SSF AND ITS CULTURAL AND HERITAGE ECOSYSTEMS IMPACT ON ATLANTIC COASTAL ECONOMIES

Universidad de Huelva (Coordinator). Juan José García del Hoyo & David Castilla Espino.
AZTI. Arantza Murillas Maza
Universidad de Oviedo. Laura García de la Fuente.

NON-MARKET VALUATION OF SSF AND ITS ECOSYSTEM CULTURAL AND NATURAL

Partners: UHU (coordinator), AZTI, UNIOVI, BIM, UALG, CEFAS.

March 2023.

1. Deliverable introduction

The WP6 (Cultural heritage) of CABFishMAN project contributes to enhancing the value of Small-Scale Fisheries (SSF) by providing tools and resources for the design and assessment of community–led local development strategies, which serve as a means for promoting social well-being, SSF cultural and natural heritage, and health tourism in coastal destinations.

This contribution requires strengthening the role of coastal communities in local development, the governance of SSF together with the rest of maritime activities [Regulation (EU) No 508/2014, EU Blue Growth strategy] or promoting the development of tourism actions: cultural heritage-based tourism, underwater archaeological/natural parks, etc. based on UNESCO experience.

WP6 Action nr. 3 [non-market valuation of SSF and its ecosystem cultural and natural (2020-2022)] This action will assess the impact of SSF and its ecosystem cultural and natural heritage on Atlantic regional economies which contributes to highlighting and enhancing their importance on coastal areas where artisanal fishing is located. The estimated economic impacts will consider the effects on Atlantic Area production, Gross Value Added and employment. The Input-Output framework will integrate the regional and national accounts and primary data from the fishing sector.

Partners involved in WP6 of CABFishMAN project have worked from 2021 to 2023 in carrying out action 3, mainly focusing on use value of cultural services including use value of different expressions of tangible and intangible cultural heritage; and the expressions of natural heritage that in combination con cultural heritage shape combined port and natural landscape of SSF in the Atlantic area.

This report begins showing the importance of a comprehensive valuation of SSF, including all services and values mainly involved in use values and its direct, indirect, and induced impact as result of purchases and expenses linked; it continues going through the description of methods used namely: survey design (WP6_2), input-output analysis; and upscaling assumptions. Methods description includes a note on the survey tool used to gather the sector involved in used cultural ecosystem services (CES). Later, it describes data used to estimate direct, indirect, and induced use value of cultural services of SSF in the Atlantic area including a reference to main elements considered in this analysis that were fully described in DWP6_2 deliverable. Finally, it discusses and concludes valuating direct, indirect, and induced use value of Cultural Ecosystem Services (CES) in European Atlantic Area related to SSF upscaling this value to ICES areas based upon reference SSF heritage sites described in DWP6_3. An annex is added to this report, that includes the survey tool designed in the framework of this deliverable.

2. Introduction

CES are the nonmaterial benefits that people obtain from the ecosystem through identity, aesthetic experience, reflection, recreation, and spiritual enrichment; they are generally excluded from valuation exercises, skewed to provisioning (Barnes-Mauthe et al., 2013) and regulating services (Rodrigues Garcia et al., 2017). However, part of this value is reflected in the market, as the final consumption of activities linked to the CES is converted into expenditures and purchases by those who enjoy it, helping to boost the economy. Thus, it is relevant accounting for cultural services values for the following reasons (UNEP-WCMC, 2011: 7):

- *To assess the costs and benefits of an action or policy, as an aid to decision making.*
- *To improve understanding of the value of benefits to society from an ecosystem or series of linked ecosystems.*

The former reason refers to the policy and management of marine/fisheries resources and stress the need to bridge the gap that results from a partially valued ecosystem that results in bias of decision making in the context of an Ecosystem Based Fisheries Management approach (Link, 2002); while the latter stress the potential benefits that produce and can eventually be enhanced by human inputs promoting diversification and complementary revenues for fishing coastal communities (UNEP-WCMC, 2011).

This research focuses on use value which applies to the benefits CES produces for those who use and receive those benefits including coastal communities, mainly enjoying festive events like seafood gastronomic festival, or visiting a SSF historical port facilities (More et al., 1996). It is worth noting that this research does no account for non-use values that concern benefits received by those who do not use CES including existence and bequest value (see DWP6_A2). Use value of CES is indirectly marketed and is generally valuated using travel cost method (G. R. Parsons, 2017), however contingent valuation is also a feasible alternative for this aim (Bateman et al., 2013; Boyle, 2017; Carson & Hanemann, 2005).

Use values of fisheries CES combined with human inputs (labor and physical capital) can be effectively marketed resulting in a direct impact through the revenues of certain economic industries; CES use produce final private consumption for making use of them in different sectors of the economy, like transport or accommodation and hospitality. Moreover, industries involved in the potential economic activities linked to CES use and enjoyment produced indirect impact on production by their intermediate consumption from other economic sectors; and an induced effect on production arises again as result of the consumption of workers that employ. This research is based upon the assumption that the exploitation of all these CES in a sustainable way allows to estimate sources of use value.

This research is aimed at valuing potential direct, indirect, and induced use value of SSF CES though heritage in EU Atlantic under an Input-Output (IO) approach (Miller and Blair, 2009), and carrying on and analysis using data produced in the framework of CABFISHMAN and other source of official EU statistics. This way, this research will allow to estimate production, GDP and employment impacts in EU Atlantic coastal communities and EU ICES divisions.

3. Data

3.1. Survey and contingent valuation data

Contingent valuation implemented in the framework of DWP6 Action2 (WP6_A2) of CABFishMAN allowed to estimate data on mean willingness to pay (WTP) for using value of CES related to SSF heritage by domestic visitors of 6 refence sites in the Atlantic area, including the percentage of respondents that express positive WTP in the survey. Additionally, a Travel cost valuation tool (annex 1) was implemented using 4 different panels (Ireland, Portugal, Spain, and UK) during October and November 2021 according to survey design described in DWP6_A2 of CABFishMAN. This valuation tool was implemented to identify the distribution of different expenses by economic sectors of CES of heritage sites related to fisheries.

As part of the Travel cost valuation tool, a direct relationship was established between the use value and the SSF CES through the identification of the time devoted visiting or participating in each of the natural and/or cultural heritage elements related to small scale fishing (a total mean of 40.75% of the time of the visit- Table 1). This allowed to adjust each of the expenditures by time consumed specifically to the SSF CES. As a result, main expenditures identified in this survey for domestic visitors were (Table 2):

Table 1. Percentage of time devoted to use CES of heritage related to SSF in the EU Atlantic area.

Heritage site	% of visit time
Ireland: County of Kerry	51.48%
Portugal: Eastern Coast of Algarve	40.02%
Spain: Basque Country	38.27%
Spain: Western Coast of Asturias	37.91%
Spain: Western Coast of Huelva	35.60%
United Kingdom: Cornwall and Isles of Scilly	48.75%
Total	**40.75%**

Source: DWP6_A2 and own elaboration using Travel Cost tool implemented survey in EU Atlantic area.

- Accommodation: accommodation cost of the visit adjusted by time consumed by the visit to use the CES.
- Meals: food cost per person and visit (lunch and dinner) adjusted by time consumed by the visit to use the CES.
- Transport: mobility cost per person and visit adjusted by time consumed by the visit to use the CES.
- Other: other costs per person and visit (supermarket, parking, …) per person adjusted by time consumed by the visit to use the CES.

Table 2. Expenses declared in the survey expressed in € and in €PPP (EU27_2020=1), referred to general price index (EUROSTAT) of the countries where heritage sites related to SSF are located.

Heritage site	Accomodation		Meal		Transport		Other	
	Total	Mean	Total	Mean	Total	Mean	Total	Mean
Ireland: County of Kerry	7,135.58 €	85.97 €	6,227.10 €	75.03 €	1,710.70 €	20.61 €	185.20 €	2.23 €
Portugal: Eastern Coast of Algarve	15,913.73 €	93.61 €	16,574.11 €	97.49 €	5,003.39 €	29.43 €	161.47 €	0.95 €
Spain: Basque Country	16,753.16 €	83.77 €	20,444.12 €	102.22 €	6,076.09 €	30.38 €	307.84 €	1.54 €
Spain: Western Coast of Asturias	8,349.71 €	52.51 €	11,532.84 €	72.53 €	4,147.80 €	26.09 €	117.26 €	0.74 €
Spain: Western Coast of Huelva	10,498.55 €	84.67 €	14,094.53 €	113.67 €	3,699.73 €	29.84 €	155.73 €	1.26 €
United Kingdom: Cornwall and Isles of Scilly	15,461.43 €	150.11 €	13,259.78 €	128.74 €	4,464.58 €	43.35 €	266.70 €	2.59 €

Source: DWP6_A2 and own elaboration using Travel Cost tool implemented survey in EU Atlantic area.

The percentage of visitors that use SSF heritage together with willingness to pay for using it, was also gathered form contingent valuation and travel cost surveys under the assumption that human capital would allow to exploit this heritage in a sustainable way (Table 3 - WP6_A2).

Table 3 Contingent valuation in € and in €PPP (EU27_2020=1), referred to recreation and culture of the countries where heritage sites related to SSF are located; and percentage of user visitors.

Heritage site	% user visitors	Spike (Kristrom 1997)
		Mean
Ireland: County of Kerry	35.75%	15.52 €
Portugal: Eastern Coast of Algarve	64.04%	17.36 €
Spain: Basque Country	83.43%	16.96 €
Spain: Western Coast of Asturias	75.82%	15.53 €
Spain: Western Coast of Huelva	67.35%	17.42 €
United Kingdom: Cornwall and Isles of Scilly	100.00%	23.60 €

Source: DWP6_A2 and own elaboration using Contingent Valuation and Travel Cost tools implemented survey in EU Atlantic area.

3.2. Secondary sources of data

The following, most recent, official symmetric IO Tables of the 6 reference sites were gathered from official regional and national accounting systems for the purposes of this research:

- Andalusia (2016). IECA.
- Asturias (2015). SADEI.
- Basque Country (2015). EUSTAT.
- Cantabria (2012). ICANE.

- France (2018). INSEE.
- Galicia (2018). IGE
- Ireland 2019. CSO.
- Portugal (2013). INE.
- United Kingdom (2019). ONS.

Regional (Andalusia, Asturias, Basque Country and Galicia) instead of national IO tables have been used in Spain in order to represent specific characteristics of inter-industry relationships of regional case study sites and the estimation of Galician impacts in Spain better. This way we used more realistic multipliers for each region.

Other relevant official information was also gathered for the purposes of this research, which include:

- Total number of domestic tourist visitors flows to the different reference sites in period 2016-2022.
- Official GDP data at NUT 2 and 3 geographical levels of the countries involved in the analysis.
- Other macroeconomic aggregates including employment level and GAV by industries.

Regarding tourist flows, Spanish hotels, camping, touristic apartments, and rural accommodation surveys of Spanish Official Statistics (INE) was used to calculate the mean annual domestic tourism flow to coastal areas in Spain in period 2016-2021. Counterpart survey statistics were used in Portugal (*Hóspedes (N.º) nos estabelecimentos de alojamento turístico por Localização geográfica*), France (*Arrivées dans l'hôtellerie" del Institut national de la statistique et des études économiques*) and Ireland (domestic travel statistics) gathered form Official Statistics. United Kingdom tourist flows statistics used are from *Great Britain Day Visits Survey* gathered from Visit England.

GDP data is referred to 2021 has been attained from respective official statistical office of countries in EU Atlantic area. It is worth noting that we did not used IO tables GDP information given that they were referred to different periods of time.

4. Methods

Contingent valuation method (Bateman et al., 2013; Boyle, 2017; Carson & Hanemann, 2005) have been used to estimate direct use value of SSF CES based upon survey data statistically designed for contingent valuation (Mitchell & Carson, 1989; V. L. Parsons, 2017) according DWP6_a2 of CABFishMAN.

This research has taken advance of a survey statistical design use for contingent valuation in order to estimate willingness to pay for using SSF heritage to estimate the potential fee to use cultural heritage of SSF if it would be exploited, and to implement an out of site travel cost method valuation tool to estimate all additional expenses net of taxes, needed for the use of SSF CES, so that the share of different economic sectors involved in the direct use SSF heritage can be identified [see annex 1 for Western Coast of Huelva travel cost (Cameron, 1992; G. R. Parsons, 2017) and WP6_A2 for contingent valuation questionnaires].

This information has allowed to implement IO analysis to estimate direct, indirect, and induced impact of use value of cultural services related to SSF heritage in the Atlantic area (Leontief, 1936; Miller & Blair, 2009). An input-output table monetary aggregated equilibrium between productive inputs used

in the production of goods and services of different industries involved and the employment generated by them in each economy of the EU Atlantic area has been assumed to estimate the contribution of different economic sector/industry on economic aggregates such as production, gdp, and employment. In this sense, the model distinguishes between the direct impact or contribution of an activity in the economy, the indirect impact due to intermediate consumption of the sector in suppliers, and the induced impact of re-spending factor retributions by industry and supplier employees.

This model assumes that different (n) economic sectors of and economy build a system of linear equations where final production (X_i) of each sector is the result of summing the supply of sector j to sector I (x_{ij}) and final demand (Y_i) as presented in Equation 1.

$$X_i = x_{i1} + x_{i2} + \cdots + x_{in} + Y_i \qquad i = 1, \dots, n \tag{1}$$

This system of equations can be matrix expressed as shown in *Equation 2* where *X* is the vector of production of each *i* sector, *x* is the transaction matrix of vectors that define supply of different *j* sector to *i* sector; and *Y* is the vector of final demand of *i* economic sector.

$$X = x + Y \tag{2}$$

Interdependences shown in the system of equations of Equation 2 can be summarized according to IO Table presented in Table 4 where the sum of columns vectors values is intermediate consumption of supply sector *j*, the sum of row vectors values represent the share of production of sector *i* which is not final consumption (Y_i).

Table 4. Structure of an IO Table.

		Inputs				Final demand
	Sectors	1	2	...	n	
Outputs	1	x_{11}	x_{12}	...	x_{1n}	Y_1
	2	x_{21}	x_{22}	...	x_{2n}	Y_2
	⋮	⋮	⋮		⋮	⋮
	n	x_{n1}	x_{n2}		x_{nn}	Y_n
Added value		V_1	V_2	⋮	V_n	
Production		X_1	X_2	⋮	X_n	

Equation 1 can be expressed as shown in Equation 3 defining technical coefficients a_{ij} as the share of economic sector *j* supply to sector *i* so that matrix equation 2 turn to the expression shown in Equation 4 where *A* is the matrix of technical coefficients.

$$a_{ij} = \frac{x_{ij}}{X_j}, \quad \forall\, i,j = 1, 2, \dots, n \tag{3}$$

$$X = AX + Y \tag{4}$$

Solving matrix equation 4 for X provides the so-called inverse Leontief matrix L of multipliers (α_{ij}) that allows to estimate production of economic sector i as a linear combination of final demand of each supply sector j (Equation 5).

$$X = (I - A)^{-1}Y = LY \tag{5}$$

This theoretical framework allows to define the multiplier of production of economic sector j (M^α_j) as the final impact on all economic sector by a unitary increase of final demand of economic sector j (Equation 6), and the multiplier of the uniform expansion of demand of production sector i as the final impact on i economic sector by a unitary increase of final demand of all economic sectors (Equation 7).

$$M^\alpha_j = \sum_i \alpha_{ij} \tag{6}$$

$$T^\alpha_i = \sum_j \alpha_{ij} \tag{7}$$

Additionally, It also feasible to attaining employment (n) multipliers using the mean employment per unit of output (c_j – Equation 8) and Gross Added Value (GAV - g) multipliers using the mean GAV per unit of output (v_j – Equation 9) where c and v are diagonal matrix with the respective means per supply sector on the main diagonal.

$$n = c(I - A)^{-1}Y \tag{8}$$

$$g = v(I - A)^{-1}Y \tag{9}$$

This research aggregate IO symmetric tables listed in section 3 in 8 different economic sectors related to CES of SSF heritage (Table 5) but in the case of Ireland where fishing sector could not be separated from agriculture and forestry ended with seven sectors. This aggregation has allowed to simplify allocating expenses to different economic sectors. In addition, the so-called closed Leontief model can be implemented, which consists of incorporating an additional row and column in the intersectoral flow table for a sector n+1 that will correspond to the domestic economies. Logically, column n+1 will come from the final demand vector considered in the open model and includes personal consumption expenditures in the production of each of the branches, as well as direct taxes and personal savings, located in gross formation. of private capital considering them endogenous while the income of the households contained in row n+1 will correspond to part of the primary inputs of the same, both wages and salaries, interest, bonuses, non-business benefits and subsidies to families(Hirsch, 1959; Miller & Blair, 2009).

Once the mean direct impact is estimated using contingent valuation for use fees of CES (Culture and leisure activities sector) and the rest of economic sectors potentially affected because of Travel Cost survey implementation results for domestic tourism (Table 5), the estimation of total direct impact has been carried out accounting for the percentage of domestic tourists that make use of the aforementioned heritage multiplied by tourism inflow, gathered from official statistics, to heritage sites and coastal communities..

The upscaling of results for the whole heritage of countries has been done using regional statistics of tourism inflows to Atlantic Area Coastal communities to country and ICES subdivisions levels.

Table 5. Aggregated Economic Sectors of IO Tables.

Economic sectors
Agriculture and forestry **Fishing and aquaculture** **Industry** **Building** **Transport** **Accomodation and hospitality** **Culture and leisure activities** **Other services**
TOTAL

Source: own elaboration.

6. Results

Methods described in section 4 have been implemented to estimate direct indirect and induced impact of use values of CES related to SSF fisheries heritage in the Atlantic area using data described in section 3.

Table 6. Impact analysis results for CES related to SSF fisheries heritage in €PPP (EU27_2020=1) of the countries where heritage sites related to SSF are located.

Heritage site	Summary of effects	EFFECTS (€PPP) ON			x1000 VISITORS EFFECTS (€PPP) ON		
		Production	GDP	Employment	Production	GDP	Employment
		1,000 €	1,000 €	no.	1,000 €	1,000 €	no.
Ireland: County of Kerry	Direct effect	344,169.82 €	210,798.48 €	8,674	80.05 €	49.03 €	2.0
	Indirect effect	282,826.55 €	133,371.61 €	1,279	65.78 €	31.02 €	0.3
	Induced effect	55,923.26 €	26,502.18 €	291	13.01 €	6.16 €	0.1
Total effect		**969,786.85 €**	**526,376.86 €**	**10,245**	**225.56 €**	**122.43 €**	**2.4**
Portugal: Eastern Coast of Algarve	Direct effect	334,940.82 €	181,971.66 €	4,705	195.81 €	106.38 €	2.8
	Indirect effect	194,718.80 €	89,152.51 €	2,502	113.83 €	52.12 €	1.5
	Induced effect	145,688.11 €	65,373.02 €	1,937	85.17 €	38.22 €	1.1
Total effect		**675,347.74 €**	**336,497.20 €**	**9,143**	**394.81 €**	**196.72 €**	**5.3**
Spain: Basque Country	Direct effect	306,571.32 €	143,887.42 €	2,693	163.59 €	76.78 €	1.4
	Indirect effect	255,760.80 €	116,488.14 €	1,978	136.48 €	62.16 €	1.1
	Induced effect	67,897.47 €	35,539.55 €	600	36.23 €	18.96 €	0.3
Total effect		**630,229.59 €**	**295,915.11 €**	**5,272**	**336.30 €**	**157.91 €**	**2.8**
Spain: Western Coast of Asturias	Direct effect	218,838.58 €	116,427.23 €	2,631	127.41 €	67.79 €	1.5
	Indirect effect	164,962.58 €	80,572.27 €	1,472	96.04 €	46.91 €	0.9
	Induced effect	71,412.30 €	39,038.29 €	756	41.58 €	22.73 €	0.4
Total effect		**455,213.46 €**	**236,037.78 €**	**4,859**	**265.04 €**	**137.43 €**	**2.8**
Spain: Western Coast of Huelva	Direct effect	202,013.83 €	102,010.82 €	2,064	215.39 €	108.76 €	2.2
	Indirect effect	104,642.10 €	50,014.22 €	909	111.57 €	53.33 €	1.0
	Induced effect	29,100.40 €	16,477.50 €	305	31.03 €	17.57 €	0.3
Total effect		**335,756.33 €**	**168,502.54 €**	**3,279**	**357.99 €**	**179.66 €**	**3.5**
United Kingdom: Cornwall and Isles of Scilly	Direct effect	6,660.81 €	3,537.47 €	80	340.34 €	180.75 €	4.1
	Indirect effect	4,274.68 €	2,111.34 €	25	0.22 €	107.88 €	1.3
	Induced effect	2,197.00 €	1,190.08 €	15	0.11 €	60.81 €	0.8
Total effect		**13,132.49 €**	**6,838.89 €**	**120**	**340.67 €**	**349.44 €**	**6.2**

Source: Own elaboration.

Results show significant impact which represents a gross domestic product (GDP) of approximately 1,143.57 x1000€PPP (EU27_2020=1) and a total of 32,918 per thousand domestic visitors at national

level in SSF heritage sites of Atlantic area considered in this research. It is also worth noting that more than 45% of the impact of this CES is indirect or induced by other economic sectors. The highest impact is attributed to Ireland followed by Portugal and Basque Country heritage sites in terms of GDP and employment (Table 6).

Results attained also show the value of CES of SSF heritage of ICES subdivisions IX, VII, and VIII of eastern Atlantic upscaled using geographically disaggregated GDP levels and tourism inflows to ICES Atlantic coastal communities of Spain, Portugal, France, Ireland, and United Kingdom resulting in the highest GDP level of VII ICES subdivision that involve France, Ireland and United Kingdom followed by IX ICES subdivision involving Spain and Portugal (Table 7).

Table 7. CES related to SSF fisheries heritage in €PPP (EU27_2020=1) of ICES subdivisions.

ICES area	TOTAL EFFECTS ON GDP (€PPP)				x1000 VISITORS EFFECTS ON GDP (€PPP)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
IX	3,035,444.94 €	1,482,286.27 €	992,495.43 €	5,510,226.63 €	103.00 €	50.01 €	29.64 €	182.66 €
VII	14,079,657.27 €	8,686,566.99 €	3,983,672.57 €	26,749,896.83 €	117.95 €	79.36 €	39.88 €	237.20 €
VIII	1,661,435.89 €	1,123,844.30 €	535,432.56 €	3,320,712.75 €	102.80 €	69.98 €	32.84 €	205.62 €

Source: Own elaboration.

6. Conclusions

The estimation the total CES of SSF (including direct, indirect, and induced economic impacts) is in most of cases not considered in cost-benefit analysis of SSF resulting in bias decision making and misunderstanding of the real importance of ecosystem services associated to fisheries and its key impact on other economic sectors. This high relevance of the intersectoral relationships should be incorporated as new knowledge in decision making, but double counting should be also avoided when computing the Total Economic Value of SSF CES including other values, as for instance, market -based-values (food provisioning but also cultural services).

This research is the first attempt to estimate the impact of CES of SSF heritage at the scale of the Atlantic area with seminar results on adapted methodology and geographical scale (country level and ICES SSF areas of influence).

The implementation of IO analysis combining data from contingent valuation and travel cost across the Atlantic area of the EU to produce direct, indirect, and induced impact of CES of SSF heritage use value constitutes a novel approach to fill the gap noted in previous paragraph between food provision services and other sources of values.

The absent of accounting for indirect and inducing economic impacts of CES of SSF heritage imply neglecting more than 45% of the impact of this CES on GDP and a significant source of employment as noted in results section given that IO analysis has allowed as to rise visibility of the impact of CES of SSF heritage in the whole economy of the EU Atlantic area (Table 4). In fact, CES of SSF heritage represents between 0.74% and 2.73% of the GDP of coastal communities in EU Atlantic area, and between 0.16% and 2.73% of GDP of riparian countries of ICES subdivisions (Table 8).

Table 8. CES related to SSF fisheries heritage on GDP.

| Country | Effects of GDP (x1000) on | Total GDP (x1000 - 2016-2021) | | CES of SSF heritage % of GDP (2016-2021) | |
	CES of SSF heritage	Coastal communities	Total	Coastal communities	Total
Spain	1,862,956.23 €	179,074,889.20 €	1,168,854,600.00 €	1.04%	0.16%
France	4,851,597.44 €	655,573,737.55 €	2,355,751,796.59 €	0.74%	0.21%
Ireland	9,338,154.45 €	341,737,333.33 €	341,737,333.33 €	2.73%	2.73%
Portugal	4,142,986.66 €	193,661,993.83 €	202,830,887.67 €	2.14%	2.04%
United Kingdom	£41,751,099.35	£756,775,333.33	£2,144,422,666.67	5.52%	1.95%

Source: own elaboration using official GDP data and results of the research.

Figures of Table 9 are even more relevant given the low percentage the primary fishing sector (including inshore but also offshore fleets) represent in relation the GDP given that significantly increase the weight of SSF in GDP (Table 8).

Table 9. Weight of CES of SSF heritage and Fisheries and Aquaculture (F&A) GDPs on total GDP.

Country	F&A GDP (x10^6)	GDP (x10^6)	% F&A GDP	CES GDP (x10^6)	% CES-F&A GDP
Spain	1,413.40 €	1,168,854.60 €	0.12%	0.16%	**0.28%**
France	801.40 €	2,355,751.80 €	0.03%	0.21%	**0.24%**
Ireland	159.35 €	341,737.33 €	0.05%	2.73%	**2.78%**
Portugal	338.04 €	202,830.89 €	0.17%	2.04%	**2.21%**
United Kingdom	£658.07	£2,170,976.73	0.03%	1.95%	**1.98%**

Source: own elaboration using official GDP data and results of the research.

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Annex 1. Travel cost valuation tool

CABFISHMAN PROJECT

This survey is part of a scientific research aimed at valuating the natural and cultural heritage of Small Scale Fisheries (SSF) in the Atlantic area of European Union (EU) and especially in the Western coast of Huelva. This survey is one of the outputs of CABFishMAN project (EAPA 134/2018) funded by European Union's Interreg Atlantic Area European Regional Development Fund. University of Huelva carries out this survey in collaboration with several partners in other Spanish regions, Portugal, France, United Kingdom and Ireland. Please go to CABFishMAN web site (www.cabfishman.net) for further details.

PLEASE ONLY TAKE THIS SURVEY IF YOU ARE OVER 18 YEARS OLD.

By completing this survey you acknowledge that you have read and understood the Personal Data Protection policy shown in the next bullet, that you willingly agree to participate, and that you may withdraw your consent before 1 September 2021 and discontinue participation if you wish.

PERSONAL DATA PROTECTION POLICY

You are informed that you your personal data will be included in database managed CABFishMAN (EAPA 134/2018) consortium funded by European Union's Interreg Atlantic Area European Regional Development Fund, according Spanish Organic Law 15/1999 of December 13 on Personal Data Protection. The objectives of this database is the anonymous quantitative (mathematical, statistical and/or econometrical) and qualitative analysis of the data gathered in the framework of the aforementioned project. You are informed that you can use your rights to access, rectify, cancel, and object your personal data by postal mail MEMPES-AEA, Departamento de Economía, Universidad de Huelva, Plaza de La Merced, 11, 21071-Huelva, España) or email (cabfishman@uhu.es).

SECTION 0. SELECTION OF THE INTERVIEWEE

1. How old are you? [P0A]

    1.1. Less than 18 ☐

    1.2. from 18 to 34 ☐

    1.3. from 35 to 49 ☐

    1.4. from 50 to 64 ☐

    1.5. more than 64 ☐

2. indicate your age [P0B]

    _____

3. What is your gender? [P0C]

    3.1. Male ☐

    3.2. Female ☐

4. Where do you live? [V42 (P0D)]

    4.1. Andalucía ☐

    4.2. Castilla y León ☐

    4.3. Castilla – La Mancha ☐

    4.4. Comunidad de Madrid ☐

    4.5. Comunidad valenciana ☐

    4.6. Extremadura ☐

    4.7. Región de Murcia ☐

SECTION 1. TRAVEL COST METHOD

5. Have you ever visited the western coast of Huelva, we refer to villages/towns/localities different to the one you live or have a second residence, for leisure during the last 5 years? [P7]

    5.1. Yes I had, and I live in another village/town/locality of the western coast of Huelva. ☐

    5.2. Yes I had, and I don't live in another village/town/locality of the western coast of Huelva.

    ☐

    5.3. Yes I had, but it was more than 5 years ago. ☐

    5.4. No, I had visited the area for work reasons ☐

    5.5. No I had not, I never visited the western coast of Huelva ☐

6. How many times did you visit the western coast of Huelva, we refer to village/town/locality different to the one you live or have a second residence, for leisure during the last 5 years? [P8]

    6.1. 1 time ☐

    6.2. from 2 to 3 times ☐

    6.3. from 4 to 6 times ☐

    6.4. from 7 to 10 times ☐

    6.5. More than 10 times. ¿How many? _____

1. Last time you visit the western coast of Huelva, we refer to village/town/locality different to the one you live or have a second residence, for leisure during the last 5 years, ¿Was it previous to COVID 19 pandemia? [P9]

    1.1. Yes. ☐

    1.2. No. ☐

2. Think of the last time you visit any village/town/locality of the western coast of Huelva, we refer to municipalities different to the one you live or have a second residence, for leisure during the last 5 years. Indicate the municipality/city of origin of your trip: [P10]

_____

3. Indicate the postal code of the village/town/locality of origin of your trip. (Write the 0s you need first if your postal code is less than 5 digits): [P10.1]

_____

4. Indicate the villages/towns/localities of the western coast of Huelva you visited in that trip: [P11]

    4.1. Huelva ☐

    4.2. Punta Umbría ☐

    4.3. El Rompido (Cartaya) ☐

    4.4. Isla Cristina ☐

    4.5. El Terron – La Antilla (Lepe) ☐

    4.6. Isla Canela – Punta del Moral (Ayamonte) ☐

    4.7. Otheres (especify – can be more than one): _____

5. If you travel /travelled with anybody else, please indicate how many people from the same place of origin accompanied you (please circle your choice). [P12]

    5.1. 1 ☐

    5.2. 2 ☐

5.3.   3   ☐

5.4.   4   ☐

5.5.   More than 4. ¿How many?   _____

6.   How much time did your visit last? [P13]

6.1.   One day   ☐

6.2.   from 2 to 3 días   ☐

6.3.   from 4 to 6 días   ☐

6.4.   from 7 to 10 días   ☐

6.5.   More than 10 days. ¿How many?   _____

7.   What is/are the mode/s of transport you used to arrive to the western coast of Huelva? [P14]

7.1.   Aircraft   ☐

7.2.   Train   ☐

7.3.   Car   ☐

7.4.   Bus   ☐

7.5.   Other (specify):   _____

8.   What were the mean **travel expenses per person (return ticket)** to arrive to the villages/towns/localities of the western coast of Huelva (excluding accommodation and meal)? [P15]

8.1.   less than 10 €. ¿How much?   _____

8.2.   from 20 to 20 €   ☐

8.3.   from 21 to 40 €   ☐

8.4.   from 41 to 70 €   ☐

8.5.   from 70 to 110 €   ☐

8.6.   from 111 to 160 €   ☐

8.7.   from 161 € to 220 €   ☐

8.8.   more than 220 €. ¿How much?   _____

9.   If you had a meal in the western coast of Huelva, **how much was the mean expense per meal (lunch or dinner) per person** during your visit to the western coast of Huelva? [P16]

9.1.   I did not have any meal in the villages/towns/localities I visited.   ☐

9.2.   less than 10 €. ¿How much?   _____

9.3.   from 11 to 20 €   ☐

9.4.   from 21 to 30 €   ☐

9.5.   from 31 to 50 €   ☐

9.6. from 51 to 60 € ☐

9.7. more than 60 €. ¿How much? _____

10. PLEASE MARK A "TWO" IN THIS QUESTION, THE QUESTIONARY WON'T BE VALID IN OTHER CASE. [P]

10.1. One ☐

10.2. Two ☐

10.3. Three ☐

10.4. Four ☐

10.5. More than four ☐

11. If you slept in the western coast of Huelva, what was the **mean overnight** (1 night) **expenses per person** of your visit to the village/town/locality of the western coast of Huelva? [P17]

11.1. I did not sleep in the villages/towns/localities the western coast of Huelva I visited. ☐

11.2. Less than 20 €. ¿How much? _____

11.3. from 20 to 50 € ☐

11.4. from 51 to 75 € ☐

11.5. from 76 to 100 € ☐

11.6. from 101 to 125 € ☐

11.7. from 126 to 150 € ☐

11.8. more than 150 €. ¿How much? _____

12. ¿Did you visit or participate to any of the natural and cultural heritage elements related to small scale fishing listed below during your visit to the western coast of Huelva? (Point out all necessary options). [P18]

12.1. *Ronqueo* of tuna ☐

12.2. The auction of fish in the wholesale market ☐

12.3. The burial of sardine/squid during Carnival. ☐

12.4. The festivity of the Virgin of Carmen. ☐

12.5. The combined port and fishing landscape. ☐

12.6. The wholesale market building, the *charangas* or fish processing and transformation small businesses, boathouses and other historical buildings of canning and salting industries of the western coast of Huelva. ☐

12.7. I did not visit or experienced any of the heritage element listed above ☐

13. During your trip, of the total leisure time (it would be 100%), ¿What percentage of your leisure time did you devoted to visited or participated in any of the activities described in question P18? (Write the %) [P19]

    _____

14. ¿How would you allocate the time you devoted visiting or participating in each of the following natural and/or cultural heritage elements related to small scale fishing? (indicate the estimated percentage, it should sum up 100%) Write the %. [P20]
    14.1. Ronqueo del atún: _____ .
    14.2. The auction of fish in the wholesale market: _____ .
    14.3. The burial of sardine/squid during Carnival: _____ .
    14.4. The festivity of the Virgin of Carmen: _____ .
    14.5. The combined port and fishing landscape: _____ .
    14.6. The wholesale market building, the *charangas* or fish processing and transformation small businesses, boathouses and other historical buildings of canning and salting industries of the western coast of Huelva: _____ .

15. In addition to the previous expenses, have you paid anything else to visit/experience the cultural and natural heritage elements related to small scale fishing of the western coast of Huelva listed in question P18? [P21]

    15.1. No, I did not pay anything else   ☐

    15.2. Less than 1 €   ☐

    15.3. from 1 to 3 €   ☐

    15.4. from 4 to 5 €   ☐

    15.5. from 6 to 10 €   ☐

    15.6. more than 10 €. ¿How much?
         _____

16. ¿What did you pay additionally for? [P22]

    Write: _____

17. In addition to the experiences or visits indicated in question P18 or in case you have NOT enjoyed any of them, what have you visited / experienced during your visit to the western coast of Huelva? (Point out all necessary options) [P23]

    17.1. The beaches of the western coast of Huelva.   ☐

    17.2. The bars and restaurants of the western coast of Huelva.   ☐

    17.3. I went to the western coast of Huelva for recreational fishing.   ☐

    17.4. Other. ¿Which one?
         _____

STATISTICAL CLASSIFICATION QUESTIONS

18. What is your nationality? [D1]

    18.1. Spanish ☐

    18.2. Foreigner. ¿Which on? _____

19. What is the postal code of your habitual residence? (Write the 0s you need first if your postal code is less than 5 digits) [D2]

    19.1. _____

20. What is the highest level of education you have completed? [D3]

    20.1. No qualifications ☐

    20.2. Primary education or equivalent ☐

    20.3. General Certificate of Secondary Education (GCSE) or equivalent ☐

    20.4. Vocational Education and Training (VET) or equivalent ☐

    20.5. General Certificate of Education (GCE) or equivalent ☐

    20.6. Certificate of Higher Education (HNC) or equivalent ☐

    20.7. Undergraduate degree or equivalent ☐

    20.8. Postgraduate degree ☐

21. ¿Do you have any kind of professional/laboral/familiar of first degree linkage with fishing sector? [D4]

    21.1. Yes I do, I am professional/employee in the fishing sector. ☐

    21.2. Yes I do, I have family member up to first degree (parents and/or brothers) that are professional/employee in the fishing sector. ☐

    21.3. Yes I do, I have family member of second degree or more, friends and/or acquaintances that are professional/employee in the fishing sector. ☐

    21.4. I do not have any linkage with the fishing sector. ☐

22. What is your employment or professional status [D5]

    22.1. I am employed in private sector. ☐

    22.2. I am self-employed. ☐

    22.3. I am public official. ☐

    22.4. I am student. ☐

    22.5. I am retired. ☐

    22.6. I am unemployed. ☐

    22.7. I am devoted to other occupations. ☐

23. Which of the following categories reflects your monthly family income net of social security and taxes? [D6]

23.1. Less than 750 € ☐

23.2. From 750 € to 1,000 € ☐

23.3. From 1,001 € to 1,250 € ☐

23.4. From 1,251 € to 1,500 € ☐

23.5. From 1,501 € to 1,750 € ☐

23.6. From 1,751 € to 2,000 € ☐

23.7. From 2,001 € to 2,500 € ☐

23.8. From 2,501 € to3,000 € ☐

23.9. More than 3,000 €. ¿How much? _____

You can surf the web of CABFISHMAN Project for additional information:
https://www.cabfishman.net

THANK YOU VERY MUCH FOR YOUR COLLABORATION.