CHARACTERIZING LIVELIHOODS AND VULNERABILITY

CARACTERIZACIÓN DE LOS MEDIOS DE VIDA Y VULNERABILIDAD

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ABSTRACT

This study characterizes the livelihood of the rural community of 40 farmers associated to the Credit and Services Cooperative (CCS) from Los Haticos Popular Council by applying a case study. To fulfill this purpose, we applied Semi-structural interviews and empirical and statistical research methods in order to support the work. The analysis of different factors the community has (human, social, physical, financial, natural and political capital), provides elements that serve as guidelines for implementing programs and actions aimed at reducing vulnerability to climate change. Social factor showed the most favorable values with a low degree of vulnerability; developing productive alternatives to weather events is significant.

KEYWORDS: family farming; resilience; weather events

RESUMEN

Se realizó un estudio de caso, de 40 agricultores asociados a la Cooperativa de Créditos y Servicios (CCS) del Consejo Popular Los Haticos para caracterizar los medios de vida de las comunidades rurales donde habitan. Se aplica las entrevistas semiestructurales y el desarrollo del trabajo se apoyó en los métodos empíricos y

estadísticos de investigación. El análisis de los diferentes capitales con los cuales cuenta la comunidad (capital humano, social, físico, financiero, natural y político), aporta elementos que sirven de pautas para implementar programas y acciones orientadas a la reducción de la vulnerabilidad frente al cambio climático. El capital social mostró los valores más favorables con grado de vulnerabilidad bajo; es significativo el desarrollo de alternativas productivas ante eventos climatológicos.

PALABRAS CLAVE: agricultura familiar; resiliencia; sucesos meteorológicos

INTRODUCTION

Climate change imposes challenges for developing countries, but local communities are the most vulnerable. Therefore, they must adopt new approaches that allow them to make decisions in a dynamic and complex stage. Strengthening these communities and increasing the resilience of environmental and socioeconomic systems is imperative to improve the population's quality of life.

One of the objectives of the plans, policies, programs, and projects developed in Cuba is related to developing competencies that favor adaptation to climate change (Concepción et al., 2023).

The capacity of groups or communities to adapt to external social, political, or environmental stresses must go hand in hand with ecological resilience. To be resilient, rural societies must demonstrate the ability to cushion disturbances through agroecological methods adopted and disseminated through self-organization and collective action.

Adaptive capacity is closely related to climate variables, exposure, and sensitivity; together, these elements define vulnerability (Ornelas & Meléndez, 2021). Reducing social vulnerability by expanding and consolidating social networks, both locally and regionally, can help increase the agroecosystem resiliencies.

Quilaqueo (2024) states that a change in current adaptation plans, which considers decision-makers from an intersectoral focus, integrating multiple actors, and addressing the resulting social inequalities, should boost not only political and

economic changes but also social, environmental, and technological changes to current public policy. The vulnerability of farming communities depends on how well-developed its natural and social capital is, which in turn makes farmers and their systems more or less vulnerable to climate disturbances.

Family farming is sensitive to climate change due to its low capacity to invest in preventing the effects of climate variability and recovering after extreme weather events. It is necessary to study this issue because climate has been the main source of risk in agriculture since its inception as a human activity.

The research was conducted in Los Haticos Popular Council Báguanos municipality in Holguin province. Through the use of empirical research methods, it was found that there are producers with farms adopting different forms of land ownership, where climate phenomena have increased, and there have been difficulties in evacuating people and safeguarding crops and animals.

This warrants an analysis of the capitals in order to guide favorable actions in the agroecosystems. Therefore, the objective was determined as follows: to characterize the livelihoods in agroecosystems vulnerable to climate change in Los Haticos Popular Council, Baguanos municipality.

DEVELOPMENT

Los Haticos Popular Council, Baguanos municipality, Holguin province is located west of the municipal capital of Baguanos, founded in 1989. Its name comes from the diminutive of the word "hato," meaning a major or minor livestock portion. It borders the Arcala Popular Council to the east, La Cuaba to the west, Santa Lucia (Rafael Freyre municipality) to the north, and Las Biajacas (Holguin municipality) to the south.

It has a territorial area of 144 km² and a population of 3,743 inhabitants, of which 2,244 are women and 1,499 are men. The average age is 42 years, and ninth grade is the average education level. Agriculture is the main economic activity; but forestry activities, livestock, and backyard poultry are also developed.

The experiment allowed a case study of 40 farmers associated with the CCS (Credit and Service Cooperative) in the Popular Council; it was applied a semi-structured interview; it was conducted an analysis of livelihoods regarding the social, human, physical, financial, natural, and political capitals of the rural communities where farmers and their families live.

The development of the work was supported by empirical and statistical research methods, which are related and explained below.

Empirical and theoretical methods:

Historical-Logical: in the characterization of the agroecosystem in Los Haticos Popular Council, Báguanos municipality.

Analysis-Synthesis: for the search of background information.

Systemic Structural-Functional: in the analysis of the behavior of the structures and functioning of livelihoods.

Hypothetical-Deductive: in the agreement and determination of objectives.

Participatory observation: during agroecosystem bogies to carry out the diagnosis.

Statistical methods:

Descriptive statistics: for information processing.

RESULTS

The research considered the current environmental problems, conditioned by climate change, where vulnerability is high. This leads to the need to increase the adaptive capacity of farming communities and focus on measures to address it.

Therefore, it was carried out a characterization of the livelihoods of the rural communities in Los Haticos, described below, as a result of the analysis of the surveys applied to the farmers.

Human Capital

Regarding human capital, vulnerability is low for responsiveness, and the highest degree of vulnerability is shown for the capacity to protect oneself.

Of the 40 (100%) respondents, they stated they are capable conducted training in the face of natural events such as hurricanes, floods, or droughts; 36% undertook them, and only 22% received training (Figure 1).

Adaptation to climate change means managing risks appropriately through programs or strategies application that protect human beings and their livelihoods.

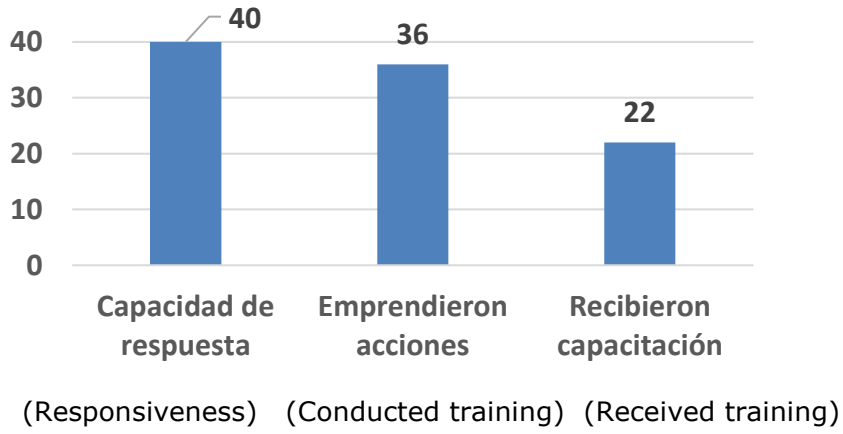

Figure 1. Human Capital. Vulnerability to climate events in Los Haticos community

It is diverse the range of practices that can be used and includes behavioral changes, structural changes, policy-based responses, and technological and management responses. A deep assessment is necessary to determine the adaptation actions to be implemented, as some of them may cause adverse effects.

To understand adaptation, it is necessary to understand the risks to which contemporary society is exposed. Not being fit to face a future full of uncertainties, typical of existence itself and human action, represents a lack of adaptive capacity. Human life and society existence have always depended largely on this process.

A distinction must be made between those risks for which human beings have authority and responsibility and whose prevention is in their hands, and those in which we are merely spectators and can do very little to avoid them.

Sorto (2023) points out that this has to do with risks of human origin; it is like the improper natural resources' exploitation, which can generate risks of natural origin, as a response from nature.

Social Capital

It is accustomed to carry out collective or community work in the locality; 82% of the interviewees stated that they are well organized to solve problems related to hurricanes, floods, or droughts, for the reconstruction of houses and infrastructure, rehabilitation of productive activities (care), participation in community tasks (food preparation and provisioning), house reconstruction, productive activities, community tasks, and coordination (brigades), rescue.

Social capital shows favorable values with a low degree of vulnerability; developing productive alternatives by more than 83.4% in the face of climatological events is significant.

Women and men participate in these activities at a rate of 75%; only 4 (10%) answered that women participate, 4 (10%) answered that men participate, and 2 (5%) answered that no one participates.

Only 22 (55%) of the interviewees report having received support from some political, social, or mass organization or institution; 14 (35%) of the interviewees stated that they only receive support in finances and supplies, and 4 (10%) of them report that they receive no support.

The community has access to information about climate events; 70% indicated they do so through radio, television, and the press. The majority of interviewees (85%) recognize that productive alternatives are implemented to cope with climate events. Reducing social vulnerability through the expansion and consolidation of social

networks, both locally and regionally, can help increase the resilience of agroecosystems. González et al. (2019) state that social resilience is understood as a dynamic and specific process in which protective factors interact, associated with forms of community organization.

According to Rosandiski (2022), reducing social vulnerability requires planning actions, public or articulated by civil society, willing to offer goods and services capable of promoting guaranteed rights, dignified living conditions, emancipation, and autonomy. In this sense, gender relations must be included as a cross-cutting issue in the debate on the impacts, mitigation, and adaptation to climate change, since referring to natural resources and the environment around us also involves understanding social processes, in an integrated manner, that occur in the relationship between nature and human beings (Matos et al., 2023).

Physical Capital

Physical capital has a high vulnerability index regarding infrastructure and its use, showing unfavorable values; which it is explained by the predominance of fragile or dilapidated houses and facilities. Figure 2 shows the percentage of respondents regarding the use given to existing infrastructures during a climatological event in the studied community; all agree that evacuation shelters are the most used.

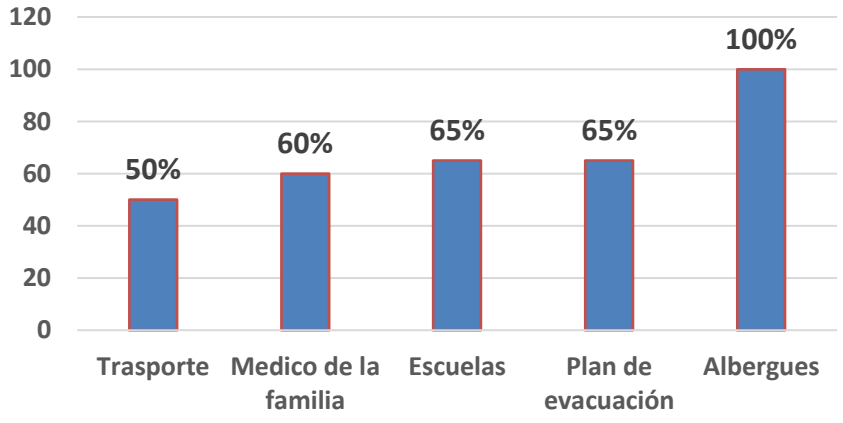

Figure 2. Physical capital use in Los Haticos community

That is why it is vitally important to identify those elements that can turn a particular site into a risk stage for houses or properties that, due to their location, may be affected by the manifestation of a threat and, consequently, are exposed to potential losses (Ramírez et al., 2024).

Financial Capital

As it is seen in Figure 3, 50% of the interviewees indicated agriculture as their main economic activity, followed by small livestock raising (25%), large livestock (20%), forestry (3%), and other productive activities (2%). 70% of the interviewees stated that they have felt a change in their income due to climate impacts; 30% indicated that it did not depend on the economic activity they engage in. Financial capital showed high vulnerability for farmers' income, influenced by damage to crops and animals.

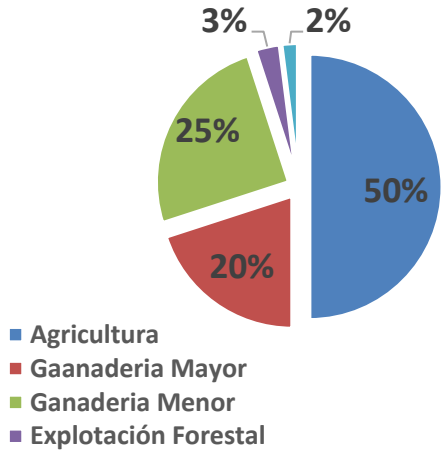

Figure 3. Main economic activities.

Financial capital includes more than cash flow, as it involves available resources such as savings or liquid assets like livestock; as well as pensions, remittances, and other financial transfers.

López-Feldman (2015) points out that one of the necessary conditions is understanding the determinants behind a farmer's decision to adopt or not an adaptation measure, with little research in this regard, besides being a very

complicated field to analyze, as small producers face many potential barriers to adaptation (agricultural insurance, technical assistance, among others).

Carrión & Cisneros (2023) present the climate threats prioritized at the provincial level and then reflect on the competencies by government levels, emphasizing that there is a lack of institutionalized coordination spaces, as well as incongruity in the selection of instruments to guide actions for adaptation and mitigation.

Natural Resource Capital

Natural resources situation has a medium degree of vulnerability, which demands attention. 75% of the respondents indicated that the land resource is highly degraded, and 25% of them said it is regular.

100% of the respondents consider the hydraulic resource to be regular, citing drought and years of land exploitation as the main cause. The biggest changes in the last ten years, according to 100%, are high temperatures and, to a lesser extent, floods; they recognize an increase in hurricane damage.

A large part of the threat of climate change lies in the variation of hydrological cycles and rainfall patterns, the intensity and frequency of extreme climatological events (droughts and floods).

In regions where the social weave has been broken, the challenge will be to rehabilitate social organization and collective strategies in communities, thereby increasing farmers' responsiveness to implement agroecological mechanisms that allow them to resist and/or recover from climate events. Redesigning agroecosystems with agroecological principles lead to systems with desirable properties of socio-ecological resilience (Nicholls & Altieri, 2019).

Salas (2021) states that it is therefore imperative to consider other actors and approaches so that actions against drought and/or extreme rains are completely efficient. Efforts must be made towards a future that adequately addresses the urgent need to establish resilient strategies against climate change.

Political Capital

Political capital shows high values regarding the rating of local authorities' management by the inhabitants and the community relationship with the municipal government, which could improve based on interviewees' proposals, as 91.6% perceive that they are heard, but their proposals are not always acted upon.

Analyzing producers' adaptation measures to climate change is considered one of the most comprehensive approaches for analyzing the sustainability of livelihood strategies and the impact of development initiatives. This facilitates the identification of the effects (positive and negative) of a livelihood on the rest of the capitals and, therefore, on the well-being of households and communities.

Sorto (2023) asseverates that a community becomes politically vulnerable when it does not have the capacity to turn its problem into a focus of attention by local and national authorities, the media, and society in general.

Mitigation action guidelines in Los Haticos Popular Council.

- ✓ Carry out cohesive work among the different actors in the study localities.
- ✓ Conduct an exhaustive study of the agroecosystems that allows people to save resources to intervene with mitigation actions.
- ✓ Deepen the analysis of natural capital and verify whether or not agroecological alternatives are being implemented to mitigate the climate change effects.
- ✓ Socialize findings in different stages involving actors of municipal agricultural development.

CONCLUSIONS

The analysis of the different capitals available to the community (human, social, physical, financial, natural, and political capital), through a case study, provides elements that serve as guidelines for implementing programs and actions aimed at reducing vulnerability to climate change. Social capital showed the most favorable values with a low degree of vulnerability; developing productive alternatives in the face of climatological events is significant.

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