***THE STRATEGY OF THE SUSTAINABLE LIVELIHOODS FOR BEEF FARMERS IN BIMA REGENCY AFTER THE FLOOD DISASTER IN APRIL 2021***

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ABSTRACT

 **Abstract.** The purpose of this study is to know the sustainable livelihood strategies of beef cattle farmers in Bima region after the flood disaster by using the concept of Sustainability Livelihood Framework (SLF). The research method used in this study is descriptive qualitative. The sampling method is purposive sampling and snowball sampling. 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 Bima region and Bank Negara Indonesia (BNI). The result of this livelihoods strategy research for the beef cattle farmers is to respond the vulnerability by participating in forest reforestation. The government awareness to enforce the rules, moving the livestock on corn farm locations, moving livestock in locations provided by village government and in Lar Doroncanga, utilizing social media and social networks to anticipate communal conflicts. Using the services of a veterinarian to treat livestock diseases, process livestock waste into compost and biogas, sell livestock in abattoirs, use social media and social networks to sell livestock seeds, using the services of Artificial Insemination officers (IB). Utilizing of savings and capital assistance from banks to buy livestock seeds, utilizing of the livestock insurance programs to anticipate vulnerabilities and buying livestock breeds in Sumbawa District and East Nusa Tenggara (NTT).

*(Keywords: Livelihoods Strategies, beef, Sustainability Livelihood Framework)*

**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. There are many public and social facilities that have been damaged included 49 educational facilities, 29 health facilities, 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 (BPBD) Bima district, 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 lightly damaged. Furthermore, it was explained that the losses due to flash floods that hit Bima Regency reached 680.569 billion. For house damage, loss is estimated at 143.126 billion, damage to infrastructure in the field of clan development 69.075 billion, damage to irrigation 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 business. In the process of developing farmer businesses affected by the flood disaster, they need capital access from the government and financial institutions as an additional capital. Pavilawati, D. A., (2020) stated that the adjustment of capital assistance programs from the government and financial institutions is one of the solution 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 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 Citizen whose main occupation is as farmers, which categorize of 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 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 own labor and other family members, and j) feed sources still rely on surrounding resources scattered on agricultural land, both grass and agricultural straw. (Ikhsanuddin M., 2017). The application of sustainable living on 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 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. The main problem in this research is the selection of a sustainable livelihood path for beef cattle farmers in 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, West Nusa Tenggara (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 using *snowball sampling techniques* to uncover, identify, select and take samples in a network that is chained or connected continuously (Saragih, 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 beef cattle business and strategies for sustainability of beef cattle farming business after the flood disaster.

**Results and Discussion**

**The Availability of Beef Cattle Breeders 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, DA, 2020). The results of the study were the age of breeders in 4 (four) sub-districts where the research location was 51-60 years old 25%, 41-50 years old 50%, 30-40 years old 16%, and <30 years old 9% of the 265 respondents. Gabriella Kodoati, POV Waleleng, J. Lainawa, (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 innovation and development of 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, HY, et al 2015).

The formal education of farmers in 4 (four) sub-districts is classified as very low, according to the data in table 6. Formal education of business actors in the livestock sector will increase the motivation and insight of farmers in analyzing events that occur in a livestock business. Education aims to change the mindset, behavior of farmers and the way farmers increase the productivity of livestock business (Prawira, HY, et al 2015). 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, HY, 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. Farmers at the research site have sufficient experience in raising livestock, so that after the flood disaster, farmers continue their livestock business by utilizing available capital.

**Natural resources or natural capital**

Resources or *natural capital*  are assets that are naturally available that are able to produce carrying capacity and benefits that can be used by the community in order to build sustainable livelihoods and deal with vulnerabilities that can disrupt the sustainability of a business (Pavilawati, DA, 2020). The results of observations by researchers at the research location, the availability of water as a supporting resource for beef cattle farming is still quite well available. Gabriella Kodoati, POV Waleleng, and J. Lainawa (2016) stated that the availability of water will facilitate livestock business in an area, besides that water is needed as a source of production activities so as 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 availability of feed is supported by the area of ​​rice fields and corn fields owned by the community in Bima Regency. (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 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, is very useful as a provider of natural feed for livestock.

**Financial or economic resources**

Resources Financial or economic resources or can be called financial capital assets are closely related to capital institutions, both private and government which can be accessed to be used in order 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, DA, 2020). Beef cattle breeders in 4 (four) sub-districts where the study is located, on average, have sources of capital, both personal savings and funding loans from financial institutions that can be used as capital for beef cattle farming. The results of the study in 4 (four) sub-districts of breeders on average have personal savings as shown in table 4.

Financial resources in the form of People's Business Credit (KUR) funds from Bank Negara Indonesia (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 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 credit recipients with a nominal value of 30 million was 3,850 farmers or 29%, recipients of loans with a nominal value of 40 million were 5,132 farmers or 38% and recipients of loans with a nominal value of 50 million were 4,467 farmers or 33% for a total of 13,449 breeders.

**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, DA, 2020). Based on the results of the study, 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.

**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, DA, 2020). The results of observations and interviews at the research location, support from the community around the farm location is very lacking. The absence of support from the community around the location of the farm is due to the lack of attention to the cleanliness of the cage. So that 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 on community complaints that are not comfortable with the conditions of the farmers' housing which are not supportive. Binding decisions cannot be carried out properly by the village government due to unhealthy political influences in the midst of people's lives. The customary rules 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. This agreement did not work optimally because of 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.Peternakan of each sub-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 96% of farmers who were involved in forest reforestation social activities. Forest reforestation is a long-term solution that can repair damaged forests so as 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 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 83% of farmers used social media Facebook and Wattsapp as a medium for exchanging useful information for the needs and sustainability of livestock business, namely to access seeds on social networks.

***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*shocks*,*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 susceptibilityconsisting of a) reduced natural resources (trees and bamboo), b) flash floods, c) communal conflicts, d) livestock diseases **(**anthrax, brucellosis and itching); Trendsconsists 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 Seasonalitynamely 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 Bima District after the flood disaster consist of:

a.    Human resources or human 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 capital that supports 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 in order to continue the livestock business which is vulnerable to causing losses in Bima Regency.

b.    Natural resources or natural capital

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.

c.    Financial resources or financial capital

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.

d.   Physical resources or physical capital

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.

e.    Social resources or social capital

Capital as 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 in order 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, compost, which is carried out by the Technical Implementation Unit (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 so that it 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 increase knowledge of farmers about the importance of recording livestock; Loans from Bank Negara Indonesia (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 site, beef cattle farmers in Bima Regency can choose *livelihoods strategies* to continue the beef cattle farming business after the flood disaster, namely supporting and being involved in forest reforestation programs carried out by local governments, local government awareness to the village government to enforce rules and laws to regulate people's lives so that the environment and forest ecology are not damaged, move livestock to corn farms in the rainy season, move livestock to locations provided by the village government during high rainfall, move livestock in Lar doroncanga in the rainy season. rainy season, utilizing social media and social networks to anticipate communal conflicts, using the services of a veterinarian to treat livestock diseases, processing livestock waste into compost and biogas to reduce the impact of environmental pollution and disease livestock, use abattoirs, social media and social networks to sell livestock, use social media and social networks to buy livestock seeds, use the services of IB officers to mate livestock, take advantage of capital from personal savings and assistance from banks to buy livestock seeds, take advantage of the program livestock insurance to anticipate when a time of vulnerability occurs which results in losses, and buying livestock breeds in Sumbawa and East Nusa Tenggara (NTT) Regencies.

**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 which contains 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. continue 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. take 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. increase the absorption of slaughterhouse livestock and b. maintain land for livestock evacuation and for livestock grazing in Doroncanga, Tambora District, Bima Regency.

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Description** | **Category**  | **Respondent** | **Presentation** | **Description** |
| 1 | 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% |
| 2 | 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% |
| 3 | 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% |
| 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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Description** |  | **Category**  | **Respondet** | **Presentation** |
| 1 | Availability of water for cattle farming | 1 | Enough when it's rainy and dry season | 265 | 100% |
| 2 | Availability of forage for cattle feed | 1 | Enough when its rain, Hard when its dry | 221 | 83% |
| 2 | Enough when it's raining and dry | 44 | 17% |
| 3 | Straw Feed Availability | 1 | The abundant of rainy and dry season over the years | 265 | 100% |
| 4 | Availability of wood as cage material | 1 | Not available | 233 | 88% |
| 2 | Available in limited quantities | 32 | 12% |
| 5 | Availability of Bamboo as 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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Description** |  | **Category**  | **Respondet** | **Presentation** |
| 1 | Source of water for livestock business | 1 | Well | 127 | 48% |
| 2 | Dam | 138 | 52% |
| 2 | Green Feed Source for livestock business | 1 | Ricefield | 93 | 35% |
| 2 | Rice fields and corn mountain fields | 172 | 65% |
| 3 | Straw Feed Source for livestock business | 1 | Ricefield | 54 | 20% |
| 2 | Rice fields and corn mountain fields | 211 | 80% |

Source: Primary Data, 2021

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Description** |  | **Category**  | **Respondet** | **Presentation** |
| 1. | Independent savings for cattle breeders in the Districts of Bolo, Madapangga, Woha and Monta | 1 | Sekitar 20 Juta | 40 | 15% |
| 2 | 21 juta s/d 30 juta | 34 | 13% |
| 3 | 31 juta s/d 40 juta | 52 | 20% |
| 4 | 41 juta s/d 50 juta | 121 | 46% |
| 5 | ≥ 50 juta | 18 | 7% |

Source: Primary Data, 2021

Table 5. People's Business Credit (KUR) Bank Negara Indonesia (BNI) Bima Branch

| **No** | **District**  | **Nominal** | **Number of recipients of Bank Negara Indonesia (BNI) Kur funds loan recipients** | **Presentasion** |
| --- | --- | --- | --- | --- |
| 1 | Number of recipients of Bank Negara Indonesia (BNI) Kur funds loan recipients | 30 million | 3.850 | 29% |
| 40 million | 5.132 | 38% |
| 50 million | 4.467 | 33% |
| **Total** | **13.449** | **100%** |

Source: Bank Negara Indonesia (BNI) Bima Branch, 2021

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Description** | **Category**  | **Respondent** | **Presentation** |
| 1 | Permanent cage | Yes  | 237 | 89% |
| Not  | 28 | 11% |
| 2 | Cage equipment | Shovel, bucket, sickle and water hose | There are  | 265 | 100% |
| Nothing  | 0 | 0% |
| Copper machine or lawn mower | There are | 14 | 5% |
| Nothing  | 251 | 95% |
| Lawn mower | Yes  | 3 | 1% |
| Nothing  | 262 | 99% |
| 3 | Motorcycle  | There are  | 265 | 100% |
| Nothing  | 0 | 0% |
| 4 | Pick Up car  | There are | 78 | 29% |
| Nothing  | 187 | 71% |
| 5 | Animal feed land | There are | 0 | 0% |
| Nothing  | 265 | 100% |

Source: Primary Data 2021

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Description** |  | **Category** | **Respondents** | **Presentation** |
| 1 | Support of the community around the farm location | 1 | Not Supporting | 201 | 76% |
| 2 | Supporting | 64 | 24% |
| 2 | Livestock group at the farm location | 1 | Yes | 265 | 100% |
| 2 | None | 0 | 0% |
| 3 | Joining the livestock group | 1 | Yes | 265 | 100% |
| 2 | No | 0 | 0% |
| 4 | Form an institution or farmer-livestock group | 1 | Ordinary community | 67 | 25% |
| 2 | Form a farmer-livestock group | 198 | 75% |
| 5 | Achievement of group goals | 1 | Goal achieved is only collective delivery of livestock when sold outside the area | 265 | 100% |
| 6 | 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% |
| 7 | Relationships between farmer groups | 1 | Rarely conflicts | 265 | 100% |
| 8 | Get involved in forest reforestation program | 1 | Yes | 254 | 96% |
| 2 | No | 11 | 4% |
| 9 | 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% |
| 10 | Utilization of social media | 1 | Do not have social media | 44 | 17% |
| 2 | Used to buy livestock seeds and to sell livestock | 221 | 83% |

Source: Primary Data 2021

**VULNERABILITY CONTEXT**

**1.**     **SHOCK**

a.  Reduction of natural resources (trees and bamboo)

b. Flash floods

c.  communal conflict

d. Livestock disease **(**Anthrax, Brucellosis and itching)

**2.**     **TRENDS**

a.  Lack of support from the community around the farm location

b. Limited local market so that farmers are forced to sell at a relatively cheap price

c.  Limited knowledge of breeders about recording

d. Politics

**3.**     **SEASONALITY**

1. Limited sources of livestock seeds due to the shift in community business to the agricultural sector

**LIVELIHOODS ASET**

**Influence Access**

**TRANSFORMING STRUCTURES & PROCESSES**

**H = Human Capital**

**F = Natural Capital**

**N = Financial Capital**

**P = Physical Capital**

**S = Social Capital**

**Key elements :**

**LIVELIHOODS STRATEGIES**

**LIVELIHOODS OUTCOMES**

**1.**     **Environmental/ecological sustainability**

1. Restoring the forest by reforestation and limiting the cultivation of land with a slope above 30 degrees;
2. Processing livestock waste as compost and making biogas to reduce the impact of environmental pollution and livestock diseases.

**2.**     **Economic sustainability**

a.  Continuing the business by utilizing financial capital sourced from personal savings and financial assistance from banks;

b. Utilize a livestock insurance program to anticipate when a time of vulnerability occurs which results in losses.

**3.**     **Social sustainability**

a.  Get involved in forest reforestation activities;

b. Accessing markets by utilizing social media and market networks both from the government and networks between livestock groups;

c.  Utilize social media and existing networks to buy livestock seeds both within the region and outside the region.

**4.**     **Institutional sustainability**

a.  Increasing the role of veterinarians and IB officers in livestock health services and injecting mating services as well as increasing farmer knowledge about livestock health and recording

b. Increase the role of livestock groups in providing information to access livestock breeds and livestock markets;

c.  Increase the role of the task force to anticipate conflicts that may occur

d. Ease of accessing livestock seeds outside areas such as Sumbawa and Kalimantan Regencies.

**5.**     **Infrastructure sustainability**

1. Increase the absorption of abattoir livestock;
2. Maintaining land for livestock evacuation and for livestock grazing in Lar doroncanga, Tambora District.

**N**

**H**

**F**

**S**

**P**

1. Support and engage in forest reforestation programs carried out by local governments.
2. Local government awareness to village government to enforce rules and laws to regulate people's lives so that the environment and forest ecology are not damaged
3. Moving livestock on corn farm site in rainy season.
4. Move livestock to locations provided by the village government during heavy rainfall.
5. Moving cattle in Lar doroncanga during the rainy season.
6. Utilize social media and social networks to anticipate communal conflicts.
7. Use the services of a veterinarian to treat livestock diseases.
8. Processing livestock waste into compost and biogas to reduce the impact of environmental pollution and livestock diseases.
9. Utilize abattoirs, social media and social networks to sell livestock.
10. Utilize social media and social networks to buy livestock seeds.
11. Using the services of IB officers to mate livestock.
12. Utilize capital from personal savings and assistance from banks to buy livestock seeds.
13. Utilize a livestock insurance program to anticipate when a time of vulnerability occurs which results in losses.
14. Purchased livestock breeds in Sumbawa and East Nusa Tenggara (NTT).
15. Forest reforestation, revoking the Annual Tax Payment Letter (SPPT), revoking permits for agricultural activities in locations with a slope above 30 degrees, and limiting the amount of subsidized fertilizer to a maximum of 14 sacks or 2 ha of land per farmer.
16. Provision of temporary infrastructure to evacuate livestock during the rainy season and livestock grazing land infrastructure
17. The formation of a joint task force consists of Babinsa, Babinkantibmas, community leaders, religious leaders and youth leaders in conflict-prone areas.
18. Increase the role of animal health officers (veterinarians) and routine socialization of livestock health management.
19. Composting training program.
20. Biogas production program.
21. Provision of abattoir infrastructure.
22. Increasing the role of artificial insemination (AI) officers and socializing to increase knowledge of farmers about the importance of recording livestock.
23. Loan funds from Bank Negara Indonesia (BNI) and livestock insurance program to protect farmers from the threat of non-natural natural disasters.
24. Granting permission to access seedlings in the districts of Sumbawa and East Nusa Tenggara (NTT).

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

**Conclusion**

The sustainable livelihood strategies of beef cattle farmers after the flood disaster in April 2021 in Bima Regency were reviewed using *the Sustainable Livelihoods Framework* (SLF), namely a) supporting and being involved in forest reforestation programs carried out by local governments, b) awareness of local governments to village governments to enforce rules and laws to regulate people's lives so that the forest environment and ecology are not damaged, c) move livestock to corn farm locations during the rainy season, d) move livestock to locations provided by the village government during high rainfall, e) move livestock in Lar doroncanga during the rainy season, f) utilize social media and social networks to anticipate communal conflicts, g) use the services of a veterinarian to treat livestock diseases, h) process livestock waste into compost and biogas to reduce the impact of environmental pollution and livestock diseases, i) use slaughterhouses, media social media and social networks to sell livestock, j) use social media and social networks to buy livestock seeds, k) use the services of IB officers to mate livestock, l) take advantage of capital from personal savings and assistance from banks to buy livestock seeds, m) take advantage of programs livestock insurance to anticipate when a time of vulnerability occurs which results in losses, and n) buying livestock breeds in Sumbawa and East Nusa Tenggara (NTT) Regencies.

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**References**

Andarwati, S. Rijanta, R. Widiati, R. & Opatpatanakit, Y. 2017. Strategi Penghidupan Peternak Sapi Perah Di Lereng Selatan Gunungapi Merapi Pasca Erupsi 2010. *Buletin Peternakan*, *41* (1), 91. [Https://Doi.Org/10.21059/Buletinpeternak.V41i1.12768](https://Doi.Org/10.21059/Buletinpeternak.V41i1.12768)

Bank Negara Indonesia (BNI). 2021. Daftar Penerima Pinjaman Dana Kredit Usaha Rakyat (KUR) di Kabupaten Bima.

Badan Penanggulangan Bencana Daerah (BPBD) Kabupaten Bima. 2021. Dampak Bencana Banjir di Kabupaten Bima Tahun 2021.

Badan Pusat Statistik Kabupaten Bima. (2021). Statistik Daerah Kabupaten Bima 2021.Hal. 2

DFID (Department For International Development). 1999. *Sustainable Livelihoods* Guidance Sheets, The Department For International Development, Glasgow, United Kingdom.

Gabriella Kodoati, P.O.V. Waleleng, J. & Lainawa, D. R. M. 2016. Analisis Potensi Sumberdaya Alam, Tenaga Kerja, Pertanian Dan Perkebunan Terhadap Pengembangan Peternakan Sapi Potong di Kecamatan Eris Kabupaten Minahasa. *Jurnal Zootek (“‘Zootek’” Journal*, *34*(July), 1–23.

Hapsoro, A., W. & Buchori, I. 2017. Kajian Kerentanan Sosial Dan Ekonomi Terhadap Bencana Banjir. *Jurnal Teknik Pwk*, *4*(4), 542–553.

Heru Yoga Prawira, M. R. S. 2015. Potensi Pengembangan Peternakan Sapi Potong Di Kecamatan Tanjung Bintang Kabupaten Lampung Selatan. *Jurnal Ilmiah Peternakan Terpadu*, *3* (November), 250–255.

Ikhsanuddin M., D. M. 2017. Universitas Islam Negeri Alauddin Makassar 2017. *Penentuan Konsentrasi Optimum Selulosa Ampas Tebu (Baggase) Dalam Pembuatan Film Bioplastikggase) Dalam Pembuatan Film Bioplastik*, 21–22.

Pavilawati, D., A. 2020. Analisis Keberlangsungan Usaha Pembuatan Taoge Ditinjau Dari *Sustainable Livelihood Framework* (Studi Kasus di Desa Penambangan, Kecamatan Balongbendo, Kabupaten Sidoarjo). *In* *Orphanet Journal Of Rare Diseases* (Vol. 21, Issue 1).

Saragih, S. 2007. Kerangka Penghidupan Berkelanjutan *Sustainable Livelihood Framework*. Hal 31.

Syamsu, J., A. & Hasanuddin, U. (2020). Potensi dan Daya Dukung Jerami Padi Sebagai Sumber Pakan. ISBN 978-602-70032-5-5. <https://www.researchgate.net/publication/341251468>.