

Doi: 10.21059/buletinpeternak.v46i3.74113

The Strategy of the Sustainable Livelihoods for Beef Farmers in Bima Regency after the Flood Disaster in April 2021

Kharismafullah*, Siti Azizah, and Agus Budiarto

Faculty of Animal Husbandry, Brawijaya University, Malang, 65145, Indonesia

ABSTRACT

The purpose of this study is to know the sustainable livelihood strategies of beef cattle farmers at the Bima region after the flood disaster. The research method used in this study is descriptive qualitative. The sampling method used the purposive sampling technique on 265 respondents beef cattle farmers in the four research districts and 22 respondents as key informants consisting of the Head of the Livestock and Animal Health Service of Bima Regency, the Head of the West Nusa Tenggara Province (NTB) Forestry Service, the Head of the Bima Regency Agriculture Service, the Head of Technical Implementation Unit (UPT) of Animal Husbandry in the 4 research districts, the Head of agricultural UPT in the 4 sub-districts of the research location, 10 village heads in the 4 sub-districts where the research is located, and the head of the livestock group. Data collection methods consisted of field observations, structured interviews using questionnaires, in-depth interviews using snowball sampling techniques, and secondary data accessed at Bank Negara Indonesia (BNI) Bima Branch. The research location consists of 4 districts, among others: the Districts of Bolo, Madapangga, Woha, and Monta. The research location was selected based on the sub-districts that were worst affected by the floods. Primary data collection methods are observation and interviews while the secondary data collection method is by accessing the Department of Animal Husbandry and Animal Health in the Bima region and BNI. Data analysis using descriptive qualitative. The results of the research on sustainable livelihood strategies for beef cattle farmers to respond to flood disaster vulnerability are by implementing a strategy of utilizing available resource assets around the location of the livestock business which consists of human resource assets, natural resources, economic resources, physical resources and natural resources, power, social resources.

Keywords: Beef, Livelihoods strategies, Sustainability livelihood framework

Article history

Submitted: 14 April 2022
Accepted: 15 July 2022

* Corresponding author:
Telp. +62 823 4087 1285
E-mail: harismafullah@gmail.com

Introduction

The flood disaster that hit Bima Regency, West Nusa Tenggara (NTB) in April 2021 caused the community to suffer both material and non-material losses. Many public and social facilities have been damaged including 49 educational facilities, 29 health facilities, and 25 worship facilities. Then, 4 bridges broke and 29 other public facilities. Besides, there are 46 irrigation units, 9,563 families of clean water networks, 350 hectares of agricultural land, 1,158 hectares of fish ponds, and 8,240 cattle washed away by the flood (Regional Disaster Management Agency of Bima district (BPBD), 2021).

Whereas for residential damage, the Regional Disaster Management Agency (BPBD) recorded that 5,333 housing units in Bima were damaged. With details, 380 units were heavily damaged, 2,176 were moderately damaged, and 2,777 were lightly damaged. Furthermore, it was explained that the losses due to flash floods that

hit Bima Regency reached 680.569 billion. For house damage, the loss is estimated at 143.126 billion, damage to infrastructure in the field of clan development at 69.075 billion, and damage to irrigation at 68.750 billion. Then, damage to educational facilities, losses estimated at 68.750 billion, damage to health facilities at 4.601 billion, and other public facilities at 2.045 billion. Furthermore, the loss of cattle for residents affected by the flood was estimated at 1.037 billion, damage to ponds was 49.062 billion, damage to agricultural land was estimated at 651.80 billion and damage to water facilities was estimated at 28.688 billion.

The flood disaster experienced by the beef cattle farmers in Bima Regency has an impact on losses, which require farmers to rebuild their long-held businesses. In the process of developing farmer businesses affected by the flood disaster, they need capital access from the government and financial institutions as additional capital. Pavilawati (2020) and Meliani (2009) stated that

the adjustment of capital assistance programs from the government and financial institutions is one of the solutions in seeking the restoration and sustainability of farmers' businesses in the beef cattle sector. Besides the capital assistance from the government and other financial institutions, naturally available assets are also a determinant of business sustainability after a disaster. Naturally available assets also become a determinant for the sustainability of the post-disaster business. Hapsoro and Buchori (2017) stated that to anticipate the susceptibility of the community, utilize 5 (five) resources, namely human resources, natural resources, financial resources, physical resources, and social resources as capital to anticipate susceptibility and capital for the sustainability of a post-disaster business.

The beef cattle farming business in Bima Regency is still conducted by the citizens whose main occupation is as farmers, which categorize as a rural community whose has common characteristics in business, namely: a) people's skills are low, b) the business capital is low, c) superior seeds aren't used yet, d) low livestock productivity, e) the use of rations that have not been good in the use of rations, f) small business scale, g) no need to apply for a business license, h) raising livestock is still traditional, i) workers still use their labor and other family members, and j) feed sources still rely on surrounding resources scattered on agricultural land, both grass and agricultural straw (Ikhsanuddin, 2017). The application of sustainable living in disaster-prone communities according to Hapsoro and Buchori (2017) can be seen from 4 (four) aspects which include: 1) the understanding of communication and susceptibility management and risk perception of local communities regarding susceptibilities and risks that threaten their lives, 2) maximize the benefits of the community from the environment without increasing its susceptibility during periods of inactivity, 3) managing crises when natural disasters occur and 4) managing reconstruction and resettlement after the crisis period. According previous research Andarwati *et al.* (2017) and Syamsu and Hasanuddin (2020) in their research on the livelihood strategies of post-disaster cattle farmers on the slopes of Mount Merapi where farmers choose livelihood strategies as a reference in maintaining their cattle farming business, further explained from the 9 livelihood strategies of farmer communities on the slopes of Mount Merapi, farmers use social assets as a combination to maintain a cattle farming business, a reasonable combination of livelihoods chosen by farmers are as follows: 1) Use of monetary or economic resources, physical and social assets by following the bull business, 2) Combination of use of physical and social resources, social access and business expansion, use of social access, use of equal assistance and social access, utilization of water resources and social capital, 3) Combination of variables with utilization

of social and monetary access, use of resources and monetary access only as utilization of downtime, use of social capital, and expand livestock business, and 4) The combination of using monetary resources, physical assets and regular with raising livestock is probably the most chosen strategy by farmers, with the largest total value (27.64%). This study formulates steps that can be taken by farmers to avoid risks that can occur during the rainy season so that beef cattle farming in Bima Regency can continue and vulnerabilities can be anticipated early on. The main problem in this research is the selection of a sustainable livelihood path for beef cattle farmers in the Bima Regency after the flood disaster in April 2021.

Materials and Methods

The study was conducted on beef cattle farmers in Bolo District, Madapangga District, Woha District and Monta District, Bima District, NTB. The research was carried out from September to November 2021. The location of the research was chosen based on the location that was most severely affected by the flood disaster and had a beef cattle farming business.

The research method used is descriptive qualitative with structured interview techniques using questionnaires and in-depth interviews to uncover, identify, select and take samples in a network that is chained or connected continuously (Sebastian *et al.*, 2007). The questionnaire contains questions to respondents who have been prepared to obtain objective information about the vulnerabilities faced by beef cattle farmers, to find out the availability of asset resources to support the beef cattle business and strategies for sustainability of the beef cattle farming business after the flood disaster. Data analysis using descriptive qualitative.

Research methods

This study uses a qualitative method. The descriptive quantitative method aims to analyze vulnerabilities and formulate livelihood strategies for beef cattle farmers affected by flooding in 4 sub-districts consisting Bolo District, Madapangga District, Woha District, and Monta District, Bima District.

Variables, resource persons, data collection techniques, and data analysis techniques

The variables used are referring to the Sustainability Livelihood Framework (SLF) theory (DFID, 1999) covering Human Resources, Natural Resources, Financial Resources, Physical Resources, and Social Resources. From these variables, it can be analyzed the vulnerability faced by beef cattle farmers so that a livelihood strategy for beef cattle farmers can be formulated in 4 districts affected by the flood disaster.

The interviewees in the study consisted of 265 beef cattle breeders in 4 sub-districts of the research location with a sampling technique using

purposive sampling and 22 key informants consisting of the Head of the Livestock and Animal Health Service of Bima Regency, the Head of the Forestry Service of NTB, Head of the Agriculture Service of Bima Regency, Head of Animal Husbandry Technical Implementation Unit (UPT) of Animal Husbandry in 4 sub-districts of the research location, Head of Agricultural UPT in 4 sub-districts of research location, 10 Village Heads in 4 Sub-districts where the research is located and Head of Livestock group.

The data collection techniques used were field observations, documentation, document studies, and structured interviews using questionnaires and in-depth interviews techniques to uncover, identify, select and take samples in a chain network or connected continuously (Sebastian *et al.*, 2007). The questionnaire contains questions to respondents who have been prepared to obtain objective information about the vulnerabilities faced by beef cattle farmers, to find out the availability of asset resources to support the beef cattle business and strategies for sustainability of the beef cattle farming business after the flood disaster. The data collection technique used is secondary data obtained from Bank Negara Indonesia (BNI) Bima Branch related to capital assistance for beef cattle farmers at the research site. Then the researcher processes the data obtained, gives meaning to the discussion, categorizes the vulnerabilities faced by beef cattle farms after the flood disaster, and formulates a strategy for the sustainability of the beef cattle farming business. Data analysis using qualitative descriptive analysis.

Results and Discussion

The availability of beef cattle –farmers assets after the flood disaster in Bima District

Human resources or human capital.

Resource assets or *human capital* is an asset that occupies the top position where humans are the most dominant subject in carrying out activities, human resource asset capital also shows a person's ability to obtain and utilize the foremost access in life and business (Pavilawati *et al.*, 2020). The results of the study are as shown in Table 1, the age of farmers in the research location is 51 - 60 years 25%, 41 - 50 years 50%, 30 - 40 years 16%, and <30 years 9% of 265 respondents. With the existence of human resources under 50 years of productive age, beef cattle farming in Bima Regency can continue and can absorb innovation and the beef cattle business will continue to grow. Kodoati *et al.* (2016) stated that the productive age of farmers ranges from 30 to 50 years. The age of the breeder is an important factor in increasing the innovation and development of the livestock business. Productivity is very important as business progress because productive age in running a livestock business will have a good impact on taking productive steps for business

progress in the field of beef cattle farming (Prawira *et al.*, 2015).

The formal education of breeders in the research location is very low, as many as 96 people 36% did not finish school, 67 people 25% graduated from elementary school (SD), 93 people 35% graduated from junior high school (SMP) and 9 people 3% graduated from high school (SMA) as in Table 1. Formal education of business actors in the livestock sector will increase the motivation and insight of farmers in analyzing events that occur in the livestock business. Education aims to change the mindset, and behavior of farmers and the way farmers increase the productivity of livestock business (Prawira *et al.*, 2015). As the results of observations made by researchers, low education, and limited knowledge, not many breeders can innovate in their livestock business.

Livestock experience can be an indicator of business success in the livestock sector, the more experience the breeder has, the better decision-making in the production process (Prawira *et al.*, 2015). Breeders in 4 (four) sub-districts where the research location has experience Less than 5 years 22%, 6 years to 7 years 39%, 8 years to 10 years 27%, 11 years to 14 years 9%, and 15 years 4% of the 265 respondents. Respondents were obtained from the results of the interviews. Farmers at the research site have sufficient experience in raising livestock. The criteria for having breeders at the research location are beef cattle farming is a hereditary business and the age of the breeder who has been in the cattle farming business for a long time, so that with this capital the breeder can continue the beef cattle business.

Natural resources or natural capital

Resources or *natural capital* are assets that are naturally available that can produce carrying capacity and benefits that can be used by the community to build sustainable livelihoods and deal with vulnerabilities that can disrupt the sustainability of a business (Pavilawati, 2020). The results of the research on the availability of water as a supporting resource for beef cattle farming are still quite well available, as shown in Table 3, the water used by farmers is available from wells and dams. Kodoati *et al.* (2016) stated that the availability of water will facilitate livestock business in an area, and that water is needed as a source of production activities to minimize production costs incurred by farmers.

Forage and straw feed sources can be accessed throughout the year by farmers in 4 (four) sub-districts of the research location. The area of rice fields and corn fields owned by the community in Bima Regency after the flood disaster can be used by farmers to access animal feed sources. BPS (The Central Bureau of Statistics) of Bima Regency (2021) reports that the area of paddy fields in Bolo Subdistrict is 2,178 ha, Madapangga Subdistrict is 5,432 ha, Woha District is 3,573.74 ha and Monta

Table 1. Human resource assets in Bolo Sub-district, Madapangga Sub-district, Woha District and Monta District, Bima District

| Description | Category | Respondent | Presentation | Description |
|--|----------|---------------------------------|--------------|-------------|
| Farmer's Age | 1 | ≥ 61years | 0 | 0% |
| | 2 | 51 - 60 years | 67 | 25% |
| | 3 | 41 - 50 years | 132 | 50% |
| | 4 | 30 - 40 years | 43 | 16% |
| | 5 | < 30 years | 23 | 9% |
| Achievement of Formal Education for Breeders | 1 | Not completed in primary school | 96 | 36% |
| | 2 | Graduated primary school | 67 | 25% |
| | 3 | Graduated Middle School | 93 | 35% |
| | 4 | Graduated high school | 9 | 3% |
| | 5 | Graduated of university | 0 | 0% |
| Livestock Experience | 1 | Less than 5 years | 57 | 22% |
| | 2 | 6 years to ≤ 7 years | 103 | 39% |
| | 3 | 8 years to ≤ 10 years | 72 | 27% |
| | 4 | 11 years to ≤ 14 years | 23 | 9% |
| | 5 | ≥ 15 years | 10 | 4% |
| Family members involved in raising livestock | 1 | 1 person | 101 | 38% |
| | 2 | 2 people | 134 | 51% |
| | 3 | 3 people | 27 | 10% |
| | 4 | 4 people | 3 | 1% |

Source: Primary data 2021.

Table 2. The support for beef cattle business environment in Bolo District, Madapangga District, Woha District, and Monta District in Bima regency

| Description | Category | Respondent | Presentation | |
|---|----------|---|--------------|------|
| Availability of water for cattle farming | 1 | Enough when it's rainy and dry season | 265 | 100% |
| Availability of forage for cattle feed | 1 | Enough when its rains, Hard when it's dry | 221 | 83% |
| | 2 | Enough when it's raining and dry | 44 | 17% |
| Straw Feed Availability | 1 | The abundant rainy and dry seasons over the years | 265 | 100% |
| Availability of wood as the cage material | 1 | Not available | 233 | 88% |
| | 2 | Available in limited quantities | 32 | 12% |
| Availability of Bamboo as the cage material | 1 | Not available | 251 | 95% |
| | 2 | Available in limited quantities | 14 | 5% |

Source: Primary data, 2021.

Table 3. Sources of water, forage, and straw feed

| Description | Category | Respondent | Presentation | |
|--|----------|--------------------------------------|--------------|-----|
| Source of water for livestock business | 1 | Well | 127 | 48% |
| | 2 | Dam | 138 | 52% |
| Green Feed Source for livestock business | 1 | Ricefield | 93 | 35% |
| | 2 | Rice fields and corn mountain fields | 172 | 65% |
| Straw Feed Source for livestock business | 1 | Ricefield | 54 | 20% |
| | 2 | Rice fields and corn mountain fields | 211 | 80% |

Source: Primary data, 2021.

Subdistrict is 4,043 ha. Meanwhile, the mountainous land area in Bolo Subdistrict is 2,128 ha, Madapangga Subdistrict is 2,860 ha, Woha Subdistrict is 100 ha and Monta Subdistrict is 990 ha. The vast agricultural area, both rice fields, and corn mountain land are very useful as a provider of natural feed for livestock.

Financial or economic resources.

Resources Financial or economic resources which can be called financial capital assets are closely related to capital institutions, both private and government which can be accessed to be used to maintain the continuity of life or business. Capital can be in the form of loans from banks or other lending institutions that can be accessed by the public, savings, deposits, and other assets that can be commercialized or have more economic value (Pavilawati, 2020). Beef cattle breeders in 4 (four) sub-districts where the research is located, on average, have sources of capital, both personal savings and funding loans from financial institutions. 265 or 100% of the respondents of beef cattle farmers received loans from banks in the form of People's Business Credit (KUR) funds. The results of the study in 4 (four) sub-districts of breeders on average have personal savings and

loans from banks as shown in Table 4. The financial sources owned by beef cattle farmers, both from personal savings and capital assistance from banks, are sufficient to support beef cattle farmers in Bima Regency to continue their business and increase their business in the beef cattle sector.

Financial resources in the form of People's Business Credit (KUR) funds from BNI Bima Branch are a collaboration program between the local government of Bima Regency and BNI Bima Branch and breeders in Bima Regency. Access to the capital with a low-interest rate of 2% is intended for breeders in Bima Regency as capital to continue to increase the beef cattle business. Credit assistance reports from the BNI Bima branch of financial institutions, in 2021 breeders in Bima Regency can apply for business loans with a nominal value of 30 million to 50 million. The number of beef cattle breeders who received loans with a nominal value of 30 million was 3,850 beef cattle breeders or 29%, recipients of loans with a nominal value of 40 million were 5,132 beef cattle breeders or 38% and recipients of loans with a nominal value of 50 million were 4,467 beef cattle breeders or 33 % with the total number of

beef cattle farmers who have accessed assistance, namely 13,449 farmers.

Physical resources or physical capital.

Capital assets are basic facilities and facilities that can be used to support the community's livelihood processes, where these physical assets can be interpreted as a set of basic infrastructure that owns production equipment that can produce goods or services (Pavilawati, 2020). Based on the results of the study as shown in Table 6, on average beef cattle farmers in 4 (four) sub-districts have physical assets with the percentage of respondents answering 89% having permanent cages, and 11% of those who do not have permanent cages. The equipment for the cage as a means of production (shovel, bucket, sickle, and water hose) is 100% owned by farmers. Production equipment such as suitcase machines only 5% or 14 breeders own, while 95% do not have suitcase machines. For lawn mowers, the average breeder does not have these physical assets. Where respondents who have lawn mowers are only 1% or breeders of the 265 respondents interviewed. Physical assets in the form of transportation equipment used as a means of transporting feed, on average, breeders have motorbikes, while very few pick-ups have them. The percentage of those who have physical assets in the form of pick-ups is 29% or 78 farmers from 265 respondents who already have a pick-up car as a means of transportation for transporting feed. In addition to physical assets in the form of production equipment, physical assets in the form of forage land are not owned by farmers. 100% of farmers do not own feed

land. The physical resources owned by the breeders are complete enough to support the beef cattle farming business, it's just that the farmers raise awareness to fulfill production tools such as cooper machines to facilitate beef cattle farming business activities.

Social resources or social capital.

Capital or social resources are everything related to cooperation in a community to achieve the goal of a better life, supported by norm values which are the main elements such as trust (mutual trust), community participation, process reciprocity, collective rules in a community and the like (Pavilawati, 2020). The results of the study as shown in Table 7 support the community around the location of the farm is very less where as many as 201 or 76% of the 265 respondents did not support it. The lack of community support around the location of the farm is due to the lack of attention to the cleanliness of the cage. So around the cage area, there is a strong smell because the livestock manure is allowed to accumulate without being cleaned by the breeder. Such conditions resulted in community discomfort which resulted in local community complaints through the village apparatus. Efforts made by the village government to direct farmers to clean the cage area are less noticed by farmers. Socio-political conditions also influence the decision of the village government for the inconvenience of the community with the conditions of the farmer's housing which are less supportive. Binding decisions cannot be carried out properly by the village government due to unhealthy political influences in people's lives. The customary rules

Table 4. Farmers' personal savings in Bolo District, Madapangga District, Woha District, Monta District, Bima Regency

| Description | Category | Respondent | Presentation |
|---|-----------------------------|------------|--------------|
| Independent savings for cattle breeders in the Districts of Bolo, Madapangga, Woha, and Monta | 1 <20 million | 40 | 15% |
| | 2 21 million s/d 30 million | 34 | 13% |
| | 3 31 million s/d 40 million | 52 | 20% |
| | 4 41 million 50 million | 121 | 46% |
| | 5 ≥ 50 million | 18 | 7% |

Source: Primary data, 2021.

Table 5. People's business credit (KUR) Bank Negara Indonesia (BNI) Bima Branch

| District | Nominal | Number of recipients of BNI Kur funds loan recipients |
|---------------------------------------|------------|---|
| Number of recipients of BNI Kur funds | 30 million | 3.850 |
| loan recipients | 40 million | 5.132 |
| | 50 million | 4.467 |
| Total | | 13.449 |

Source: BNI Bima Branch, 2021.

Table 6. Physical resources of farmers in Bolo Sub-district, Madapangga Sub-district, Woha District and Monta District, Bima District

| Description | Category | Respondent | Presentation | |
|---|------------------------------|---------------|--------------|-----|
| Permanent cage | Available | 237 | 89% | |
| | Not Available | 28 | 11% | |
| Cage equipment Shovel, bucket, sickle, and water hose | Available | 265 | 100% | |
| | Not Available | 0 | 0% | |
| | Copper machine or lawn mower | Available | 14 | 5% |
| | | Not Available | 251 | 95% |
| Lawnmower | Available | 3 | 1% | |
| | Not Available | 262 | 99% | |
| Motorcycle | Available | 265 | 100% | |
| | Not Available | 0 | 0% | |
| Pick Up car | Available | 78 | 29% | |
| | Not Available | 187 | 71% | |
| Animal feed land | Available | 0 | 0% | |
| | Not Available | 265 | 100% | |

Source: Primary data 2021.

Table 7. Social capital of beef cattle farmers in Bolo District, Madapangga District, Woha District, Monta District, Bima District

| Description | | Category | Respondents | Presentation |
|---|---|---|-------------|--------------|
| Support of the community around the farm location | 1 | Not Supporting | 201 | 76% |
| | 2 | Supporting | 64 | 24% |
| Livestock group at the farm location | 1 | Yes | 265 | 100% |
| | 2 | None | 0 | 0% |
| Joining the livestock group | 1 | Yes | 265 | 100% |
| | 2 | No | 0 | 0% |
| Form an institution or farmer-livestock group | 1 | Ordinary community | 67 | 25% |
| | 2 | Form a farmer-livestock group | 198 | 75% |
| Achievement of group goals | 1 | The goal achieved is only collective delivery of livestock when sold outside the area | 265 | 100% |
| Group meeting | 1 | Meet once a month when health workers go to the farm location | 67 | 25% |
| | 2 | Meet once a year during the process of selling livestock to Jakarta and Kalimantan | 198 | 75% |
| Relationships between farmer groups | 1 | Rarely conflicts | 265 | 100% |
| Get involved in a forest reforestation program | 1 | Yes | 254 | 96% |
| | 2 | No | 11 | 4% |
| Participate in the government program to evacuate livestock during the rainy season | 1 | Releasing livestock in Doroncanga Tambora District | 178 | 67% |
| | 2 | Meng evacuate livestock when it rains in hilly areas provided by the village government | 87 | 33% |
| Utilization of social media | 1 | Do not have social media | 44 | 17% |
| | 2 | Used to buy livestock seeds and sell livestock | 221 | 83% |

Source: Primary data 2021.

mutually agreed upon by elements of the community and the village government are to always clean the cattle pen area so as not to disturb the surrounding community and it is agreed that if they cannot keep the cage clean, the breeder is required to raise livestock on land that has been prepared by the village government. Such an agreement did not work optimally due to the lack of social sensitivity of the farmers and the lack of firmness from the village government in enforcing the mutually agreed rules.

In general, the results of the study were beef cattle farmers in Bolo District, Madapangga District, Woha District, and Monta District, Bima District, already knew about the existence of livestock groups. There are 100% of farmers who already know about the form of livestock groups. Meanwhile, as many as 100% of breeders have joined the livestock group with 25% of each belonging to the ordinary community and 75% of those who are members of the farmer-livestock group. The condition of farmers who are still members of ordinary communities opens up opportunities for the government and livestock farmer groups to be invited to join the group. Overall, the objectives of the farmer-livestock group have not been realized properly. It's just that the farmer-livestock group facilitates the selectivity of sending livestock to the Jakarta and South Kalimantan areas during the month of qurban or Eid al-Adha. Meanwhile, the meeting of registered breeders in the community and farmer-livestock groups when counseling is held by animal health officers from the UPT of Animal Husbandry in each District and at the time of preparation for sending livestock out of the region. Meanwhile, the relationship between fellow breeders who are members of a community and farmer-livestock groups is very good and conflicts rarely occur.

Socially, farmers at the research site are actively involved in supporting local government programs to restore forest functions by

reforestation of damaged forests due to the conversion of forest functions as corn farming land. The results of the study were that 96% of farmers were involved in forest reforestation social activities. Forest reforestation is a long-term solution that can repair damaged forests to minimize flash floods. As for the temporary solution, farmers use the physical facilities provided by the government to evacuate beef cattle during the rainy season, namely in hilly areas and livestock release areas in Doroncanga, Tambora District to evacuate livestock during the rainy season and release livestock throughout the year. The results of the study 67% of farmers released their livestock during the rainy season in the lar doroncanga area, Tambora District, Bima Regency, and 33% of farmers chose to evacuate their livestock in hilly areas provided by the village government when heavy rains occurred.

Social capital used by farmers is social media which is intended to buy seeds and sell livestock by informing social media. The results of the study were that 83% of farmers used social media Facebook and Whatsapp as a medium for exchanging useful information for the needs and sustainability of livestock business, namely to access seeds on social networks. The social capital of beef cattle farmers in Bima Regency is good enough in terms of awareness to join the livestock group, but community support in the business environment is still very lacking so farmers need to be encouraged to improve the management of cage cleanliness and increase innovation to process livestock waste into compost and biogas.

Sustainability Livelihood Framework (SLF) (DFID, 1999) beef cattle breeders in Bima District after the flood disaster

Vulnerability context. Vulnerability is classified into 3 (three) forms, namely *stocks, trends, and seasonality* (Department for International Development (DFID), 1999). Based

on the results of observations and interviews, the vulnerability faced by beef cattle farmers in Bima District after the flood disaster was Shock susceptibility consisting of a) reduced natural resources (trees and bamboo), b) flash floods, c) communal conflicts, d) livestock diseases (anthrax, brucellosis, and itching); Trends consists of a) lack of support from the community around the location of the farm, b) limited local market so that farmers are forced to sell at relatively cheap prices, c) limited knowledge of breeders about recording, d) politics; and Seasonality namely a) limited sources of livestock seeds due to the shift in community business to the agricultural sector.

Asset livelihoods. Based on the results of interviews and observations conducted at the research site, asset resources that support the sustainability of beef cattle farming in the Bima District after the flood disaster consist of: Human resources or human capital, Natural resources or natural capital, Financial resources or financial capital, Physical resources or physical capital, Social resources or social capital.

Capital is the main capital in the sustainability of livestock business activities. Communities and breeders in Bima Regency are the main elements in forest reforestation activities and other activities that can reduce vulnerability to natural disasters that can harm businesses in the livestock sector. The human capitals that support the livestock business are veterinarians and IB officers. Veterinarians and AI officers can be utilized and accessed by farmers for handling livestock diseases and for breeding livestock by injecting or IB mating. In principle, human capital is capital that is involved as a whole in a series of activities to continue the livestock business which is vulnerable to causing losses in Bima Regency.

Capital that can be used by breeders is natural resources available at locations provided by the village government and livestock grazing locations in Lar doroncanga, Tambora sub-district in the form of feed and water that are naturally available when farmers choose to evacuate their cattle to rainy season to anticipate flash floods.

Capital that can be used by farmers to continue their livestock business after being affected by the flood disaster is utilizing personal savings, assistance from banks, and government assistance in the form of livestock insurance programs. Farmers can use personal savings and financial assistance from Bank Negara Indonesia to buy livestock seeds and broodstock to continue their cattle farming business. In addition, economic capital that can be accessed by farmers to anticipate vulnerability is the livestock insurance program. The livestock insurance program can protect the community's cattle farming business in Bima Regency. The insurance program can provide a sense of security for farmers who release livestock during the rainy season at the Lar Doroncanga location.

Capital that can be utilized by farmers for the sustainability of livestock business after the flood disaster is livestock refuge land and

livestock grazing land that can be accessed by farmers to move livestock during the rainy season. The physical capital provided by the village government and local government is an anticipatory step when in the rainy season flash floods occur which can harm farmers. Support from other physical resources such as Slaughterhouses (RPH) can help farmers to sell livestock so that livestock prices are in line with farmers' expectations.

Capital is an asset that can be used as a support for the sustainability of the beef cattle farming business after the flood disaster in Bima Regency in 2021, namely the involvement of farmers and the community in carrying out forest reforestation to improve the condition of damaged forests due to the conversion of forest land into agricultural land. In addition, breeders also often participate in socialization and training on the manufacture of animal feed, and compost, which is carried out by the UPT of Animal Husbandry and Animal Health at the District level. Another thing that is a social asset for the sustainability of the beef cattle business in Bima Regency is that farmers can use social media and social networks to buy livestock seeds and sell livestock. In addition, social capital that can be utilized by farmers is that livestock groups can become a forum as a forum for interaction and a network of farmers to continue to share information between farmers in terms of market information, information on taking seeds, and other information that can provide welfare for farmers. In addition, livestock groups and social assets, such as a task force consisting of various elements, can be a source of information to anticipate when a conflict occurs in the community which has a wide impact that affects farmers who can harm the livestock business.

Transforming structures and processes

Based on the results of interviews conducted at the research site, *the transforming structures and processes* carried out by the government and breeders in maintaining the sustainability of the cattle farming business after the flood disaster in Bima Regency in 2021 consisted of reforestation, revoking the Annual Tax Payment Letter (SPPT), revoke permits for agricultural activities in locations with a slope above 30 degrees, and limit the amount of subsidized fertilizer to a maximum of 14 sacks or 2 ha of land per farmer; provision of temporary infrastructure to evacuate livestock during the rainy season and livestock grazing land infrastructure; establishment of a joint task force consisting of Babinsa, Babinkantibmas, community leaders, religious leaders and youth leaders in conflict-prone areas; increasing the role of animal health officers (veterinarians) and routine socialization of livestock health management; composting training program; biogas production program; provision of abattoir infrastructure; increasing the role of artificial insemination (IB) officers and socialization to

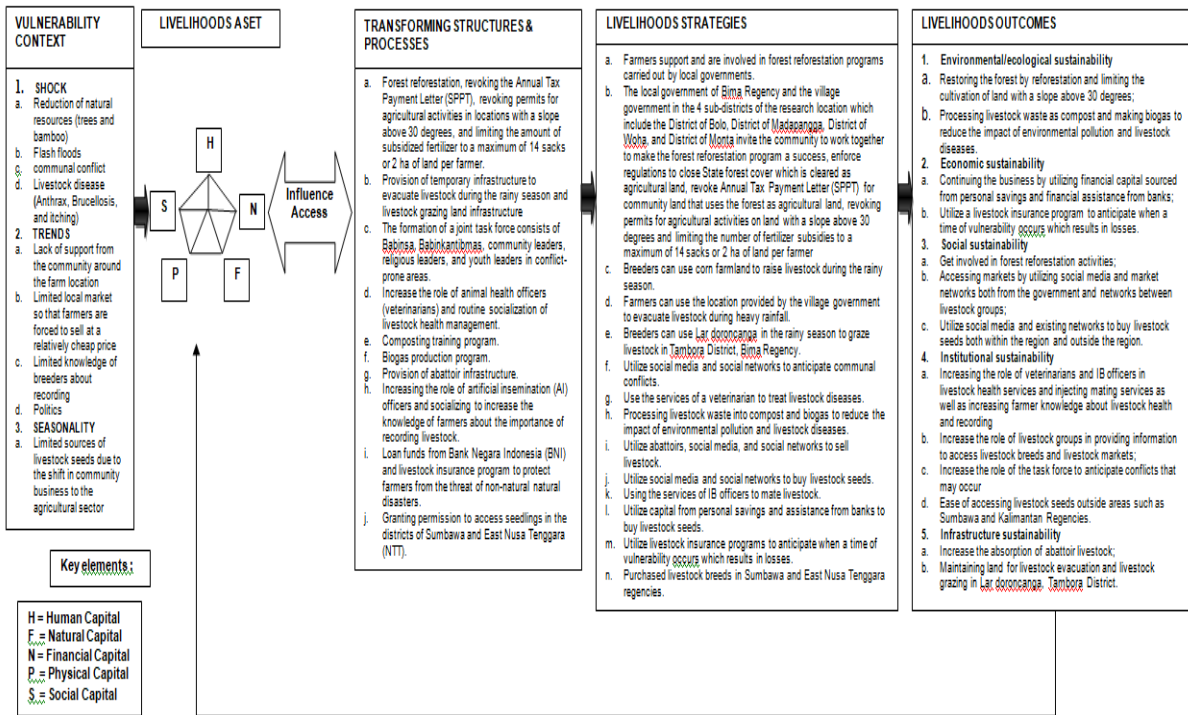


Figure 1. Sustainable Livelihoods Framework (SLF) for beef cattle farmers in Bima District after the 2021 flood disaster.

increase knowledge of farmers about the importance of recording livestock; Loans from BNI and livestock insurance programs to protect farmers from the threat of non-natural natural disasters; and granting permission to access seedlings in the districts of Sumbawa and East Nusa Tenggara (NTT).

Livelihoods strategies

Based on the results of interviews conducted at the research location, beef cattle breeders in Bima Regency can choose livelihoods strategies to continue the beef cattle business after the flood disaster, namely, the farmers support and are involved in the forest reforestation program carried out by the local government, the local government of Bima Regency. and the village government in the 4 sub-districts of the research location which include the Bolo Sub-district, Madapangga Sub-district, Wohu Sub-district, and Monta Sub-district invites the community to work together to make the forest reforestation program a success, enforce regulations to close state-covered forests that are cleared as agricultural land, revoke Annual Tax Payments. (SPPT) community lands that use forests as agricultural land, revoke permits for agricultural activities on land with a slope above 30 degrees and limit the number of fertilizer subsidies to a maximum of 14 sacks or 2 ha of land per farmer, utilize social media and social networks to anticipate communal conflicts, use the services of a veterinarian to treat livestock diseases, convert livestock waste into compost and biogas to reduce the impact of environmental pollution and livestock diseases, utilize abattoirs,

social media and social networks to sell livestock, utilize social media and networks social workers buy livestock seeds, use the services of IB officers to mate livestock, use capital from personal savings and assistance from banks to buy livestock seeds, take advantage of livestock insurance programs to anticipate when a time of vulnerability occurs which results in losses and buy livestock breeds in Sumbawa and Nusa Regencies East Southeast. As for the alternative strategy that can be chosen by farmers to continue their livestock business in the rainy season to avoid flooding, namely, farmers can use corn farmland to raise livestock during the rainy season, farmers can use the location provided by the village government to evacuate livestock when it rains. high, breeders can take advantage of Lar doroncanga in the rainy season to graze livestock in Tambora District, Bima Regency.

Livelihoods outcomes

Outputs resulting from the review of the Sustainable Livelihoods Framework (SLF) on beef cattle farmers after the flood disaster in Bima Regency in 2021 contain outputs 1) environmental/ecological sustainability which consists of a. Restoring the forest by reforestation and limiting the cultivation of land with a slope above 30 degrees, b. Processing livestock waste as compost to reduce the impact of environmental pollution and livestock diseases. The next output is 2) economic sustainability which consists of a. continuing the business by utilizing financial capital sourced from personal savings and financial assistance from banks and b. Utilize a livestock insurance program to anticipate when a

time of vulnerability occurs which results in losses. 3) social sustainability consists of a. taking part in forest reforestation activities, b. access the market by utilizing social media and market networks both from the government and networks between livestock groups and c. utilize social media and existing networks to buy livestock seeds both within the region and outside the region. 4) Institutional sustainability consists of a. increasing the role of veterinarians and IB officers in livestock health services and injecting mating services as well as increasing farmers' knowledge about livestock health and recording, b. increasing the role of livestock groups in providing information to access livestock breeds and livestock markets and c. increasing the role of the task force to anticipate conflicts that may occur and d) Ease of accessing livestock breeds outside the regions such as Sumbawa and Kalimantan Regencies. 5) Infrastructure sustainability consists of a. increasing the absorption of slaughterhouse livestock and b. maintain land for livestock evacuation and livestock grazing in Doroncanga, Tambora District, Bima Regency.

Conclusions

The strategy of sustainable livelihoods for beef cattle farmers after the April 2021 flood disaster in Bima Regency is to implement a strategy of utilizing available resource assets around the location of the livestock business which consists of human resource assets, natural resources, economic resources, physical resources and resource. social resources.

Acknowledgement

This may give an appreciation to my parents who have helped in the research process, moral and material assistance helped us so that our research went smoothly.

References

- Andarwati, S., Rijanta, R. Widiati, and Y. Opatpatanakit. 2017. Strategi Penghidupan Peternak Sapi Perah Di Lereng Selatan Gunungapi Merapi Pasca Erupsi 2010. *Buletin Peternakan* 41: 91. <https://doi.org/10.21059/Buletinpeternak.V41i1.12768>
- Badan Penanggulangan Bencana Daerah (BPBD) Kabupaten Bima. 2021. Dampak Bencana Banjir di Kabupaten Bima Tahun 2021.
- Badan Pusat Statistik (BPS) Kabupaten Bima. 2021. Statistik Daerah Kabupaten Bima tahun 2021. ISSN : 2503-4022; Nomor Publikasi : 52060.5206.
- Bank Negara Indonesia (BNI). 2021. Daftar Penerima Pinjaman Dana Kredit Usaha Rakyat (KUR) di Kabupaten Bima. Cabang Bima.
- Department for International Development (DFID). 1999. *Sustainable Livelihoods* Guidance Sheets. The Department For International Development, Glasgow, United Kingdom.
- Hapsoro, A. W. and I. Buchori. 2017. Kajian kerentanan sosial dan ekonomi terhadap bencana banjir. *Jurnal Teknik PWK* 4: 542–553.
- Ikhsanuddin, M. D. G. 2017. Penentuan konsentrasi optimum selulosa ampas tebu (baggase) dalam pembuatan film bioplastik. Skripsi, Universitas Islam Negeri Alauddin Makassar. pp. 21–22.
- Kodoati, G., P. O. V. Waleleng, J. Lainawa, and D. R. Mokogouw. 2016. Analisis potensi sumberdaya alam, tenaga kerja, pertanian dan perkebunan terhadap pengembangan peternakan sapi potong di Kecamatan Eris Kabupaten Minahasa. *Zootek* 34: 15–26.
- Meliani, D. 2009. Daya dukung lingkungan kecamatan Rasau Jaya berdasarkan ketersediaan dan kebutuhan lahan. *Jurnal Mahasiswa Teknik Lingkungan Untan* 1997: 1–10. jurnal.untan.ac.id/index.php/jmltuntan/article/viewFile/1806/.
- Pavilawati, D. A. 2020. Analisis keberlangsungan usaha pembuatan taoge ditinjau dari sustainable livelihood framework (Studi kasus di Desa Penambangan, Kecamatan Balongbendo, Kabupaten Sidoarjo). Skripsi, Program Studi Ilmu Ekonomi, Fakultas Ekonomi dan Bisnis, Universitas Islam Negeri Sunan Ampel.
- Prawira, H. Y., Muhtaradin, and R. Sutrisna. 2015. Potensi pengembangan peternakan sapi potong di Kecamatan Tanjung Bintang Kabupaten Lampung Selatan. *Jurnal Ilmiah Peternakan Terpadu* 3: 250-255.
- Sebastian, S., J. Lassa, and A. Ramli. 2007. Kerangka Penghidupan Berkelanjutan Sustainable Livelihood Framework. pp.31.
- Syamsu, J. A. and U. Hasanuddin. 2020. Potensi dan Daya Dukung Jerami Padi sebagai Sumber Pakan. ISBN 978-602-70032-5-5. <https://www.researchgate.net/publication/341251468>.