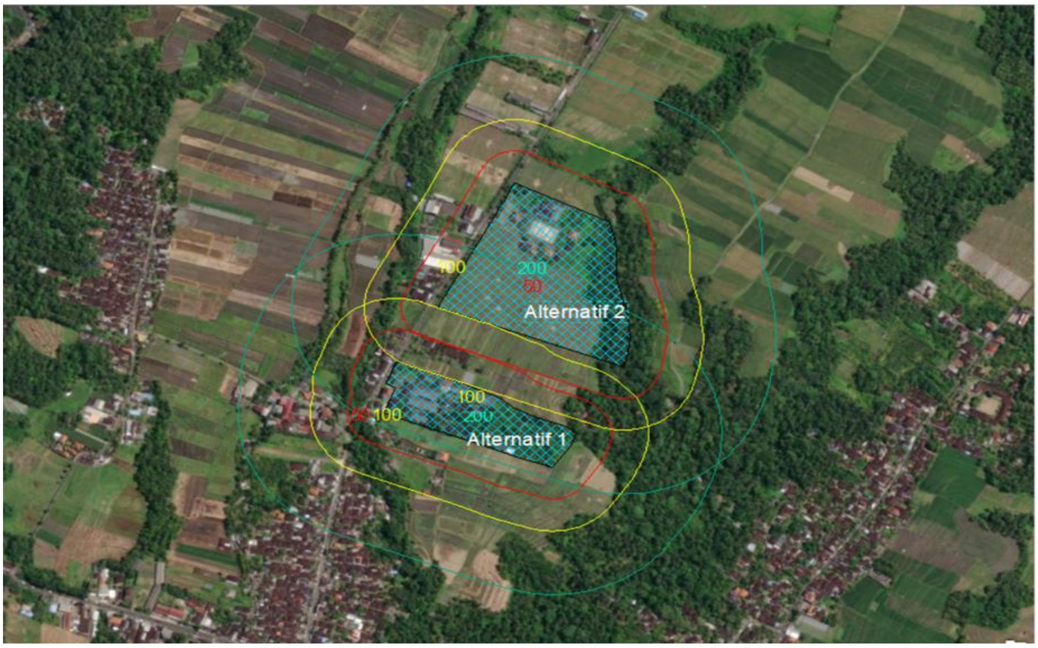

Figure 3
Alternative Locations for Animal Feed Mills with 50m, 100m, and 200m Buffer Zones

Figure 4
Initial Colour at Alternative Location 1

Topography, Morphology, Geology, and Soil Type

Both alternative locations generally have flat to gentle topography, with elevations ranging from 140 to 150 meters above sea level (masl). The slope at the location ranges from 2 to 15% and is classified as gentle morphology. These conditions are ideal for agricultural activities and infrastructure development due to the minimal risk of erosion, landslides, or construction difficulties (Tetteh et al., 2025).

Geologically, this region consists of young alluvial material formed from river deposits and volcanic rock weathering. The soil has a sandy loam texture, with moderate to high permeability. These conditions make the soil fertile and suitable for irrigated rice farming, which is the dominant land use in this region (Akpoti et al., 2022).

Latosol soil is characterized by a predominantly clayey texture, low to moderate permeability, and generally low organic matter content. Latosol is also known to have high aggregate stability, a crumbly to lumpy structure, and can vary from clayey, loamy, to sandy textures. Latosol soil generally does not have strong shear strength. Latosol soil tends to have a loose structure and low organic matter content, which makes it relatively weak in resisting shear forces (Rahmat et al., 2025).

The stable and flat soil structure provides technical advantages in the construction of facilities such as animal feed mills, both in terms of building foundation stability. Table 6 shows the conditions at the alternative locations.

Table 6. Physical Conditions at Both Alternative Locations for Feed Mill Construction

No	Feature	Keterangan
1	Elevation/topography	100-150 mdpl
2	Slope	2-15%
3	Morphology	Gentle slope
4	Geology	Quaternary geology, Contents: Tuff and lahar deposits from Buyan-Beratan and Batur
5	Soil Type	Latosol

Source: Primary data analysis

5. HYDROLOGY AND WATER QUALITY

Hydrologically, the planned location for the feed mill is located near an agricultural irrigation network, which is part of an active rice field irrigation system (Singh, 2015). This water flow is permanent and its existence is important to support agricultural sustainability in the region. For the operational needs of the animal feed factory, water supply can be obtained from two alternative sources: bore wells, which will be constructed if necessary in accordance with groundwater utilization licensing procedures, and PDAM (Regional Water Company), if the network is available and sufficient in terms of water quantity and pressure.

Land Use

Spatially, the planned location for the animal feed factory is in an area dominated by agricultural land use, consisting of actively producing rice fields and low-density rural residential areas. The land to be used for the animal feed factory is owned by the local government and was selected based on the following considerations: accessibility to collector roads, proximity to feed raw material production centers, and minimal impact on densely populated residential areas (Tchonkouang et al., 2024).

Based on a preliminary review of the Tabanan Regency Spatial Plan (RTRW) document, alternative location 1 is in a rural residential zone. Meanwhile, alternative location 2 is partly in an agricultural area and partly in a rural residential zone. Land use suitability is an important prerequisite for development so as not to cause conflicts over space utilization or unwanted environmental impacts. According to the Bali RTRW regulation, the construction of animal feed factories is permitted in rural residential and agricultural zones, provided that they are located outside the LP2B area. Figure 7 is a map of the RTRW.

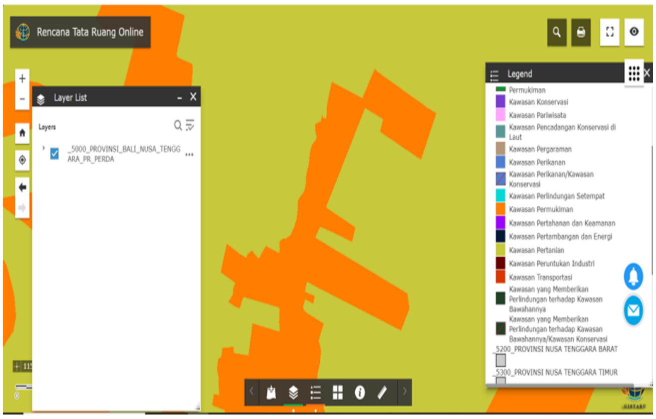

Figure 7

Land Use at the Location According to Tabanan Regency Regulation Number 3 of 2023 concerning the 2023-2043 Tabanan Regency Spatial Plan

Socio-Economics

Timpag Village is known as an agricultural village, where most of the residents work as rice farmers and farm laborers. The main crop is rice, which is intensively cultivated using a technical irrigation system. Meanwhile, Tabanan Regency is a livestock center in Bali, mainly for pigs and chickens. The presence of an animal feed factory in this region is expected to provide significant added value to the broader agricultural supply chain in Tabanan Regency. From a social perspective, this animal feed factory project is not expected to encounter resistance from the community, given that it is located in an environment that is accustomed to agricultural and livestock activities. Community support will be optimized through socialization and the involvement of livestock groups in the planning and operational processes (Prasetyo & Firdauzi, 2023).

Potential Environmental Impact

With its significant production capacity, this animal feed factory has the potential to cause impacts that need to be managed seriously. Figure 8 shows the pollution caused by each stage of production at the animal feed factory.

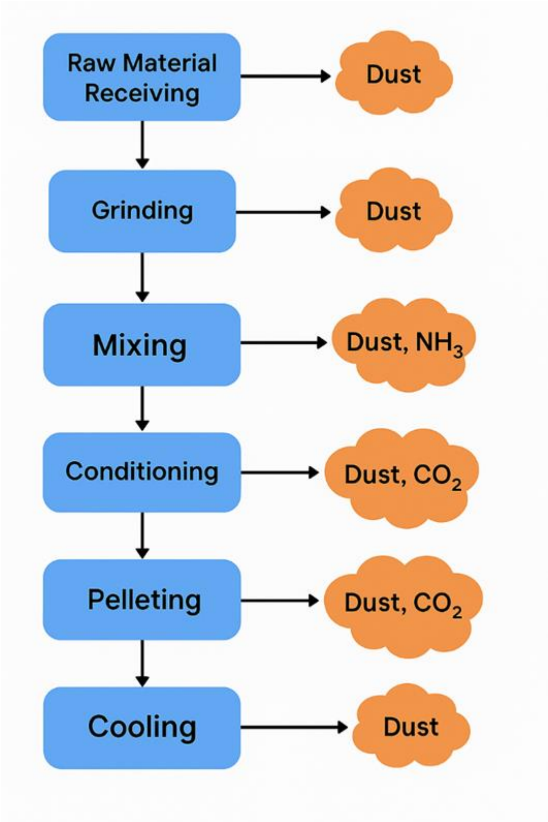

Figure 8
Stages in Animal Feed Production and the Pollution They Cause

Impact on air quality
Particulate Matter (PM): The grinding of raw materials (corn, soybean meal, bran, fish/meat meal), mixing, drying, and packaging will produce large amounts of dust. This dust can interfere with the breathing of workers and the surrounding community, as well as pollute the environment (Kenyatta, 2023). Exhaust Gas: If the factory uses boilers (e.g., for drying or steam production) with fossil fuels or biomass, there will be emissions of gases such as SO2, NOx, CO, and particulates that can contribute to a decline in local air quality. Odor: The processing of raw materials, especially those derived from animals (e.g., fish/meat meal), improper storage of raw materials, and solid and liquid waste can cause unpleasant odors that can potentially spread to residential areas, depending on the prevailing wind direction.

Impact on water quality
Industrial Wastewater: The use of water for equipment washing, cooling, boiler blowdown, and other processes will produce wastewater that potentially contains high suspended solids, organic matter (BOD/COD), nitrogen, phosphorus, and possibly fats/oils. Domestic Wastewater: Waste from sanitation facilities and employee kitchens. Potential Pollution: Disposal of waste without adequate treatment can pollute water bodies (rivers, irrigation), reduce groundwater quality, disrupt aquatic ecosystems, and pose health risks to the community (Mora et al., 2022).

Impact on solid waste management, noise and traffic
Sources: Unused/spilled raw materials, packaging waste, production process waste, and domestic waste. Potential Problems: Accumulation of waste, potential soil and water pollution, attraction of disease vectors (flies, rats), and source of odors if not managed properly. Source: Operation of production machinery (grinders, mixers, conveyors, dryers), vehicles transporting raw materials and finished products, and loading and unloading activities. Large-scale production will increase the level and duration of noise. Potential Impact: Disturbance to the comfort of the surrounding community, communication disruption, and risk of disturbance (Khan & Burdzik, 2025). Source: Increased frequency of trucks transporting raw materials and finished products. Potential Impact: Traffic congestion on village/local roads, road damage due to heavy loads, and increased risk of accidents.

Social, Economic, and Cultural Impacts
Positive Impacts: Job creation for the local community, increased community income, regional economic growth through taxes and levies, and availability of quality animal feed for local farmers. Negative Impacts: Potential changes in land use (from agriculture to industry), social jealousy (if recruitment is not transparent), cultural value shifts due to industrialization, and social conflict if environmental impacts (odors, dust, noise) are not managed properly. The existence of animal feed factories in rural areas has the potential to create an economic multiplier effect through job creation, increased farmer income, and strengthening of the local agribusiness value chain.

The shared value approach to development emphasizes that industrial investment must provide both economic and social benefits to the surrounding community (Ashley & Maxwell, 2001; Porter, 2011). In the context of regional development, agriculture-based processing industries have been shown to contribute to accelerated regional economic growth (Dall'erba & Le Gallo, n.d.).

Environmental Management and Monitoring Efforts
Environmental management and monitoring efforts must be integrated throughout the entire project cycle, from planning and construction to operation and post-operation (Dall'erba & Le Gallo, n.d.). This will be an integral part of the Environmental Management Plan (RKL) and Environmental Monitoring Plan (RPL) documents in the AMDAL study.

Installation of efficient dust collection systems (e.g., bag filters or cyclones) at every dust emission point. Use of boilers with clean combustion technology and equipped with emission control devices (if using boilers), as well as regular monitoring of chimney emissions in accordance with quality standards. Implementation of Good Manufacturing Practices (GMP) to minimize raw material spillage and maintain factory cleanliness. Planting of dense vegetation (trees and plants) around the factory boundaries to absorb dust, reduce noise, and filter odors. Management of odorous raw materials (e.g., fish meal) in enclosed and ventilated areas. Construction of a specially designed and adequate Wastewater Treatment Plant (WWTP) to treat all factory wastewater to meet applicable wastewater quality standards before being discharged into receiving water bodies. Application of the reduce, reuse, recycle (3R) principle in water use to minimize wastewater volume. Regular monitoring of wastewater quality by an accredited laboratory and reporting of results to relevant agencies. Construction of separate drainage channels for rainwater and process wastewater.

6. CONCLUSION AND RECOMMENDATIONS
Based on the results of the technical, financial, and environmental assessment, it can be concluded that the construction of an animal feed factory in Tabanan Regency is feasible to be implemented under the management scheme of Perumda Dharma Santhika. This project has great potential in supporting food security, increasing the added value of agricultural products, and creating new jobs in the agribusiness sector. From a technical perspective, the availability of local raw materials and infrastructure support ensure production continuity. The economic aspect shows significant financial benefits if managed efficiently. Meanwhile, from an environmental perspective, this project can be categorized as safe with the implementation of proper waste management and impact mitigation. The main recommendations are the need for inter-agency synergy, increased human resource capacity, and the application of green industry principles so that the animal feed factory in Tabanan can become a model of sustainable development in the Balinese livestock sector.

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