

Formación de capacidades en gestión riesgos, para mitigar los efectos del cambio climático en las comunidades

Capacity building in risk management to mitigate the effects of climate change on communities

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RESUMEN: El presente trabajo tiene como objetivo contribuir la gestión del riesgo y la vulnerabilidad mediante la formación de capacidades en las comunidades cubanas vulnerables a los efectos del cambio climático. Tomando como referentes las ciudades de Cienfuegos y Santi Spiritus. Se asumen la metodología cualitativa como fortaleza de la investigación. El estudio posibilitó la formación de capacidades en gestión de riesgo para mitigar los efectos del cambio climático. El mismo se realiza en conjunto entre docentes universitarias en este caso, la universidad de Santi Spiritus y de Cienfuegos y se expresa en acciones que permiten la preparación y percepción de las comunidades.

Palabras clave: Formación; Gestión; Riesgo; Vulnerabilidad

ABSTRACT: The objective of this work is to contribute to risk and vulnerability management through capacities building in Cuban vulnerable communities to the effects of climate change, taking as referents the cities of Cienfuegos and Santi Spiritus. It is assumed the qualitative methodology as strength of the research. The study made possible the formation of capacities in risk management to mitigate the effects of climate change. It is carried out in collaboration between university professors, in this case the universities of Santi Spiritus and Cienfuegos, and it is expressed in actions that allow the preparation and perception of the communities.

Keywords: Training; Management; Risk; Vulnerability

Introduction

An essential role is played by human behavior in the face of technological, climatological and sociocultural changes that today underpin the projection of the 2030 Agenda; especially because it allows the communities themselves to identify the situation faced by countries, especially coastal

countries, as is the case of the island of Cuba in the face of climate change.

At present, a number of unstable situations are being experienced, due to the variables they face in their daily environment, for example: high temperatures, intense rains and local storms or intense droughts elsewhere in the Cuban geography. Therefore, the attitude to be assumed implies the participation of a necessary social control of the interdisciplinary knowledge generated first of all from a diagnosis, evaluation of perceptions and their relationship with the socio-cultural impact.

This will imply not only receiving the discourse and action of the sociocultural actors of the context, but also achieving commitment to the social appropriation of the knowledge generated, to turn it into a starting point for the new perception and action to prevent, compensate and correct vulnerabilities in the communities.

Capacity building is related to professional and personal improvement, among which are professional improvement in risk and vulnerability management León (2023), Mauricio (2024), these last generation researches that refer to the transfer of learning and innovative and creative knowledge that in turn feedback socio-training and transforming processes.

The objective pursued by the article is to contribute to risk and vulnerability management for the preparation of fragile Cuban communities to the effects of climate change. It is carried out in collaboration between teachers from the University of Santi Spiritus and the University of Cienfuegos.

The effects of climate change are already noticeable, threaten to be generalized, and they are becoming more and more intense. They directly affect the livelihoods of the entire population, the economy, health and food, to cite just a few examples. Rising sea levels, heat waves, severe storms, prolonged droughts, floods, destruction of ecosystems, as well as economic instability and poverty, are increasingly frequent events, and the islands are one of the regions where the negative impact of these events is most strongly felt.

This shows the urgent need to join efforts to face such challenges in a conscious, scientific and collective participation manner. One way to this end are the studies of social perception of danger, vulnerabilities and risks associated with natural events generated by climate change.

These studies are the focus of attention in research, since they are based on the analysis of people's behaviors, needs and interests. The proposal presented here seeks, based on information, knowledge, dialogue, participation and awareness of society in relation to the risks to which the

communities of the South Coast are exposed.

Therefore, risk management studies contribute to reveal the intrinsic nature of human beings, their social conscience and with it the empirical perceptual image they sustain about reality, what they perceive, think and desire, what they know and what they intend to do, their perceptions, representations, beliefs, convictions, needs, motivations, are in essence their spirituality. It is then about exploring the perception of risk and vulnerabilities in the community and from it, understand the way of relating and acting.

Development

In recent years, socio-cultural diagnoses in communities have placed environmental problems at the center of interest of the environmental management program applied to development. Worldwide economic losses related to natural phenomena (geophysical, climatic and hydrometeorological) average US\$170 billion per year according to the United Nations Office for Disaster Risk Reduction (2022). According to Blanco (2021), it should be noted that both rich and poor countries are subject to natural hazards, but most of the 3.3 million deaths over the last 40 years occurred in poor countries. The data, however, may be growing in absolute terms, with earthquakes and storms being the main causes.

According to Eckstein, Kunzel, and Schafer (2021) more than 495 000 people worldwide died due to extreme weather conditions in the last 20 years and damages amounted to about \$ 3450 billion. On the other hand, between 1970 and 2019, that is only 49 years, 11 072 disasters have been attributed to weather, water and climate related hazards, which caused 2.06 million deaths and US\$3.6 trillion in economic losses.

Global population growth has had negative impacts on socioeconomic, natural and urban systems; one of its consequences is permanent exposure to hazard conditions and increased social vulnerability to natural phenomena that increase the risk of disasters, especially in communities near the sea. Therefore, it is necessary to train the population living in communities at risk, which are ultimately the basis for urban planning, as Holguin and Guillemes (2022) point out that disasters are caused by inadequate or non-existent land-use planning.

It is an object of analysis to take into account the steps for risk management such as the identification, analysis, monitoring and evaluation, based on the technological, economic and

sanitary risks brought about by accelerated climate change. In the case of Cuba, these studies have not been sufficient; they have not yet been carried out in the communities and social actors.

In this sense, this study analyzes the results from an alliance between the teachers of the academic institutions of Cienfuegos and Santi Spiritus, because of the liaison between the two provinces along the south coast of the island, in order to build knowledge where students and teachers are active actors in a systematic process of accompaniment and instruction to communities at risk and vulnerability. From the sociocultural theory, the development is explored from the importance of conceptual models that represent the formation of capacities as a tool in the process of construction of risk and vulnerability. Its objective: to contribute to risk and vulnerability management for preparedness in Cuban communities vulnerable to the effects of climate change.

Indeed, climate changes, the decrease of natural resources, confrontations and wars have caused an extensive number of damages around the world. Thus, proposals have been aimed at promoting reforms that call for new technologies that can ensure greater participation of citizens in decision-making and autonomy in the management of socio-cultural development in the territories; deploying a more open, comprehensive and integrating vision of the diversity of factors that concur in sustainability.

At present, the search for models that serve as a reference for change in terms of higher levels of preventive concreteness in decision-making and the need to contribute to the resolution of limitations and inadequacies that still hinder change, whether technological, political or sociocultural, is laudable. Facing this challenge implies recognizing that currently the management of risk and vulnerability prevention, both in the macro and micro-organizational aspects, involves new ways of identifying and managing factors and situations that are specific to citizens. Gómez and Marín (2023) carried out a study on post-pandemic education and enunciated the digital divide facing social groups with greater economic limitations, which we consider an element to be taken into account in this work, since perception is often limited precisely by this economic factor.

To this end, the aim is to control and solve the negative tendencies in which these are manifested, placing them in more favorable positions; at the same time, they can overcome the forms already used and manage from a participatory and dialogic perspective the proposals that allow to manage the situation that these changes generate. Thus, the communicative and participatory strategies should achieve a high level of involvement, as an expression of the change in the actions implied

by the perception of risk and vulnerability; in order to offer possibilities of new responses to the demands of the environment, transforming the scenario in which it takes place.

In this sense, by assuming the sociocultural perspective of Vygotsky cited by Escallón, *et al.* 2019) this analysis of this topic, the interest is focused on the implicit aspects of citizens' actions in the face of risk and vulnerability (norms, values, implicit beliefs and symbolic actions, which shape life and shared meanings) within organizations and communities.

Each person has a frame of reference, assumes and acts in complex situations, so they need to be understood from their formal and informal aspects, which is what Díaz (2023) refers to when he says that reducing social inequalities and ensuring a sustainable and resilient future for all.

In this process, common knowledge and beliefs are transformed into formal knowledge about the world through the creation of new categories in mental models that incorporate existing scientific descriptions, in this way, everyday and scientific concepts are mediated between each other.

Everyday concepts provide the conceptual fabric for the development of scientific concepts and these, in turn, are transformed by being organized into a knowledge system, such a process is part of common knowledge and beliefs are transformed into formal knowledge about the world by creating new categories in mental models that incorporate existing scientific descriptions. However, a risk assessment, which includes the variable climate change, solastalgia as a disease produced by it, as well as corrective management of climate risk, would allow prioritizing interventions to reduce the existing risk condition.

On the other hand, prospective risk management is an input for updating regulations, planning and land organization, with a focus on climate risk reduction and disaster, which facilitates the development of safe and adaptable territories based on the cognitive, cultural and symbolic activity of social groups and the patterns of society-nature interaction that support and guide the management of natural resources.

It is then a matter of knowing the social perceptions of the communities in order to manage prevention with an integral approach (political, educational, and legal) in the communities involved in the study. This will make it possible to broaden the prism of analysis and understand what is happening in a different way, in order to offer comprehensive and sustainable responses. The semi-structured interview was conducted with a group of 35 inhabitants of the communities mentioned, the management of prevention and the perceptions interpreted by understanding the exceptional circumstances, the questionnaire of the cultural and academic level of this population was added,

as another data for the collection of information, age groups and activities performed were taken into account.

People will not adopt or maintain new behaviors if they do not make sense in their daily lives. Vulnerability reduction requires sharing information, establishing conversations between scientific research and traditional knowledge, so that information is widely and equally available, articulating the predictions of academia with what people are seeing daily in their lives and on their land.

In relation to the first set of data and prior to the analysis, joint talks were held with resident students of the areas who are studying at university in different careers, whose knowledge allowed observing the comparative patterns with other communities. The instruments applied showed in the first place - problems with technical equipment - problems to move the population because many still do not want to leave their homes in case of the occurrence of natural phenomena - problems in communication and follow-up -between government and community.

Thus, the work in the communities on risks and vulnerabilities included in this study showed that this process should contain a longer stay and systematicity so that it can facilitate the learning of other members of the communities such as social actors, whose role means competences, skills and aptitudes to improve training processes and of course to deploy the different ways of seeing, thinking, theorizing and conceptualizing hazards, vulnerabilities and risks; as well as to unveil the differences and similarities in the beliefs and ways of thinking and feeling of the actors according to the link (direct or indirect) with the local problem.

In this sense, scientific activity, recognized as a sociocultural production, is of great importance to know to what extent people value its results and effects for social life, allowing a favorable feedback for their development indicators. For this reason, the main beneficiaries of the study will be the socio-cultural actors of the selected communities, as they present higher levels of risk and vulnerability.

In general, there are key ideas to consider as basic references for further research, such as:

- There are hazards of natural, technological and sanitary origin as part of the country's socioeconomic development process, the impact of climate change and the influence of external factors.
- Vulnerability is being exposed to a hazard and its possible harmful consequences. Although in the first place there is the social dimension, i.e. the vulnerability of individuals,

households, groups, etc., it is also possible to speak of the vulnerability of ecosystems or technological systems.

- Risk as a social construction and cultural process is difficult to objectify, since it responds to the way in which each person, from his or her experience and assessment, connotes reality, identity and culture, age and we could add the levels of family care of the individual from an early age. Therefore, from a methodological point of view, the interpretation of risk is multidimensional and the decoding of communication must be flexible.

The social construction of risk associated and even identified directly with the perception of risk from showing how the rational perception of risks is marked by the lack of information and the omission of social contexts in the definition of symbols that allow to identify the risks themselves. Therefore, this process places education and new information and communication technologies to facilitate the access and exchange of information aimed at strengthening the endogenous capacities of the different contexts, on a scientific basis.

It is necessary to highlight the link between social perception and education, so it is urgent the deconstruction of this knowledge from the educational agencies, which is concretized in the programs of promotion and education for health, communication and responsible practices.

- To take advantage of the existing facilities (strategies, programs and budgets) in order to raise awareness and sensitize the inhabitants of the different communities to actively participate in the decision-making processes which, in this sense, require establishing a direct relationship between citizens, institutions and community leaders.
- Organization for the realization of diploma and master's degree work.
- Closeness between social actors and accompaniment in learning.
- The studies on risk and vulnerability should integrate not only the identification and understanding of the problem, but also evaluate and stimulate the resilience capacity from cultural and psychological social indicators (experiences related to customs, habits, culture and neighborhood preference) and with a holistic approach in the establishment of a culture of prevention, safety and sustainability.

The direct or potential beneficiaries of the research are the population and socio-cultural actors (formal and informal leaders, government representatives in the structure of the popular council,

residents). These are important actors in the integrated community work, since they strengthen prevention management not only for the community, but in the community itself, allowing the transformation process to be from the community, that is, dreamed, planned, conducted, executed and evaluated integrally by the community itself.

The results of the study for the period 2023-2024 show that the levels of perception have been increasing with respect to previous trends between a high and treatment associated with the time of the Covid-19 pandemic. The study of risk management as a way of training the population and social actors that allows prevention in communities, the development of protocols for the diagnosis of diseases associated with climate change as the spread of viruses and infectious diseases, also aims to influence environmental management and socio-cultural processes, from science, technology and innovation at the local level from participatory processes and dialogues of knowledge.

The formation of capacities in risk management by the teachers in the communities, increased the level of preparation, corroborated that the level of these perceptions does not occur equally in all the communities. Similarly, considering the differential behavior of the communities, grouped by similarities in their qualifying behavior before the training actions, significant differences can be seen: the most affected have been from the territory of Cienfuegos, which also has more experience in dealing with natural disasters; however, both have been impacted by natural phenomena, have had the presence of viruses and infectious diseases that have been reproduced in a similar way.

Therefore, what is stated by Castellanos *et al.* (2021) should be included in the educational projects, first to contribute to guarantee their good environmental performance, from the influences that the community educational project has, since they are spaces for the development of environmental education because they are the nodes of communication legitimized in the context.

Another variable taken into account after the training is the level of individual behavior, the manifestation of behaviors such as: community actions, decision making and collective organization (to cite some examples) that involve social interaction and are linked to social participation, which is an important part of our study. Of course, framed in the historical-cultural tradition, which emphasizes the importance of personal experience and the relationship with the process of construction of individual knowledge.

The research process is assumed as an alliance between the academic institutions (Carlos R. Rodríguez University and José Martí University of Santi Spiritus) due to the lack of preparation of the population in relation to risk management to mitigate climate change, the same is achieved in a dynamic projection, as a complex, holistic and dialectical totality, which is developed in the context where the acting professor and others involved in the study manage to reach new dimensions and structure of university-community relations, giving rise to a formative systematization.

Conclusions

In the analysis of capacity building in risk management vulnerability to face the effects of climate change in conjunction between the University of Cienfuegos and the University of Medical Sciences and is expressed in actions that allow the preparation and perception of the communities.

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