

3.2.1 Preliminary study for mapping the relationships between communities and marine ecosystems relations

CONFISH

– Connectivity among Mediterranean fishery stakeholders and
scientists resolves connectivity of fishery populations –

WP 3 – STUDYING

ACTIVITY 3.1 – ANALYSIS OF ECOSYSTEMS AND COMMUNITIES DYNAMICS AND SYNERGIES

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Introduction

The present document delivers the results of the preliminary study developed in view of mapping the relationships between the communities and marine ecosystems in the ConFish project (Connectivity among Mediterranean fishery stakeholders and scientists resolves connectivity of fishery populations).

The communities at study are Komiža in Split-Dalmatia (Croatia), Patti in Sicily (Italy) and Palamós in Cataluña (Spain).

This preliminary study involved the collection of existing information in different sources on each community, to enable the characterization and analysis of the relationships between communities and marine ecosystem. The information was available online, in official records and institutional statistical data, as well as non-official information and data provided by the partners. It therefore includes official and non-official information, all important to provide the team with ground information, relevant for the preparation of the workshops held in the different communities.

The Ostrom framework of Social-Ecological Systems (SES) was used as a basis to collect information (Annex I). This framework is characterized as “a conceptual model that provides a common language for case comparison, organizing the many variables relevant in SES analysis into a multitier hierarchy that can be unfolded when needed” (Binder et al. 2013). It “helps to identify relevant variables for studying a single focal SES” (Ostrom 2009).

The next sections of the report present the general data collected on each community, and a resumed table of the core points, as well the data still missing.

Marine social-ecological systems

Komiža, Split-Dalmatia, Croatia

Komiža is the smallest community of the three under study, also with the lowest population density. It has 1.526 inhabitants, at the municipality level, of which 1.397 in the City of Komiža. The municipality has been losing inhabitants since 1921 as can be seen in Figure 1. This was largely due to migration.

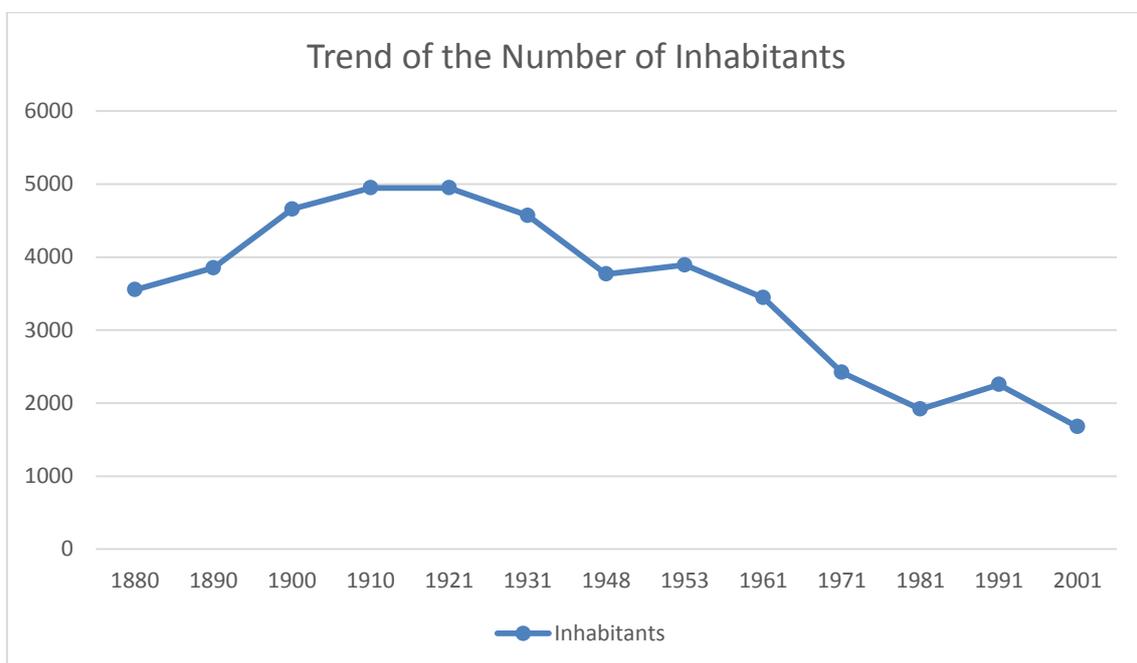


Figure 1 - Trend of the number of inhabitants in Komiža (Source: DZS)

On the demographic structure, the main part of the population is between the 25-64 years old (56,8%), while between 0-24 and larger than 65 years is quite balanced (21,6% in each case) (Figure 2). The community shows a high level of literacy with well-balanced gender distribution in general, but predominantly male in the fisheries sector (see Table 2).

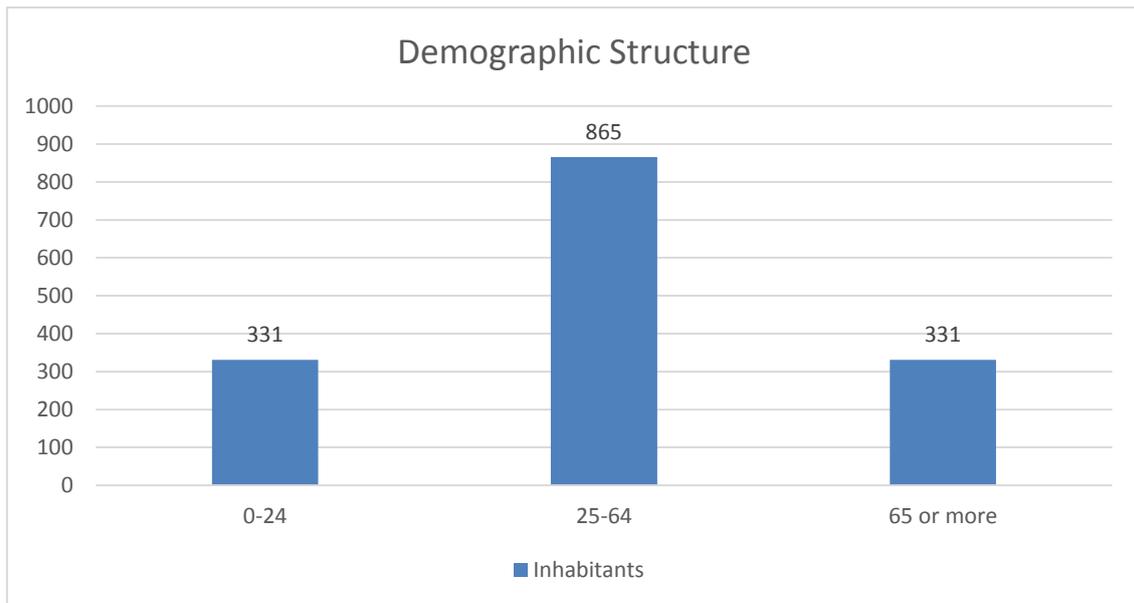


Figure 2- Demographic structure of Komiža (Source: DZS)

Komiža is a small village with strong seasonal activities. The main economic activities of the island are agriculture, forestry and fisheries, and tourism, namely accommodation and food services activities. In the 865 registered people in the age range 25-64 (active population) only 506 are employed, which reveals about 41% of unemployment. The town Komiža on the island of Vis is considered the cradle of fishing not only in the Adriatic Sea but also further. Fisheries was already an important industrial activity in Komiža when the Neptun factory (the oldest fishing processing factory in the Adriatic) was built. In 2003 the factory Neptun was closed and the machines for fish processing were sold, and its buildings and large cold storage for fish are now out of use. After its closing, fisheries became a family based business. Touristic season is mostly from June to September. In September, the agricultural activities begin. Fisheries go through all the year round. Tourism determines fishing activities to some extent by the increased demand for some species that are attractive for restaurants (like lobster), and by occupying port by yachts and tour boats, living less berths for the fisherman boats. Concerning social characteristics, Komiža has many Christian traditions such as Saint Nikola, the patron of Komiža, of the seas and fishermen. The community has had for years the tradition of burning boats, as a sacrifice offered on behalf of the safety of fishermen and a blessed fishery that would be enough to satisfied them (Bozanic and Buljabasic, 2012). In Komiža there is also a traditional boat Falkusa design to answer specific needs of historical Komiža fishermen, who had a unique practice in the Adriatic and Mediterranean and went to long fishing expeditions in the open seas.

The location of Komiža is represented in Figure 3 and Figure 4.

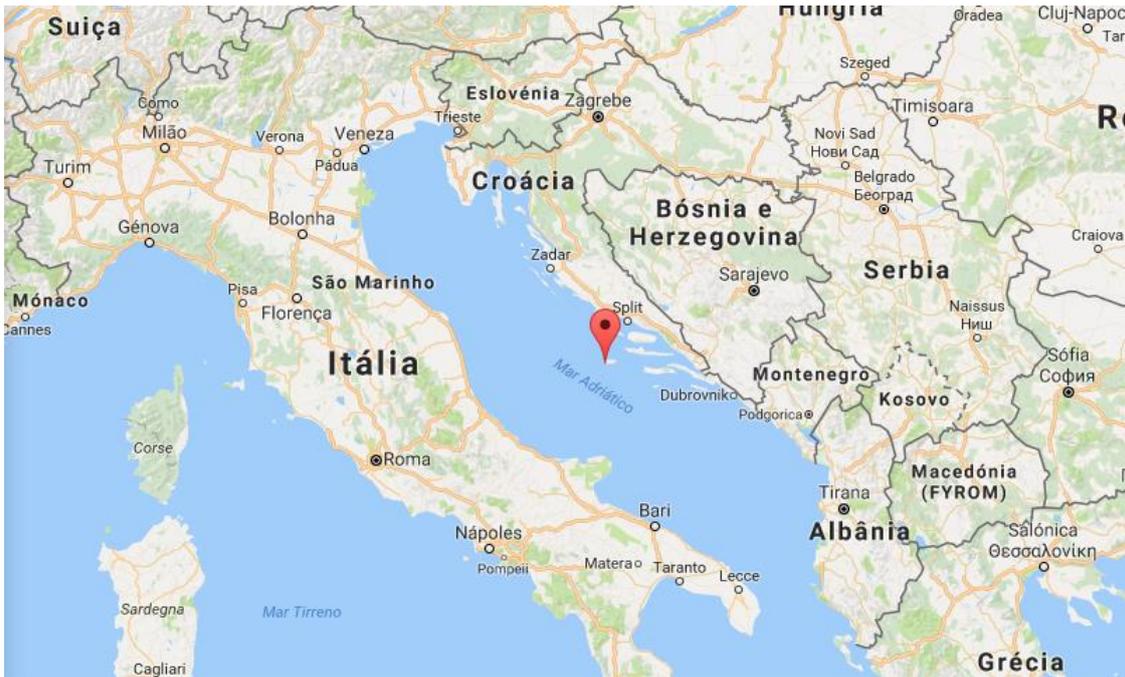


Figure 3 - Location of Komiža (large scale) (Source: GoogleMaps).



Figure 4 - Location of Municipality of Komiža (small scale) (Source: GoogleMaps).

The main legislation determining the fisheries policies of the island are national and international, specified in Table 1. There are no specific regulations for fisheries in Komiža, historically fishermen advocated for the conservation of fish stocks-from which they live and they used only selective fishing gear.

Table 1 - Main plan/policy/programs influencing the study.

| Plan/Policy/Program | Objective | Level |
|---|--|-------------------------|
| National Reform Program | The main axis of development and investment in Croatia, including the islands. | National |
| Regulation on the Register of Croatian Fishing Fleet | Governance of fishing capacity | National |
| UN Law of the Sea Convention; UN Fish Stock Agreement | Main directives and trends | Global (United Nations) |

Table 2 presents the resumed table of the information about Komiža municipality.

Table 2 - List of Information from Komiža Municipality.

| Variables | | Information |
|--|---|---|
| Section 1 Demographic Trends | Number of Inhabitants | 1.526 (2011) |
| | Gender distribution | 49,6% men; 50,4% women |
| | Trend of the number of inhabitants | Figure 1 |
| | Population density | 31,1 hab/km ² (2013) |
| | Demographic structure | 0-24 years: 21,6% 25-64 years: 56,8% >65 years: 21,6% |
| | Migratory movements | There was a great wave of migration of fishermen to California. |
| Section 2 Social development | General levels of literacy | Total literacy in Komiža is 99,6%. |
| | Levels of literacy in fishery communities | There is no specific information about it – however, literacy is almost 100% in Komiža. |
| | Gender distribution in the fishery sector | Unequal, extremely dominant male gender. 100% male. Until the closure of fish processing factory “Neptun”, there was a large number of women working in the factory. |
| Section 3 Social characteristics | Life-styles | Small village with strong seasonal activities. Tourism from June to September. In September, it's the beginning of agricultural activities. Fishing all year (November – hunting for squid). |
| | Social distances | In 506 employed population about 109 work in agriculture, forestry and fishery, and 102 in hotel accommodation and food services related to tourism activities (census 2011) accounting for 40% of the total. |
| | Public participation (election) | No information. |

| | | |
|--|---|--|
| | Norms/social capital | Christianity – the tradition and ritual of burning boats. |
| Section 4 Actors in or related with fishery | Relevant actors | Fishing cooperative City of Komiža Davor Fishery (Service provider) Purchase station Conger (transportation & purchase company) Purchase station Ankora (transportation & purchase company) Ministry of agriculture directorate of fisheries (Split) Nautical center Komiža Institute of Oceanography and fisheries (Split) Flag Škoji (NGO) Plavi Svijet (NGO) |
| | Neighborhood relationships | Some conflicts about the right to fish, as well the owning of the fishery (Palagruza) |
| | Spatial location | Figure 1 and Figure 2 |
| Section 5 Economic Development | Economic sectors | The main sectors are the agriculture, forestry and fisheries and the accommodation and food services activities. |
| | Characteristics of the sector – fishery | Since the closing of Neptun Factory, the sector lost industrial importance and became Family oriented. The catch of fish has increased in the last 20 years: from 15.000 tons to 75.000 tons. |
| | Employment per sector | Unemployment is around 41% (estimate based on difference between total and employed population) NOTE: a large part of the population in on old-age pensions, other pensions, as well as in social welfare payments. |
| | Income per capita - fishery | The income per capita in the agriculture, fishery and forestry sector is 5050 kuna (aprox: 678,12 euros or 723,18 US dollars). Annual income per fisherman: approx. 100,000 kuna |

| | | |
|--|---|---|
| Section 6 Environmental Policy Issues | Markets incentive to conservation of marine ecosystems | There are no protected areas assigned in this area. |
| | Environmental policy for fishery | No information. |
| | Compliance of regulatory and policy frameworks in fishery | |
| Section 7 Technical development | Infrastructures and facilities | There are plans to build a new Fishing Port with all the facilities; It was found on a tourism website that there were plans to turn the “Neptun Factory” into a touristic center. |
| | Technological evolution and industrial development within fishery | Longlines and pots. |
| Section 8 Governance System | Property-rights systems | There are the problems about the status of “small-scale fisheries”, and the “grey fishing”. |
| | Collective-choice rules defined by involved actors | There are no defined regulations. The fishermen advocate for a self-regulation of the fisheries. |
| | Operational rules | No information |

Patti, Sicily, Italy

Regarding population, Patti has 13.431 inhabitants (2016), a growing population and a population density of 267,66 inhab/km². The evolution of the population is represented in Figure 5.

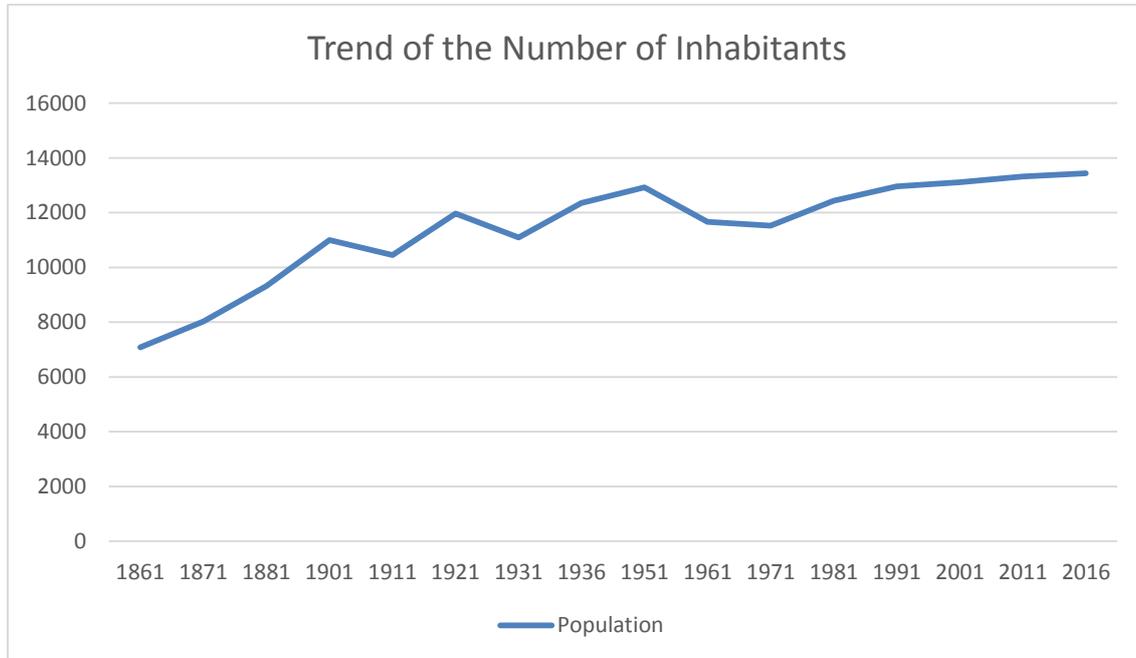


Figure 5 - Trend of the number of inhabitants in Patti (Source: ISTAT)

On the demographic structure, the main part of the population is between the 25-64 years old (55,2%), while between 0-24 and larger than 65 years is quite balanced (around 22% in each case as shown in Figure 6).

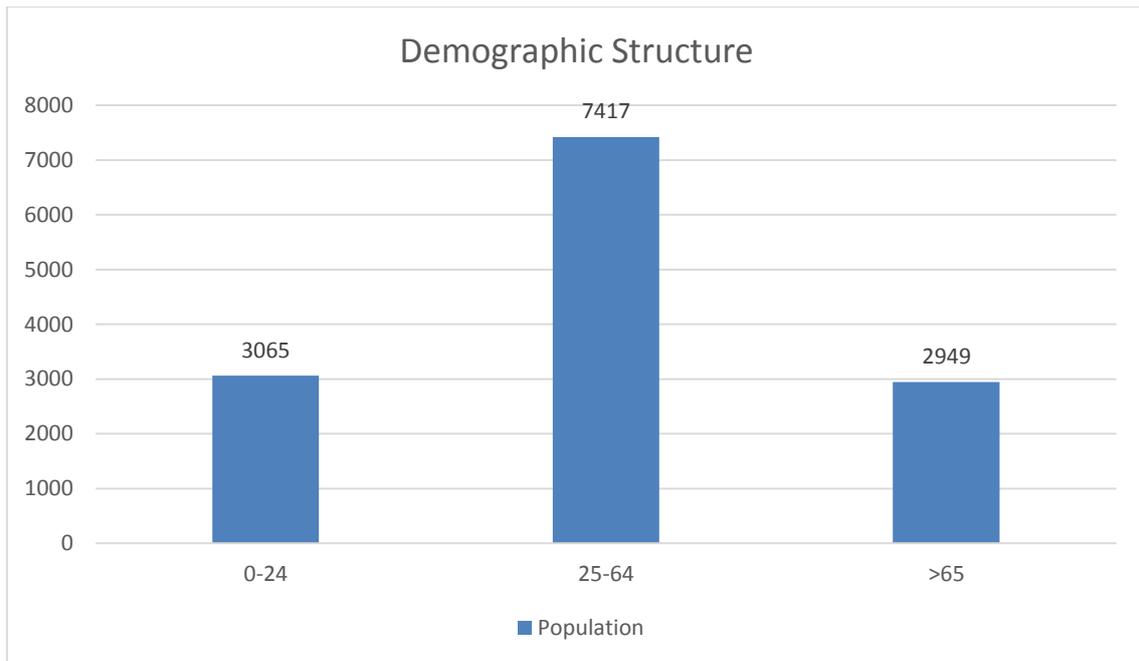


Figure 6 - Demographic structure of Patti (Source: ISTAT)

Regarding the level of literacy of the fishing communities, although the data only refers to a total of 227 fishermen involved in the management plan, 29.5% of them have the upper secondary school and 2.2% graduation. The family in Italy, especially in Sicily, is one of the most important social norms, there is a strong collective organization when compared to Komiža, but less than registered for average insular Italy. The main local products are cheese specialty Nebrodi, anchovies, wines and olive oil. Regarding cultural events of Patti, there are some festivities, with the Last Sunday of July being the day of the Patron of Patti, S. Febronia. The location of Patti is represented in Figure 7 and Figure 8.

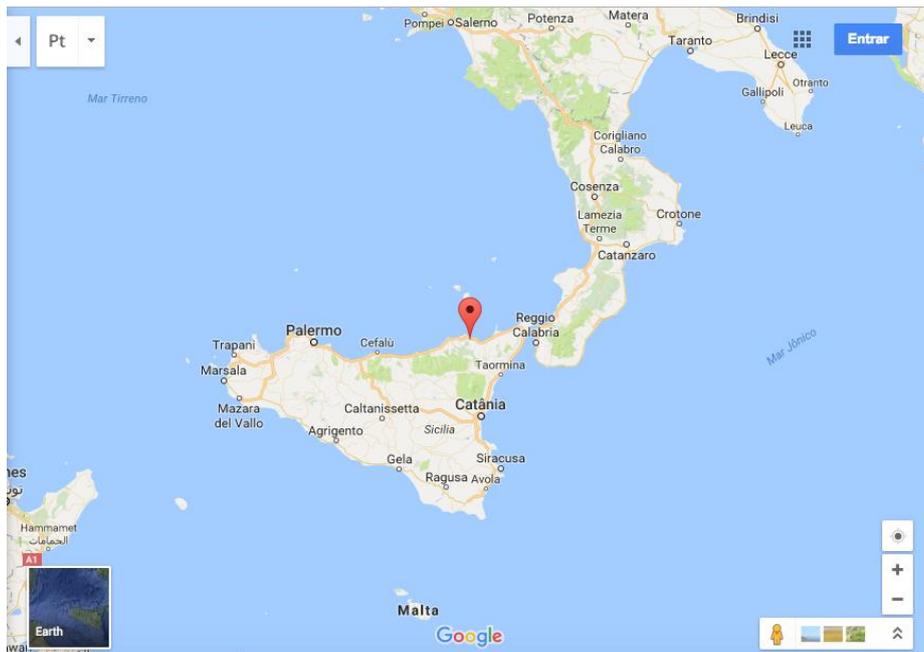


Figure 7 - Location of Patti (large scale) (Source: GoogleMaps).

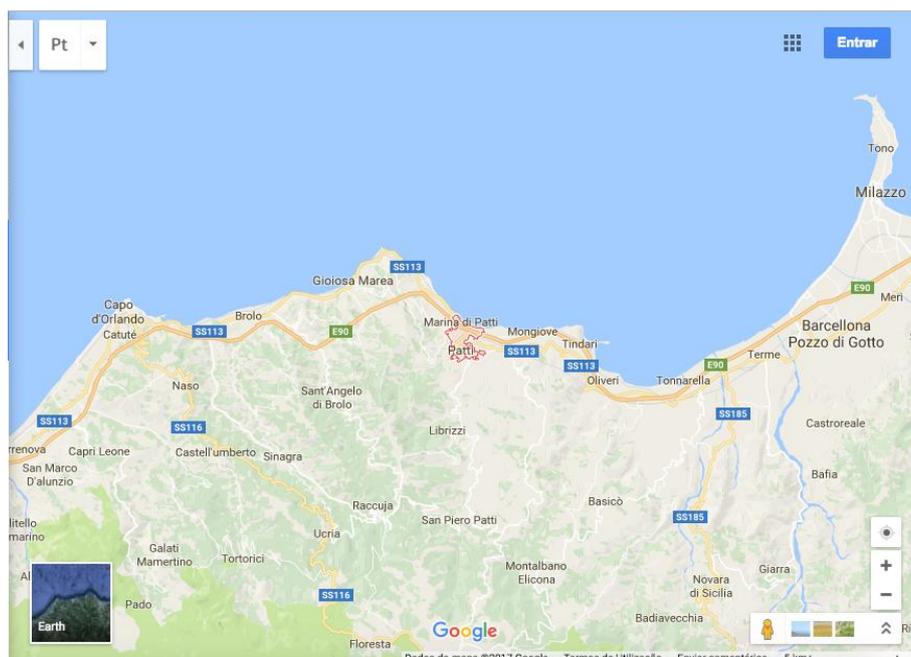


Figure 8 - Location of Patti (small scale) (Source: GoogleMaps).

At a regional level of Sicily, tourism only accounts for 4% of the regional GDP despite of being attractive tourism destination, and specific data for Patti municipality are not available.

Regarding the fishery sector in the regional economy of Sicily, the fishing and aquaculture represents 0,58% of the total economy. The fisheries in Sicily employs 18.135 people, 58% in maritime fisheries, 8% in transformation, 1% in aquaculture and 33% in related activities, as commercialization, port services or

others. It is the region with the larger number of fish conserve companies in Italy (32%) and with the biggest number of jobs in this sector (27%).

Sicily's regional economic system is based on services, provided by public administration, followed by "financial intermediation, real estate and businesses" as well as commerce.

Most Sicilian companies with high added value are concentrated in Palermo and Catania.

As far as legislation is concerned, the following specific Sicilian and local policies influencing the community of Patti were identified:

Table 3 - Main plan/policy/programs influencing the study.

| Plan/Policy/Program | Objective | Level |
|--|---|-----------------------|
| Fisheries in Sicily, 2010 | Diagnosis of the State of the Fisheries in Sicily, and main directives. | European/ Regional |
| Economic, Social and Territorial Situation of Sicily, 2015 | Diagnosis of the State of Sicily, in economic, social and territorial aspects, and main directives. | European/ Regional |
| Piano Integrato per lo sviluppo sostenibile delle zone di pesca del Golfo di Patti, 2013 | Main directives for management of the Golfo di Patti. | Local |
| Piano di gestione locale dell'Unità Gestionale da Capo Calavà a Capo Milazzo | Main directives for management of the Capo Calavà until Capo Milazzo | Local |
| Area del Piano di Gestione Local (PGL) di Portorosa (under development) | Main directives for the management of the new area under development | Regional |

Table 3 summarizes the information collected on Patti municipality. It is important to note that due to the lack of information at the local level most information was collected at the Sicilian regional level.

Table 4 - List of information from Patti Municipality.

| Variables | Information | |
|--|---|---|
| Section 1 Demographic Trends | Number of Inhabitants | 13.431 (2016) |
| | Gender distribution | 6.444 Men (47,98%) 6.987 Women (52,02%) |
| | Evolution of the number of inhabitants | Figure 6 |
| | Population density | 267,66 inhab/km ² . |
| | Demographic structure | 0-24 22,82% 25-64 55,22% >65 21,96% |
| | Migratory movements | No information. |
| Section 2 Social development | Age distribution in the fishery communities | From the municipalities included in the new management plan ¹ the main ages are between 36-45 (29,1%) and 46-55 (29,5%), followed by 56-65 (16,3%) and 26-35 (15,4%). The remaining scales are smaller than 10%. |
| | Levels of literacy in fishery communities | From the municipalities included in the new management plan the main literacy is middle school (48,9%) being followed by high school (29,5%), then primary school only (19,4%) and graduation (2,2%). |
| | Gender distribution in the fishery sector | No information. |
| | Life-styles | No information. |
| | Social distances | No information. |

| | | |
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| Section 3 Social characteristics | Public participation | Lack of public participation when compared to the levels in the remaining Italy. |
| | Norms/social capital | The figure of the family is the most important social norm. It's believed to be mafia related issues, and a "favors" culture. |
| Section 4 Actors in or related with fishery | Relevant actors | Municipality of Patti and Milazzo Delegation Patti Beach Gac Patti Federco pesca Cogecopesca Portorosa Diving Milazzo Turismo Hrbor office |
| | Neighborhood relationships | No information. |
| | Spatial location | Figure 7 and Figure 8. |
| Section 5² Economic Development | Economic sectors | Value added per sector, the agriculture sector 3 billion, the industry sector 6,4 billion, the building sector 3,7 billion and the tertiary sector 60,8 billion; Sicily is a very attractive touristic destination (4,4 million in Sicily, national average of 104 million); Most of the hotels are situated in Messina (31,3%); |
| | Characteristics of the sector – fishery | In Sicily, the fisheries sector represent 0,58% of the total economy (2008). The commercial balance of fisheries in Sicily is positive. |
| | Unemployment per sector | The fishery sector in Sicily employs 18 135. The biggest share of the employment in Sicily is the Public administration, defense, education, health and social work activities, and the wholesale and retail trade, transport, accommodation and food service activities. The unemployment rate in Sicily is 21.0% while in Italy is 12.2% (2013) |

² Information on the Sicilian region

| | | |
|---|--|---|
| <p>Section 6 Environmental Policy Issues</p> | <p>Markets incentive to conservation of marine ecosystems</p> | <p>No information.</p> |
| | <p>Environmental policy for fishery</p> | <p>Local management plan of “Golfo di Patti”; Sicily has imposed temporary prohibitions to the totality of his fleet in order to better manage the fish catch and marine ecosystem conservation.</p> |
| | <p>Compliance of regulatory and policy frameworks in fishery</p> | <p>No information.</p> |
| <p>Section 7 Technical development</p> | <p>Infrastructures and facilities</p> | <p>From the region under the new management plan, that incorporates several municipalities, the information is that there exist 159 boats, which 46 are registered at the Patti Beach Delegation. The Messina region has only 4% of the fleet capacity of all provinces of Sicily.</p> |
| | <p>Technological evolution and industrial development within fishery³</p> | <p>The fishery fleet in Sicily has been dropping since 1991 in the number of Ships, TAB, and Potency.</p> |
| <p>Section 8³ Governance System</p> | <p>Property-rights systems</p> | <p>Sicily has some autonomy in the legislative and executive branch, being one of the five Italian regions with special autonomy. There is one commission in the Sicily Regional Assembly that legislates about fisheries, as well one member of the regional government responsible for the management. There are also, national laws that promote the rational utilization and the improving of biologic marine resources by the balanced marine fishing. The legislation is in the process of being adapted to the European Communitarian one.</p> |
| | <p>Collective-choice rules defined by involved actors</p> | |
| | <p>Operational rules</p> | |

³ Information on the Sicilian region

Palamós, Cataluña, Spain

Data in this section is based on the Catalonia Statistical Institute website. Palamós has an estimated population of 17.677 inhabitants in 2016, being the largest of the three communities under study. The evolution of the number of inhabitants (Figure 9) presents a continuous sustained growth till 2009, and from then onward it had a slight decrease. Already in 2012, the Catalonia Statistical Institute estimated 3.212 seasonal inhabitants, around 15% of the estimated population.

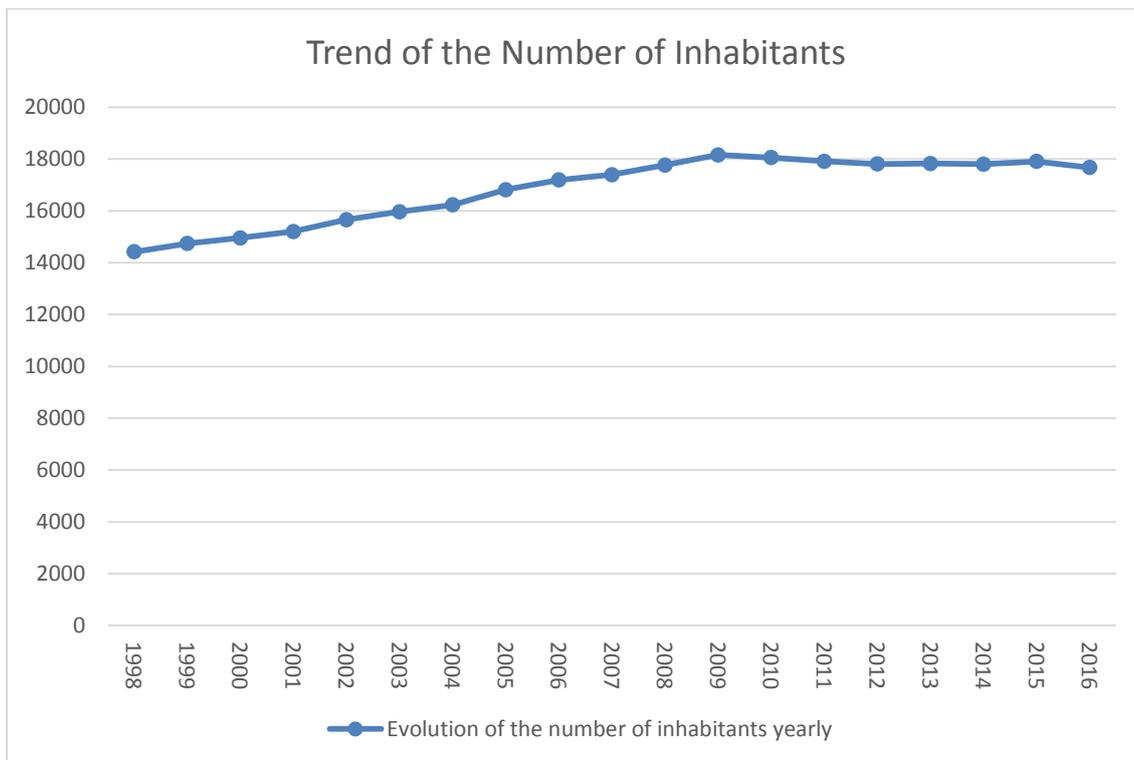


Figure 9 - Trend of the number of inhabitants in Palamós (Source: IDESCAT)

On the demographic structure, the largest part of the population is in the range 25-64 years old (66,8%), followed by the above than 65 years (18,7%) and finally the 0-24 years old (14,5%). Palamós is the community within this study with the most unbalanced demographic structured, as represented in Figure 10. The proportion of young/old is one young man to 1.3 old man.

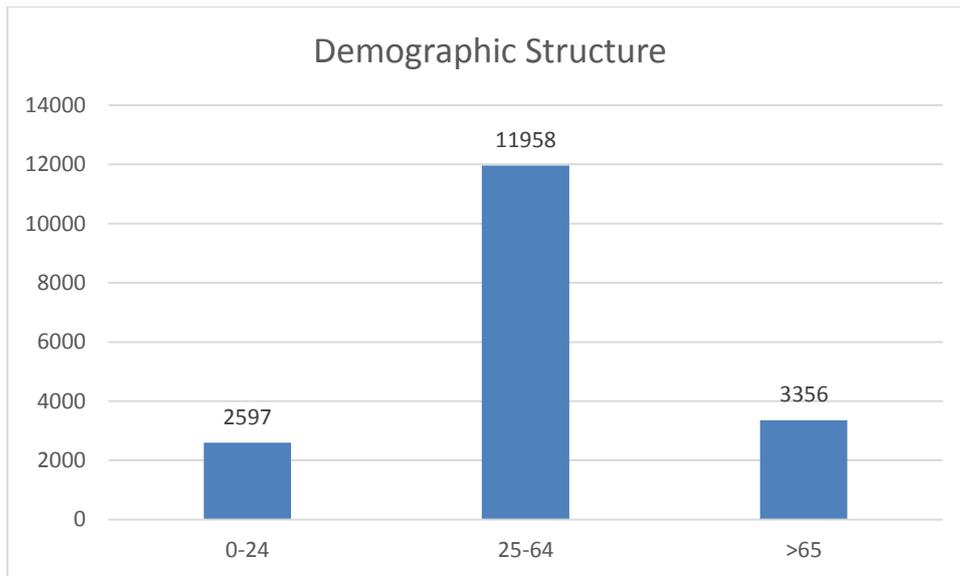


Figure 10 - Demographic structure of Palamós (Source: IDESCAT)

Regarding the levels of literacy, in Palamós only 10% of inhabitants have no studies, and around 40% has high school or upper education. However, skilled workers in agriculture, livestock, forestry and fisheries, are mostly male.

As for workplaces, 80,9% of the workplaces are allocated to the services sector (517). The second largest group are the construction companies (12,1%), followed by the industry, with 44 workplaces (6,9%). The unemployment registered per branch of activity, in the branch “Agriculture, Cattle, Forestry and Fishery” the value has fluctuated between 7,3 (2005) and 21,8 (2015).

Palamós has been investing in tourism, building several facilities related to the fishery activity as a tourism attraction. For example, Palamós has a Fishing Museum that is a reference in Catalonia and Spain. There are also the *Espai del Peix* that has several activities and places related to fish products and the gastronomic experience to learn how to cook fish, identify species, show-cooking, workshops. The red shrimp is the most important species in Palamós that has very important fishing grounds of red shrimp and is known in all Catalonia and part of Spain. Fisherman in Palamós show a great associative capacity. They have set up the *Confraria de Palamós* to organize themselves towards a better management of the resources especially the shrimp. They have created a certificate of quality for the red shrimp of Palamós and relevant regulation approved in 2013 in order to preserve this resource. The location of Palamós is represented in Figure 5 and Figure 6.



Figure 11 - Location of Palamós (large scale) (Source: GoogleMaps).

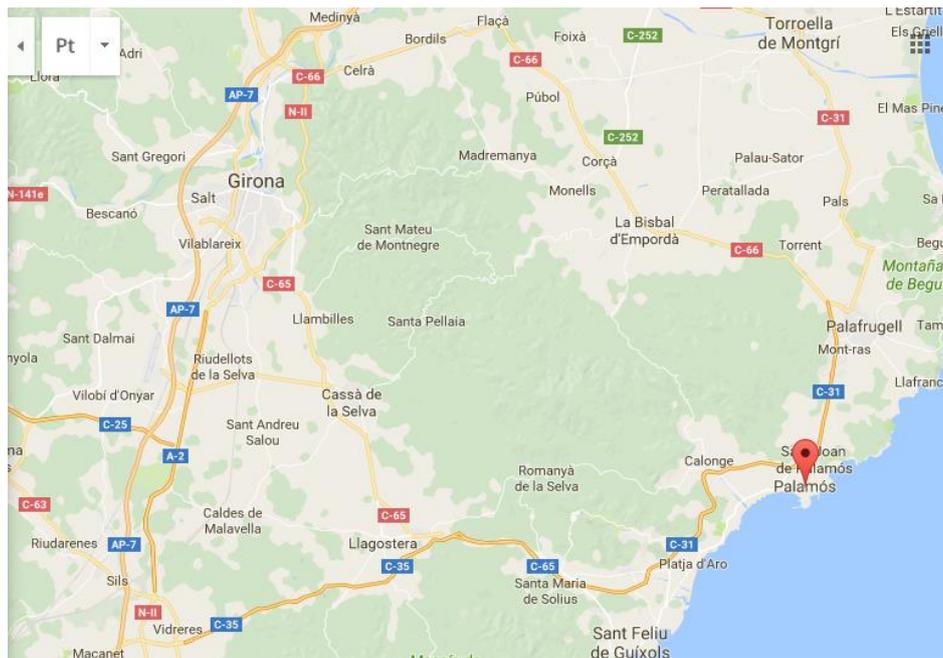


Figure 12 - Location of Palamós (small scale) (Source: GoogleMaps).

Concerning main policy and planning documents and legislation the following were identified at local and national levels:

Table 5 - Main plan/policy/programs influencing the study.

| Plan/Policy/Program | Objective | Level |
|---------------------|-----------|-------|
|---------------------|-----------|-------|

| | | |
|--|--|-------|
| Declaració Ambiental 2015 del Sistema de Gestió Ambiental del Litoral de Palamós | Provides the environmental framing on the policies conducted in the coast management of Palamós. | Local |
| Procés deliberatiu per a la definició compartida d'una estratègia de Desenvolupament Local de Palamós – àmbit urbà-territorial, síntesis de diagnosi | State of the urban-territorial analysis in Palamós. | Local |
| Procés deliberatiu per a la definició compartida d'una estratègia de Desenvolupament Local de Palamós – àmbit econòmic i empresarial, síntesis de diagnosi | State of the economic and business analysis in Palamós. | Local |
| Procés deliberatiu per a la definició compartida d'una estratègia de Desenvolupament Local de Palamós – àmbit mercat de treball, síntesis de diagnosi | State of the job market analysis in Palamós. | Local |
| Procés deliberatiu per a la definició compartida d'una estratègia de Desenvolupament Local de Palamós – àmbit sociodemogràfic, síntesis de diagnosi | State of the sociodemographic analysis in Palamós. | Local |
| Pressupost municipal exerci 2016 | Budget and big options of action in the year 2016 | Local |
| Pla Estratègic de Desenvolupament Local de Palámos, Horizon 2025 | Results of the plan for local development of Palamós, with an horizon until 2025 | Local |
| Política del Litoral Terrestre de Palamós, Àrea de Medi Ambient | Stablishes the coastal policy, according to environmental conditions. | Local |

| | | |
|---------------------------|--|-----------------|
| <p>Order AAA/923/2013</p> | <p>Regulates the fisheries of rose-shrimp (Aristeus Antennatus) as trawling. The main objective is to monitoring the viability of the management plan and consider the possibility that it may extend to another fields.</p> | <p>National</p> |
|---------------------------|--|-----------------|

Finally, Table 4 synthesizes the information about Palamós municipality.

Table 6 - List of information from Palamós Municipality.

| Variables | | Information |
|--|---|--|
| Section 1 Demographic Trends | Number of Inhabitants | 17.677 (2016) |
| | Gender distribution | 48,8% men; 51,2% women |
| | Evolution of the number of inhabitants | Figure 5 |
| | Population density | 1.275,4 hab/km ² ⁴ |
| | Demographic structure | 0-14 years: 14,5% 15-64 years: 66,8% >65 years: 18,7% |
| | Migratory movements | It is balanced in terms of migratory movements, as the gain in some years compensate the lost in others. |
| Section 2 Social development | General levels of literacy | No studies: 10,65% Primary education: 15,81% Up to High School: 46,00% Prof. Training: 12,14% Higher Education: 15,39% |
| | Levels of literacy in fishery communities | High levels of illiteracy (IDESCAT). |
| | Gender distribution in the | Men: 96,8% |

⁴ “Procés deliberatiu per a la definició compartida d’una estratègia de Desevolupament Local a Palamós – Àmbit Sociodemogràfic – Síntesi de la Diagnosi”

| | | |
|---|---|--|
| | fishery sector | Women: 3,2% |
| | | (2011 – idescat) |
| Section 3 Social characteristics | Life-styles | The associations of fishermen's (<i>Confraria</i>) it's said to be familiar, with strong social relationships. |
| | Social distances | No information. |
| | Public participation (election) | Average of 38,22% abstention in local elections. It has increased to a value of 45,5 (2011). |
| | Norms/social capital | No information. |
| Section 4 Actors in or related with fishery | Relevant actors | <ul style="list-style-type: none"> - Catedra de Estudis Maritims Palamós (Ajuntamento de Palamós & Universitat de Girona); - Confraria de Pescadors de Palamós; - Ajuntamento de Palamós. |
| | Neighborhood relationships | No information. |
| | Spatial location | Figure 5 and Figure 6. |
| Section 5 Economic Development | Economic sectors | Services: 80,9% Construction: 12,1% Industry: 6,9% |
| | Characteristics of the sector – fishery | There are 32 local fishery associations in Catalunya and each has its own regulations. The local fisheries have in average 30 to 40 fishing boats, mainly family business, whose members are the owners and skippers of the boats. Each vessel has 3 to 5 fishermen on board. |
| | Unemployment per sector | In 2015 the nr of unemployment per sector was: Agriculture: 21,8 Industry: 139,3 Construction: 196,3 Services: 868,8 Without previous employment: 60 |

| | | |
|---|--|---|
| <p>Section 6 Environmental Policy Issues</p> | <p>Markets incentive to conservation of marine ecosystems</p> | <p>There are major policies, at regional, national and European level. However, information obtained with the Palamós partner in Confish is that the main plans are local, but with regional and national surveillance.</p> |
| | <p>Environmental policy for fishery</p> | <p>No information gathered for fishery – But there are plans for the conservation of the litoral coast. It is the main policy of the <i>Ajuntamento de Palamós</i> (Municipality).</p> |
| | <p>Compliance of regulatory and policy frameworks in fishery</p> | <p>No information.</p> |
| <p>Section 7 Technical development</p> | <p>Infrastructures and facilities (<i>Confraria de Palamós</i>)</p> | <p>Composition of the fishing fleet Palamós:</p> <ul style="list-style-type: none"> - 25 trawlers - 10 vessels from other arts - 4 purse seine vessels <p>Services of the <i>Confraria</i>:</p> <ul style="list-style-type: none"> Own ice factory Cold storage and freezing Point of waste selection Store items for fishing Gas |
| | <p>Technological evolution and industrial development within fishery</p> | <p>Various techniques and traditional gears (traps, longlines, trammel, and gillnets); Great variability in size, power, and technological equipment (Dimitriadis, 2015).</p> |
| <p>Section 8 Governance System</p> | <p>Property-rights systems</p> | <p>The main institution is the “<i>Confraria de Pescadors de Palamós</i>”. It’s a public entity in law, that aggregate both owners and workers.</p> |
| | <p>Collective-choice rules defined by involved actors</p> | <p>Together, the fishermen from Palamós could reach an unanimously agreement to stop fishing, to allow the growth of the shrimp species.</p> |

| | | |
|--|-------------------|---|
| | Operational rules | There are regulations, regional, national and European. |
|--|-------------------|---|

Conclusions

The data collected for the three study areas are presented in the previous sections. The Ostrom (2009) framework for Social-Ecological Systems (SES) was adopted to structure the data and to compare and understand the three communities and the important facts and figures that can help the ConFish team to later more successfully integrate, communicate and learn within the communities.

In the three case studies fisheries account for low values of GDP, with a tendency for an increase in the tourism sector GDP. Also across the three cases the large part of the population are within the 25-64 years range, with a predominance of male gender in the fishery sector. However, in relation to the area and population, from the smaller Komiža, to the larger Palamós there are some distinct points regarding the marine social-ecological systems. As said, they all have its traditions founded on fishery, nowadays turning into tourism, but this transition is happening in different ways. While in Komiža and Patti there are conflicts between the two activities in what concerns its spatial distribution and infrastructures, in Palamós fishery is used as a main factor of tourism attraction to the village. Distinct in the three case studies are also the levels of associativism of the fishery community, among which Palamós is the most collective and organized one, and Komiža the least organized, while in Patti the family plays a strong social role. As also mentioned above, both Patti and Palamós have local management plans, while Komiža still miss this type of norms towards a better management of the fishery resources. Finally regarding the population, Komiža has been significantly losing inhabitants while Patti and Palamós have been slightly increasing or stabilizing.

Given what has been said, the methodologies to involve the community and collect further empirical knowledge have been, and will continue to be adjusted to each of the realities in subsequent stages of the project.

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Annex I

Overall List of information needed from each community

| Variables | | key elements to be understood | Document Examples |
|--|---|--|--|
| Demographic trends | Number of inhabitants | Evolution of the number of inhabitants. | Census; Maps of population distribution. |
| | Population density | Disperse population; Concentrated population; Isolated areas... | |
| | Demographic structure | Age distribution | |
| Social development (general information about the community) | Levels of literacy in fishery community and surrounding sectors | Discrepancy older/ younger generations; % of literacy; type of literacy... | Literacy indicators, Census; Record of parish councils; Relevant web links ... |
| | Gender distribution in the fishery sector | Equal; Unequal; Gender distribution per activity ... | Census; Records of fishery associations; Relevant web links ... |
| Societal characteristics | Life-styles | How do people live in the community; daily habits; social habits; family habits; elderly habits, youngster's habits; | Newspaper articles; community records; calendar of community celebrations; key events; relevant web links.... |
| | Social distances | Social hierarchy, predominance of a class; Existence of social grouping (Castes)... | Anthropologic and ethnographic studies; History of the community; |
| | Norms/social capital | Relation with fishery: Habits; Traditions; Symbolisms, Superstitions; Stereotypes; helps on characterize the value-system. | Anthropologic and ethnographic studies; History of the community; Parish council reports; cultural events records... |
| Actors in or related with fishery | Relevant actors | Commercial fishery, recreational use of marine ecosystems, indigenous people. Government and non-governmental organizations of environment | Economic reports of the region; Statistics reports. |
| | Neighbourhood relationships | Conflicts; Trades deals; Commercial agreements or any other kind; Cooperation; Historical relationships... | Newspapers articles; history of the community; anthropologic and/or ethnographic studies, Relevant web links ... |
| | Spatial location of the community and fishery area | with natural boundaries (e.g. marine protected areas) and anthropogenic boundaries | Cartography of the region |
| Economic development | Economic sectors | Related directly and/or indirectly with fishery. | Reports from economic ministry; regional economic reports;... |
| | Characteristics of the sector - fishery | Company oriented; Family oriented; Public/private own. | |
| | Employment per sector | Percentage of employment in each key sector | Socio-economic database |
| | Income per capita – fishery | Income per capita – fishery | |
| Environmental policy issues | Markets incentive to conservation of marine ecosystems | Subsidies/support or tax breaks for conservation | National environmental offices technical reports. |
| | Environmental policies for fishery | Specific environmental policies on marine ecosystems. | |
| | Compliance of regulatory and policy frameworks in fishery | Monitoring plans and sanctioning. | |
| Technical development | Infrastructures and facilities | Facilities to support fishery: access ways, storage or transformation facilities | Road Maps; |
| | Technological evolution and industrial | Technology available (e.g. type of | Newspaper articles, fishery |

| Variables | | key elements to be understood | Document Examples |
|-------------------|--|---|--|
| | development within fishery | technology used to harvest, and manage resources)... Main stream operational industrial processes and machinery (across harvesting, transportation, transformation of fishery) | associations, community records; relevant web links.... Specific fishery industry reports; survey results to the main organisations/companies, |
| Governance system | Property-rights systems | Duration, Exclusivity, and Transferability of the rights to fish | Reports of local, regional and national administrations |
| | Collective-choice rules defined by involved actors | Informal rules define by involved actors on fishery | Local associations reports, surveys to the community |
| | Operational rules | Local rules defined in formal plans stating who, how, when, where, why have access to fishery resources. | Local administration planning reports |

This list fundamentally follows the Social Ecological Systems (SES) framework McGinnis&Ostrom (2014) that provides variables and structure data collection aiming to represent the situation of a community on its social, economic and environmental aspects in a systematic way. The following references were used:

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