

The Development of The Rural Community and The Role of The Fishing Cooperative

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Abstract- Rural communities are characterized by taking advantage of natural resources to carry out their economic activities; fishing cooperatives in Mexico emerge as a way of organizing shrimp harvesting and on the other hand represent an instrument to promote local development of the community. The objective of the study was to analyze the development of the rural community of Las Arenitas and the role of the fishing cooperative. The research was conducted with a qualitative approach; Information was collected through semi-structured interviews with managers of fishing cooperatives, complemented by analysis of documents and government reports. The results indicate that Las Arenitas is a rural community where fishing is its way of life and over time is gradually transformed and developed organized fishing through the integration of economic entities with cooperatives, which conform to fishermen Inhabitants of the community; On the other hand, also shows social changes since it improves the school, housing and infrastructure levels of the community. In economic terms, cooperatives had boom times, however in recent years production has been unstable. With the above it is concluded that Las Arenitas from its origin to the present has been developed. The resources available allow fishing to be carried out as the main economic activity capable of detonating local development; the fishermen have been integrated into cooperatives as economic units of production. However, they are currently facing a decline in production, which is an obstacle in the economic development of the community as the main unit of contribution to the community; for that reason it is necessary to promote complementary economic activities to stimulate the development of the locality.

Index Terms: cooperative organization, natural resources, local development, rural community.

I. INTRODUCTION

The rural community is considered a territorial space where its inhabitants share socio-cultural features; Galeana [1996] indicates that it is a microcosm or social unit with a network of constant and close relationships that determine their dynamics, their behavior and shared common problems. On the other hand, Anderson [1994] indicates they can be people, groups, families and organizations that carry out common activities, taking advantage of the natural resources offered by the space, to meet their needs. For Marchioni [1970] the community is a specific territory, with a specific population, that has resources and that have certain demands. In Mexico, from 1970 the population is classified according to the size of locality. Instituto Nacional de Estadística y Geografía (INEGI, 2010) points out that the number of inhabitants that a population has determines whether it is rural or urban; If it has less than 2500 inhabitants it is rural,

whereas the urban one is where more than 2,500 people live. From 1950 to 2010 the population in rural communities decreased from 57% to 22%. While in the state of Sinaloa, in 2010, 27% live in rural community (see table I).

Table I. Inhabitants in rural communities in Mexico and Sinaloa 1950-1990-2010

	México			Sinaloa
	1950	1990	2010	2010
Urban	43%	71%	78%	73%
Rural	57%	29%	22%	27%

From 1950 to 2010 the rural population declined in relative terms from 57.4% to 23.2%, but continues to grow in absolute terms from 14.2 to 26.1 million inhabitants (see Table II). In relation to localities, Instituto Nacional de Estadística y Geografía (INEGI, 2010) indicates that in the year 2000 there were 196,000 communities with less than 2,500 inhabitants with a population of 24.6 million and by 2015 decreased to 188,596 rural localities with 26, 049,769 inhabitants.

Table II. Rural population in Mexico

	Population millions	Growth rate %	Population rural-millions	Rural percentage %
1950	25.8	2.7	14.8	57.4
1990	81.2	2.0	23.2	28.7
2000	97.5	1.9	24.7	25.4
2010	112.3	1.4	26.1	23.2

One of the main characteristics of rural communities is the use of natural resources for the development of their main economic activity. The country has an extension of 11,122 kilometers of coastlines that represent a potential of fish resources for those who live in the zones. In the Americas, in 2009 it ranked fourth (see table III) by volume of fish (1,774 tons) after Peru (6,994), United States (4,710) and Chile (4,703). The largest species are sardine, shrimp, oyster, mojarra and tuna - bonito, bonito and skipjack - (872,640, 196,456, 42,250, 77,009 and 129,420 tons respectively) and those exported are sardines, shrimp, shrimp And yellowfin tuna (INEGI, 2010).

Table III. Main fish producers in the American continent in 2009

	Perú	United States	Chile	Mexico
Litoral Extension Km	2,414	19,924	6,435	11,122
Tonnage fishing volume	6,994	4,710	4,703	1,774

Considering this assumption, each locality or territory is characterized, by a given productive structure, a labor market, a business and technological capacity, a natural

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resources endowment and infrastructure, a social and political system and a tradition and culture, on which The processes of development are articulated.

It is recognized that rural communities not only perform functions of transformation of natural resources, but also develop a complex network of productive and social relationships that allows them to form organizations for personal, family and local development, improving their quality of life; Where state policies exert influence on productive development, infrastructure, education, the environment, among others and at the same time enhances the vision of natural resources management based on environmental protection by favoring a concept that recognizes The reciprocity of the environmental, economic, social and political institutional dimensions. The local focuses on specific development factors, relative to the community or region, considering their characteristics and taking advantage of their environment as a generator of innovation and dynamism [Polèse, 2014].

From an economic perspective, the concept of development refers to a process that exceeds the merely qualitative meaning of economic growth. Economic development, theoretically defined as the increase of a country's production but including qualitative transformations of the economic system, which imply an equitable distribution of income, as well as an improvement in the standard of living of the people that is translated in welfare [Petit, 2013].

Local development can be defined as a developmental trajectory in a given territory that is based on the use of local resources of that territory and that benefits the local population, these resources being activated by the mobilization of local actors [Vargas, 2006].

Fisheries and aquaculture continue to be the fastest growing food-producing activities on a global scale, with a contribution of 150 million tones. In Latin America and the Caribbean, fisheries and aquaculture are of great economic and social importance, employing more than two million people directly. Artisanal fisheries economically and food sustainably support multiple rural communities, where the contribution of fish to animal protein intake exceeds in some cases 80%. Their participation in the agroalimentary labor sector is expected to continue to grow driven by the growth of the aquaculture sector [CEPAL,2013]. Mexico is one of the countries that include fish in its diet, but at the same time it consumes less. This situation is contradictory due to the amount of natural resources that exist in the waters of the seas [Bassols, 2002].

II. METHODOLOGICAL REFERENCES

This research is an analytic descriptive purpose; it was conducted in the fishing community. Las Arenitas, considering the cooperative fishing role as an economic agent, with the purpose of analyzing the resources, materials and infrastructure available to the community and cooperative in order to identify the development of the rural community and the contribution of the fishing cooperative. The study was conducted during the year 2015 in 2016. The research includes qualitative variables. Data collection was addressed to managers of the fishing cooperative. Interviews with people linked to the fishing activity: through the governmental apparatus (National Commission of Aquaculture and Fisheries CONAPESCA) and

representative institutions of the cooperatives (Federation of Cooperative Societies of Fishing Production High and Ensenada of the Pavilion) and the analysis of documents; Fisheries reports, statistical yearbook, scientific articles and theses. Key people from the community and the authority from the community (commissary) and from the city of Culiacan, Sinaloa (Director of Economic Development); likewise direct observation in the community was done. Moreover, the documentary research consisted of the analysis of the internal documents of the cooperative, as well as reports from the city and state government.

III. EMPIRICAL RESULTS

In Mexico, Sinaloa is the state with 622 km of coastline (5.6% of national), 24,187 square kilometers of continental shelf, 272,440 hectares of coastal lagoons, 70,456 hectares of inland water bodies, more than 200,000 hectares of potential for cultivation of shrimp and 11 rivers that bathe the coastal strip and 11 dams. Fishing is developed in 18 lagoon systems. It has a surface of water bodies protected in estuaries, lagoons, marshes and bays where fishery resources such as shrimp, crab, curvina, mojarra, snapper and sea bass are exploited [Gaxiola, 2015].

The fishing activity in the entity represents one of the most important for its economic and social impact in the creation of jobs, food production, foreign exchange generation and regional development factor.

In particular, it has a natural vocation for fishing activity, because of its potential in commercial species. It has conditions to develop a versatile fishing activity with richness in its biodiversity of species, emphasizing in order of importance for the production volumes tuna, shrimp, sardine, scales, crustaceans, molluscs, tilapia and crab.

The state concentrates just over 24% of the national fleet, more than 18% of the processing industry; 53% of the farms producing shrimp; 13% of coastal fishing cooperatives and just over 15% of the national fishing population. In the last 10 years the share of fishing in the State Gross Domestic Product has averaged 1.5%. It occupies the first position in participation in the total value of the national fishing production. Of the \$ 19 913 988 the 24.67% corresponds to the entity, that is to say, \$ 4,912,049 [CONAPESCA, 2013]. This economic activity generates more than 45 thousand direct jobs and a considerable number of indirect jobs in the entity [Castañeda, 2012]. For the development of the fishing activity there are 495 cooperative societies, of which 110 correspond to inland waters, 20 offshore, 281 riverside and 84 aquaculture [Gobierno del estado de Sinaloa, 2010]. In this activity, the human resource that works in the entire production chain is about 35,000 people, who intervene in all phases of the activity, who are based in 154 fishing communities, with a total population of 300,000.

Sinaloa is divided into 18 municipalities, one of which is Culiacan, consisting of 18 unions, of which Eldorado is formed by 22 police stations with a territorial extension of 586,563 km, 23,628 inhabitants and 38 communities. Las Arenitas is located in the Eldorado union, has 1,838 inhabitants, 49.68% are men while 50.32% are women. From its beginnings, in this community, artisanal fishing has been the means of sustenance for its inhabitants and the shrimp is the species of greater economic value for its inhabitants.

For the shrimp harvest in an organized way, it was necessary to transit through several stages. In Mexico, the first Law of Fishing was in 1925, with the purpose of regulating the activity, later in 1932 the Law establishes the possibility that the fishermen organize themselves in groupings and in 1938 in the period of Lázaro Cárdenas the Law of Fishing in Territorial Waters promotes the creation of social organizations privileging rights to cooperatives and strengthening the social sector.

The shrimp fishery, like others in Mexico, is governed by the Fisheries Law (Official Gazette of the Federation, July 24, 2007). As a specific normative instrument for the shrimp fishery, Official Mexican Standard 002-PESC-1993 (DOF, 1993) and its amendments and normative appendices (DOF, 2013) concerning suriperas, Turtles and the process of changing fishing gear. The current regulatory measures consider the application of closures (DOF, 1994), restriction of effort and regulation of fishing gear. There is also the National Fisheries Charter (CNP) which contains the status of stocks and their fisheries, as well as guidelines and management strategies by region of fisheries in Mexico.

Las Arenitas move from free fishing to the integration of organizations, concentrating 4 cooperative societies of fishing production that were founded in different decades (1944, 1978, 1982 and 1986); integrated with a total membership ranging from 32 to 38, 64 and 87 (see table IV). Table IV: Cooperative societies of fish production in Las Arenitas

Cooperative	Pescadores de el Brinco	Ensenada del Tiburón	José Luis Castro Verduzco	Boca del Río San Lorenzo
Foundation Year	1944	1986	1978	1982
Total membership	38	64	87	32
Authorized fishing permits	Shrimp - bay	Shrimp - bay	Shrimp - bay, Shark, Scale, Jaiba	Shrimp - bay

The main marine species that are caught in the community are: shrimp, crab, oyster, mantarraya, mussels, mule paws, clams of candelón, loggerhead, snail, ax callus and fish: snapper, curvina, grouper, sea bass, Chops or charales and botete. Nevertheless the species of greater use is the shrimp. In relation to production from 2013 to 2016, cooperatives have had ups and downs, with an unstable catch (see table V).

On the other hand, the community reflects development in the social field, from year 2000 to year 2010, since there is a decrease both in the illiterate population and in those who do not attend school and without right to health services; On the other hand, housing has improved since it has better public services such as toilets, piped water from the public network, drainage, electricity, among others (see Table VI and VII).

Table V. Shrimp production by cooperative 2013-2016 - SAGARPA - Sinaloa

Cooperative	Production of shrimp (sum of live weight in kg)			
	2013	2014	2015	2016
Boca del Río San Lorenzo	118,826	48,479	70,650	4,998
Pescadores de El Brinco	98,250	78,682	111,765	10,514
Ensenada del Tiburón	10,239	56,680	77,918	
José Luis Castro Verduzco	337,206	184,271	362,428	152,602
Total	655,522	368,112	622,761	168,115

Table VI. Education Indicators, inhabitants Las Arenitas 2000, 2005 and 2010

Year	Population	Population aged 15 years and over illiterate	Población de 6 a 14 años que no asiste a la escuela	Population aged 6 to 14 years that does not attend school	Population without right of access to health services
2000	1,856	7.76	8.96	70.43	28.39
2005	1,831	7.49	4.34	64.79	51.56
2010	1,838	4.41	4.82	59.55	16.32

Table VII. Housing Indicators, inhabitants Las Arenitas 2000, 2005 and 2010

Household With earth floor	Household that do not have toilets or sanitary	Household that do not have piped water from the public network	Household That do not have drainage	Houses that do not have electricity	Houses that do not have a washing machine	Homes that do not have a refrigerator
11.82	26.35	12.56	22.66	2.22	41.38	17.98
25.51	4.37	15.86	12.41	14.94	4.37	34.02
3.32	14.60	9.73	9.73	0.44	36.06	10.18

Regarding the school level, 47.7% of the population has basic education, 27.7 with secondary education, 13.8% with a baccalaureate degree and 3.1% with undergraduate studies (Grafic 1).

Some other components that account for the development of the community is the road access infrastructure to the community, although in bad conditions, however there are roads that require maintenance. Likewise, they receive support from the government to modernize smaller vessels, marine engines, satellite tracking devices, restocking of estuaries and bays. Temporary employment programs are promoted (wages and materials for repairing boats, inspection and monitoring of bays, acquisition and repair of

fishing gear, cleaning and rehabilitation of public spaces, among others).

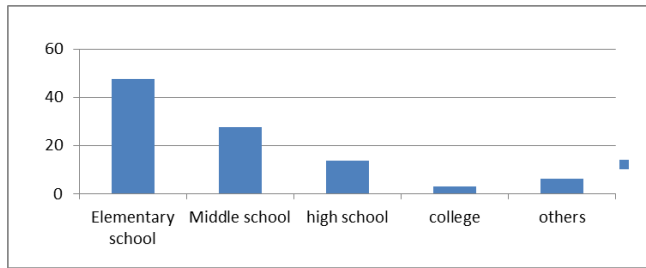


Figure 1. Level of study of inhabitants of Las Arenitas 2010

IV. CONCLUSION

The geographical location of the community has the resources that make it possible to place fishing as the predominant economic activity on the rest of the primary activities in the community. The use of the aquatic resources by the inhabitants through the fishing cooperatives, allows the development of the community, as an economic unit generating jobs.

The community has been transformed from its origins, both socially and economically. With the increase of inhabitants in the community, the number of cooperatives and other organizations in the locality increased; The inhabitants raised their educational level; The housing infrastructure improved and with it their living conditions, however, fishing in recent years has been unstable representing a concern for those who live in localities that take advantage of marine resources.

Cooperatives made up of fishermen living in Las Arenitas are mainly engaged in shrimp (coffee, white and blue), because this marine species is the most economically valuable, exploiting the natural resources provided by the territory, but It is recognized that overexploitation, the increase of fishermen and the low production, among others, are aspects to consider to face the challenges

For the design of new economic alternatives for those who live in rural communities and seek the development of the locality.

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